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MINDFULNESS AND COMPASSION: AN EXPLORATION OF RELATED CONCEPTS AND IMPLICATIONS FOR PSYCHOLOGICAL WELL-BEING

Tese de doutoramento em Psicologia, especialidade em Psicologia Clínica, orientada por Professor Doutor José Augusto da Veiga Pinto Gouveia e apresentada à Faculdade de Psicologia e Ciências da Educação da Universidade de Coimbra

Dezembro de 2016



UNIVERSIDADE DE COIMBRA

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Dissertação de Doutoramento em Psicologia, na área de especialização em Psicologia Clínica, apresentada à Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra, sob orientação do Professor Doutor José Augusto da Veiga Pinto de Gouveia.

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Resumo

Enquadramento

Apesar do conceito de compaixão ter sido, desde sempre, um tema de interesse em vários segmentos da sociedade, desde a antiguidade à modernidade, tem, no entanto, recebido pouca atenção por parte das ciências psicológicas. Esta tendência, contudo, tem-se alterado nos últimos anos, e a compaixão tem vindo a ocupar um lugar de destaque em vários domínios científicos, inclusivamente no campo da psicologia. De forma semelhante, o interesse no *mindfulness* e nas intervenções baseadas no *mindfulness*, desenvolvidas no contexto do Budismo há mais de dois milénios, também tem crescido exponencialmente.

Objetivos

De uma forma geral, o presente trabalho tem como principais objetivos: i) explorar os benefícios e consequências negativas dos objetivos compassivos e de autoimagem, bem como potenciais preditores destes objetivos; ii) explorar a relação entre auto-compassão e estados afetivos positivos; iii) explorar fatores disposicionais associados à fadiga por compaixão e ao *burnout*; iv) testar a eficácia de um programa baseado no *mindfulness* para reduzir a fadiga por compaixão e o *burnout*, e para promover características psicológicas positivas, em enfermeiros oncológicos.

Método

Para cumprir estes objetivos, foram recolhidas várias amostras e foram empregues diferentes designs experimentais e procedimentos metodológicos. De uma forma geral, duas populações estão representadas nos estudos do presente estudo. Para explorar as consequências dos objetivos compassivos e de autoimagem, e para proceder à validação da Escala de Objetivos Compassivos e de Autoimagem (Estudo I a Estudo IV), os participantes foram

recrutados da população de estudantes universitários ($n = 291$; $n = 307$; $n = 153$). Várias amostras, recrutadas da população de estudantes universitários e da população geral foram usadas para explorar a relação entre auto-compaixão e afeto positivo no Estudo V ($n = 307$; $n = 124$; $n = 161$; $n = 331$). Para explorar os correlatos fisiológicos do afeto positivo (Estudo VII), uma amostra de estudantes universitários foi recrutada ($n = 94$). Para explorar as relações entre alexitimia, auto-compaixão, e afetividade positiva, uma amostra da população geral foi recrutada ($n = 331$). Nos Estudos VIII a XI, desenhados para explorar fatores psicológicos associados à fadiga por compaixão e ao *burnout*, e para realizar um estudo de validação da versão Portuguesa da *Professional Quality of Life Scale-5*, foi recrutada uma amostra de enfermeiros de várias especialidades de vários hospitais das zonas Norte e Centro de Portugal ($n = 280$). Para testar a eficácia e os mecanismos de mudança da intervenção baseada no *mindfulness* (Estudos XII e XIII), foi recrutada uma amostra de enfermeiros oncológicos de dois dos principais hospitais oncológicos de Portugal ($n = 94$). Nos Estudos I, V, e VI a XI, foi usado um design transversal. Nos Estudos II a V, foram utilizados designs longitudinais que, ainda não demonstrando conclusivamente causalidade, proporcionam mais confiança na interpretação dos resultados. Nos Estudos XII e XIII foi realizado um design de ensaio clínico controlado não randomizado. Os participantes foram divididos em duas condições: a condição experimental, que consistiu na participação no programa baseado no *mindfulness* durante seis semanas; e uma condição de controlo passiva. Ambos os grupos preencheram questionários de autorresposta antes e depois da intervenção.

Resultados

Os resultados do primeiro conjunto de estudos indicaram que os objetivos compassivos predizem um aumento na conexão social, e uma diminuição dos sintomas psicopatológicos e da ansiedade e evitamento social. Em contraste, os objetivos de autoimagem predizem uma diminuição da conexão

social e um aumento dos sintomas psicopatológicos e da ansiedade e evitamento social. Os objetivos compassivos e de autoimagem também predizem mudanças nos tipos de afeto positivo que, por sua vez, se revelaram mediadores significativos da relação entre os objetivos interpessoais e as várias variáveis dependentes. Os resultados do segundo conjunto de estudos sugerem que a auto-compassão está associada, e prediz, diferentes tipos de afeto positivo e várias emoções positivas. A auto-compassão também se revelou um mediador significativo da associação negativa entre alexitimia e emoções positivas. O afeto positivo relacionado com sentimentos de calor e contentamento está associado a um perfil autonómico caracterizado por um aumento da variabilidade da frequência cardíaca em repouso, um indicador de atividade parassimpática. Os resultados do último conjunto de estudos indicam que vários processos psicológicos estão relacionados com a qualidade de vida profissional. A preocupação empática associou-se positivamente à fadiga por compaixão, mas não ao *burnout*, e a auto-compassão mediou e moderou esta associação. Finalmente, a intervenção baseada no *mindfulness* para enfermeiros oncológicos foi eficaz na redução da fadiga por compaixão e do *burnout*, bem como de outros indicadores de bem-estar. O traço *mindfulness*, a auto-compassão e a flexibilidade psicológica foram mediadores significativos das mudanças em várias variáveis dependentes do pré-teste para o pós-teste.

Conclusão

De uma forma geral, evidência resultante deste trabalho mostrou que: i) ter objetivos compassivos, em oposição a objetivos de autoimagem, nas relações interpessoais está associado a diversos benefícios; ii) traços como o *mindfulness* e a auto-compassão ajudam a promover objetivos compassivos e a diminuir objetivos de autoimagem; a auto-compassão promove estados afetivos positivos mais frequentes, e pode proteger dos efeitos negativos da alexitimia; iv) as emoções positivas promovidas pelos objetivos compassivos e pela auto-compassão, por sua vez, estão associados a um indicador de

saúde física; v) sentimentos empáticos são importantes para retirar satisfação do trabalho de enfermagem, mas ao mesmo tempo podem ser um fator de risco para a fadiga por compaixão, sobretudo se o indivíduo não tiver competências de auto-compaixão; vi) sentimentos de culpa relacionada com empatia exacerbados aumentam a fadiga por compaixão e *burnout*; vii) os enfermeiros beneficiaram de seis semanas de treino de *mindfulness* em vários indicadores de bem-estar; viii) *mindfulness*, auto-compaixão, e flexibilidade psicológica são promovidos pelo treino de *mindfulness* e medeiam as mudanças em vários indicadores.

De uma forma geral, o presente trabalho salientou a importância de atributos positivos, tais como a (auto)compaixão, o *mindfulness*, a flexibilidade psicológica, e a afetividade positiva para o bem-estar. Nesse sentido, estes processos podem ser importantes alvos terapêuticos de intervenções psicológicas.

Palavras-chave: compaixão; motivações compassivas; auto-compaixão; fadiga por compaixão; *burnout*; *mindfulness*; enfermagem oncológica

Abstract

Introduction

Although the concept of compassion has always been at the center of interest in many segments of society, from antiquity to modernity, it has received little attention within the field of psychological study. This tendency, however, has changed in recent years and compassion has been at the center stage of research in several scientific domains, including psychology. Similarly, the interest in mindfulness and mindfulness-based interventions, developed in the context of Buddhism over two millennia ago, has grown exponentially in recent years.

Aims

In general, the present work aims to: i) explore the benefits and shortcomings of compassionate and self-image goals, and well as potential predictors; ii) explore the relationship between self-compassion and positive affective states; iii) explore dispositional factors associated with compassion fatigue, and also with compassion satisfaction and burnout; iv) test the effectiveness of a mindfulness-based program for reducing compassion fatigue and burnout and to promote positive psychological characteristics in oncology nurses.

Methods

To accomplish these aims, several samples were recruited, and different designs and methodological procedures were performed. In general, two major populations are represented in the studies of the present work. To explore the consequences of compassionate and self-image, and to validate the Compassionate and Self-Image Goals Scale in a Portuguese sample, (Study I to Study IV), participants were recruited from a population of college students ($n = 291$; $n = 307$; $n = 153$). Several samples, recruited from college students and the general population, were used to explore the link between

self-compassion and positive affect in Study V ($n = 307$; $n = 124$; $n = 161$; $n = 331$). To explore the physiological correlates of positive affect (Study VII), a sample of undergraduate students was recruited ($n = 94$). To explore the links between alexithymia, self-compassion, and positive affect, a sample from the general population was recruited ($n = 331$). In Studies VIII to XI, designed to explore psychological factors associated with compassion fatigue and burnout, and to validate the Portuguese version of the Professional Quality of Life Scale-5, we used a sample of nurses from several nursing specialties, which were recruited from several hospitals based in the North and Centre regions of Portugal ($n = 280$). To test the effectiveness and mechanisms of change of a mindfulness-based intervention (Study XII and Study XIII) we used a sample of oncology nurses from two major oncology hospitals from Portugal ($n = 94$).

For the Studies I, V, and VI-XI, we used a cross-sectional design. In the Studies II-V, we employed longitudinal designs which, although not conclusively demonstrating causality, provide more confidence in interpreting the results. In Studies XII and XIII we used a non-randomized, wait-listed controlled trial design. Participants self-selected to one of two conditions: the experimental condition, which consisted of attending a weekly mindfulness-based intervention; and a wait-list control condition. Both groups provided self-report measures at baseline and after the intervention period.

Results

Results from the first set of studies indicated that compassionate goals predicted increased social connectedness, and decreased psychopathological symptoms, and social anxiety/avoidance. In contrast, self-image goals predicted decreases in social connectedness and increases in psychopathological symptoms and social anxiety/avoidance. Compassion and self-image goals also predicted changes in different types of positive affect, which in turn were significant mediators of the relation between interpersonal goals and the several outcomes. Results from the second set of

studies suggested that self-compassion is associated with, and predicted, different types of positive affect and several discrete positive emotions. Self-compassion was also a significant mediator of the negative association between alexithymia and positive emotions. Positive affect related to feelings of warmth and contentment was associated with an autonomic profile characterized by increased resting heart rate variability, a measure of parasympathetic activity. Results from the final set of studies indicated that several psychological processes are related to professional quality of life. Empathic concern was positively associated with compassion fatigue, but not with burnout, and self-compassion mediated and moderated this association. Finally, a mindfulness-based intervention for oncology nurses was effective in reducing compassion fatigue and burnout and other indicators of well-being. Trait mindfulness, self-compassion, and psychological flexibility were significant mediators of changes in several outcomes from pretest to posttest scores.

Conclusions

In general, evidence from this work showed that i) having compassionate goals, as opposed to self-image goals, in interpersonal relations is associated with benefits to the individual experiencing compassion; ii) traits such as mindfulness and self-compassion help promote compassionate goals and decrease self-image goals; iii) self-compassion promotes more frequent experiences of positive affective states, and may be protective of the negative effects of alexithymia; iv) positive emotions promoted by compassionate goals and self-compassion, in turn, are associated with an indicator of physical health; v) empathic feelings are important for deriving satisfaction from the nursing work, but at the same time may be a risk factor for compassion fatigue, especially if the individual lacks self-compassionate abilities; vi) exacerbated feelings of guilt related to empathy increase nurses compassion fatigue and burnout symptoms; vii) nurses benefited from six weeks of mindfulness training in several indicators of psychological well-being; viii) mindfulness,

self-compassion, and psychological flexibility processes are promoted by the mindfulness training and mediate changes in several outcomes.

In general, the present work highlighted the importance of positive attributes, such as (self)compassion, mindfulness, psychological flexibility, and positive emotions for individuals' well-being. Thus, these processes may be important therapeutic targets for psychological interventions.

Keywords: compassion; compassionate motivations; self-compassion; compassion fatigue; burnout; mindfulness; oncology nursing

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List of published articles in peer-reviewed journals

- Duarte, J., & Pinto-Gouveia, J. (2015). Focusing on self or others has different consequences for psychological well-being: A longitudinal study of the effects of distinct interpersonal goals. *Journal of Social and Clinical Psychology, 34*(9), 809-825. doi: 10.1521/jscp.2015.34.9.809 123
- Duarte, J., & Pinto-Gouveia, J. (in press). Correlates of psychological inflexibility mediate the relation between alexithymic traits and positive emotions. *Journal of Contextual and Behavioral Sciences.* 239
- Duarte, J. Pinto-Gouveia, J., & Cruz, B. (2016). Relationships between nurses' empathy, self-compassion and dimensions of professional quality of life: A cross-sectional study. *International Journal of Nursing Studies, 60*, 1-11. doi: 10.1016/j.ijnurstu.2016.02.015. 313
- Duarte, J., & Pinto-Gouveia, J. (2016). Effectiveness of a mindfulness-based intervention on oncology nurses' burnout and compassion fatigue symptoms: A non-randomized study. *International Journal of Nursing Studies. 64*, 98-107. doi: 10.1016/j.ijnurstu.2016.10.002 395

Preface

The current research topic was inspired by the combination of my own personal interests and previous work experience in research. During my graduation, I became familiarized with the literature on compassion and mindfulness. At the time, and even more so today, research in these fields was growing, and almost every psychology student had at the least heard about these concepts. After my Master in Clinical Psychology, I decided I wanted to pursue a research career and study compassion and mindfulness, and I was fortunate enough to be able to do an internship as a researcher at Derby University with Professor Paul Gilbert, one of the main researchers in the field of (self)compassion, and founder of the Compassionate Mind Foundation and Compassion Focused Therapy. Here I was able to develop my research skills, and by the end of that period, I was more convinced that I would like to pursue a Ph.D. on the subject of compassion.

I approached my Master thesis's supervisor, whom I knew was also very interested in the study of compassion, and who fortunately embraced my ideas, and helped me delineate what would be my Ph.D. research project.

At the time, this Ph.D. project was mainly focused on the study of self-compassion, both in the general population and in oncology nurses. This population was suggested by my supervisor based on the idea that these healthcare professionals would be particularly affected by stress.

By the time I began my research, which was almost a year and a half later, I was not entirely pleased with the project I proposed myself to do. Although self-compassion was, and still is, an important topic, much of what we aimed to explore had already been studied, and so I didn't feel I could make a significant contribution to the field.

In contrast to the large amount of research on self-compassion, few studies in comparison explored compassion directed to others, and particularly the consequences of having more compassionate and opposed to more self-

focused motivations in one's personal relations.

This was in a context where the scientific understating of human nature was witnessing a revolution. Today, scientists of many disciplines are uncovering the deep roots of human goodness, and are challenging the long-held beliefs that humans are primary and essentially selfish. Books such as *The Compassionate Instinct* (Keltner, Marsh, & Smith, 2010), *Moving Beyond Self-interest* (Brown, 2011), *Altruism* (Ricard, 2015), or *Born to be Good* (Keltner, 2009), which were very inspiring to me, and thousands of research papers, are proving increasing evidence that compassionate behavior and altruism not only exemplify a good and moral way to live, but also have great emotional and physical health benefits for compassionate people.

Around the same time, in one of the lectures in my first meditation retreat, I was introduced to some basic concepts of Buddhism. Particularly, the teacher spoke about this idea that we can see and relate to the world from different perspectives, in a continuum from seeing the world from a self-centered framework to seeing the world from a more interdependent framework. Having these different beliefs about the concept of self then has implications for our motivations and intentions, which ultimately inform our actions. If we see the world from the distorted perception of self-centeredness then our motivations will be dominated by clinging and aversion, which then will lead to unskillful actions, that is, actions that are not conducive to happiness and well-being.

I didn't know at the time but the teacher was talking about the Noble Eightfold Path. Briefly, the Eightfold Path is the fourth of the Four Noble Truths and describes the system of following eight divisions of the path to achieve spiritual enlightenment and cease suffering. These eight divisions are: Right view, Right Thinking, Right Speech, Right Action, Right Livelihood, Right Diligence, Right Mindfulness, Right Concentration.

The second aspects of the Eightfold Path is Right Intention or Right Thought, or *samma-sankappa* in Pali. Why are our thoughts or intentions so important?

Intention is in the second place of the path, between Right View and the moral factors that begin with Right Speech, because the mind's intentional function forms the crucial link between our cognitive perspective with our modes of acting and engaging with the word. Our intentions, in turn, reflect our prevailing views. When wrong views prevail, the outcome is wrong intention giving rise to unwholesome actions. But when there is right view, the intentions are right and the actions will be right.

When this is applied to the idea of self, it suggests that a wrong view of the nature of the self, one that sees the self as permanent, eternal, unchanging, or autonomous, will lead to motivations or intentions to protect this self, based on clinging and craving, which in turn will lead to actions that enact these motivations, that will not promote our happiness and well-being

What was interesting for me at the time was the similarity between this ancient philosophy and current theories about human motivation. We now know today that the human motivational repertoire is much broader than self-interest and that human beings are capable of extending value beyond themselves and are motivated to genuinely care about the welfare of others.

This Buddhist lecture and the current context of research on human nature inspired the first set of empirical studies of the present work. Specifically, we aimed to explore the concept of interpersonal motivations developed by Crocker and colleagues. According to the authors, people can be motivated to give support to others out of a genuine consideration for their well-being, and can also be motivated to manage how others view oneself to obtain desired outcomes or avoid undesired outcomes, reflecting selfish inclinations. These two distinct interpersonal motivations are named compassionate goals and self-image goals, respectively.

We decided to focus on compassionate motivations, and not so much in compassionate behaviors because research has been suggesting that more than the actual actions, is the underlying intentions and motivations that have an impact on well-being. This helps explain why research on the personal

benefits of helping and giving to others has yield mixed findings, as the motivations that energize giving may account for at least some of these mixed findings. A wide range of motivations may prompt giving. For example, people may give for approach or avoidance reasons or for intrinsic or extrinsic reasons. Indeed, research suggests that people often agree to requests for donations or other types of help not because they enjoy giving, but rather because they feel pressure to give or feel compelled by social norms to give even when they do not want to. A large of body of research is suggesting that the mixed consequences of giving and taking may depend on whether they are motivated by selfishness or selflessness. For example, Konrath and colleagues (2012) found that volunteering results in lower mortality, but only when the motive for volunteering is other oriented; people who volunteer for selfish reasons do not live longer than non-volunteers.

Interestingly, this is in line with the Buddhist thought presented above. If we look only to actions, we may not have the full picture of what intentions, and ultimately what views, are being enacted by those actions, and ultimately cultivated.

Thus, we intend to explore the motivations and intentions people can have in their interpersonal relations, and what consequences these may have for personal well-being. Specifically, we aimed to answer the following questions: what are the consequences of having compassionate versus self-image goals for the individual, and if indeed compassionate goals have positive effects and self-image have negative effects, what factors may promote the development of compassionate goals and reduce self-image goals. On Study II and III, we report the results of a longitudinal study in which we aimed to test the impact of compassionate and self-image goals on several outcomes, namely psychopathological symptoms, social connectedness, and social anxiety/avoidance. Study IV tests the hypothesis that trait mindfulness and self-compassion would be factors related to compassionate and self-image goals.

Among other important results that emerged from this study, we found that positive emotional states played an important role in the link between interpersonal motivations and psychological well-being. This result was in line with a large body of research pointing to the benefits of positive emotions, and of how positive emotions are not only the result of but also the cause of success and thriving. What was not particularly explored in the literature was whether positive emotions could be promoted by self-compassion. Some studies offered some indication that self-compassion was related to positive outcomes, such as happiness, well-being, emotional intelligence, wisdom, but not specifically positive emotions. Also, just like negative emotions, different positive emotions evolved for particular functions and are related to different action tendencies. Joy is different from compassion, awe is different from love. The few studies linking self-compassion to positive emotions used general measures of positive emotions that did not take into account these distinctions.

Exploring the relationship between self-compassion and positive affective states was the main aim of the second set of studies presented in this work. In particular, we wanted to explore whether self-compassion was associated with, and predicted, more frequent positive emotions (Study V), and what would be the role of self-compassion in the context of alexithymia, a condition that is known to impair the identification and experience of emotions (Study VI). And finally, we were also interested in testing whether positive emotions would be related to heart rate variability, an important indicator of mental and physical health (Study VII). If positive emotions are associated with greater heart rate variability, and if compassionate motivations and self-compassion are related to positive emotions, this may explain the link between (self)compassion and several psychical and mental health indicators. Although this is an interesting hypothesis, it was beyond the scope of the present work.

Together with my supervisor, it was decided that the ‘clinical’ population for

this project would be oncology nurses. As mentioned, this was based on the idea that these healthcare professionals would be particularly vulnerable to stress. Also, these people have their empathic and compassionate abilities put to the test on a daily basis. As compassion is based on suffering, these people are in constant contact with the experience that leads to compassion.

While reviewing the literature on the psychological effects of the work of healthcare professionals in general, and oncology nurses in particular, we came across the concept of compassion fatigue. From the literature review, it became clear that few studies explored the role of psychological variables in compassion fatigue, in comparison to a large number of studies exploring demographic or occupational variables. Also, some authors suggested that it is the experience of compassion for the suffering of their patients that leads to compassion fatigue.

However, as I read more about compassion, the more it became clear that the term compassion fatigue was a contradiction. Compassion, research showed, was related to all sorts of benefits, and thus it seemed a contradiction that at the same time it could be related to compassion fatigue and burnout in caregivers. I was pleased to come across a chapter by Klimecki and Singer in the book *Pathological Altruism*, in which the authors made a similar argument that the term compassion fatigue was slightly misleading, since it suggests that caregivers are tired of feeling too much compassion, whereas in fact, compassion can be protective from stress, burnout, and compassion fatigue. The authors proposed the term “empathic distress fatigue” more appropriately describes the state.

In this context, we were interested in exploring the role of psychological factors, and in particular empathy, in the experience of compassion fatigue, and also burnout, in general nurses and in oncology nurses. These studies are presented in Part 3 of Chapter 3. Specifically, on Study VII we aimed to explore the validity and factorial structure of the Portuguese version of the Professional Quality of Life Scale, version 5, which was used to measure

compassion fatigue, burnout, and compassion satisfaction. Although compassion satisfaction was not a primary outcome in our studies, we also report the results for this measure of positive outcomes of working with patients. On Study XI we explored the relationship between empathy and compassion fatigue, burnout, and compassion satisfaction, and also explored the potential mediating role of self-compassion in this association. We hypothesized that self-compassion, which has been described as an important emotion regulation process, could mediate and/or moderate the potential negative effects of several empathy dimensions on compassion fatigue.

We were interested in exploring other processes that could explain the link between empathy and compassion fatigue. On Study X we tested the hypothesis that, given the straight relationship between empathy and guilt, when empathy is associated with pathogenic guilt this can increase compassion fatigue and burnout symptoms. The concept of survivor guilt was first coined in the context of the Holocaust literature and was used to describe the intense guilt survivors often experienced. Survivor guilt came to be recognized in other traumatic situations, such as combat and natural disasters. Thus, we hypothesized that the constant contact with suffering and the responsibility to alleviate that suffering, that characterizes the nursing profession could create the conditions for psychological distress in individuals more vulnerable to empathy-based guilt. To our knowledge, however, there were no studies exploring the concept of empathy-based guilt in healthcare professionals.

While previous studies were conducted in a sample of general nurses, on Study XI we explored the impact of several psychological processes in a sample of oncology nurses. We hypothesized that empathy, self-compassion, and psychological inflexibility could be important factors to explain compassion fatigue and burnout in this population.

It should also be mentioned that at the time I began my Ph.D., the research lines of my research center were also moving from studying psychological

processes related to vulnerability to psychopathology and resilience (e.g., self-compassion) to developing and implementing interventions designed to change those processes.

Around the same time, I also decided to take my meditation practice more seriously. The growing of research around mindfulness meditation inspired me to try for myself the benefits. After some initial indiscipline, my interest in meditation increased slowly but steadily and I started to attend once or twice a year meditation retreats in which I stayed several days in silence, meditating and contemplating. During these retreats I experienced for the first time a deep connection to my inner self, this sense of inner connectedness evolved into an experience of dissolution of the self and an increased awareness of the interconnectedness of others and the environment. This state was accompanied by a sensation of full happiness. Experienced meditation practitioners know that sense of total interconnectedness. It is not a permanent state, it comes and goes, and I fully experience it only in moments of very deep meditation. I came to believe through my personal experience that meditation and contemplative practices could reduce stress, transform negative emotions and increase wellbeing and happiness, which in turn inspired me to bring this to other people.

In this context, we decided that the development and implementation of a mindfulness-based intervention program for oncology nurses would be a central study of my Ph.D. research project. This decision also became clear in light of the findings from the cross-sectional studies with general and oncology nurses, which pointed to the important role of several psychological processes on the experience of compassion fatigue and burnout. Based on previous structured programs, namely Mindfulness-Based Stress Reduction, we developed a six-week, group-based intervention, designed to promote mindfulness skills to help reduce compassion fatigue and burnout in oncology nurses.

When designing the intervention, we were interested in promoting not only

mindfulness skills but also (self)compassion, because we believed that these skills could be particularly important for this population, as will be further developed in the Introduction. However, given that this was a sample with no experience in mindfulness and meditation, most of the program was designed to explicitly promote mindfulness. One of the reasons for this is that focusing only on cultivating compassion without mindfulness can actually contribute to psychological distress. In the Dalai Lama's own words, "... to help others it is not sufficient merely to wish to do so ... altruistic thoughts can become an obsession and increase our anxiety ... When such good thoughts are combined with wisdom, we know how to help beings effectively and can actually do so" (2009; p. 26)

Also, in Santideva's *The Way of the Bodhisattva* (1997) it is argued that the moral discipline of mindfulness (the capacity to sustain focused attention and awareness) is integral to engaging in the proper compassionate actions. If the *bodhisattva* lacks mindfulness, Santideva argues, seemingly compassionate actions will just cause suffering both to the giver and to others. Therefore, mindfulness and awareness are at the very heart of Santideva's ethics and they go part and parcel with realizing compassionate intentions and embodying them in engaging with others.

If nurses develop a great deal of compassion for their patients, without the necessary wisdom of mindfulness, caring can become unbalanced and lead to more emotional suffering. But although compassion is only explicitly approached at the end of the program, it is implicitly cultivated throughout the program, as compassion and mindfulness are two inseparable processes.

Although there was preliminary evidence of the effectiveness of mindfulness-based interventions in reducing burnout symptoms in healthcare professionals and nurses, there were no studies exploring their role in compassion fatigue. Also, most of the studies used heterogeneous samples of healthcare professionals, and no study was conducted with oncology nurses. Thus, the last two studies describe the results of the mindfulness-based intervention. On

Study XII we present the results of the effectiveness of the intervention in several outcome measures, including compassion fatigue and burnout, and on Study XIII we present the results of mediation analyses designed to explore the mechanisms underlying the effects of the mindfulness-based intervention.

In a way, self-compassion remained a central topic in this research project, albeit in different ways than what was originally proposed. Instead, we related self-compassion with other constructs that were poorly studied, such as compassionate and self-image motivations, positive emotions, alexithymia, and compassion fatigue and burnout.

Chapter 1 aims to provide an introduction to the present work. In this chapter, we provide an overview of the historical evolution of the concept of compassion, current definitions of compassion, and benefits associated with compassion. We also provide an overview of the importance of compassion in the context of healthcare, and some of the consequences of working in close contact with the suffering of others, namely compassion fatigue and burnout. Finally, we provide a rationale for the implementation of mindfulness-based interventions in this context.

Chapter 2 provides a description of the general and specific aims of the present work and the general methodological approach.

Chapter 3 includes the empirical studies that compose the present work. These were grouped into three parts.

Chapter 4 provides a discussion of the results of the empirical studies, as well as clinical implications, limitations, and indications for future studies.

The reference list provided at the end of the present work refers to Chapter 1, Chapter 2, and Chapter 4.

Chapter 1

THEORETICAL BACKGROUND

CONTENTS

- 1.1. Introduction
 - 1.2. Brief historical overview of the concept of compassion
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 - 1.4. Benefits of compassion
 - 1.5. Compassion in healthcare
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1.1. Introduction

Although the importance of compassion is recognized in many segments of society, from religion to healthcare, education, and justice, compassion has received little attention within the field of psychological study.

As Glaser (2005) states, “though much of psychology circles around the vale of compassion, nowhere does it make compassion central to the foundation, process, or goal of psychological health and wholeness (p. 3).”

An evolutionary perspective on compassion can be traced to Darwin (1871/2004). Darwin explained the origin of what he called sympathy (which today would be termed empathy, altruism, or compassion), describing how humans and other animals come to aid others in distress. While he acknowledged that such actions were most likely within the family group, he wrote that the highest moral achievement would be the concern for the welfare of all living beings. Darwin (1871/2004) proposed that natural selection would favor the occurrence of compassion: “...in however complex a manner this feeling may have originated, as it is one of high importance to all those animals which aid and defend one another, it will have been increased through natural selection; for those communities, which included the greatest number of the most sympathetic members, would flourish best, and rear the greatest number of offspring (p. 130)”.

Current theories also note that compassion is reproductively advantageous, being part of a caregiving system that has evolved to protect the young (see Goetz et al., 2010). Compassion can be seen as having evolved from an adaptive focus on protecting oneself and one’s offspring to a broader focus on protecting others including and beyond one’s immediate kinship group (De Waal, 2009). Compassion may have also evolved in primates because it is a desirable criterion in mate selection and facilitates cooperative relationships with non-kin (De Waal, 2009; Keltner, 2009).

Despite the lack of attention, the field is beginning to become aware of compassion and note its relevance. Treating others with compassion is believed to promote individual well-being and improve mental health (e.g., Cosley et al., 2010; Feldman & Kuyken, 2011; Poulin, Brown, Dillard, & Smith, 2013). Accordingly, some researchers have called for the implementation of interventions that seek to enhance people's ability to give and receive compassion, arguing that compassion buffers reactivity to stress and is central to the process of recovery from psychopathology (e.g., Hoffman, Grossman, & Hinton, 2011; Shonin, Van Gordon, Compare, Zangeneh, & Griffiths, 2014).

Other research has also focused specifically on the benefits of being self-compassion. Self-compassion is the self-directed equivalent to other-oriented compassion. It reflects a warm-hearted, caring, empathic and nonjudgmental orientation towards the self during times of suffering and failure, accompanied by a motivation to alleviate this suffering (e.g., Neff, 2003a, 2003b). It is now widely accepted that self-compassion has numerous benefits for individuals' well-being (e.g., MacBeth & Gumbley, 2010; Zessin, Dickhäuser, & Garbade, 2015).

Within the healthcare domain, compassion is believed to have numerous advantages. It has been argued that treating patients compassionately has wide-ranging benefits, including improving patients' subjective well-being (e.g., Fogarty, Curbow, Wingard, McDonnell, & Somerfield, 1999; Sarinopoulos et al., 2013), clinical outcomes (e.g., Del Canale et al., 2012; Rakel et al., 2009), and satisfaction with care (e.g., Kim, Kaplowitz, & Johnston, 2004).

Although there seems to be theoretical support for the beneficial effects of compassion for patients and providers, some argue that the work of helping others in suffering may also lead to negative consequences for the caregiver, namely compassion fatigue (Figley, 1995). In contrast to compassionate care,

compassion fatigue may contribute to poor quality of care (Najjar, Davis, Beck-Coon, & Carney Doebbeling, 2009).

Despite the importance of compassion and increasing interest from researchers, clinicians, teachers, and other professionals, there is still a lack of consensus on its definition. This lack of an agreed upon operational definition may be in part rooted in the very recent interest of psychology in its study which, in turn, we suggest can be traced back to long-held views regarding human nature.

1.2. Brief historical overview of the concept of compassion

In the last thirty years some psychologists have begun research on altruism and empathy, though they had not yet linked those with the idea of compassion. The time is ripe for the field to pay attention to compassion as well as positive emotions in general.

-Ervin Staub

Compassion has appeared in all cultures throughout human history. Thinkers, philosophers, and religious figures, from ancient times to modernity, have presented it as a fundamental human quality pointing to the inherent good of human beings and their nature as social creatures.

The most well-known applications of compassion are those found in the great religions, particularly Buddhism and Christianity. These religions have made historical uses of compassion and, to this day, still present themselves, in certain senses and contexts, as the 'religions of compassion'.

Compassion had, and still has, additional manifestations in culture, which are not necessarily related to religion. The first in-depth and articulated treatment of the subject appears in Aristotle's *Rhetoric* (1385/1984). Compassion, which at the time was named pity, was defined by Aristotle as "a feeling of pain at an apparent evil, destructive or painful, which befalls one who doesn't deserve it, and which we might expect to befall ourselves or some friends of ours, and moreover befall us soon" (p. 1385b: 15-18). This notion of compassion is one of the earliest western philosophical definitions on the construct. Several modern Western philosophers also supported the notion of compassion, such as the eighteenth-century British philosophers who proposed recognizing compassion as an inborn emotion, and as the natural and, therefore, legitimate basis to building human society (Adam Smith). Schopenhauer (1840/1995) also saw compassion as the foundation for all morality, and the solution to the "great mystery of ethics" (p.144).

Schopenhauer felt that the only viable foundation for a moral framework was the fact that people care in some basic way about the wellbeing of others.

Despite the long-held interest in the subject, the psychological sciences only recently began to draw attention to the study of compassion. We believe that several historical and contextual factors may have contributed to this later bloom on the interest of compassion.

1. There is still a permeating idea in western psychology, and other areas such as economy, that human beings are inherently bad and selfish, and thus a compassionate nature is not credible.

From a historical perspective, the dominant egoistic narrative of Modernism has caused compassion to retreat from centre stage (Lampert, 2005). The general cultural ethos of Modernism reveals extremely wide consensus with regard to human beings as creatures essentially driven by, and acting to achieve, self-interest. This notion is based on the idea that human beings are biological creatures that are driven, like all other organisms, by the need to satisfy their essential requirements, and this determines their development, personality, and behavior. Although several theories opposed this view (e.g., Adam Smith, August Comte), this myth became, mainly over the course of the 20th century, an integral part of the way in which humans were perceived, namely as entities that are driven primarily by the personal interest to satisfy their needs.

An important factor to the development of this narrative was the great acceptance and diffusion of psychoanalytical thought, on the one hand, and the Darwinist evolutionary conception, on the other. This had ramifications for the understanding of compassion. Specifically, compassion (if it even existed), was not seen as an inherent characteristic of humans but rather a superimposition of culture to control their true egotistical nature. Also, if we dig enough there is always an egotistical motivation behind compassionate

and altruist acts, even if the individual is not conscious of them (Lampert, 2005). In fact, even the pioneering efforts made by Darwin and others to understand the evolution of generous, altruistic behavior in terms of the survival of the group or the tribe, the assumption generally was that individuals cared for one another in a group in order to compete better with other groups (Harrington, 2002).

In short, modern sciences of human behavior have not developed a systematic perspective on compassion as natural sciences are not really convinced that human beings are “naturally” compassionate. In contrast, the prevailing social sciences tend to view the authentic forces governing human behavior to be self-interest, aggressiveness, territoriality, class conflict, and the like (Seligman & Csikszentmihalyi, 2000).

This idea is in sharp contrast with the Buddhist perspective. Accordingly, the Dalai Lama has suggested that at the most fundamental level, humans’ nature is compassion, and cooperation, rather than conflict, is the basic principle that guides human existence (Dalai Lama, 2002). This premise is based on several indications. First, there is the observation that all sentient beings show basic tendencies, such as the desire for happiness and peace, and the avoidance of suffering. Also, human beings as a species depend largely on others’ care, affection, and cooperation, from the moment of birth to the moment of their deaths. An additional support for the idea that human beings are fundamentally compassionate lies in the natural ability to recognize and connect with the suffering of others. If human beings were not fundamentally self-giving, fundamentally generous, such feelings and actions would be inexplicable. Another indication according to the Dalai Lama (2002) is found in the association between certain psychological and emotional states and their effect on the physical well-being. Accordingly, it is suggested from first-person observation and scientific studies that ‘unwholesome’ psychological

states contribute to indicators of ill-being, while wholesome states, such as compassion and love, contribute to one's well-being (Dalai Lama, 2002).

The Buddhist notion of a compassionate human nature aligns with the recent revolution in the scientific understanding of human nature. Currently, scientists of many disciplines are uncovering the roots of human goodness, and suggest that it is just intrinsic to our species as badness, challenging long-held beliefs about human nature (e.g., Keltner, 2009; Keltner, Marsh, & Smith, 2010; Ricard, 2015; Brown, Brown, & Penner, 2011). Humans, like other mammals, have an evolved caregiving system that promotes and motivates caring for their young, who are incapable of surviving on their own. In humans, this capacity to care about others extends beyond caring for one's offspring and kin to caring about and wanting to promote the well-being of friends, acquaintances, and even strangers (e.g., Preston, 2013, Sprecher & Fehr 2005).

2 - There has been a fragmentation of the concept of compassion in Modernism.

In later modernity, from the second half of the 19th century, compassion underwent a process of fragmentation, eventually being replaced by concepts such as empathy and altruism (Lampert, 2005). This was mainly due to the general rationale of modernism, and empiricist logic, which proposed that any physical and social phenomena could only be understood through analysis and compartmentalization of its fundamental elements. Under this logic, a conscious act such as compassion is a threefold process. First, there is an experience; this experience elicits an emotion, and this emotion motivates a specific action. The modernism's fragmentation led to the reduction of the concept of compassion to an emotion, with the experiential and action processes being detached from compassion (Lampert, 2005). The experiential part of the concept of compassion was labeled 'empathy', which denotes the experience of entering the mind of the other. The emotional stage

remained compassion or mercy, which was seen as a non-rational response to the distress evoked by empathetic identification with the other. The action to alleviate the distress of another was labeled 'altruism'. These two new concepts (empathy and altruism) originated in the 19th century Europe and replaced the vague and broad concept of compassion (Lampert, 2005).

According to Lampert (2005), the single, all-inclusive conceptual model of compassion - which encompasses the motivation to be aware of the other, the personal experience entailed by such awareness, and the action that is inherent to the encounter - was replaced by several concepts which, although they logically derive from one another, have no necessary connection. In addition, the separation of disciplines that characterized modernism further contributed to this fragmentation. Empathy, compassion, and altruism were each taken over by different disciplines (for example, empathy was the domain of psychologists, while altruism was the domain of biologists and sociobiologists; Lampert, 2005).

3 - There has been a predominance of the study of pathology and negative states in western psychology.

Finally, psychology has traditionally focused on psychological problems and on interventions for those problems. This is probably due to the fact that negative emotions— particularly when extreme, prolonged, or contextually inappropriate—are associated with many health problems (Fredrickson, 2002). This exclusive focus on pathology grew out of the medical disease model of looking at human beings, in which one tries to repair damage. This almost exclusive attention to pathology, however, neglects aspects that help individuals not just endure and survive but also to flourish, which include positive human traits, such as well-being, flow, joy, compassion, forgiveness, wisdom, etc. (Seligman, 2002).

The Buddhist tradition of psychology, however, is quite different since it has emphasized the study of positive emotional and mental states. For more than two millennia, Buddhist practitioners have developed and tested ways of gradually cultivating those emotions that are conducive to the pursuit of happiness (*sukkhā*) and of freeing themselves from emotions that are detrimental to this pursuit. It is suggested that through the cultivation of 'beautiful mental states' (*sobbhana*) their corresponding unwholesome counterparts are naturally overcome and the practitioner discovers greater peace and well-being (e.g., Boddhi, 2007). Among all the positive mental states humans experience, Buddhism views compassion as the most important. Thus, Tibetan Buddhism has long dedicated to studying the scope, expression, and training of compassionate feelings and action, and sees compassion as a key to enduring happiness and, even more fundamentally, spiritual transformation.

As a consequence of this difference in focus, while Buddhists developed and provide methods for modifying affective traits and for cultivating happiness (Wallace, 2005), in psychology the only methods for changing enduring affective traits are those that have been developed specifically to treat psychopathology. With a few notable exceptions (e.g., Seligman, 1998), no effort has been invested in cultivating positive attributes of mind in individuals who do not have mental disorders.

Compassion today

In the last few decades, however, there has been an increasing interest in the concept and study of compassion in the psychological sciences, with a growing number of articles and books published every year on the subject. Several reasons may have contributed to this increased interest.

On one hand, there was the emergence of the field of positive psychology in the turn of the millennium. Positive psychology is focused on positive

subjective experiences, such as well-being and satisfaction, joy, happiness, optimism, and positive personal traits, such as capacity for love and compassion, perseverance, forgiveness, wisdom, which are seen as important for the prevention of mental illness and for the promotion of human flourishing (e.g., Seligman & Csikszentmihalyi, 2000).

On the other hand, as Buddhism places such a great emphasis on compassion as a cause of happiness and well-being, much of this growing interest in compassion in the West has been motivated by the dialogues between Buddhism and Western psychology (e.g., the most widely-known and public context for contemporary debates in this area is that of the Mind and Life Institute dialogues presided over by His Holiness the Dalai Lama).

In sum, this brief historical overview suggests that the concept of compassion has always been at the center of interest, from antiquity to modernity, from religious thinkers to philosophers. However, compassion as a concept almost completely disappeared from the scientific discourse during the 19th and 20th century, being replaced by concepts such as empathy and altruism, each with its own separate discourse. Recent scientific interest in the potential of positive human traits, along with close dialogues between Western scientists and Buddhist scholars where westerners came to take Buddhists' concepts and understandings more seriously and with potential scientific value, seem to have brought compassion to the spotlight of scientific interest. This still recent interest in the concept of compassion in the psychological sciences may be one of the reasons why there is no clear and broadly accepted definition of the term.

1.3. Definitions of compassion

We all want happiness and do not want suffering

-H. H. Dalai Lama

According to the Oxford English Dictionary, the word “compassion” stems from the Latin “compati”, meaning “to suffer with”. In the literature, there appears to be a broad consensus that compassion involves feeling for a person who is suffering and being motivated to act to help them. For example, in his seminal work on human emotions, Lazarus (1991) defines compassion as “being moved by another’s suffering and wanting to help” (p. 289). Similarly, in a major systematic review of compassion and its evolutionary origins, Goetz, Keltner, & Simon-Thomas (2010) define compassion as “the feeling that arises in witnessing another’s suffering and that motivates a subsequent desire to help” (p. 351). Sprecher and Fehr (2005) have defined compassionate love as “an attitude toward other, either close others or strangers or all of the humanity; containing feelings, cognitions, and behaviors that are focused on caring, concern, tenderness, and an orientation toward supporting, helping, and understanding the other, particularly when the other is perceived to be suffering or in need” (p. 228).

Several other conceptualizations understand compassion as comprising multiple components. For example, Neff (2003a), regarding the concept of self-compassion, defined compassion as “being touched by the suffering of others, opening one’s awareness to others’ pain and not avoiding or disconnecting from it, so that feelings of kindness towards others and the desire to alleviate their suffering emerge” (p. 86-87). Within this definition lie the three elements that are proposed to compose self-compassion and compassion more generally. They include kindness, common humanity, and mindfulness (Neff 2003a; Neff & Pommier, 2010). Also, Gilbert suggests that

compassion has cognitive, affective, and behavioral elements. Gilbert (2010) sees compassion as consisting of six attributes: sensitivity, sympathy, empathy, motivation/caring, distress tolerance, and non-judgment. Sensitivity involves being responsive to other people's emotions and perceiving when they need help. Sympathy is defined as showing concern for the other person's suffering and empathy is defined as putting oneself in their shoes. Motivation to act involves having a desire to act to alleviate the person's suffering. Distress tolerance is defined as the ability to tolerate difficult emotions in oneself when confronted with someone else's suffering without becoming overwhelmed by them. Non-Judgment is defined as the ability to remain accepting of, and tolerant towards another person even when their condition, or response to it, gives rise to difficult feelings in oneself. Ozawa-de Silva, Dodson-Lavelle, Raison, Negi, and Raison (2012) suggest that compassion includes cognition, or the ability to empathically recognise emotions in others, emotion, or experiencing sympathetic distress, motivation, which refers to the will to reduce the other's suffering), and behaviour, which is the consequent action.

Based on a systematic review of the literature on definitions and measures of compassion, Strauss et al (2016), in an attempt to consolidate existing conceptualizations, proposes a definition of compassion as a cognitive, affective, and behavioral process consisting of five elements: 1) recognizing suffering; 2) understanding the universality of suffering in human experience; 3) feeling empathy for the person suffering and connecting with the distress (emotional resonance); 4) tolerating uncomfortable feelings aroused in response to the suffering person, so remaining open to and accepting of the person suffering; 5) motivation to act to alleviate suffering.

In sum, there seems to be a consistent view that compassion is a multidimensional phenomenon, that involves not only feeling touched by a person's suffering but also a motivation and willingness to transform that suffering.

Is compassion an emotion?

Probably one of the most unresolved questions regarding compassion is whether it is considered an emotion. Some argue in favor and some argue against the conceptualization of compassion as an emotion.

Compassion as a discrete emotion

Compassion has had a problematic standing in the study of emotion (Lazarus, 1991). It has been most typically ignored in emotion taxonomies (e.g., Smith & Ellsworth, 1985; Ekman, 1999). When considered, it has been treated as empathic distress (Ekman, 2003; Hoffman, 1981), or a variant or blend of sadness and love (e.g., Post, 2002; Shaver et al., 1987; Sprecher & Fehr, 2005; Underwood, 2002).

However, recent research has been providing compelling evidence that compassion is a discrete and distinct emotion, with antecedents, appraisals, and behavioral consequences different from other close states, such as sadness, empathy distress, or love, shows different signaling behaviors, and has a distinct subjective experience and physiological profile (see Goetz et al., 2010 for a review). For example, the compassion-related decelerated heart rate and with vagal activity suggests this emotion is associated with the parasympathetic autonomic nervous system, unlike sadness or distress (Oveis, Horberg, & Keltner, 2010; Shiota, Neufeld, Yeung, Moser, & Perea, 2011). It has been suggested that these changes associated with compassion may calm the body to prepare it to engage soothingly and in a caring manner with those who are suffering which might best facilitate the reception of another's suffering (Condon & Feldman, 2013; Stellar & Keltner, 2014).

One of the areas in need of further study is where compassion falls within the dimensional space that characterizes so many affective states, a space defined by two dimensions, valence and arousal (Barrett & Russel, 1999; Russel, 2003). For example, in a review of six studies of self-reports of emotion in

response to witnessing another's suffering, Batson, Fultz, and Schoenrade (1987) found that self-reports of feeling compassionate, sympathetic, moved, tender, warm, or soft-hearted consistently loaded on a common factor, while self-reports of feeling alarmed, upset, disturbed, distressed, worried, or perturbed loaded on a separate factor. Compassion clearly is rooted in negatively valenced appraisals and feelings of distress. At the same time, it engages approach and shares a core appraisal with positive emotions like gratitude and love (Shiota, Keltner, & John, 2006).

Reports of compassion experiences indicate that compassion can feel unpleasant. Images depicting poverty and vulnerable infants, for example, simultaneously elevated reports of compassion and distress (Simon-Thomas et al., 2012). Similarly, Condon and Feldman (2013) found that while prototypical conceptualizations of compassion seem to be pleasant, experiences of compassion can feel pleasant or unpleasant.

In sum, recent research has documented that compassion, an approach-oriented, positively valenced emotion, is different from related emotions such as sadness, distress, and love. Compassion is part of a family of prosocial emotions, including empathy, sympathy, and pity, that motivate helping and soothing behaviors in response to suffering. Compassion is universally signaled through touch and vocalizations and a physiological profile of this emotion, mainly characterized by the activation of the parasympathetic nervous system, is emerging.

An evolutionary account of compassion seems to give support to the claim that this it is a distinct and discrete emotion. The evolutionary roots of compassion were first put forward by Darwin (1871/2004), in his *The Descent of Man, and Selection in Relation to Sex*. Darwin viewed compassion (or sympathy in his phrasing) as the strongest of humans evolved instincts:

“sympathy will have been increased through natural selection; for those communities, which included the greatest number of the most sympathetic members, would flourish best, and rear the greatest number of offspring (Darwin, p. 130).

Goetz and colleagues (2010), in the context of a theoretical review, suggest that “compassion evolved as a distinct affective experience whose primary function is to facilitate cooperation and protection of the weak and those who suffer (p. 351).” Three arguments have been made by evolutionary theorists for why compassion would be encouraged through different selection processes. First, compassion promotes caretaking behaviors critical to enabling offspring to reach the age of reproduction (Keltner & Haidt, 2001; Trivers, 1971). Within this vulnerable offspring perspective, compassion is the brief affective state associated with caregiving toward those who suffer or are in need (for similar arguments, see also Batson, Lishner, Cook, & Sawyer, 2005; Sober & Wilson, 1998). A second argument posits that compassion evolved to promote cooperation among nonkin (Trivers, 1971). Compassion for strangers promotes helping behavior and perpetuates the formation and maintenance of long-term relationships rooted in the benefits of direct reciprocity (Sober & Wilson, 1998; Trivers, 1971). Within this system of emotions, compassion emerged as a state to motivate altruism in mutually beneficial relationships and contexts. A third evolutionary argument for the emergence of compassion is found within sexual selection theory, which suggests that in intersexual selection processes, females and males likely preferred mating with more compassionate individuals— a process that over time would increase compassionate tendencies within the gene pool (Goetz et al., 2010).

In sum, compassion seems to have evolved as a distinct affective state and trait because it enhances the welfare of vulnerable offspring, because it may be a desirable emotion or attribute in mate selection processes, and because it enables cooperative relations with nonkin.

Compassion is not considered an emotion

In contrast to this view, some authors suggest that compassion is not considered an emotion. For example, Ekman (2008) defends the view that compassion should not be conceptualized as an emotion, stating that “compassion needs to be cultivated while emotions do not”, “compassion once cultivated is an enduring feature of the person while emotions come and go” and that “compassion does not distort our perception of reality, while emotions do” (p. 141). However, when considering familial compassion, for example, the compassion that characterizes the mother-infant relationship, Ekman states that it shares common features with other basic emotions, such as universality and being a result of automatic appraisals. Other arguments that may not favor familial compassion as an emotion are the fact that it is unknown whether it has a distinct signaling and physiology, and the fact that it has a very constrained target (i.e., a suffering person) and the motivation is always constructive (i.e., ameliorate suffering) (Ekman, 2013, personal communication).

In this line, Halifax (2011) distinguished between two large categories of compassion. On one hand, there is referential or biased compassion, defined as compassion with an object. Several types of referential compassion include biologically-based compassion (e.g., parent-child), and attached compassion (e.g., in-group). On the other hand, there is non-referential or unbiased compassion, or compassion that is objectless and pervasive, where compassion pervades the mind of the as a way of being (Halifax, 2011).

Similarly, Bornemann and Singer (2013) suggested that it is important to distinguish between two notions of compassion: a narrow notion of compassion as an emotion and motivation, and a broader notion of compassion as a way of being, that is, an approach to reality and attitude to life. Accordingly, regarding the first notion of compassion as an emotion and motivation, compassion is defined as deep awareness of the suffering of another coupled with the wish to relieve it (Singer & Steinbeis, 2009). This

definition is similar to other authors, as reviewed above. Compassion in this understanding is both an emotion (feeling of concern) and a motivation (the will to alleviate suffering). It is a fleeting state, rather than an enduring way of being or attitude to life.

The view that compassion is a particular approach to reality or attitude to life, rather than solely an affective-motivational state, is in line with contemplative notions of compassion, particularly with Buddhism. In Buddhism, compassion is defined as the mental state of wishing for beings to be free from suffering (e.g., Dalai Lama, 2011). State of mind is used here rather than emotion because there is, or there wasn't, a Tibetan word for our word "emotion" (Dreyfus, 2002). Compassion is believed to exist at least potentially in the mind of every human being and, from a Buddhist point of view, in every sentient being. However, it is believed that the compassion that exists naturally in humans is limited, undeveloped, weak, and partial (Dreyfus, 2002). In fact, we can feel compassion only towards certain people, particularly those who are more familiar and close to us. This state is quite different from the compassion developed through the Buddhist path, which is stronger and less limited. This is particularly important in the Mahayana tradition, and is reinforced by the figure of the bodhisattva, or being that vows to fully realize the skillful means of compassion and wisdom for the sake of all beings. There is in the Buddhist tradition a distinction between bodhisattvas who are beginners and those who are more advanced. Beginning bodhisattvas exhibit the kind of psychological and physiological characteristics when experiencing compassion that are normally associated with emotions, and that were discussed previously. Because they haven't developed appropriate wisdom, they can be deeply moved by compassion. When bodhisattvas progress, however, their compassion seems to change, becoming less clearly emotional in the usual sense of the word. Such a compassion is described as being equanimous, more balanced and does not lead to the kind of emotional outburst mentioned previously, impartial,

unconditional and all-inclusive (Dreyfus, 2002). This equanimous and developed level of compassion, however, does not fit in the current conceptualizations of emotion.

In sum, whether compassion is conceptualized as an emotion seems to depend on the notion or view that one adopts. While it is clear that compassion is a considered specific emotion, elicited in specific situations and which has an episodic nature, compassion can also be viewed as an enduring affective trait, a mental state, and a disposition that persists across context and time. This latter view is particularly emphasized in Buddhism, which sees compassion as a mental quality that can be trained and developed for the benefit of self and others.

1.4. Benefits of Compassion

If you want others to be happy, practice compassion. If you want to be happy, practice compassion

-H. H. Dalai Lama

While it is clear that compassion bears many benefits to the recipient (e.g., Clark & Lemay, 2010, Sprecher & Fehr, 2005), what is more intriguing and potentially powerful are indications that compassion also benefits the giver. According to Buddhism, compassion is thought to be beneficial to the person experiencing it because it is a powerful way to overcome selfhood and an individualized sense of self. This individualized mode of selfhood, or self-centeredness, is regarded in Buddhism as the fundamental cause of unhappiness, with attachment to an 'ego' or 'self' being at the root of suffering (e.g., Hangartner, 2013). Thus, overcoming or transcending this narrow sense of selfhood is seen as the key to alleviating suffering. In the Dalai Lama's own words (1999), if we cultivate compassion, we "will discover that when we reach beyond the confines of narrow self-interest, our hearts become filled with strength. Peace and joy become our constant companion(s) (p.75)".

This view seems to be in line with recent empirical findings. For example, in a recent study, the authors set out to explore the neural mechanism that supports extreme prosocial or altruistic tendencies by using a population of extraordinary altruists: altruistic kidney donors who volunteered to donate a kidney to a stranger. Such behavior meets the most stringent definitions of altruism in that they represent an intentional behavior that incurs significant costs to the donor to benefit an anonymous, nonkin other (Marsh et al., 2014). The authors found that these individuals exhibited variations in neural anatomy and functioning that represent the inverse of patterns previously observed in psychopaths, who are unusually callous and antisocial.

Specifically, extraordinary altruists can be distinguished from controls by their enhanced volume in the right amygdala and enhanced responsiveness of this structure to fearful facial expressions, an effect that predicts superior perceptual sensitivity to these expressions of distress (Marsh et al., 2014). But more important for the present discussion, the authors also found that extraordinary altruists could be distinguished from controls by a psychological profile characterized by low self-centeredness.

Self-centeredness versus selflessness

Even when engaging in the same behavior, people may want to maximize their own self-interest or to advance the welfare of others (Bauer & Wayment 2008). For example, people can give their time or their money to others to increase their reputation or to decrease feelings of guilt, or they can genuinely give to enhance others' well-being.

Different theoretical frameworks have conceptualized this distinction. For example, the Hypo-Egoic Mindset Model (Leary & Terry, 2012) proposed a model of self-regulation which distinguishes between two distinct mindsets: the egoic mindset and the hypo-egoic mindset. Individuals more prone to an egoic mindset tend to be concerned about other people's evaluations, vulnerable to ego threats, and prone to having ego-centric emotions, such as anxiety, anger, sadness, and shame (Leary & Terry, 2012). By contrast, individuals operating under a hypo-egoic mindset—that is, people with diminished attention to the self—tend to be less preoccupied with how they are perceived by others. Hypo-egoic states (such as flow, and transcendence) also tend to generate fewer ego-centric emotions and more positive emotions.

Similarly, Dambrun and Ricard (2011) propose a theoretical model of the structure of the self. Based on several different disciplines, including western psychology and philosophy, and eastern tradition (e.g., Buddhism), the

authors suggest that having a perception of the self as permanent, independent, and solid leads to self-centered psychological functioning. Self-centeredness can be defined as an exaggerated importance given to the self, in which the self takes central point of reference with regard to many psychological activities (i.e., motivation, attention, cognition, affect/emotion, and behavior; Dambrun & Ricard, 2011). Self-centered psychological functioning seems to include characteristics such as biased self-interest, egoism, egocentrism, and egotism. In contrast, having a perception of the self as interdependent and impermanent gives rise to a selfless psychological functioning. Selflessness is characterized by low levels of self-centeredness and a low degree of importance given to the self (i.e., not exaggerated), and is based on a weak distinction between self and others and the environment as a whole (Dambrun & Ricard, 2001). The authors present theorizing and evidence that while a self-centered psychological functioning is associated with ill-being and fluctuating happiness (unstable), selfless psychological functioning can be a source of authentic and enduring happiness. In fact, this style of psychological functioning is thought to be closely related to characteristics such as altruism, kindness, respect, empathy, compassion (including the self), self-transcendence (e.g., Levenson, Jennings, Aldwin, & Shiraishi, 2005; Piedmont, 1999), wisdom (Ardelt, 2008), and a quiet ego (e.g., Bauer & Wayment, 2008; Leary, 2004).

In the same line, Crocker and collaborators suggested that there are two distinct motivational perspectives on the relationship between self and others—egosystem and ecosystem perspectives—and the interpersonal goals they inspire—self-image goals and compassionate goals (Crocker & Canevello, 2008). Self-image goals refer to the desire to construct, maintain, and defend positive images of oneself and to seek that others see oneself as valuable and worthy (Crocker & Canevello, 2008). This allows people to get social inclusion and support because when other people think we have desirable qualities they want to include us in social groups and support us

(Leary & Baumeister, 2000). So people spend a great deal of time and effort trying to create, shape or influence the impressions others have of them, trying others to notice their positive qualities. Self-image goals reflect a broader motivational perspective of the relation between the self and others – egosystem perspective (Crocker, Olivier, & Nuer, 2009). This motivational paradigm is activated in situations personally threatening, competitive or zero-sum (i.e., one individual's gain is another individual's loss). In such situations, individuals may believe that they need to attend to their needs over those of others and/or to protect themselves from harm (from physical or social threats). In these situations, people interpret and respond to threats to their self-image as if they were threats to the self, putting well-being and survival at stake (Crocker et al., 2009). Thus, constructing, maintaining and defending their self-image becomes a means by which people believe they can meet their needs. In this scenario, the other is seen as an evaluator or competitor or even as someone who can give something to the self, such as attention, approval or love. Thus, under this motivational perspective, people focus on others only insofar as they can give or withhold something for the self (Leary & Baumeister, 2000), and they seldom take into account the needs of others, and thus this perspective leads to a narrow and incomplete view of the reality. While the egosystem motivational perspective can be useful for obtaining approval or acceptance by others, and access to valuable resources, it can elicit distrust and retaliation from others, which may lead to conflicts and separation (Leary, 2007). Also, the benefits derived from the egosystem approach and goals do not satisfy other important needs and often can be an obstacle to them (Ryan & Deci, 2000).

In contrast, when people have compassionate goals they are focused on providing support for others, not as a way of acquiring a desirable outcome for them, but genuinely out of concern for others' well-being (Crocker & Canevello, 2008). When people have compassionate goals they typically hold an ecosystem motivational perspective of the relation between the self and

others (Crocker et al., 2009). Within such perspective the self is seen as part of a larger whole, an ecosystem, in which his actions have consequences for others and the entire system, and vice versa. Understanding this interconnectedness leads people to focus on the needs of others and to see relations as non-zero sum in nature (Crocker et al., 2009). This ecosystem motivational perspective is activated in situations where people understand their connectedness to others and believe that it is possible to meet their own needs by collaborating with others and taking their needs into account. It follows that compassionate goals, and an ecosystem perspective more broadly, should help the creation and development of relationships characterized by cooperation and mutual support (Crocker et al., 2009).

Benefits of selflessness and compassion

A consistent body of research on the consequences of selflessness and other-focused motivation, including compassion, suggests that it has many benefits for psychological well-being, physical health, and relationships.

Treating oneself and others with compassion is believed to promote individual wellbeing and improve mental health. For example, compassionate love has been associated with positive mood, high self-esteem, and a sense of connectedness to others (Sprecher & Fehr 2006). Altruist emotions and behaviors are associated with greater well-being (e.g., Dovidio, Piliavin, Schroeder, & Penner, 2006; Post, 2005; Weinstein & Ryan, 2010). Grateful thinking improves positive affect and well-being (McCullough, Emmons, & Tsang, 2002).

Compassionate goals to be supportive and constructive and not harmful to others predict decreased symptoms of anxiety and depression (Crocker, Canevello, Breines, & Flynn, 2010), and loneliness (Crocker & Canevello 2008), increased self-esteem (Canevello & Crocker, 2011), and feelings of peacefulness, connectedness, and clarity over time (Canevello & Crocker,

2015). Galante, Galante, Bekkers, and Gallacher (2014) conducted a meta-analysis of 22 randomised controlled trials of compassion-based meditation techniques and found that these were effective in reducing self-reported depression and enhancing positive emotions in the protagonist. Hofmann, Grossman, & Hinton (2011) suggest that, given the benefits of such practices for the self, loving-kindness meditation and compassion meditation may provide potentially useful strategies for targeting a variety of different psychological problems.

Selflessness and other-focused motivation are also associated with better physical health, including reduced mortality. For example, Konrath and colleagues (2012) found that volunteering results in lower mortality, but only when the motive for volunteering is other-oriented; people who volunteer for selfish reasons do not live longer than non-volunteers. Compassionate love in older female spouses is also associated with better health outcomes (Rauer et al. 2014). Studies using compassion-based interventions suggest changes in physical indicators of health, such as inflammation and cortisol (e.g., Pace et al., 2009, 2010).

Perhaps the most pronounced benefits of other-focused motivation arise in the domain of interpersonal relationships. Empathy and compassion are suggested to be the driving forces behind prosocial behaviors such as altruism and social support (e.g., Batson, 1995; Davis, 1996; Dovidio & Penner, 2001; Sprecher & Fehr, 2005). Compassionate love for one's partner predicts higher relationship quality and greater relationship stability overall (Fehr, Harasymchuk, & Sprecher, 2014). Additionally, when relationship partners make sacrifices with the goal to make their partner happy, they experience greater personal authenticity, ultimately resulting in better relationship well-being (Impett, Javam, Le, Asyabi-Eshghi, & Kogan, 2013). Also, diminishment of the individual self and its concerns seems to enhance collective concern and prosocial behavior (Piff, Dietze, Feinberg, Stanccato, & Keltner, 2015). Similarly, research on compassionate goals suggests that it leads to

relationship benefits, both for others and for the self. When people have compassionate goals, feelings of closeness, support, and trust within their relationships increase (Crocker & Canevello, 2008, Hadden, Smith, & Knee, 2014). Furthermore, people with compassionate goals become more secure (less anxious and avoidant) in their relationships over time (Canevello, Granillo, & Crocker, 2013). Compassionate goals predict increased responsiveness to relationship partners, which in turn predicts increased relationship quality for both people (Canevello & Crocker, 2010). Compassionate goals also predict increases in perceived social support as well as increased social support given to and received from college roommates (Crocker & Canevello, 2008).

Costs of self-centeredness

Several studies seem to indicate that self-centeredness and self-focused motivation, in contrast, are related to poor psychological well-being and relationship quality. For example, a recent meta-analysis examining data from more than 250 independent samples confirms that materialism is associated with lower psychological well-being (Dittmar, Bond, Hurst, & Kasser, 2014). Also, self-image goals predict increased symptoms of anxiety and depression over time (Crocker et al., 2010), less emotional clarity and greater emotional confusion (Canevello & Crocker 2015), and greater loneliness (Crocker & Canevello, 2008). Similarly, impression management goals are associated with social anxiety, self-handicapping, and even psychotic symptoms (Leary & Kowalski, 1990). Unmitigated communion, which reflects selfish motivations for giving to others, is associated with psychological distress (Fritz & Helgeson, 1998).

Self-focused motivations are also linked to poor relationship outcomes. For example, people with more egoistic (versus altruistic) caregiving motivations tend to provide low levels of support to their partners, with negative consequences for the partner and for the relationship as a whole. Notably,

when people with egoistic caregiving motivations do provide more support, they typically do so in ineffective ways that do not actually address the partner's needs (Feeney & Collins, 2003). Similarly, self-image goals are associated with less responsiveness (Canevello & Crocker, 2010) and less support provision (Crocker & Canevello, 2008) to relationship partners, as well as more interpersonal conflict (Crocker & Canevello, 2008). Self-image goals also predict decreased relationship stability via increased relationship avoidance and anxiety (Canevello et al., 2013).

In sum, the studies and theoretical accounts reviewed above suggest that compassion may be rooted in a psychological functioning characterized by selflessness, or the perception of the self as part of an interconnected whole, with no defined boundaries. This psychological functioning, associated with taking an interest in caring for others, in contrast to a self-focused motivation to compete, avoid being inferior, shamed and rejected, is associated with improved well-being and relationship quality.

These two types of functioning, however, are not conceived as fixed states wherein each individual acts in a rigid and unchangeable manner. While there may be individual differences in the tendency to be driven by self-centeredness and selflessness, which can be due to basic temperament and personality, education, culture, or life experiences, situational and contextual variables that are more transitory and temporary may also supplant the individual's dominant tendency (Crocker, 2011; Danbrum & Ricard, 2011).

For example, it has been suggested that mental training, and particularly the practice of meditation, can encourage selflessness. Research carried out by Emavardhana and Tori (1997) showed important changes in both self-perception and ego defense mechanism in participants in a 7-day Vipassana meditation retreat compared to a control group. The participants in the

Vipassana meditation group showed a significant increase in self-acceptance, were less likely to use the defenses of displacement, projection (i.e., attributing unacceptable feelings to others) and regression (i.e., immature behaviors) following the retreat. More recently, Wayment, Wiist, Sullivan, and Warren (2010) found a positive correlation between meditation experience and a quiet ego (e.g., altruism, wisdom).

Thus, rather than conceiving self-centeredness and selflessness as two exclusive styles of functioning, it has been suggested that they are both present in each individual and that the tendency to adopt one or the other is largely a question of degree, and depends on a several variables (Crocker, 2011; Danbrum & Ricard, 2011). This area of research, however, is largely underdeveloped.

1.5. Compassion in healthcare

We need the gentleness and the strength of compassion. The more lucid we are about the world, the more we accept seeing it as it really is, the easier it is to accept that we cannot face all the suffering that is encountered in the course of our lives unless we have this strength and this gentleness.

-Christophe André

Compassion is an essential part of healthcare. Being in the presence of suffering in a person and having the desire to relieve that suffering, is a defining characteristic of the healthcare provider work, and is intrinsic to nursing practice (Kret, 2011).

A recent scoping review of the empirical literature on compassion in healthcare found that nearly three-quarters of all articles were published in the last 5 years, suggesting that patients, and their families, and society increasingly view compassion as a fundamental aspect of healthcare (Sinclair et al., 2016).

Compassion is believed to have numerous advantages in the healthcare field, for patients, and for healthcare professionals. It has been argued that treating patients compassionately has wide-ranging benefits, including improving clinical outcomes, increasing patient satisfaction with services, and enhancing the quality of information gathered from patients (Epstein et al., 2005; Rendelmeir, Molin, & Tibshirani, 1995). Patients reported that receiving compassionate care from clinicians aided recovery, including an increased sense of responsibility and control of their health (van der Cingel, 2011; Lloyd & Carson, 2011). In one study watching 40 seconds of a compassionate communication from a provider on videotape was sufficient to reduce anxiety in breast cancer patients (Fogarty et al., 1999). In another study using fMRI patients who were given an empathic, patient-centered interview, compared

to standard procedures, showed decreased neural activation in the anterior insula, a region associated with pain, when receiving painful electric shocks (Sarinopoulos et al., 2013).

In addition to subjective well-being, compassionate care also improves physical outcomes. For example, diabetic patients whose provider scored higher on compassion had better metabolic control (versus moderate or low control) and fewer metabolic complications (Del Canale et al., 2012). Provider compassion, as rated by the patient, also predicts shorter duration and severity of the common cold (Rakel et al., 2009), and improved patient satisfaction, treatment compliance, and health outcomes (Kim et al., 2004), in a broad array of patient populations (e.g., Hojat et al., 2011). Sequist and colleagues (2008) have shown that patient experience of compassionate care correlates positively with both prevention and disease management. Diabetic patients, for example, demonstrate higher self-management skills when they self-report positive relationships with their providers (Greenfield, Kaplan, Ware, Yano, & Frank, 1988). Adherence to medical advice and treatment plans is highly correlated with compassionate care (DiMatteo et al., 1993) and this is especially so when patients have chronic conditions (Beach, Keruly, & Moore, 2006).

Furthermore, a review of 21 studies related quality of physician-patient communication with increased physical functioning, emotional health and decreased physical symptoms of pain in patients (Stewart, 1995). Patients admitted to hospital following myocardial infection who self-reported more positive care experiences had better health outcomes (Fremont et al., 2001) and one study showed a significantly lower mortality rate in the first year after discharge (Meterko, Wright, Lin, Lowy, & Cleary 2010).

Preliminary findings also suggest that compassion may have a positive effect on specific caregiver outcomes, including increased job satisfaction (Way & Tracey, 2012; Graber & Mitcham, 2004).

While it is vital that caregivers work with compassion, researchers are suggesting that there may be a cost to this work, generally referred to as compassion fatigue (e.g. Adams, Boscarino, & Figley, 2006; Figley, 1995; 2002; Hesse, 2002; Jenkins & Baird, 2002)

Compassion fatigue

The concept of compassionate fatigue was first introduced by Joinson (1992) to describe a state of reduced capacity for compassion as a consequence of being exhausted from dealing with the suffering of others (Figley, 2002; 2012; Sabo, 2006). Joinson never formally defined the concept and, in 1995, it was adopted by Figley as a more “friendly term” for secondary traumatic stress disorder (STSD) (Figley, 1995) resulting from a deep involvement with a primarily traumatized person. Currently, compassion fatigue is used interchangeably with STS (Figley, 2002), and sometimes with vicarious traumatization (McCann & Pearlman, 1990).

Secondary traumatic stress describes the development of PTSD symptoms in individuals who play a significant role in the survivor’s life (Figley, 1995). The symptoms of secondary traumatic stress are parallel to those of PTSD with the exception that with secondary traumatic stress, the traumatic event is not directly experienced by the affected individual; rather the stressor is the exposure to the traumatized or suffering person. There are three clusters of symptoms: intrusive reexperiencing of the traumatic material, avoidance of trauma triggers and emotions, and increased physical arousal (Bride, Robinson, Yegidis, Figley 2004).

While compassion fatigue has been observed in professional caregivers and discussed in the literature over the past two decades, a specific definition of its characteristics and corollaries has not been uniformly embraced (Coetzee & Klopper, 2010; Najjar, Davis, Beck-Coon, & Doebbeling, 2009). As a result, multiple terms have been used synonymously to describe the phenomenon.

The use of multiple terms to describe compassion fatigue, and the absence of a distinct and accepted definition, has hindered the study and identification of interventions related to this important problem (Najjar et al., 2009; Yoder, 2010). Nonetheless, Figley's (1995) definition of compassion fatigue as a secondary traumatic stress reaction resulting from helping, or desiring to help, a person suffering from traumatic events, seems to be the most reliable and commonly used definition of compassion fatigue (Najjar et al., 2009).

Distinguishing Compassion Fatigue from Burnout

Burnout has been defined as a prolonged response to chronic job-related stressors, characterized by emotional exhaustion, depersonalization, and lack of perceived personal accomplishments (Maslach, Schaufeli, & Leiter, 2001). Other conceptualizations of burnout have been proposed, either suggesting that burnout might be reduced to exhaustion (e.g., Malach-Pines, 2005; Kristensen, Borritz, Villadsen, & Christensen, 2005; Shirom & Melamed, 2006), or to two dimensions (e.g., Demerouti, Bakker, Vardakou, and Kantas (2003). In the present study, burnout is conceptualized as being "associated with feelings of hopelessness and difficulties in dealing with work or in doing your job effectively" (Stamm, 2010, p. 13).

Burnout can occur in any profession and is not specific to work with a traumatized population. Also, meta-analytical studies found significant relationships between job burnout and risk factors such as high job demands (e.g., workload, role conflict) or low job resources (e.g., control, autonomy at work) (Lee & Ashforth, 1996; Alarcon, 2011).

In contrast, compassion fatigue refers exclusively to those individuals in the helping professions and results from the exposure to traumatized patients (Figley, 1995). Compassion fatigue stems from emotional engagement and interpersonal intensity associated with witnessing suffering within the work setting.

The specific relation between compassion fatigue and burnout is not clear. This is mostly due to the lack of conceptual clarity and the fact that the debate has been dominated by narrative analyses of these differences rather than by empirical evaluation (Adams, Boscarino, & Figley, 2006; Jenkins & Baird, 2002; Sabo, 2011; Thomas & Wilson, 2004). However, one recent meta-analysis investigated the relationships among job burnout and psychosocial consequences of secondary exposure to trauma (i.e., compassion fatigue, secondary PTSD, or vicarious trauma; collectively, secondary traumatic stress [STS]) in professionals working with trauma survivors (Cieslak et al., 2014). The meta-analysis of 41 studies suggested that the association between these two constructs is high and that these two concepts may share as much as 48% of the variance. Also, a recent longitudinal study showed that job burnout led to an increased frequency of STS symptoms at 6-month follow-up, but the levels of STS symptoms were not predictive of job burnout levels, being the first study to help clarify the nature of the relationship between these two core job-related outcomes (Shoji et al., 2015).

Studies regarding the prevalence of compassion fatigue present mixed results, particularly due to the lack of conceptual clarity and the use of different measures. However, some estimates of rates of compassion fatigue among helping professionals range from 13% to 50% (Bride, 2007; Conrad & Kellar-Guenther, 2006; Sprang, Clark, & Whitt-Woosley, 2007). In Portugal, the prevalence of burnout has been reported as moderate and high (Marôco, 2016) in physicians and in nurses. To our knowledge, no study has been published regarding the prevalence of compassion fatigue in Portugal in any healthcare profession.

What is the role of compassion in compassion fatigue?

Given the multiple names for the experience of compassion fatigue, it is currently unclear if it is compassion, or instead, lack of compassion, that is the key ingredient that defines the disorder. Several studies and theoretical

considerations, in contrast, seem to point to empathy as a risk factor for the experience of compassion fatigue. Being overly sensitive to others' suffering in the course of caring for patients experiencing trauma or pain is theorized to lead to deleterious effects, such as burnout or compassion fatigue (e.g., Najjar et al., 2009; Figley, 2002; 2012).

Empathy in healthcare

Empathy is a natural socio-emotional competency that has evolved with the mammalian brain to form and maintain social bonds, facilitate the survival of offspring, and facilitate cooperation among group members (Decety & Svetlova, 2012). Findings from studies in affective neuroscience revealed shared neural representations for own pain and other's pain, that is, brain areas involved in the experience of physical pain are also activated by the perception or even the imagination of another individual in pain. Specifically, when comparing the neural activation elicited during the first-hand experience of pain with the brain activation elicited when merely observing the other person experiencing painful stimulation, researchers found that both conditions led to overlapping activations in the anterior insula (AI) and the anterior medial cingulate cortex (aMCC) (Singer, Seymour, O'Doherty, Kaube, Dolan, & Frith, 2004). These two brain regions comprise the so-called affective dimension of a pain experience and have been associated with subjective reports of unpleasantness (Lamm, Decety, & Singer, 2011). In line with the "shared network hypothesis of empathy", these data suggest that we share emotions with others by activating the neuronal representation underlying our own experience of these emotions. Nearly a decade of empathy research from different laboratories consistently points that activations in AI and aMCC have been observed in numerous empathy-for-pain studies (Lamm et al., 2011).

Following this reasoning, one of the consequences of sharing the pain of others is that it can lead to emotional distress in the observer. Because

healthcare professionals are exposed to high levels of negative emotions in stressful environments, they can indeed develop compassion fatigue and severe emotional exhaustion (Figley, 2012), which may impede the delivery of quality medical care and increase the risk of errors.

Thus, it can be challenging for healthcare professionals to find a delicate balance between over-identification with their patients and emotional detachment. Therefore, it has been suggested that emotional regulation skills are critical for healthcare professionals to keep their emotions balanced and maintain personal stability (Cheng et al., 2007; Decety et al., 2010).

Compassion versus Empathy

While empathy can be seen as a double-edged sword, facilitating care but at the same time leaving the healthcare provider vulnerable to compassion fatigue, compassion may instead be a protective factor (Boellinghaus, Jones, & Hutton, 2012). Compassion appears to buffer the effects of stress on well-being (Poulin, Brown, Dillard, & Smith, 2013). Also, the other-oriented focus of the compassionate response may allow the observer to empathize with the other's suffering but without identifying with it, providing a self-other distinction which is essential to regulate own distress feelings and to provide adequate care to the sufferer (Klimecki & Singer, 2012).

In contrast, empathy can lead to personal or empathic distress. In this case, the empathizer is overwhelmed by the experience of negative emotions because there is an identification with the suffering of others. As a consequence, the empathizer will be motivated not to provide help but instead to try to reduce these negative feelings and withdrawn from the distressful situation. These findings have been supported by data from cognitive neuroscience (Lamm, Batson, & Decety, 2007; Klimecki, Leiberg, Lamm, & Singer, 2013) and other empirical studies (e.g., Batson, Fultz, & Shoenrade, 1987). Thus, compassion for others can protect against the risk of

burnout and compassion fatigue; instead of being overwhelmed by empathic distressing feelings, the healthcare professional responds with feelings of love and concern and is motivated to provide care and assistance.

Recent studies from social neuroscience offer further insights into the differences between empathy and compassion. Using a video-based task, participant's brain responses were measured while they viewed short documentary video clips depicting people in pain or everyday life situations. After each video, participants reported their positive and negative feelings, as well as their levels of empathy. Consistent with many previous findings on empathy for pain (Lamm, Decety, & Singer, 2011), participants' initial empathic responses to suffering were accompanied by activations in AI and aMCC. Moreover, prior to training, seeing others in pain was associated with elevated levels of negative affect and low levels of positive affect. The comparison of training effects revealed that compassion training specifically increased self-reports of positive affect, even in response to the distress of others. At the same time, compassion training did not decrease negative affect, which might be a prerequisite for helping behavior. On the neural level, the authors observed that compassion training, but not memory training, increased activations in a network previously observed in cross-sectional compassion studies (Lutz, Brefczynski-Lewis, Johnstone, & Davidson, 2008; Beauregard, Courtemanche, Paquette, & St-Pierre, 2009; Kim et al., 2009), and in brain regions related to positive affect (Kringelbach, & Berridge, 2009) and affiliation (Strathearn, Fonagy, Amico, & Montague, 2009) as well as maternal and romantic love (Bartels, & Zeki, 2004). This network spans the medial orbitofrontal cortex, the putamen and pallidum and the ventral tegmental area/substantia nigra. These findings suggest that the cultivation of compassion engages a neural network that is distinct from activations found empathy of pain (Klimecki, Leiberg, Lamm, & Singer, 2013).

These results were confirmed in a subsequent study, using a short-term intervention in which the same group of participants was first trained in

empathy and then received compassion training (Klimecki, Leiberg, Ricard, & Singer, 2014). On the level of self-reports, training empathic resonance increased negative affect and empathy. On the neural level, empathy training increased activations in AI and aMCC. This again suggests that engaging in empathic resonance can be a highly aversive experience and, as such, can be a risk factor for compassion fatigue and burnout. The subsequent compassion training, however, reversed these effects by decreasing negative affect back to baseline and – like in the previous study – by strengthening positive emotions. It is notable that compassion again induced this combination of strong positive affect along with normal levels of negative affect. This emphasizes that compassion does not lead to the denial of suffering but enables people to experience positive emotions, in spite of another person's difficulty. On the neural level, compassion induced entirely different activations than did empathy, as suggested in the previous study.

Taken together, these results underline important differences between empathy and compassion. This important distinction has led Klimecki and Singer (2012) to propose that 'compassion fatigue' could more helpfully be thought of as 'empathetic distress fatigue', because compassion, as defined in this context, can actually be protective of burnout and compassion fatigue. Thus, when witnessing others' suffering or pain, compassionate healthcare professionals may be more able to adopt a more other-focused perspective which prevents their empathic feelings to turn to personal distress and ultimately compassion fatigue.

Thus, in line with this perspective, compassion can be considered the solution, rather than the problem of compassion fatigue. The question then is how to promote compassion, and other psychological resources that can help regulate aversive empathic feelings, in healthcare professionals to counteract the negative effects of compassion fatigue and burnout?

1.6. Mindfulness interventions in healthcare

The goal of mindfulness is compassionate informed action in the world, to use a wide array of data, make correct decisions, understand the patient, and relieve suffering

Epstein

Modern nursing faces increasing professional stressors. Nurses have to deal with and care for dying patients, witness patients' suffering and act as a support system for patients and their families. In addition, the modern world of healthcare and tightening budgets are resulting in additional work-related stressors, such as barriers to providing optimal care, increasing complex needs of patients, the need to increase knowledge of ever-changing technology, nursing shortages, poor staffing, long work hours, and limited resources (McCloskey & Taggart, 2010). These work-related stressors put nurses at increased risk for physical and mental illness.

In turn, nurses' stress has been associated with nurses' reports of decreased ability to focus on patients' needs and patients' reports of decreased satisfaction with care (Beddoe & Murphy, 2004; Vahey, Aiken, Sloane, Clarke, & Vargas, 2004).

Oncology nursing

Oncology nursing is one of the areas most affected by occupational stress and burnout (Barnard, Street, & Love, 2006; Potter et al., 2010; Gómez-Urquiza et al., 2016). Oncology nursing involves the management of complex pathologies with poor prognosis, close and constant contact with patients who are in severe pain, distress and approaching death, and difficult patient and family situations, which poses an additional challenge to these professionals

and further contributes to job dissatisfaction, stress, and burnout (Barrett & Yates, 2002; Potter et al., 2010).

In addition, oncology nursing is one area that has been particularly affected by the nursing shortage (e.g., Buerhaus, Donelan, DesRoches, Lamkin, & Mallory, 2001; Glaus, 2007). Moreover, projections from the World Cancer Report show that cancer rates may increase up to 50% to 15 million new cases by the year 2020 (World Health Organization, 2003). These statistics suggest that the number of oncology nurses is far from adequate to meet current and future needs. According to previous studies, nursing shortage significantly contributes to job dissatisfaction, stress, and burnout in oncology nurses, and increased intent to leave the profession (Toh, Ang, & Devi, 2012).

This reality drives the need to identify interventions to help nurses learn to effectively cope with work-related stress to help improve nurses' job satisfaction, decrease rates of burnout and improve the quality of patient care. While significant attention in the nursing literature and research has been placed on the incidence and implications of stress, burnout and compassion fatigue, there is limited focus on prevention and reduction of these concerns (Poulin, Mackenzie, Soloway, & Karayolas, 2008).

Eliminating work-related stressors, such as nurse shortage or long work hours, unfortunately is not a realistic goal. Implementing interventions that are focused on helping nurses learn to cope more effectively with stress, on the other hand, is more realistic. (Poulin, Mackenzie, Soloway, & Karayolas, 2008).

One of the most frequently identified, effective, and empirically validated intervention used in a variety of populations and contexts to help address coping with stress is meditation, and particularly, mindfulness-based meditation.

Mindfulness

Numerous definitions and descriptions of mindfulness are available. Perhaps the most well-known secular definition is provided by Kabat-Zinn (2013) who describes mindfulness as paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally. In a later paper, Kabat-Zinn (2003) also suggests that mindfulness includes an affectionate, compassionate quality within the attending, a sense of openhearted, friendly presence and interest. Generally, mindfulness is learned and practiced in a structured manner, whether individually or in a group setting, and normally includes enrolling in secularized structured programs, such as Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1982), and Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002). MBSR is a group-based program consisting of weekly meetings (2h30h duration) typically delivered over an 8-week period. MBCT follows a similar structure (i.e., 8-weeks, group-based, weekly meetings, guided mindfulness exercises, CD for self-practice, all-day retreat) and is advocated for the treatment of specific forms of depression by the National Institute for Health and Clinical Excellence (2009) and by the American Psychiatric Association (2010). In addition to MBSR and MBCT, a number of other group-based MBIs have been developed to target specific illnesses and/or populations (e.g., Mindfulness-based relapse prevention for the prevention of relapse following rehabilitation from substance-use disorders). Mindfulness techniques have also been integrated into cognitive behavioral therapeutic modes such as Dialectic Behavior Therapy (Linehan, 1993) and Acceptance and Commitment Therapy (Hayes, Strosahl, Wilson, 1999).

In general, mindfulness-based interventions (MBIs) are designed to teach participants to become more aware of thoughts, feelings, and body sensations, while approaching these internal states with a non-judgmental curiosity. Mindfulness practice allows for greater awareness of the present moment and helps cultivate healthier and adaptive ways of responding to stress, rather than

habitual and often maladaptive reactions. The cultivation of concentration, attention and non-judgmental acceptance of whatever is being experienced in the present moment is central to the practice of mindfulness (Bishop et al., 2004; Kabat-Zinn, 2013).

The great enthusiasm and interest for mindfulness in Western psychology and medicine derives from a substantial number of scientific studies, many indicating that MBIs are effective in alleviating suffering in a broad range of conditions, and in increasing well-being. For example, a meta-analysis of 20 studies in a wide range of clinical populations found consistent improvements in depression, anxiety, coping style, and quality-of-life measures following Mindfulness-Based Stress Reduction (MBSR; Grossman, Niemann, Schmidt, & Walach, 2004). Also, a meta-analysis concluded that MBSR is effective in reducing stress, depression, anxiety, and distress and in ameliorating the quality of life, in nonclinical populations (Khoury, Sharma, Rusch, & Fournier, 2015). A recent review also outlined evidence to support the impact of mindfulness meditation on many stress-related medical conditions including psoriasis, type 2 diabetes, fibromyalgia, rheumatoid arthritis, and chronic low back pain, as well as reducing stress among individuals with chronic illness (Greeson, 2009).

Why a mindfulness-based intervention for burnout and compassion fatigue?

Mindfulness may be an effective way to promote less burnout and compassion fatigue and to promote professional and personal well-being in nurses.

Mindfulness promotes compassion

One way through which mindfulness can decrease compassion fatigue (and possibly burnout), is through the promotion of compassion.

Although Buddhist teachings suggest that increases in compassionate responding should be a primary outcome of meditation (Davidson & Harrington, 2002), little scientific evidence supports this conjecture. Some studies, however, offer preliminary evidence for this link. For example, Condon, Desbordes, Miller, & DeSteno (2013) found that 8 weeks of meditation practice directly enhanced compassion responding (in this study to assess compassion researchers measured whether participants offered his or her seat to a sufferer to relieve their pain). Also, this enhanced prosocial responding did not differ as a function of meditation protocol; participants practicing mindfulness meditation were as likely to aid the sufferer as were those practicing compassion meditation. A follow-up study exploring a possible mechanism for the link between mindfulness meditation and compassion confirmed the findings that a three-week, mobile-app based training courses in mindfulness meditation increased compassionate behavior, and found that empathic accuracy was not increased by mindfulness practice. This suggests that mindfulness-enhanced compassionate behavior does not stem from associated increases in the ability to decode the emotional experiences of others. It is important to note, however, that these findings do not preclude the possibility that continued training in meditation might alter empathic abilities (Lutz, Brefczynski-Lewis, Johnstone, & Davidson, 2008; Mascaro, Rilling, Tenzin Negi, & Raison, 2013); rather, they show that any such increases need not always underlie greater compassionate behavior. Whereas compassion meditation might increase compassionate behaviors through empathic processes and prosocial emotion, mindfulness meditation might increase compassionate behaviors through a number of plausible mechanisms, including increased attention to stimuli (MacLean, Ferrer, Aichele, Bridwell, Zanesco, et al., 2010) or a reduction of self-related affective biases (Hölzel et al., 2011; Vago & Silbersweig, 2012).

As previously suggested, compassion can be protective of burnout and compassion fatigue, as healthcare professionals may be more able to adopt a more other-focused perspective which prevents their empathic feelings to turn to personal distress and ultimately compassion fatigue.

Mindfulness promotes self-compassion

Preliminary evidence suggests that self-compassion may be a mechanism of change in MBIs. For example, in a randomized controlled trial (RCT) of Mindfulness-Based Cognitive Therapy (MBCT), the effects of the intervention on depressive symptoms were found to be mediated by changes in both mindfulness and self-compassion (Kuyken et al., 2010). In another RCT the authors also found that both mindfulness and self-compassion were mediators of the effects of the Mindfulness-Based Stress Reduction, even when controlling for the effects of one another (Keng, Smoski, Robins, Ekblad, & Brantley, 2012). Although promising, this modest body of evidence does not provide conclusive evidence of self-compassion as a mediator of the impact of MBIs on psychological outcomes, and more studies are needed (Gu et al., 2015).

Self-compassion could be helpful to healthcare professionals, and nurses in particular, because it may play an important role in maintaining their mental health and because of the emerging evidence that self-compassion is associated with compassion for others. Specifically, self-compassionate people may have psychological characteristics that make them more able to regulate their emotions. In previous studies it was found that self-compassion was associated with less rumination (Raes, 2010; Johnson, & O'Brien, 2013; Odou, & Brinker, 2014), avoidance (Krieger, Altenstein, Baettig, Doerig, N., & Holtforth, 2013) and suppression (Leary, Tate, Adams, Allen, & Hancock, 2007) and with more emotion validation (Leary et al., 2007; Neff, Hseih, Dejitterat, 2005; Neff et al., 2007). This suggests that self-compassionate individuals do not try to alter or escape from negative stressful experiences,

but rather they seem to modify the context in which these negative experiences occur, and expose themselves to the stressor with feelings of care, support, openness, and equanimity.

Preliminary research is suggesting that self-compassion may be one mechanism explaining the buffering effects of positive mental health on psychopathology, as individuals with high levels of positive mental health may possess more self-compassion skills, which they utilize in daily life during stressful circumstances to buffer against the long-term development of psychopathology (Trumpeter, Kleine, & Bohlmeijer, 2016). So, it may be that these psychological characteristics that have been associated with self-compassion may render healthcare professionals more resilient and less vulnerable to the potential negative impact of work-related stress.

On the other hand, self-compassionate people may be more other-focused when witnessing others in pain and suffering. In previous studies it was found that self-compassion was associated with compassion for others (Lindsay & Creswell, 2014; Welp & Brown, 2014; Neff & Pommier, 2013).

In this line, Dalai Lama (2003; 2012, p. 125) argues that “For someone to develop genuine compassion towards others, first he or she must have a basis upon which to cultivate compassion, and that basis is the ability to connect to one’s own feelings and to care for one’s own welfare. . . Caring for others requires caring for oneself.” Thus, developing self-compassion may be vital for preventing compassion fatigue and promoting compassionate care (Gustin & Wagner, 2013).

Mindfulness promotes emotion regulation skills

One of the most consistent findings in the literature regarding the positive psychological effects of mindfulness is that mindfulness is associated with, and promotes adaptive emotion regulation (see Chiesa, Serretti, & Jakobsen, 2013; Roemer, Williston, Rollins, 2015; Hölzel et al., 2011, for reviews).

Emotion regulation, in turn, can have an impact on burnout and compassion fatigue.

Regarding burnout, it has been recently found that subjects suffering from burnout symptoms attributed to chronic occupational stress were less capable of down-regulating negative emotion (Golkar et al., 2014). The authors concluded that in subjects suffering from chronic occupational stress, the functional couplings within the emotion- and stress-processing limbic networks seem to be altered, and associated with a reduced ability to down-regulate the response to emotional stress, providing a biological substrate for a further facilitation of the stress condition.

Emotion regulation may help decrease compassion fatigue. It has been suggested that emotional regulation skills are necessary to regulate the empathic feelings when watching the suffering of others (Cheng et al., 2007; Decety et al., 2010). Psychological and neuroscience research indicates that individuals who can regulate their own affective responses to maintain an optimal level of emotional arousal have greater expressions of empathic concern for others (Decety & Meyer, 2008; Davidov, Zahn-Waxler, Roth-Hanania, Knafo, 2013; Ho, Konrath, Brown, & Swain, 2014; Williams, O'Driscoll, & Moore, 2014; Eisenberg et al., 2000).

Studies of mindfulness in healthcare professionals

According to Epstein (2003), mindfulness can lead to valued qualities in healthcare providers, including “attentiveness, interest in clinical problems, interests in the patient-as-person, clinical judgment, compassion, and presence” (p. 2). In fact, some studies found preliminary evidence that MBIs may be helpful for healthcare professionals. For example, a recent systematic review and meta-analysis of 8 studies of the impact of MBIs on healthcare professionals’ health and wellness found that participation in an MBI can have benefits for healthcare professionals in the domains of general and mental

health, such as reduced stress, depression, anxiety, burnout, and improve self-compassion, mindfulness, physician empathy, sense of coherence and satisfaction with life (Burton, Burgess, Dean, Koutsopoulou, Hugh-Jones, 2016). Another meta-analysis of 39 studies of outcomes of MBSR or MBSR-based interventions in health care providers found that this intervention is associated with improvements in burnout, stress, anxiety, and depression (Lamothe, Rondeau, Malboeuf-Hurtubise, Duvala, & Sultana, 2016). A recent review suggests that mindfulness-based interventions can increase self-compassion and other-focused concern in healthcare professionals (Boellinghaus et al., 2012).

Research on the impact of MBIs in nurses separate from other healthcare professionals is still scarce. However, some studies have found significant improvements in burnout and general psychological distress among nurses participating in a MBI compared to control groups (Cohen-Katz, Wiley, Capuano, Baker, & Shapiro, 2005; Mackenzie, Poulin, & Seidman-Carlson, 2006; Pipe et al., 2009).

In sum, there is consistent evidence that mindfulness-based interventions are effective in helping people deal with stress. Nurses, and particularly oncology nurses, are affected by several work-related stressors, which in the long term may contribute to their ill-being, and at the same time reduce their ability to provide effective care. Thus, it is important to uncover ways that help nurses mitigate the pervasive and negative effects of work-related stress, such as burnout and compassion fatigue.

Chapter 2

AIMS AND METHODOLOGY

CONTENTS

2.1. General and Specific Aims

2.2. General Methodology

2.1. General and Specific Aims

The present work has several specific goals that were organized into three main empirical parts composed by different studies. These three parts correspond to the three general aims of the present work:

1. To explore the benefits and shortcomings of compassionate and self-image goals, as well as potential predictors;
2. To explore the relationship between self-compassion and positive affective states;
3. To explore dispositional factors associated with compassion fatigue, and also with compassion satisfaction and burnout; to test the effectiveness of a mindfulness-based program for reducing compassion fatigue and burnout and to promote positive psychological characteristics in oncology nurses.

1. Compassionate Goals versus Self-Image Goals

According to the literature reviewed in the introduction, compassion entails many benefits, not only to the recipients of compassion but also to the individuals that hold compassionate attitudes and have compassionate behaviors.

The general aim of the first set of studies is to explore the impact of having different motivational goals in the relationships with others, and how holding more compassionate goals, and fewer self-image goals would have more benefits for the people who hold them. We also wanted to explore whether mindfulness and self-compassion would predict more compassionate goals and fewer self-image goals. Specifically, we conducted four studies.

First, given that there was no instrument validated to the Portuguese population measuring self-centeredness and other-centeredness, the first step was to translate and validate the Compassionate and Self-image Goals Scale (CSIGS; Crocker & Canevello, 2008) for the Portuguese population. To this aim, two independent samples of college students were recruited and completed several self-report measures designed to explore the psychometric properties of the CSIGS. Apart from the CSIGS, participants also completed other measures to explore construct validity (Study I).

Second, we aimed to explore the impact of compassionate and self-image goals on psychopathological symptoms, using a longitudinal design. Based on the literature reviewed, self-centeredness is thought to be associated with psychological distress, while selflessness is thought to be associated with less psychological distress. Regarding compassionate and self-image goals, in particular, a previous study found that participants high in self-image goals showed increased symptoms of depression and anxiety, whereas participants chronically high in compassionate goals showed decreased symptoms of depression and anxiety (Crocker, Canevello, Breines, & Flynn, 2010). Thus, we aimed, on one hand, to replicate the findings that compassionate and self-image goals differently predicted psychological distress, and on the other hand, to explore other possible mediators of this relationship that were not previously studied (Study II).

Third, we aimed to explore the impact of compassionate and self-image goals on social connectedness, and on social anxiety / social avoidance. Social connectedness has been defined as an individual's sense of interpersonal closeness with the social world (Lee & Robins, 1995). It is suggested that as people meet their fundamental need for belongingness and connection they develop a stable and secure sense of connectedness (Baumeister & Leary, 1995). In contrast, excessive fear and avoidance of social situations, because of concerns about being evaluated and even rejected, may interfere with social activities and decrease social connectedness (Baumeister & Tice, 1990).

Specifically, we hypothesized that compassionate goals would predict more social connectedness and less social anxiety/avoidance. As people provide support for others out of concern for their well-being they may contribute to the creation and development of cooperative mutually supportive relationships which satisfy their need to belong and connect. In contrast, we hypothesized that the presence of discomfort, anxiety, or avoidance in social interactions may be related to selfish motivations. (Study III).

Fourth and final, we aimed to explore potential predictors of compassionate and self-image goals. Although there are several studies exploring correlates and outcomes of compassionate and self-image goals, few studies in comparison have explored predictor variables that might affect the development of such interpersonal goals. We hypothesized that trait mindfulness and self-compassion would be potential candidates, and that could prospectively predict more compassionate goals, and simultaneously fewer self-image goals, in the relationships with others. Several studies have been linking self-compassion to other-focused attitudes and behaviors (e.g., Lindsay and Creswell, 2014; Welp and Brown, 2013; Neff & Beretvas, 2012), and one previous study found that self-compassion was positively correlated with compassionate goals, and negatively correlated with self-image goals (Crocker & Canevello, 2008). Regarding mindfulness, also several studies seem to suggest an association with positive interpersonal variables (e.g., Dekeyser, Raes, Leijssen, Leysen, & Dewulf, 2008; Barnes, Brown, Krusemark, Campbell, & Rogge, 2007; Burpee & Langer, 2005; Wachs & Cordova, 2007; Carson, Carson, Gil, & Baucom, 2004). However, there is still a scarcity of studies exploring the role of self-compassion and mindfulness on interpersonal variables, and no studies to our knowledge with interpersonal goals in particular. In addition, most of the studies used cross-sectional designs, which limits conclusions regarding potential causality (Study IV).

In general, we aimed to further contribute to the study of the benefits of compassionate goals, and the potential costs of holding self-interested goals, in the relationships with others.

2. Self-compassion, Positive Affective States, and Heart Rate Variability

Self-compassion has been extensively researched in the last decades, particularly since 2003 when Neff introduced the concept in the academic literature with two papers describing the concept and providing a self-report measure (Neff, 2003a, 2003b). Consistent evidence from meta-analyses suggests that self-compassion is associated with less psychological symptoms (MacBeth & Gumley, 2012), and with indices of psychological well-being (Zessin et al., 2015). In contrast to a large number of studies linking self-compassion to decreased psychological distress, the role of self-compassion in the experience of positive emotions and affect remains less studied in the literature. While finding ways to mitigate negative states and psychological distress is of paramount importance, it is also relevant to uncover ways that promote positive states and human growth. There is accumulating evidence that psychopathology and positive mental health function along two different continua that are only moderately interrelated (Huppert and Whittington 2003; Westerhof & Keyes 2010; Weich et al. 2011), which makes positive mental health in itself a significant end-point of scientific study and intervention.

Positive emotions and positive affect have been proven to be essential for our well-being (e.g., Lyubomirsky, King & Diener, 2005; Fredrickson, 1998). Although research suggests that self-compassion may be associated with positive affect (e.g., Krieger Hermann, Zimmermann, & Holtforth, 2015; López, Sanderman, & Schroevers, 2016; Sirois, Kitner, & Hirsch, 2015; Odou & Brinker, 2015; Woodruff et al., 2013; Wren et al., 2012), in the studies linking self-compassion and positive affect the latter variable is often

measured using general measures of positive affect and emotions, which has several limitations that will be further discussed in the study.

In the *first* study, we used several samples and different methodological procedures to test the hypothesis that self-compassion would be associated with more frequent experiences of positive emotions and positive affect. Based on previous studies and theorizing about self-compassion, our main hypothesis was that self-compassion would be associated, and would predict, more frequent positive states in general. In particular, we hypothesized that self-compassion would be particularly related to safe positive affect (e.g., feelings of warmth, safeness, contentment), and positive emotions of love, compassion, and joy. Accordingly, Gilbert (2009) suggested that compassion and self-compassion are an evolved capacity that emerges from behavioral and affective systems involved in attachment, caring, and affiliation (Study V).

Second, and building on the results from the previous study, we were interested in exploring the role of self-compassion in the experience of positive emotions, in the context of alexithymia. Alexithymia has been described as a difficulty in identifying feelings, difficulty in describing feelings, and a tendency for externally oriented thinking, or a concentration on external, often fantastic, events (e.g., Taylor, 2000; Taylor & Bagby, 2004). Although the association between alexithymia and negative affect and psychopathology is well documented, there is a scarcity of studies exploring its impact on the experience of positive emotions. It has been suggested that individuals with alexithymia have limited experiences of positive emotions, such as joy, happiness, and love (Bagby and Taylor (1997), but there has been little research on this relationship. The few existent studies, however, point to an association between alexithymia and lower positive affect (e.g., De Gucht, Fischler, & Heiser, 2004; Yelsma, 2007; Ciarrochi, Heaven, & Supavadeeprasit, 2014) or a lower tendency to experience positive emotions (Luminet, Bagby, Wagner, Taylor, & Parker, 1999). Several factors may

explain such link. For example, a recent meta-analysis of neural correlates of alexithymia found preliminary evidence for a decreased activation in several brain areas (right anterior and posterior insula and precuneus) indicative of a reduced emotional awareness of positive affect (van der Velde et al., 2013). We hypothesize that self-compassion may also be an important mediator of this relationship, as individuals who have difficulty experiencing their emotions will also have difficulties accepting those emotions with kindness instead of judgment, and with mindful awareness. On the other hand, having a kind, open and accepting attitude towards one's emotions could create a safe context so that positive emotions can be acknowledged and processed. In this study, we also explored the role of other variables conceptually related to the broad concept of psychological inflexibility, which has been defined as an individual's inability of choosing behavior in line with identified values and goals due to difficulties in connecting with the present moment fully, following rigid rules and attempting to control or avoid difficult internal experiences (Hayes, Strosahl, & Wilson, 1999; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Specifically, we explored whether experiential avoidance, decentering, and fears of compassion would also mediate the link between alexithymia and the experience of positive emotions. A detailed exploration of these concepts is provided in the study (Study VI).

In the *third* and final study of this chapter, our main goal was to explore the physiological correlates of positive affect, which was shown to be an important variable in the previous studies. To this aim, we used Heart Rate Variability (HRV), a measure of the continuous interplay between sympathetic and parasympathetic influences on the heart rate. In this paper, we focus on changes in parasympathetic activity, particularly activity of the vagus nerve, which can be estimated by measuring the high-frequency band of heart rate variability (HF-HRV; e.g., Task-Force, 1996). Increases in this measure reflect increased parasympathetic or vagal (inhibitory) control over sympathetic nervous system activity, and thus reflect greater autonomic flexibility (e.g.,

Thayer & Lane, 2009). Because the ability to regulate emotion is closely related to the ability to flexibly shape perceptual and affective brain processes in response to changing contexts, HRV has been linked to emotion regulation (Appelhans and Luecken, 2006; Thayer & Lane, 2009; Thayer & Brosschot, 2005). Some studies have been examined the relationship between positive emotions and measures of HRV, and overall results point that high resting HRV may be associated with positive emotionality. Preliminary research has also been suggesting that increased heart rate variability may be associated with compassion (e.g., Kogan et al., 2014) and self-compassion (Svendsen et al., 2016), suggesting potential interrelations between these cognitive, affective, and physiological processes (Study VII).

3. Compassion in Action: Assessment and Intervention

Compassion is elicited by the perception of suffering. By its own definition, suffering is the antecedent of compassion. Healthcare professionals continually witness the suffering and death of their patients and families. Although alleviation of human suffering is at the heart of professional caregivers' work, it has been suggested that this very work is also a predisposition to psychological distress, namely compassion fatigue (Figley, 1995).

In the final set of studies of the present work, we turn to the exploration of the concept of compassion fatigue, a term which has been poorly defined in the literature and, as we will argue and as others have (e.g., Klimecki & Singer, 2012), may be misleading. Accordingly, while empathy may be a vulnerability factor for the development of compassion fatigue, we believe that compassion may, in contrast, be a protective factor. This reasoning is based on recent findings from the field of neuroscience which have been unveiling important distinctions between the states of empathy and compassion (e.g., Klimecki, Leiberg, Lamm, & Singer, 2013; Klimecki, Leiberg, Ricard, & Singer 2013).

The general aim of the first four studies was to explore the role of psychological dispositions in the experience of compassion fatigue, and also in burnout and compassion satisfaction, in nurses. Compassion satisfaction has been defined as a sense of satisfaction derived from helping others (Stamm, 2010).

Most of the studies examining work stress-related problems (such as compassion fatigue and burnout) have examined mostly demographic variables and organizational or institutional factors (such as caseload, training, and supervision, etc.). Fewer studies, in contrast, have looked at intrapersonal factors, such as empathy or self-compassion.

In the **first** study, we explored the psychometric of the Portuguese version of Professional Quality of Life Scale - 5 (ProQOL-5; Stamm, 2009; Portuguese version by Carvalho, 2011) in a sample of Portuguese nurses. Notwithstanding its wide use, there are few studies exploring the factorial structure of this scale. To our knowledge, only one published study using a sample of Italian accident and emergency workers provided a contribution for the factor validity of the scale (Palestini, Prati, Pietrantonio, & Cicognani, 2009). The cultural adaption and validation study of the Portuguese version of the ProQOL-5 was conducted in a sample of 73 palliative caregivers (Carvalho, 2011). Despite being a preliminary contribution to the validation of the ProQOL to the Portuguese population, the sample used was small, specific to a palliative setting, and included mixed healthcare professionals, such as physicians, nurses, and psychologists. Also, a detailed exploration of the factorial structure of the scale was not conducted (Study VIII).

In the **second** study, we aimed to empirically test the hypothesis that empathy would be a vulnerability factor for the development of compassion fatigue, but not burnout, in line with the literature reviewed in the Introduction. Current approaches converge to consider empathy not as a single ability but a complex socio-emotional competency that encompasses different but

interacting components (e.g., Decety & Svetlova, 2012). Having an idea of the other person's thoughts, feelings and motives can be considered the cognitive component of empathy (perspective taking). There are two main categories of affective empathy responses: self-oriented responses are feelings of distress and anxiety when witnessing another's negative state (personal distress), whereas other-focused responses are feelings that focus on the well-being of the other person (empathic concern; Davis, 1983). These distinctions are important because they are related to different consequences. For example, while self-oriented feelings will motivate the observer to reduce his/her own distress, other-focused feelings will motivate the observer to focus on the needs of the other and to provide care (Batson, 1987). Despite these important distinctions, components of empathy are rarely examined in applied research. In addition, given the role of self-compassion in emotion regulation and its relationship with psychological well-being, we also hypothesize that self-compassion would be a mediator and/or moderator of the association between empathy components and compassion fatigue (Study IX).

In the *third* study, we aimed to further explore the impact of empathy on compassion fatigue and burnout. Particularly, we wanted to explore the concept of empathy-based guilt in this population. Previous theoretical and empirical work (e.g., Hoffman, 2000; Leith & Baumeister, 1998) suggests that empathy is closely related to guilt so that more empathic people are more likely to experience guilt than less empathic people. Empathy-based guilt, often nonpathogenic, is necessary for many social situations. Empathy-based guilt becomes pathogenic when it leads to cognitive errors in understanding causality. When people who feel empathy at witnessing another's suffering falsely believe they cause others' problems, or falsely believe that they have the means to relieve the person of suffering, they have erred in their analysis of the situation. Pathogenic guilt is thus associated with incorrect explanations of causality and can result in maladaptive outcomes, such as psychopathology and pathological acts of altruism (O'Connor et al., 2012). In certain jobs

where one is responsible for others' lives and well-being, such as nursing, guilt can be especially acute when things go wrong. However, few studies to date explored the impact of feelings of guilt on nurses' well-being. In this study, we aim to test a model in which we hypothesize that pathogenic empathy-based guilt mediates the association between empathy and compassion fatigue/burnout symptoms (Study X).

In the **fourth** study, we were interested in exploring the protective role of empathy, self-compassion, and psychological flexibility on oncology nurses' compassion fatigue and burnout symptoms. As suggested in the Introduction, oncology nursing is one of the areas most affected by work-related stress. Along with pressures common to other nursing specialties, oncology and palliative nurses face additional stressors by the nature of their caregiving work with this particular population. With this in mind, we were interested in testing whether several psychological characteristics could be associated with less compassion fatigue and burnout symptoms in this population. We hypothesize that some empathy dimensions, self-compassion, and less psychological inflexibility would be related to fewer symptoms of compassion fatigue and burnout, and more compassion satisfaction (Study XI).

The last two studies describe the results of the development and implementation of a mindfulness-based intervention for reducing compassion fatigue and burnout in oncology nurses.

In the **fifth** study, we aimed to explore the efficacy of a program that uses mindfulness and compassion for reducing compassion fatigue and burnout in a sample of oncology nurses. It is hypothesized that, compared to a wait-list comparison group, participants receiving the mindfulness-based intervention would experience decreases in symptoms of burnout and compassion fatigue, and also depression, anxiety, and stress, and increases in satisfaction with life. Moreover, we hypothesized that the intervention would promote increases in trait mindfulness and self-compassion, and decreases in rumination and psychological inflexibility (Study XII).

The *sixth* and final study of this work aimed to explore the mechanisms underlying the effects of the mindfulness-based intervention. While there is extensive research on the effectiveness of mindfulness-based interventions, few studies in comparison explored possible mediating mechanisms of such effects. We hypothesize that several mechanisms previously reported in the literature would be mediators of the impact of the mindfulness-based intervention on nurses' psychological well-being, namely trait mindfulness, self-compassion, and psychological inflexibility (Study XIII).

2.2. General Methodology

The methodology and samples used for each study are described in detail in the studies, and thus we decided to include only a general overview of the methods and statistical procedures used to avoid replicating information.

Study Design

In general, two major populations are represented in the studies of the present work. From Study 1 to Study 7, we recruited participants from the general population, using mainly non-probability sampling methods. In Studies 8 to 11, we used a sample of nurses from several nursing specialties, which were recruited from several hospitals based in the North and Centre regions of Portugal. In Studies 12 and 13 we used a sample of oncology nurses from two major oncology hospitals from Portugal.

To achieve our aims and purposes, we employed several methodological procedures of study design. For the Studies 1, 5, and 6-11, we used a cross-sectional design. In the Studies 2-5, we employed longitudinal designs which, although not conclusively demonstrating causality, provide more confidence in interpreting the results. In Studies 12 and 13 we used a non-randomized, wait-listed controlled trial design. Participants that agreed to take part in the study, self-selected to one of two conditions: the Experimental Condition,

which consisted of attending a weekly mindfulness-based intervention; and a wait-list control condition. Both groups provided self-report measures at baseline and after the intervention period.

Statistical Analyses

Several statistical procedures were used in the studies. Descriptive statistics were calculated in all studies mainly to describe samples' characteristics and the measures in study.

We calculated Pearson's correlation coefficient in the majority of studies, to explore the magnitude and direction of the association between two variables. Partial correlations were used when we were interested in the size of the unique portion of variance removing the portion of variance that was common between two variables. Multiple regression analyses were also performed in most of the studies when we wanted to predict one variable from several variables.

To compare means between two variables, we used Student's *t* test for independent and for paired-samples, and one-way Analysis of Variance (ANOVA) to compare more than two means.

Mixed design ANOVAs were used to compare several means when there were two independent variables, and one of them was measured using the same participants and the other was measured using different participants.

For the exploratory study of the factorial structure of self-report measures, we used Principal Components Analysis (PCA) and Factor Analysis with Maximum Likelihood (ML) estimation.

To further explore the goodness-of-fit of factorial structures of self-report measures to the data, we conducted confirmatory factor analysis (CFA), using structural equation modeling with the maximum likelihood estimation method.

Scales' internal consistency was assessed using Cronbach's alpha and composite reliability.

In Studies III and IV we used mixed linear models to estimate change in compassionate and self-image goals over time and whether trait mindfulness and self-compassion would predict such changes. These models are appropriate to handle data where observations are not independent, as is the case in repeated measures, correctly modelling correlated error (Twisk, 2006).

To test mediation models, the Hayes' PROCESS macro was used (Hayes, 2013). Direct and indirect effects were computed using a series of ordinary least squares regressions and the bootstrapping procedure. In one study we used Path Analysis to test mediational models. To test within-subjects' mediation effects, we used the macro MEMORE for SPSS, a novel approach that allows testing mediation effects in two-condition within-participants' designs, i.e., when the data come from repeated measurement of the same people on variables in the mediation process.

Chapter 3

EMPIRICAL STUDIES

Chapter 3

EMPIRICAL STUDIES

PART 1: Compassionate Goals versus Self-Image Goals

CONTENTS

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Study IV. Mindfulness and self-compassion predict compassionate and self-image goal orientations

Self-centred or other-centred: The factor structure of the Compassionate and Self-image Goals Scale and its relation with self-compassion and fears of compassion¹

Abstract

Recent research has been suggesting that people can have different motivational approaches and goals in their relationships, and that such motivations and goals are associated with distinct outcomes in terms of relationship quality and well-being.

This study set out to explore the dimensionality of the newly developed Compassionate and Self-image Goals Scale (CSIGS), in two independent samples of Portuguese university students (Sample 1 = 291; Sample 2 = 307). This scale was designed to measure the extent to which people hold more compassionate or self-image goals regarding their relationships. We also wanted to explore whether compassionate and self-image goals would be differently associated with self-compassion, fears of compassion, shame and psychological distress.

Results suggest that the CSIGS has two distinct factors (Compassionate Goals and Self-image Goals), and good psychometric properties. We also found that having compassionate goals is associated with self-compassion, less fears of compassion, less external shame and less depressive, anxious and stress symptoms, while having self-image goals was associated with less self-compassion and with fears of compassion, shame and psychological distress.

An interpretation of these results is presented and the major implications of this study are discussed.

¹ Duarte, J., & Pinto-Gouveia, J. (2016). Self-centred or other-centred: The factor structure of the Compassionate and Self-image Goals Scale and its relation with self-compassion, fears of compassion and psychological distress. *Manuscript submitted for publication*

Keywords: Compassionate and self-image goals; exploratory and confirmatory factor analysis; compassion; psychometric properties.

Introduction

The need to belong is a fundamental human motivation. Human beings have a pervasive drive to form and maintain lasting, positive and significant interpersonal relationships (Baumeister & Leary, 1995). This fundamental interpersonal motive presumably has an evolutionary basis. In fact, the desire to form and maintain social bonds would have both survival and reproductive benefits (Buss, 1990). Given this evolutionary advantage, human beings should be hardwired with a set of mechanisms that would drive them to belong to social groups and maintain lasting relationships. Such mechanisms would include a tendency to experience distress when deprived of social contact and a tendency to feel positive affect from social contact. We easily create bonds with others because it's associated with positive emotions; contrary, breaking them is associated with negative emotions, which makes it the reason we try to avoid it (Baumeister & Leary, 1995).

Given the importance of belongingness not only for one's well-being but also for survival, humans may be equipped with several resources that would allow them to check their social acceptance for avoiding social devaluation and rejection. In fact, according to sociometer theory (Leary & Baumeister, 2000), self-esteem may have evolved as a monitor of relational value, and thus lower self-esteem would signal that one's relational value has decreased and thus placing the individual at risk for social exclusion. This signal would thus guide people to become more socially acceptable by constructing desired images of the self, in their own eyes and others', which would ultimately lead to social inclusion. However, recent research (see Crocker, 2011 for a review; Baumeister, Campbell, Krueger, & Vohs, 2003) has been suggesting that often when people try to get others to recognize their desired qualities, they may be at risk of creating the opposite effect – others' regard

for them declines, relationships become less supportive, and well-being drops. Instead, when people act genuinely out of concern for others' well-being and focus on others' needs they create more positive outcomes for the self.

The aim of the present study is to explore the dimensionality of a new scale measuring two types of interpersonal goals - self-image and compassionate goals – and its relationship with self-compassion, fears of compassion, shame and distress symptoms. These goals reflect distinct motivational perspectives on the relationship between self and others.

Self-Image Goals

People constantly want to shape the impressions others have of them, trying to convey their positive qualities and to “hide” what they and others perceive as being failures or more undesirable qualities (Schlenker, 2003). The impressions people want to create to others may vary depending on the situation and the person (e.g., trying to be chosen for a job, coming across as attractive and interesting for a date, wanting to look reliable and likable for a friendship), but there is always an underlying attempt to control how others view the self (Schlenker & Leary, 1982). When people want to create, maintain and defend desirable images of the self they are said to have self-image goals (Crocker & Canevello, 2008). Self-image goals reflect an egosystem motivational perspective of the relation between self and others (Crocker & Canevello, 2011).

Self-image goals may contribute to psychological distress both directly and also through their negative impact on relationships. On the one hand, it has been shown that self-image goals are associated with more anxiety, feelings of loneliness, fear and confusion (Crocker & Canevello, 2008). This may be especially so when people are uncertain that they are succeeding in creating a desirable image of the self (Crocker, 2011). On the other hand, given that self-image goals have negative consequences for relationships (especially long-term relationships) this might lead to anxiety and depression as their

needs are not being met by others. A study with roommate dyads found support for this (Crocker & Canevello, 2008; study 2). If people are focusing on controlling others' view of them they may not pay attention to others' needs and so not respond to them. Also, other people may not reciprocate support they think may be motivated by self-interest. In this way, people with self-image goals may receive less support from others and their relationships quality worsens (Crocker & Canevello, 2008).

Compassionate Goals

When people hold compassionate goals they are focused on providing support for others, not as a way of acquiring a desirable outcome for them, but genuinely out of concern for others' well-being (Crocker & Canevello, 2008).

When people transcend the self, caring less about how others view them and more about the well-being of others, others are most likely to regard them highly and provide support, which will likely improve relationship quality. Consequently, well-being improves. In other words, people are more likely to get what they want when they stop trying to get it by convincing others to see them in desired ways, and start trying to contribute to the well-being of others (Crocker & Canevello, 2008). The more people feel supported and understood, the more they feel close and the more they want to support them in return (Brown & Brown, 2006). This suggests that when people genuinely care about other's well-being and respond to their needs, they end up nurturing closer relationships (Crocker & Canevello, 2008). It is suggested that people with compassionate goals have an ecosystem motivational perspective, i.e., they see others as interconnected and genuinely care about their welfare and needs. It is also worth noting that people can, and do have both of these goals, and the activation of one or the other may be dependent on the context (Crocker, 2011).

Given the importance of interpersonal goals on relationships and well-being, this study sets out to explore the factorial structure of the Compassionate and Self-Image Goals Scale (Crocker & Canevello, 2008) in two independent

samples. Also, we wanted to test how these goals may be differently related to several constructs theoretically related. It is expected that holding self-image goals, i.e., create a positive image of the self, paradoxically leads to less mental health and well-being; on the contrary, it is hypothesized that focusing on promoting the well-being of others may have in fact positive effects for the self.

Method

Participants

The sample used for Exploratory Factor Analysis was composed by 291 university students. The majority of the sample was female ($n = 241$; 82.8%) compared to 17.2% male ($n = 50$), with ages ranging from 18 to 55 ($M = 21.65$; $SD = 4.17$), and years in school from 12 to 19 ($M = 13.47$; $SD = 1.51$). Regarding marital status, 96.9% ($n = 282$) were single, 1.7% ($n = 5$) were married and 0.7% were divorced ($n = 2$).

The sample used for the Confirmatory Factor Analysis was composed by 307 university students. Within the sample, 185 (60.3%) were female and 122 (39.7%) were male, with ages ranging from 18 to 27 ($M = 21.21$; $SD = 1.87$) with an average of 13.94 ($SD = 5.20$) years in school. Regarding marital status, 99.7% ($n = 306$) were single and only 1 was married (0.3%). There were no significant differences between the samples regarding demographic characteristics, with the exception of gender.

Procedure

Participants were recruited in several Portuguese universities. Students were informed about the study aims and were asked to sign an informed consent form previous to their participation, in which essential information about the

study and confidentiality was presented. It took 30 minutes on average to complete the self-report questionnaires.

The validation of the Compassionate and Self-Image Goals Scale followed the specific procedures for scale validation. Initially, each item was translated and adapted for the Portuguese language by two experts in the field fluent in both languages. Then, back translation was performed by an independent person who was not involved in, neither knew about the investigation, and also fluent in English and Portuguese. The back translation version was then compared with the original scale to assess consistency. Thus, a final version emerged which was used in a pilot study with a 20-people sample in order to test the comprehensibility of the instrument; each participant left a comment and/or suggestion about the items comprising the scale. Based on the back translation and the pilot study, a final version of the Portuguese Compassionate and Self-Image Goals Scale was obtained.

Measures

Compassionate and Self-Image Goals (CSIG; Crocker & Canevello, 2008; Portuguese Version by Pinto-Gouveia, Duarte & Lopes, 2014). The CSIG is a 13-item scale that uses a 5-point rating scale (1 = *not at all* to 5 = *always*) to assess the extent to which subjects hold more compassionate or self-image regarding their friendships. There are 7 compassionate goals' items (i.e., "have compassion for others' mistakes and weaknesses") and 6 self-image goals' items (i.e., "avoid the possibility of being wrong"). All items begin with: "In the past week, in the area of friendship, how much did you want to or try to..." In the original study Cronbach's Alpha was .83 for Self-Image Goals and .90 for Compassionate Goals.

Self-Compassion Scale (SCS; Neff, 2003; Portuguese version by Castilho & Pinto-Gouveia, 2011). The Self-Compassion Scale measures the way people act towards themselves in a number of situations. It's composed by 6 subscales,

with a total of 26 items: (1) self-kindness (“I try to be loving towards myself when I’m feeling emotional pain”); (2) Self-Judgment (“When times are really difficult, I tend to be tough on myself”); (3) Common Humanity (“When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people”); (4) Isolation (“When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world”); (5) Mindfulness (“When I’m feeling down I try to approach my feelings with curiosity and openness”); and (6) Over-identification (“When I’m feeling down I tend to obsess and fixate on everything that’s wrong”). A total score can be computed by reversing the items of the negative factors. In past research the SCS has demonstrated good internal consistency (original version Cronbach’s $\alpha = .92$; Portuguese version Cronbach’s $\alpha = .94$).

Fears of Compassion Scales (FCS; Gilbert, McEwan, Matos & Rivis, 2010; Portuguese version by Matos, Pinto-Gouveia, Duarte, & Simões, 2014). The FCS assesses the way people see and feel about compassion in three major areas of their lives: Expressing compassion for others; Responding to compassion from others; and Expressing kindness and compassion towards themselves. It is thus composed by of 3 subscales: (1) Fear of compassion for others (i.e., “People will take advantage of you if you are too forgiving and compassionate”); (2) Fear of compassion from others (i.e., “Wanting others to be kind to oneself is a weakness”); (3) Fear of compassion for self (i.e., “When I try and feel kind and warm to myself I just feel kind of empty”). Participants rate each statement using a 5-point Likert scale (0 = *don’t agree at all* to 4 = *completely agree*). In the original and the Portuguese version studies, the Cronbach’s alphas were .72/.88 for fears expressing compassion for others, .80/.91 for fears of receiving compassion from others, and .83/.94 for fears in giving compassion to self, respectively.

Other as Shamer Scale - 2 (OAS-2; Matos, Pinto-Gouveia, Gilbert, Duarte & Figueiredo, 2015). The OAS-2 is a short version of the 18-item Other as Shamer Scale (Goss, Gilbert & Alan (1994), composed by 8 items that assess

external shame, which is defined as the belief that others have negative views of the self. Items include “Other people see me as not measuring up to them” and “People see me as unimportant compared to others”. Participants rate each statement on a 5-point Likert scale (0 = *Never* to 4 = *Almost always*). A Cronbach’s alpha of .82 has been reported for this version.

Depression, Anxiety, Stress Scale – 21 (DASS-21; Lovibond & Lovibond, 1995; Portuguese version by Pais-Ribeiro, Honrado, & Leal, 2004). The DASS-21 comprises 3 subscales, each with 7 items. The Depression subscale measures low self-esteem and motivation, associated with feelings of hopelessness towards life goals. The Anxiety subscale assesses the connection between persistent anxiety state and the subjective feeling of fear as a response. The Stress subscale measures high levels of hyperarousal and tension, associated with low levels of resistance to frustration and disappointment. Participants are asked to indicate the degree to which each statement applied to them in the last week. The DASS-21 uses a 4-point rating scale (0 = *Did not apply to me at all* to 3 = *Applied to me very much, or most of the time*). The Portuguese version showed internal consistency (Depression subscale Cronbach’s $\alpha = .85$; Anxiety subscale Cronbach’s $\alpha = .74$; Stress subscale Cronbach’s $\alpha = .81$).

Analytic Procedure

The statistical procedures were computed using Software PASW Statistics (v.20; SPSS Inc., Chicago, IL) and Software AMOS (v.19; SPSS Inc., Chicago, IL). Initially, several descriptive statistics (means, standard deviations and measures of dispersion) were calculated. Also, Cronbach's alphas were calculated in order to assess internal consistency of the variables in study.

For the exploratory study of the factorial structure of the CSIGS we used Principal Components Analysis (PCA) with oblimin rotation, which allows for the factors to be correlated. Items were eliminated based on low factor loadings ($< .40$) and/or cross-loadings between the factors (Costello &

Osborne, 2005). Since the goal of EFA is usually to infer or explore the likely factor structure of an instrument when used within a particular population, it is important to know whether a solution within a particular data set is likely to be observed within another, similar data set. Thus, to further explore the dimensionality of the CSIGS, and to test whether the factorial structure found would have a good fit to the data, we conducted a Confirmatory Factor Analysis (CFA) in a different sample from the Portuguese population. Structural equation modelling was used, with the maximum likelihood estimation method. An evaluation of skewness (Sk) and kurtosis (Ku) was conducted to assess the assumption of normality of the items. According to Kline (2005), $Sk > |3|$ and $Ku > |10|$ indicate severe deviations to normal distribution. The quadratic Mahalanobis distance (MD^2) was analysed to check for possible outliers. Several indicators should be considered when conducting a CFA: fit indices of the model, factor loadings and discriminant validity. The following fit statistics were used to assess the models' global adjustment: normed chi-square (χ^2/df), goodness-of-fit index (GFI), Tucker–Lewis index (TLI), comparative fit index (CFI) and root mean square error of approximation (RMSEA). A good fit is obtained when the χ^2/df is 2 or lower, the CFI, GFI and TLI are .90 or higher and the RMSEA is .10 or lower. In addition, it is expected that all items of the factor present factor loadings with values of $\lambda \geq .50$. Finally, we explored the discriminant validity of the measure, defined as the ability of a latent variable to account for more variance in the observed variables associated with it than (a) measurement error or similar external, unmeasured influences or (b) other constructs within the conceptual framework. To assess the discriminant validity, we compared the average variance extracted (AVE) of each construct with the shared variance between constructs. For any two constructs, A and B, the AVE for A and the AVE for B both need to be larger than the shared variance (i.e., square of the correlation) between A and B (Hair, Anderson, Tatham, & Black, 1998). Regarding scale reliability, we computed Cronbach's alpha and composite reliability, which provides a much less biased estimate of reliability than alpha and is more

appropriate for multidimensional scales (Marôco, 2010). Partial Pearson product–moment correlation coefficients were used to assess convergent validity of the CSIGS with other measures.

Results

Descriptive Statistics

Descriptive statistics of the variables in the study for the total sample are presented in Table 1.

Table 1

Mean Standard Deviation, Skewness, Kurtosis and Cronbach's Alpha for the Variables in Study (N = 598)

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	α
Compassionate Goals	3.64	.61	-.30	.15	.76
Self-Image Goals	3.00	.72	-.27	-.14	.75
Fears of Compassion					
for others	2.08	.76	-.14	-.18	.87
from others	1.18	.70	.37	-.20	.90
for the Self	.84	.68	.77	.14	.93
Self-compassion					
Kindness	2.89	.70	.22	.33	.82
Judgement	2.82	.78	.17	-.05	.83
Common Humanity	3.18	.77	-.03	-.17	.77
Isolation	2.61	.81	.19	-.13	.78
Mindfulness	3.08	.73	.07	-.03	.76
Over-identification	2.81	.78	.15	-.11	.75
Total	3.14	.57	.02	.50	.72
External Shame	.87	.65	.69	.40	.91
Depression	.51	.56	1.45	1.66	.89
Anxiety	.54	.56	1.41	1.74	.85
Stress	.97	.67	.60	-.02	.89

Exploratory Factor Analysis

An EFA, with Principal Components and with oblimin rotation, was conducted to explore whether the items of the CSIGS would load on the intended factors (Compassionate Goals and Self-Image Goals).

According to the rule eigenvalue > 1 , 3 factors were initially extracted, explaining 55% of the total variance. The KMO was .843 and Bartlett's Test of Sphericity was significant. However, the analysis of the items' loadings on the three factors extracted led us to conclude that a three-factor structure wasn't appropriate (i.e., it didn't reflect the theoretical model and there were several cross-loadings). Also, the examination of the initial Scree Plot suggested a two-factor structure.

Thus, we specified the extraction of a two-factor solution. These two factors explained 47% of the variance, and were similar to the original factors, with few exceptions. Specifically, one compassionate goals' item ("Avoid doing things that aren't helpful to me or others") loaded more on the self-image goals factor (.64), and two compassionate goals' items (items 4 and 10) loaded on both factors, although higher on the intended factor. All items loaded highly on the factors ($\geq .45$). The correlation between compassionate and self-image goals was .32.

We then conducted another EFA, excluding items 1, 4 and 10. Deleting these items resulted in a clearer factor structure, comparable to the original scale. This solution explained 51% of the total variance. The KMO was .798 and Bartlett's Test of Sphericity was significant. All items presented high factor loadings ($> .55$) on the intended factors. The correlation between compassionate and self-image goals was .27. All items' standardized loadings and communalities regarding the initial and final solutions are presented in Table 2.

Table 2

Summary of Factor Loadings and Communalities of the Compassionate and Self-Image Goals Scale (CSIGS) (n = 291)

Item	Initial Solution			Final Solution		
	1	2	h ²	1	2	h ²
2. avoid the possibility of being wrong	.75		.55	.71		.51
7. avoid taking risks or making mistakes	.73		.53	.74		.54
6. avoid being rejected by others	.68		.47	.71		.50
9. avoid showing your weaknesses	.65		.39	.68		.45
1. avoid doing things that aren't helpful to me or others	.64		.43			
3. get others to recognize or acknowledge your positive qualities	.59		.41	.61		.45
13. convince others that you are right	.57		.31	.57		.32
11. be supportive of others		.85	.66		.87	.72
12. make a positive difference in someone else's life		.75	.54		.78	.61
5. have compassion for others' mistakes and weaknesses		.73	.51		.71	.50
8. be constructive in your comments to others		.65	.47		.65	.48
10. avoid doing anything that would be harmful to others	.32	.51	.47			
4. avoid being selfish or self-centred	.31	.45	.39			

Note. 1 - Self-Image Goals; 2 -Compassionate Goals; h² = communalities; Items 1, 4 and 10 were eliminated from the initial solution to the final solution

Confirmatory Factor Analysis

Next, we conducted a Confirmatory Factor Analysis to test whether the two-factor solution obtained with 10 items would fit a different sample from the Portuguese population. We specified a model in which the six self-image

goals items loaded on the Self-image Goals factor only, and the four compassionate goals items loaded on the Compassionate Goals factor only (Figure 1).

Model fit indices indicated that, in general, the two-factor model showed good fit to the data, $\chi^2/df = 3.013$, $p < .001$; TLI = .87; CFI = .90; RMSEA = .081; $p = .003$. Also, the magnitudes and order of factor loadings were roughly the same as found in EFA.

We also tested the model fit of the original 13-item solution. Results indicated a poorer fit to the data ($\chi^2/df = 3.937$, $p < .001$; TLI = .78; CFI = .82; RMSEA = .098; $p < .000$). Modification indexes suggested that the correlation between items 1 and 2 residuals would improve model's fit, which is in accordance with the results found in the exploratory factor analysis suggesting that item 1 is more related to the Self-Image Goals' factor. In general, these results point to the replicability of the EFA results.

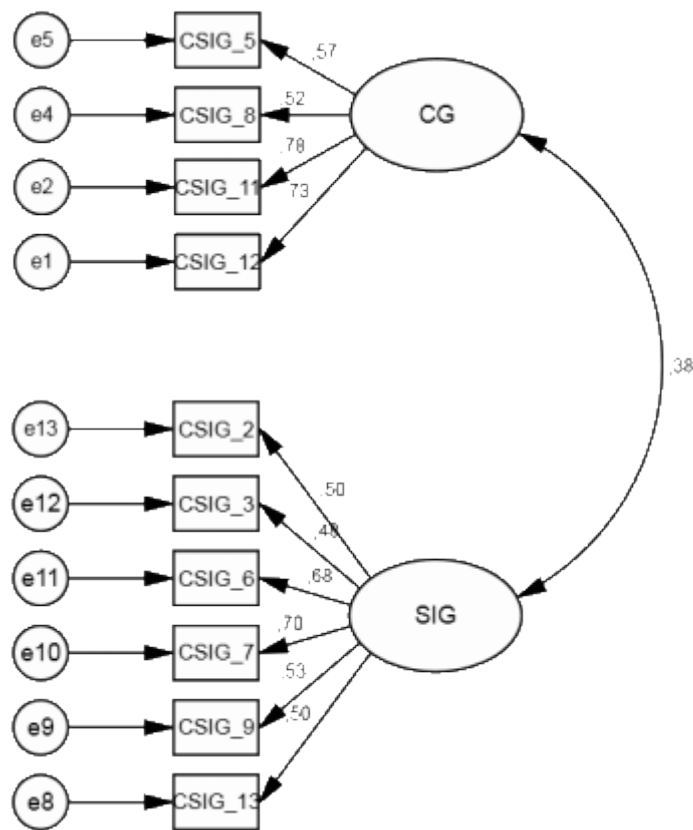


Figure 1. Standardized factor loadings of the 10 items of the Compassionate and Self-Image Goals Scale on the respective factor, and correlation between the latent variables. Rectangles represent the observed variables (scale's items) and ellipses represent the latent variables (CG = Compassionate Goals and SIG = Self-Image Goals). Error terms are represented by circles. $\chi^2/df = 3.013$, $p < .001$; TLI = .87; CFI = .90; RMSEA = .081; $p = .003$. $n = 307$

Scale's reliability and validity.

Items' standardized loadings (λ) ranged from .48 to .78. The AVE was .55 for Compassionate Goals and .43 for Self-Image Goals (this was close to the cutoff point of .50). Discriminant validity was assessed through the comparison between the AVE and the square correlation between the factors ($r^2 = .14$). These results indicate good discriminant validity between Compassionate Goals and Self-Image Goals, suggesting that they are measuring related but different constructs.

The composite reliability was very good ($> .70$), with .74 for Compassionate Goals, and .84 for Self-Image Goals. Internal consistency assessed through

Cronbach's alpha was .74 for Compassionate Goals and .76 for Self-Image Goals. Item's properties (means, standard deviations, correlation coefficients with total scale and Cronbach's Alpha if item deleted) are presented on Table 3.

Table 3
Means, Standard Deviations, Correlation Coefficients with Total Scale and Cronbach's Alpha (α) if Item Deleted for CSIGS Items (N = 598)

	<i>M</i>	<i>SD</i>	Corrected item- total correlation	α if item deleted
Item 2	2.95	1.07	.44	.74
Item 3	3.05	1.00	.48	.74
Item 5	3.76	.84	.32	.76
Item 6	2.79	1.19	.51	.73
Item 7	3.22	1.07	.53	.73
Item 8	3.69	.80	.44	.74
Item 9	3.12	1.14	.40	.75
Item 11	4.04	.77	.36	.75
Item 12	3.86	.87	.41	.75
Item 13	2.86	.99	.38	.75

Convergent Validity

Convergent validity was assessed by computing partial Pearson correlations between CSIGS and self-report measures that evaluate theoretically related constructs, such as self-compassion and fears of compassion, external shame, and also depression anxiety and stress symptoms. Partial correlations were used to explore the size of the unique variances. So, in the correlations for compassionate goals the effect of self-image goals was controlled for, and vice versa. Overall, the pattern of correlations found. Compassionate goals were positively associated with self-compassion, and negatively associated with

fears of compassion, external shame and psychopathological symptoms, while self-image goals showed an opposite pattern of correlations (Table 4).

Table 4
Partial Pearson Product-moment Correlations Between Self-Image and Compassionate Goals and the other Variables in Study (N = 593)

	Self-Image Goals	Compassionate Goals
Self-Compassion		
Kindness	-.26**	.25**
Judgment	.33**	-.11*
Common-Humanity	-.22**	.29**
Isolation	.32**	-.15**
Mindfulness	-.22**	.25**
Over-Identification	.25**	-.11*
Total	-.36**	.26**
Fears of Compassion		
For Others	.33**	-.14**
From Others	.33**	-.23**
For Self	.32**	-.24**
External Shame	.20**	-.17**
Depression	.24**	-.17**
Anxiety	.25**	-.19**
Stress	.25**	-.17**

Note. * $p < .01$; ** $p < .05$

Discussion

This study is rooted in a recent line of research that has been suggesting that the motivations underlying interpersonal behaviours may lead to different outcomes, both to the giver and to the receiver. Thus, more important than the behaviour itself may be whether the motivation driving such behaviour is more self-referent and self-focused, or predominantly focused on the well-being of others. It has been showed that such motivational systems have

different consequences for relationship quality and well-being. Specifically, self-image goals have negative effects on relationship quality and decrease mental health whereas compassionate goals focused on the well-being of others have positive effects on interpersonal relationships and mental health (Crocker, 2011).

The main goal of the present study was to explore whether the two-factor structure of the Compassionate and Self-Image Goals Scale would be replicated in two samples of Portuguese college students. We also wanted to explore whether interpersonal goals would correlate differently with self-compassion, fears of compassion, shame and psychological distress.

Exploratory Factor Analysis suggested that the two-factor structure originally proposed was almost completely replicated in our sample, except for three items. Specifically, one compassionate goals' item (item 1) loaded on the unintended factor and two compassionate goals' items (items 4 and 10) loaded on both factors. This led us to drop these items which resulted in a clearer factor structure. Item 1 ("Avoid things that aren't helpful to me or others") loaded more on the self-image goals rather than in the compassionate goals factor, which might be due to a misinterpretation of the content of the item. In fact, it could be that participants may have responded to the first part of the sentence (avoidance doing things that aren't helpful to *me*), which seems to reflect a more egoistic approach, than to the last part, which reflects a more altruistic approach. This finding is in accordance with the results found by Niiya, Crocker, & Mischkowski (2014) in a sample of Japanese students. Also, items 4 ("Avoid being selfish or self-centred") and 10 ("Avoid doing anything that would be harmful to others"), loaded significantly on both factors. It might be the case that people can avoid being self-centred and cause harm to others to create and maintain a positive and desirable image of the self in the eyes of others, and not so much because one truly cares about the welfare of others, because being selfish or disrespectful of others is judged negatively by the society.

The 10-item factor solution was further subjected to a Confirmatory Factor Analysis in a different sample of Portuguese college students. Overall, results indicate that the 10-item, two-factor structure has good fit to the data. The scale also presented good psychometric properties, namely factorial validity, internal consistency, discriminant validity (compassionate goals and self-image goals are clearly distinct factors) and convergent validity with other related measures.

It should be noted that the correlation between the factors was .38. Positive correlations between the two goals were also found in previous studies (Crocker & Canevello, 2008; Niiya et al., 2013), suggesting that compassion and self-image goals are not mutually exclusive. Also, although people may differ in their tendencies to be motivated by egosystem or ecosystem goals, we all have the capacity for both egosystem and ecosystem goals, and to shift between these goals, probably depending on the context. In fact, there may be situations where having more self-image goals would be the most appropriate approach. However, because there is shared method variance between the two factors, conclusions regarding their correlation should be cautious.

The scale also showed convergent validity with other constructs that we hypothesized would be associated with having compassionate and self-image goals. In general, the pattern of correlations found supports convergent validity of the measure. Specifically, Compassionate Goals were positively associated with self-kindness, common humanity, mindfulness and self-compassion in general, and negatively associated with feelings of shame, fears of compassion, and depression, anxiety and stress symptoms. By contrast, Self-Image Goals were positively associated with shame, fears of compassion, depression, anxiety, stress, self-judgment, isolation and over-identification, and negatively with self-kindness, common humanity, mindfulness and self-compassion in general. These results show that holding a more other-centred motivation seems to be related to a more compassionate and caring self-to-

self relation. Also, participants scoring higher on compassionate goals reported less negative beliefs about being compassionate with oneself and others and about receiving compassion from others, which can be explained by a greater sense of interconnectedness that is likely to help build social bonds and create constructive relationships. All this, in turn, would contribute to more happiness and well-being.

Holding more self-centred motivations, in contrast, seems to be associated with being more self-critic, feeling more isolated when in distress and over-identifying with negative thoughts and emotions. Self-criticism may function as an internal monitoring of one's actions, preventing the self from making mistakes and/or improving the self, so that it would be more desirable in the eyes of others. Such self-centred approach, however, can lead to a sense of isolation by preventing one to see that others also have faults and struggle when facing setbacks. Self-image goals were also associated with negative beliefs about giving and received compassion probably because such individuals fear they will look dependable and vulnerable to the eyes of others which is not in line with the positive image they so hard try to pass on. However, avoiding receiving and giving compassion and support to others may ultimately lead to feelings of isolation and psychological distress (e.g., depression, anxiety and stress). Also, despite all efforts to create a positive and desirable image to others, people with self-image goals believe others hold negative and shaming views of them.

Although this study supports the use of CSIGS, several limitations should be taken into account and these relate mostly to the nature of the sample. In fact, only college students were used in this study, which greatly limits the generalizability of the findings to other groups. However, it should be noted that similar results were found in the Niiya et al.'s study (2013) in a sample of 320 adults, pointing that compassionate and self-image goals may not vary much with age. Also, the fact that we used a different sample to confirm the factor structure gives further confidence to the results found.

We believe that this study contributes to an emerging line of research on the importance of interpersonal goals and motivations. The central tenet of this approach is that people can be more other vs. self-oriented, and these orientations may have different consequences for relationships and mental health. Several studies by Crocker and colleagues (e.g., Crocker & Canevello, 2008) have been pointing that although people often adopt self-image goals to gain acceptance and a sense of belonging or to avoid social exclusion, it might promote the opposite effect especially in close relationships, which undermines their efforts to be connected to others. Crocker (2011) suggests that this may be because, on one hand, when people are focused on their self-interests they may be unresponsiveness to others' needs, and on the other, when they do show supportive behaviours others may mistrust their true intentions assuming they don't reflect a genuine concern for their well-being. This, in turn, may lead to decreased psychological well-being.

This line of research has important implications, as it suggests that people can have an active role in creating, nurturing and/or fixing social relations and support by holding more compassionate goals in their relationships. This, in turn, may lead to more satisfying relationships and thus to more social support and well-being.

This study is an important contribution to this field of study. In general, our results indicated that the CSIGS is a reliable and valid instrument to measure interpersonal motivations. Also, we found strong replicability which gives researchers more confidence in the use of the CSIGS across different samples.

References

- Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Voh, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest*, 4(1), 1-44. doi: 10.1111/1529-1006.01431
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, 497–529.
- Buss, D. M. (1990). The evolution of anxiety and social exclusion. *Journal of Social and Clinical Psychology*, 9(2), 196-201.
- Castilho, P., & Pinto-Gouveia, J. (2011). Auto-Compaixão: Estudo da validação da versão portuguesa da Escala da Auto-Compaixão e da sua relação com as experiências adversas na infância, a comparação social e a psicopatologia. [Self-Compassion: Validation study of the Portuguese version of the Self-Compassion Scale and its relation with early negative experiences, social comparison and psychopathology]. *Psychologica*, 54, 203-231.
- Crocker, J. (2011). The paradoxical consequences of interpersonal goals: Relationships, distress, and the self. *Psychological Studies*, 56, 142-150. doi: 10.1007/s12646-011-0064-3
- Crocker, J., & Canevello, A. (2008). Creating and undermining social support in communal relationships: The role of compassionate and self-image goals. *Journal of Personality and Social Psychology*, 95, 555-575. doi: 10.1037/0022-3514.95.3.555
- Crocker, J., & Canevello, A. (2011). *Egosystem and ecosystem: Motivational perspectives on caregiving*. In S. E. Brown, M. Brown, & L. Penner, (Eds.), *Self-interest and beyond: Toward a new understanding of human caregiving*, (pp 211-223). Oxford: Oxford University Press. doi:10.1093/acprof:oso/9780195388107.003.005
- Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, 10(7), 1-9.
- Gilbert, P., McEwan, K., Matos, M., & Rivis, A. (2011). Fears of compassion: Development of three self-report measures. *Psychology and Psychotherapy: Theory, Research and Practice*, 84, 239–255.

- Goss, K., Gilbert, P., & Allan, S. (1994). An exploration of shame measures I: The Other as Shamer Scale. *Personality and Individual Differences*, 17(5), 713-717. doi: 10.1016/S0191-8869(03)00206-X
- Hair, J. E., Anderson, R. E., Tatham, R. L., & Black W. C. (1998). *Multivariate data analysis* (5th ed.). Upper Saddle River, NJ: Prentice-Hall.
- Kline, R. B. (2005). *Principles and practice of Structural Equation Modeling* (2nd ed.). New York: Guilford.
- Leary, M. R., & Baumeister, R. F. (2000). *The nature and function of self-esteem: Sociometer theory*. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 32, pp. 1–62). San Diego: Academic
- Lovibond, P. F., & Lovibond, S.H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335-343. doi: 10.1016/0005-7967(94)00075-U
- Marôco, J. (2010). *Análise de equações estruturais: Fundamentos teóricos, software e aplicações* [Structural Equation Analysis: Theoretical grounding, software and applications]. Pêro Pinheiro: ReportNumber.
- Matos, M., Pinto-Gouveia, J., Duarte, J., & Simões, D. (2014). *The Portuguese Version of the Fears of Compassion Scales*. Manuscript submitted for publication.
- Matos, M., Pinto-Gouveia, J., Gilbert, P., Duarte, C., & Figueiredo, C. (2015). The Other As Shamer Scale – 2: Development and validation of a short version of a measure of external shame. *Personality and Individual Differences*, 74, 6-11. doi:10.1016/j.paid.2014.09.037
- Neff, K. D. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity*, 2, 223-250. doi:10.1080/15298860390209035
- Niiya, Y., Crocker, J., & Mischkowski, D. (2013). Compassionate and self-image goals in the US and Japan. *Journal of Cross-Cultural Psychology*, 44, 389-405.
- Pais-Ribeiro, J. L., Honrado, A., & Leal, I. (2004). Contribuição para o estudo da adaptação portuguesa das escalas de ansiedade, depressão, stress de Lovibond e Lovibond [Contribution for the Portuguese validation of depression, anxiety and stress scales of Lovibond and Lovibond]. *Psychologica*, 36, 235–246.

- Schlenker, B. R. (2003). *Self-presentation*. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (pp. 492–518). New York: Guilford.
- Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization and model. *Psychological Bulletin*, *92*, 641–669.

Focusing on self or others has different consequences for psychological well-being: A longitudinal study of the effects of distinct interpersonal goals²

Abstract

A longitudinal study examined the association between interpersonal goals (self-image and compassionate goals) and depression, anxiety and stress symptoms. We propose that having self-image goals (trying to create and manage a positive image) may lead to psychological distress, while genuinely taking others' needs into account and caring for their welfare (compassionate goals) may promote psychological well-being.

The sample was composed by 161 university students (151 female, 8 male) who completed 6 surveys, every two weeks, assessing depression, anxiety and stress symptoms, interpersonal goals, goal-related affect, feelings of closeness and loneliness, interpersonal conflicts and positive emotions.

Regression analysis suggested that compassionate goals predicted decreases in pre and post levels of depression, anxiety and stress, while self-image goals predicted increases in these psychopathological symptoms. Positive affect and feelings of clarity and closeness and less interpersonal conflicts mediated the relation between compassionate goals and depression, anxiety and stress symptoms, while feelings of fear and confusion, loneliness and interpersonal conflicts and less positive emotions mediated the relation between self-image goals and depression, anxiety and stress symptoms.

² Duarte, J., & Pinto-Gouveia, J. (2015). Focusing on self or others has different consequences for psychological well-being: A longitudinal study of the effects of distinct interpersonal goals. *Journal of Social and Clinical Psychology, 34*(9), 809-825. doi: 10.1521/jscp.2015.34.9.809

Helping people reframe situations in terms of an ecosystem motivational framework and be more mindful of their goals and motivations may improve their well-being.

Keywords: Compassionate goals and self-image goals; depression, anxiety and stress symptoms; interpersonal relations; mediation analysis.

Introduction

Driven by a fundamental motivation to belong and connect, human beings spend a lot of time and energy trying to construct, maintain and defend positive images of themselves in the eyes of others (Leary & Baumeister, 2000). This is because having qualities that we think others' value will increase our chances of being accepted and included in groups, which would have increased our chances of survival in our evolutionary past (Baumeister & Leary, 1995). It is suggested that because humans have an innate motivation to belong and connect, and given that promoting an image of the self as attractive to others will increase the probability of being accepted and included, time and effort is spent in trying to manage an image of the self that is desirable to others.

Attempts to manage the impressions others have can sometimes lead to desired outcomes, and in fact others may come to form positive images of the self. However, recent research has been suggesting that despite some short-term benefits, such attempts can undermine interpersonal relationships and well-being in the long run (Baumeister, Campbell, Krueger, & Vohs, 2003; Colvin, Block, & Funder, 1995; Crocker & Park, 2004; Paulhus, 1998; Robins & Beer, 2001). The present study used a longitudinal design to test how different types of interpersonal goals predict psychological distress.

Interpersonal goals

Interpersonal goals are defined as goals to "attain, maintain, or avoid a specific end state for the partner or the relationship, such as to help the

partner, maintain closeness, or avoid rejection” (Fitzsimons & Bargh, 2003 p. 150). Here we focus on two types of interpersonal goals that reflect the role of other people in relation to the self: self-image and compassionate goals (Crocker & Canevello, 2008).

Self-image goals refer to the desire to construct, maintain and defend positive images of oneself and to seek that others see oneself as valuable and worthy (Crocker & Canevello, 2008).

Although constructing and maintaining a desirable image is a fundamental process in social interactions, humans have also the capacity to give, create and contribute to something outside or larger than themselves (Brown & Brown, 2006). Humans can at times genuinely care about the welfare of others, can be compassionate, generous and supportive, without concern for themselves and their self-image (Batson, 2011). When people are guided by compassionate goals in their relationships they are more aware of other people’s needs, they care more about their well-being and are more responsive and supportive, and not necessarily at the expense of the self.

We base this study on the idea that humans have both self-centered and other-centered motivations (e.g., Hoffman, 1981; Brown & Brown, 2006; Sober & Wilson, 1998), and both conferred evolutionary advantages. Gaining inclusion and status depends on successfully creating a desirable self-image to others (Leary & Baumeister, 2000), while creating close and meaningful relationships may depend on being supportive to others and responsive to their needs, out of a genuine concern for their well-being (Reis, Clark, & Holmes, 2004). Both types of interpersonal goals address human fundamental needs, and thus it is not a question of one being good and the other bad. However, they may involve distinct processes and possibly have different consequences. We propose that individuals with more compassionate goals in their relationships may have less psychological distress. We predict that compassionate goals are associated with feelings of clarity and connectedness, feelings of closeness to others, less interpersonal conflicts and

positive emotions, which can contribute to psychological well-being. These predictions are based on the idea that compassionate goals are associated with an ecosystem perspective of relationships, i.e., with a belief of the interconnectedness of people and all life (Crocker & Canevello, 2008), and with previous studies pointing to the benefits of caring (e.g., Brown & Brown, 2006) and compassion (Cosley, McCoy, Saslow, & Epel, 2010). We also propose that individuals with high self-image goals may experience more psychological distress, and that such an association may be explained by several processes. We predict that self-image goals, by being associated with an egosystem perspective on relationships (Crocker & Canevello, 2008) in which the self is seen as separate from others, may lead to feelings of fear and confusion, loneliness, interpersonal conflicts and low positive emotions, which can contribute to psychological ill-being.

Methods

Participants

The sample was composed by 161 university students. The majority of the sample was female ($n=151$; 95%), with ages ranging between 18 and 55 ($M=21.34$; $SD=4.31$), and between 12 and 19 years in school ($M=13.36$; $SD = 1.36$). Regarding marital status, 98.1% ($n=155$) of the participants were single, 0.6% ($n=1$) were married and 1.3% were divorced ($n=2$). No significant differences were found between men and woman in the study.

Procedure

Students that agreed to participate were informed about the study aims and were asked to sign an informed consent form previous to their participation, in which essential information about the study and confidentiality was presented. The completion of the pre-test self-report questionnaires was in person and took on average 30 minutes.

Weekly measures were then completed online using Lime Survey, an online survey tool, and took around 20 minutes to complete. Participants who failed to complete at least three of the weekly surveys were excluded from the study. The post-test survey was also completed online, and included the same questionnaire as the pre-test survey. The methodological procedure is similar to Crocker and Canevello's study (2008).

Measures

Pre and Post-test measures.

Depression, Anxiety, Stress Scale – 21 (DASS-21; Lovibond & Lovibond, 1995; Portuguese version by Pais-Ribeiro, Honrado, & Leal, 2004). The DASS-21 comprises 3 subscales, each with 7 items. The Depression subscale measures low self-esteem and motivation, associated with feelings of hopelessness towards life goals. The Anxiety subscale assesses the connection between persistent anxiety state and the subjective feeling of fear as a response. The Stress subscale measures high levels of hyperarousal and tension, associated with low levels of resistance to frustration and disappointment. Participants were asked to indicate the degree to which each statement applied to them in the last two weeks. The DASS-21 uses a 4-point rating scale (0 = *Did not apply to me at all* to 3 = *Applied to me very much, or most of the time*). Subscale scores were computed by calculating the mean of subscale item responses.

Weekly Measures.

Participants were asked to complete the weekly measures based on their last two weeks which corresponded to the time interval from their last survey.

Types of Positive Affect Scale (TPAS; Gilbert, McEwan, Mitra, Franks, Richter, & Rockliff, 2008). The TPAS was developed to measure the degree to which people experience different positive emotions. Respondents are asked to rate 18 items describing feelings on a 5-point scale to indicate how characteristic it is of them (0 = *not characteristic of me* to 4 = *very characteristic of me*). The

scale is composed by three factors measuring different types of positive feelings: Activating Positive Affect (e.g., *excited, dynamic, active*); Relaxed Positive Affect (e.g., *relaxed, calm, peaceful*) and Safeness/contentment Positive Affect (e.g., *safe, secure, warm*). The scale showed good psychometric properties with Cronbach's alphas of .83 for Activating Positive Affect and Relaxed Positive Affect, and .73 for Safeness/contentment Positive Affect. Subscale scores were computed by calculating the mean of subscale item responses.

The following weekly measures were adapted from Crocker and Canevello (2008).

Compassionate and Self-Image Goals (CSIG; Crocker & Canevello, 2008). The CSIG is a 13-item scale that uses a 5-point rating scale (1 = *not at all* to 5 = *always*) to assess the extent to which subjects hold more compassionate or self-image goals regarding their friendships. There are 7 compassionate goals' items (i.e., "have compassion for others' mistakes and weaknesses") and 6 self-image goals' items (i.e., "avoid the possibility of being wrong"). All items begin with: "In the past week, in the area of friendship, how much did you want to or try to..." In the original study Cronbach's Alphas were .83 for Self-Image Goals and .90 for Compassionate Goals. Subscale scores were computed by averaging across the weekly reports.

Goal-related affect. Having in mind their interpersonal goals, participants were asked to rate the extent to which they felt critical (of self or others), competitive, clear, loving, confused, peaceful, connected to others, empathic, isolated, engaged, present, ambivalent/conflicted, pressured, distracted, cooperative, and fearful, on a scale ranging from 1 (not at all) to 5 (extremely). Two factors were calculated: clear and connected (peaceful, connected to others, cooperative, loving, clear, present, empathic, and engaged); afraid and confused (fearful, ambivalent/conflicted, pressured, distracted, confused, critical, isolated, and competitive). These factors showed good internal

consistency in the original study (.91 and .90). Subscale scores were computed by averaging across the weekly reports.

Feelings of closeness, loneliness and conflict. Single items were used to assess the frequency of feelings of closeness (“feel close to others”), loneliness (“feel lonely”), and interpersonal conflicts (“have conflicts with people”), in the past two weeks, on a rating scale ranging from 1 (*never*) to 5 (*always*). Subscale scores were computed by averaging across the weekly reports.

Statistical Analyses

Correlations between compassionate and self-image goals and other variables were tested using partial correlations, given the strong association between compassionate and self-image goals. Multiple regression analyses were conducted to test the predictive power of goals on pre and post-test levels of depression, anxiety and stress symptoms. Hierarchical linear regression was used to explore whether interpersonal goals predicted change in these outcome variables over the study period, by entering pre-test scores as a first step, and compassionate and self-image goals simultaneously on the second step.

Several path models were tested to explore possible mediators for the association between interpersonal goals and residual scores of depression, anxiety and stress. Standardized residual scores were calculated by regressing post-test scores on pre-test scores, giving a measurement of change from pre to post test. The estimation method used was Maximum Likelihood (ML) and the resampling method Bootstrap (with 2000 resamples) was conducted to estimate the significance of the indirect effects. This method creates 95% bias-corrected confidence intervals (CI) for estimates of total, direct and indirect effects. The statistical procedures were computed with software IBM SPSS and AMOS (v. 20).

Results

Descriptive Statistics

Descriptive statistics and reliability analysis of the study variables are described in Table 1.

Table 1

Means, Standard Deviations, Minimum, Maximum, Skewness, Kurtosis, and Cronbach's Alpha (α) of the Study Variables (N = 161)

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skew</i>	<i>Kurtosis</i>	α
Compassionate Goals	3.40	.58	1.75	5.00	-.02	-.02	.82
Self-image Goals	2.90	.64	1.11	4.46	-.30	-.16	.83
Pre-test							
Depression	.48	.53	0	2.29	1.31	1.02	.90
Anxiety	.52	.57	0	2.57	1.42	1.77	.86
Stress	.96	.64	0	2.86	.71	.22	.89
Post-test							
Depression	.45	.53	0	2.43	1.70	2.84	.91
Anxiety	.43	.50	0	2.71	1.82	4.26	.87
Stress	.82	.55	0	2.86	.63	.50	.88
Weekly measures							
Clear and connected	3.38	.49	2.18	4.83	-.04	.29	.81
Afraid and confused	2.55	.47	1.35	4.00	-.07	.21	.76
Closeness	3.52	.52	2.40	5	.04	-.32	-
Loneliness	2.50	.63	1	4.40	.48	.08	-
Conflicts	2.07	.60	1	3.80	.25	-.24	-
Activating positive affect	3.48	.61	2.15	4.78	-.10	-.51	.91

Relaxed positive affect	3.86	.90	1.58	5.96	.07	.38	.93
Safe positive affect	3.46	.65	1.75	4.85	-.30	-.46	.86

Note. Compassionate Goals, Self-image Goals and the Weekly measures were calculated averaging the 5 weekly reports. The α for such variables is an average of the α for each weekly measurement.

Correlational Analysis

Given that compassionate and self-image goals were strongly correlated ($r=.61, p < .001$), we conducted partial correlations to explore the size of the unique variances. So, in the correlations for compassionate goals the effect of self-image goals was controlled for, and vice versa. Table 2 presents the partial correlations between compassionate and self-image goals and pre and post-test measures and averaged weekly measures, and Table 3 presents the correlations between weekly measures and pre and post levels of depression, anxiety and stress.

Table 2.

Partial Correlations Between Compassionate and Self-image Goals and the Other Variables in Study

	Compassionate Goals	Self-image Goals
Pre-test measures		
Depression	-.21*	.35**
Anxiety	-.18*	.29**
Stress	-.20*	.36**
Post-test measures		
Depression	n.s.	.27*
Anxiety	n.s.	.24*

Stress	-.21*	.27*
<hr/>		
Weekly measures		
Clear and connected	.56**	-.37**
Afraid and confused	n.s.	.46**
Closeness	.31**	-.23*
Loneliness	n.s.	.22*
Conflicts	n.s.	.35**
Active affect	.35**	-.26*
Relaxed affect	.35**	-.30**
Secure affect	.35**	-.34**
<hr/>		
<i>Note.</i> * $p \leq .05$; ** $p < .001$; n.s. = non-significant		

Table 3.

Correlations Between Weekly Measures and Depression, Anxiety and Stress at Pre and Post Levels

	Depression		Anxiety		Stress	
	Pre	Post	Pre	Post	Pre	Post
<hr/>						
Weekly measures						
Clear and connected	-.31**	-.30**	-.21**	-.19*	-.25**	-.28**
Afraid and confused	.38**	.43**	.32**	.36**	.46**	.50**
Closeness	-.24**	-.23**	n.s.	n.s.	n.s.	n.s.
Loneliness	.50**	.48**	.29**	.24**	.42**	.37**
Conflicts	.22**	.36**	.16*	.32**	.23**	.36**
Active affect	-.50**	-.54**	-.30**	-.37**	-.36**	-.43**

Relaxed affect	-.44**	-.49**	-.44**	-.42**	-.58**	-.68**
Secure affect	-.52**	-.55**	-.40**	-.41**	-.54**	-.55**

Note. * $p \leq .05$; ** $p < .001$, n.s. = non-significant

Compassionate goals were negatively associated with depression (pre-test only) and stress and were positively correlated with feelings of connectedness and clarity, feelings of closeness, supportive behaviours and positive affect (activating, relaxed and safe). Controlling for compassionate goals, self-image goals were positively associated with depression, anxiety and stress at pre and post-test, feeling afraid and confused, loneliness, and conflicts with others, and were negatively associated with weekly feelings of clarity and connectedness, closeness and positive affect (activating, relaxed and safe). Also, the associations between weekly measures and depression, anxiety and stress at pre and post levels were as expected; depression, anxiety and stress were associated with less feelings of clarity and connectedness, closeness (depression only) and activating, relaxed and safe positive affect, and increases in loneliness and interpersonal conflicts.

Regression Analysis

Table 3 shows the standardized regression coefficients for the relations between compassionate and self-image goals and the variables measured at pre and post-test, controlling for the pre-test scores.

Table 3

Standardized Regression Coefficients for the Relationship between Chronic Compassionate and Self-image Goals and Outcome Measures at Pre and Post-test, and Change from Pre-test to Post-test (N = 132)

Goals	Depression			Anxiety			Stress		
	pre	post	change	pre	post	change	pre	post	change
Compassionate	-.20*	-.19	.01	-.17	-.14	.02	-.20*	-.29*	-.13
Self-image	.41**	.37*	.05	.34*	.29*	.09	.44**	.37**	.07

Note. * $p \leq .05$; ** $p < .001$

Results suggested that increases in average levels of compassionate goals were associated with a significant decrease in pre and post stress ($t=-2.08$, $p=.039$; $t=-2.57$, $p=.01$) and a decrease in pre levels of depression ($t=2.09$, $p=.038$). Increases in self-image goals predicted increases in depression at pre ($t=4.26$, $p < .001$) and post-test ($t=3.22$, $p = .002$), anxiety pre ($t=3.45$, $p=.001$) and post-test ($t=2.48$, $p=.01$) and stress pre ($t=4.65$, $p < .001$) and post-test ($t=3.29$, $p=.001$). There were no significant associations between goals and change scores in the dependent variables.

Path Analyses

Although regression analyses revealed that there are no direct effects between interpersonal goals and change from pre-test to post-test in depression, anxiety and stress, we wanted to explore possible indirect effects. As suggested by Rucker, Preacher, Tormala & Petty (2011) and others, significant indirect effects can be found in the absence of significant total or direct effects. Thus, the next step was to explore which variables could mediate the association between interpersonal goals and change in depression, anxiety and stress from pre to post test. Several path models were tested in which interpersonal goals

were entered simultaneously as predictors, residual scores of depression, anxiety and stress were outcomes and weekly measures were mediating variables.

Depression

Results from several path analyses indicated that the relation between compassionate goals and depressive symptoms was mediated by activating positive affect, $\beta = -.11$ [-.225 - -.034], $p = .006$, relaxed positive affect, $\beta = -.14$ [-.242 - -.055], $p = .001$ and safe positive affect, $\beta = -.12$ [-.241 - -.031], $p = .006$. The association between self-image goals and change in depressive symptoms was significantly mediated by feeling afraid and confused, $\beta = .11$ [.010 - .220], $p = .033$, activating positive affect, $\beta = .08$ [.021 - .183], $p = .007$, relaxed positive affect, $\beta = .11$ [.036 - .223], $p = .002$, and safe positive affect, $\beta = .12$ [.028 - .226], $p = .008$.

Anxiety

The association between compassionate goals and change in anxiety symptoms was mediated by interpersonal conflicts, $\beta = -.05$ [-.117 - -.007], $p = .023$, relaxed positive affect, $\beta = -.09$ [-.054 - -.000], $p = .050$, and safe positive affect, $\beta = -.10$ [-.192 - -.019], $p = .019$. Significant mediators between self-image goals and anxiety symptoms were feelings of fear and confusion, $\beta = .11$ [.025 - .212], $p = .013$, number of conflicts, $\beta = .10$ [.023 - .198], $p = .015$, relaxed affect, $\beta = .08$ [.000 - .048], $p = .047$, and safe positive affect, $\beta = .10$ [.014 - .195], $p = .021$.

Stress

Finally, the relationship between compassionate goals and stress symptoms was mediated by feeling clear and connected, $\beta = -.14$ [-.286 - -.019], $p = .024$, number of conflicts, $\beta = -.05$ [-.122 - -.007], $p = .021$, and activating, $\beta = -.13$ [-.248 - -.055], $p = .001$, relaxed, $\beta = -.20$ [-.315 - -.110], $p < .001$, and safe positive affect, $\beta = -.13$ [-.230 - -.043], $p = .005$. The significant indirect effects between self-image goals and stress symptoms were mediated by feeling clear

and connected, $\beta=.08$ [.014 - .201], $p=.018$, feeling afraid and confused, $\beta=.16$ [.070 - .261], $p = .001$, loneliness, $\beta=.04$ [.001 - .108], $p=.046$, and activating, $\beta=.10$ [.038 - .199], $p=.001$, relaxed, $\beta=.16$ [.073 - .269], $p=.001$, and safe positive affect, $\beta=.13$ [.037 - .236], $p=.005$.

All models presented good model fit assessed through several fit statistics, namely relative chi-squared (χ^2/df), Comparative Fit Index, (CFI), Tucker-Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA).

In sum, results from the mediational studies showed that compassionate goals predicted decreases in psychological symptoms over time because they were associated with feelings of clarity and connectedness (stress only), less interpersonal conflicts (anxiety only) and positive emotions (activating, relaxed and safe). In contrast, self-image goals seem to increase psychological distress by being associated with a sense of fear and confusion, feelings of loneliness (stress only), more interpersonal conflicts (anxiety and stress) and less positive emotions.

Discussion

On their daily lives, and in virtually any activity, people may try to get others to satisfy, or not block, their needs and desires by trying to manage a desirable image in the eyes of others, or they may try to be constructive and supportive of others' needs and desires. We predicted that when people give equal priority to the needs of others, and genuinely care about and want to support others' well-being, they will experience less psychological distress. On the other hand, we predicted that when people have a self-interest perspective in their relationships they may experience more psychological distress in the long run.

Our results generally supported these hypotheses. Compassionate goals predicted decreases in psychological symptoms probably because they made students feel clear and connected (stress), experience less interpersonal

conflicts (anxiety) and experience more positive emotions (activating, relaxed and safe). In contrast, self-image goals seem to paradoxically increase psychological distress by being associated with a sense of fear and confusion, by leading to feelings of loneliness (stress), by creating more interpersonal conflicts (anxiety and stress) and by decreasing positive emotions.

It seems that by being associated with a sense of clarity and connectedness, by promoting fewer conflicts with others and by increasing positive emotions, compassionate goals predict less psychological distress over time. This is line with the literature pointing to the negative impact of interpersonal conflicts on psychological distress (e.g., Nazir & Mohsin, 2013), and also to the considerable evidence showing that being able to experience positive affect has beneficial effects on mental health, and especially in depression (e.g., Höhn et al., 2013; Tugade & Fredrickson, 2004).

These results can be conceptualized and interpreted in terms of the physiological mechanisms underlying self-image and compassionate goals. MacLean (1990) and Henry & Wang (1998) proposed that there are two organizing physiological and emotional systems: the self-preservative and the species-preservative. The self-preservative system is focused on defending the organism from harm and securing resources necessary for survival. It is based on a sense of self vs other, a separate sense of 'I', and developed early in evolutionary history. The species-preservative system evolved more recently and is based on a more inclusive sense of self and promotes awareness of our interconnectedness with others. It is concerned with the well-being of others and implies an inclusive sense of 'I'. Like compassionate and self-image goals, and ecosystem and egosystem motivational approaches more broadly, self-preservative and species-preservative modes are present in every individual. Individual differences in thresholds of negative affect may lead to a temporary shift from a species-preservative mode to a self-preservative mode. Self-preservation is appropriate and necessary in situations where danger is present or when we need to secure basic needs. It is the activation of this system in

everyday life in response to everyday events that can become problematic. It is suggested that self-image goals, and the egosystem motivation perspective, are associated with the self-preservative system, because threats to the self-image may be confused with survival threats, activating the self-preservation motivational system. Consistent with this view, a great deal of research has demonstrated that cortisol, which is released when the fight-or-flight self-preservation system is activated, is also associated with psychological threats to the self-image (Dickerson & Kemeny, 2004), to major depression (Connor & Leonard, 1998; Gold, Licinio, Wong, & Chrousos, 1995; Maes, 1999), and to mental disorders in general (Sapolsky, 1998). We hypothesize that it is the activation of this system that lead to low positive emotions and depressive, anxious and stress symptoms.

Compassionate goals and an ecosystem motivational perspective are hypothesized to be associated with the species-preservative system, which is thought to give rise to parental care, social interaction and pair bonding. Hormones associated with the species-preservation system, such as oxytocin and progesterone, are linked to affiliation, trust and giving in humans, even with strangers (Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005; Schultheiss, Wirth, & Stanton, 2004; Taylor et al., 2000). We hypothesize that the activation of the species-preservation system, by down-regulating the self-preservative mode (Taylor et al., 2000), may explain why compassionate goals were associated with more positive emotions, and with decreased psychological distress.

There can also be other indirect links between interpersonal goals and psychological distress. For example, Crocker, Canevello, Breines, & Flynn (2010) found that compassionate goals predicted decreased distress in part because they predicted increased support received and especially support given, which is in line with research demonstrating the ill-effects of poor of social support (e.g., Holt-Lunstad, Smith & Layton, 2010; Uchino & Kiecolt-Glaser, 1996), and the benefits of giving support (Brown & Brown, 2006). In

the present study, support given and received was not assessed, but interpersonal conflicts, which can lead to poor social support given and received, mediated the relation between interpersonal goals and anxiety and stress.

In sum, the motivation to contribute to others' well-being and the egoistic motivation to benefit the self involve distinct goals and feelings. When people genuinely care about the well-being of others, they have compassionate goals, i.e., they want to be constructive and supportive and not harm others; and feel peaceful, clear and loving. When people want to benefit or protect the self, and see the relation between self and others as an ecosystem, they have self-image goals, and may feel conflicted, confused and fearful.

This study has several limitations. Although results support the theoretical hypotheses, it is not possible to draw conclusions regarding the direction of causal relations. For example, Crocker et al. (2010) found that distress and interpersonal goals can be mutually reinforcing and that when people feel more distress compassionate goals decrease and self-image goals increase. Also, these results should be replicated in populations other than university students, and more gender homogenous to test for possible gender differences. In fact, it has been suggested that females may differ in their biobehavioral responses to stress, which are thought to be less mediated by the fight-or-flight response and more by the attachment-caregiving system (Taylor et al., 2000), which may have implications for studies on interpersonal goals and psychological distress. Finally, this study is based on self-report measures and thus suffers the limitations from such methodology (e.g., demand characteristics, social desirability bias...).

Despite these limitations, this study is an important contribution for the growing field of compassion research, and advances our understanding of the benefits of caring for others. Also, it offers several avenues for future studies and for psychological interventions for symptoms of depression, anxiety and stress. Helping people reframe stressful situations in a more ecosystem

perspective, bringing compassionate intentions to their relations with others, may lead to a down-regulation of the stress response which may reduce the risk for psychopathological symptoms. This is in line with recent findings suggesting that compassion-based interventions are associated with personal well-being, including stress-related immune responses (Pace et al., 2009), positive affect (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008), and psychological and physical health (Fredrickson et al., 2008).

The interpersonal goals people adopt, which reflect broader motivational tendencies, can have a significant impact on their psychological well-being. It is thus suggested that being more mindful of such goals and motivations so they can be changed when unhelpful may have valuable benefits for relations and well-being.

References

- Batson, D. (2011). *Altruism in Humans*. New York: Oxford University Press.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *111*, 497–529. doi: 10.1037/0033-2909.117.3.497
- Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest*, *4*, 1–44.
- Brown, S. L., & Brown, R. M. (2006). Selective investment theory: Recasting the functional significance of close relationships. *Psychological Inquiry: An International Journal for the Advancement of Psychological Theory*, *17*(1), 1–29. doi: 10.1207/s15327965pli1701_01
- Colvin, C. R., Block, J., & Funder, D. C (1995). Overly positive self-evaluations and personality: Negative implications for mental health. *Journal of Personality and Social Psychology*, *68*, 1152–1162.
- Connor, T. J. & Leonard, B. E. (1998). Depression, stress, and immunological activation: The role of cytokines in depressive disorders. *Life Sciences*, *62*, 583–606.
- Cosley, B. J., McCoy, S. K., Saslow, L. R., & Epel E. S. (2010). Is compassion for others stress buffering? Consequences of compassion and social support for physiological reactivity to stress. *Journal of Experimental Social Psychology*, *46*, 816–823. doi:10.1016/j.jesp.2010.04.008
- Crocker, J. (2011). The paradoxical consequences of interpersonal goals: relationships, distress, and the self. *Psychological Studies*, *56*(1), 142–150. doi 10.1007/s12646-011-0064-3
- Crocker, J., & Canevello, A. (2008). Creating and undermining social support in communal relationships: The role of compassionate and self-image goals. *Journal of Personality and Social Psychology*, *95*(3), 555–575. doi: 10.1037/0022-3514.95.3.555.
- Crocker, J., & Park, L. E. (2004). The costly pursuit of self-esteem. *Psychological Bulletin*, *130*, 392–414.
- Crocker, J., Canevello, A., Breines, J. G., & Flynn, H. (2010). Interpersonal goals and change in anxiety and dysphoria in first-semester college

students. *Journal of Personality and Social Psychology*, 98(6), 1009–1024. doi: 10.1037/a0019400

- Dickerson, S. S., & Kemeny, M. E. (2004). Acute stressors and cortisol responses: A theoretical integration and synthesis of laboratory research. *Psychological Bulletin*, 130(3), 355–391. doi: 10.1037/0033-2909.130.3.355
- Fitzsimons, G. M., & Bargh, J. A. (2003). Thinking of you: Nonconscious pursuit of interpersonal goals associated with relationship partners. *Journal of Personality and Social Psychology*, 84, 148–163.
- Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*, 95, 1045–1062.
- Gilbert, P., McEwan, K., Mitra, R., Franks, L., Richter, A. & Rockliff, H. (2008). Feeling safe and content: A specific affect regulation system? Relationship to depression, anxiety, stress, and self-criticism. *The Journal of Positive Psychology*, 3, 182–191. doi: 10.1080/17439760801999461
- Gold, P. W., Licinio, J., Wong, M.-L., & Chrousos, G. P. (1995). Corticotropin releasing hormone in the pathophysiology of melancholic and atypical depression and in the mechanism of action of antidepressant drugs. *Annals of the New York Academy of Sciences*, 771, 716–729. doi: 10.1111/j.1749-6632.1995.tb44723.x
- Henry, J. P., & Wang, S. (1998). Effects of early stress on adult affiliative behavior. *Psychoneuroendocrinology*, 23(8), 863–875.
- Hoffman, M. L. (1981). Is altruism part of human nature? *Journal of Personality and Social Psychology*, 40, 121–137.
- Höhn, P., Menne-Lothmann, C., Peeters, F., Nicolson, N. A, & Jacobs, N., Derom, C., Thiery, E., van Os, J., & Wichers, M. (2013) Moment-to-moment transfer of positive emotions in daily life predicts future course of depression in both general population and patient samples. *PLoS ONE* 8(9): e75655. doi:10.1371/journal.pone.0075655
- Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010) Social relationships and mortality risk: A meta-analytic review. *PLoS Med* 7(7), e1000316. doi:10.1371/journal.pmed.1000316

- Kosfeld, M., Heinrichs, M., Zak, P. J., Fischbacher, U., & Fehr, E. (2005). Oxytocin increases trust in humans. *Nature*, *435*, 673–676. doi:10.1038/nature03701
- Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 32, pp. 1–62). San Diego, CA: Academic Press.
- Lovibond, P. & Lovibond, H. (1995). The structure of negative emotional states: comparison of the depression anxiety stress scales (DASS) with Beck depressive and anxiety inventories. *Behaviour Research and Therapy*, *33*, 335–343.
- MacLean, P. D. (1990). *The triune brain in evolution: Role in paleocerebral functions*. New York: Plenum Press.
- Maes, M. (1999). Major depression and activation of the inflammatory response system. In R. Dantzer, E. E. Wollman & Raz Yirmiya (Eds.), *Cytokines, stress, and depression* (pp. 25–47). New York, NY: Kluwer Academic/Plenum Publishers.
- Nazir, A., & Mohsin, H. (2013). Coping styles, aggression and interpersonal conflicts among depressed and non-depressed people. *Health Promotion Perspectives*, *3*(1), 80–89. doi:10.5681/hpp.2013.010
- Pace, T. W. W., Negi, L. T., Adame, D. D., Cole, S. P., Sivilli, T. I., Brown, T. D., . . . Raison, C. L. (2009). Effect of compassion meditation on neuroendocrine, innate immune and behavioral responses to psychosocial stress. *Psychoneuroendocrinology*, *34*, 87–98.
- Pais-Ribeiro, J., Honrado, A. & Leal, I. (2004). Contribuição para o Estudo da Adaptação Portuguesa das Escalas de Ansiedade, Depressão e Stress (EADS) de 21 itens de Lovibond e Lovibond. *Psicologia, Saúde & Doenças*, *5*(2), 229–239.
- Paulhus, D. L. (1998). Interpersonal and intrapsychic adaptiveness of trait self-enhancement: A mixed blessing? *Journal of Personality and Social Psychology*, *74*, 1197–1208.
- Reis, H. T., Clark, M. S., & Holmes, J. G. (2004). Perceived partner responsiveness as an organizing construct in the study of intimacy and closeness. In D. Mashek & A. P. Aron (Eds.), *Handbook of closeness and intimacy* (pp. 367–389). Mahwah: Erlbaum.

- Robins, R. W., & Beer, J. S. (2001). Positive illusions about the self: Short-term benefits and long-term costs. *Journal of Personality and Social Psychology, 80*, 340–352.
- Rucker, D. D., Preacher, K. J., Tormala, Z. L., & Petty, R. E. (2011). Mediation analysis in social psychology: Current practices and new recommendations. *Social and Personality Psychology Compass, 5*(6), 359–371. doi: 10.1111/j.1751-9004.2011.00355.x
- Sapolsky, R. M. (1994). *Why zebras don't get ulcers: An updated guide to stress, stress-related diseases, and coping*. New York: Freeman.
- Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization and model. *Psychological Bulletin, 92*, 641–669.
- Schultheiss, O. C., Wirth, M. M., & Stanton, S. J. (2004). Effects of affiliation and power motivation arousal on salivary progesterone and testosterone. *Hormones and Behavior, 46*, 592–599. doi:10.1016/j.yhbeh.2004.07.005
- Sober, E., & Wilson, D. S. (1998). *Unto others: The evolution and psychology of unselfish behavior*. Cambridge, MA: Harvard University Press.
- Taylor, S. E., Klein, L. C., Lewis, B. P., Gruenewald, T. L., Gurung, R. A. R., & Updegraff, J. A. (2000). Biobehavioral responses to stress in females: Tend-and-befriend, not fight-or-flight. *Psychological Review, 107*(3), 411–429. doi: 10.1037/0033-295X.107.3.411
- Tugade, M. M., & Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology, 86*(2), 320–333. doi:10.1037/0022-3514.86.2.320
- Uchino, B. N., Cacioppo, J. T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: A review with emphasis on underlying mechanisms and implications for health. *Psychological Bulletin, 119*(3), 488–531. doi: 10.1037/0033-2909.119.3.488

Compassionate and self-image goals predict social connectedness and social anxiety³

Abstract

This study explored whether different types of interpersonal goals – self-image goals and compassionate goals – predicted social connectedness and social anxiety/social avoidance. A sample of 153 female college students completed pretest and posttest measures of social connectedness and social anxiety/avoidance and five biweekly assessments of interpersonal goals, positive and negative affect. Results suggested that compassionate goals predicted increases in social connectedness from pretest to posttest, while self-image goals predicted decreases in social connectedness and increases in social anxiety. Positive and negative affect mediated the relation between interpersonal goals and change in social connectedness, social anxiety and avoidance. Compassionate goals promote social connectedness and decrease social anxiety and thus could be a valuable target in interventions.

Keywords: compassionate goals; self-image goals; social connectedness; social anxiety; positive affect; compassion.

Introduction

Both early and modern psychologists have argued that social connection is a primary psychological need and motivator essential for human development and survival (Baumeister & Leary 1995; Maslow, 1943). Evidence from neuroscience studies offers support for this idea, suggesting that the human brain is hard-wired for connection (e.g., Lieberman, 2013).

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Several decades of research on social connection suggest that it is linked to several psychological and physical health benefits (Cacioppo et al. 2002, Cacioppo & Patrick, 2008; Pressman et al. 2005). Accordingly, social connection is strongly correlated with subjective well-being (e.g., Jose, Ryan, & Pryor, 2012; Lee, Dean, & Jung, 2008; Kimweli & Stilwell, 2002; Lee, Draper, & Lee, 2001; Lee & Robins, 1998).

Interestingly, significant evidence suggests that subjective, psychological indicators (particularly, sense of belonging, identification and connection) are most powerfully related to health outcomes than more direct measures of social connection, such as the number of friends. For example, in a large nationally representative sample, Berry and Welsh (2010) found that individual-level psychological measures of social capital (in particular, sense of belonging) had the strongest relationship with physical and mental health. Specific to depression, Cacioppo and colleagues (2010) found that perceived social isolation was the best predictor of depression symptoms, even after controlling for social network size and social support. At the same time, feeling connected to others is associated with physical benefits. Strong social connection leads to a 50% increased chance of longevity (Holt-Lunstad, Smith, Layton, 2010), strengthens the immune system (Pressman, Cohen, Miller, Barkin, & Treanor, 2005), and is associated with longevity (Brown, Nesse, Vinokur, & Smith, 2003).

In addition to being associated with emotional well-being, high social connection is associated with positive interpersonal orientation and behavior (e.g., Pavey, Greitemeyer & Sparks, 2011; Hagerty, Williams, Coyne, & Early, 1996). For example, increasing feelings of connectedness may reduce aggression (Twenge et al., 2007), and increase trust and cooperation (Glaeser, Laibson, Scheinkman, & Soutter, 2000).

The opposite seems to be true for people low in social connection. The literature suggests that a lack of social connection not only leads to declines in physical and psychological health (e.g., Baumerister & Leary, 1995;

Cacioppo et al. 2002; Heikkinen & Kauppinen 2004; House, Landis, & Umberson, 1988), but also compromises one's ability to engage in positive interpersonal relationships, which may further increase isolation. Indeed, people with low social connection may engage in less prosocial behavior and more aggression (e.g., Baumeister & Leary, 1995; Leary, Twenge, & Quinlivan, 2006; Kirkpatrick, Waugh, Valencia, & Webster, 2002; Twenge, Baumeister, Tice, & Stucke, 2001; Lee, et al. 2001; Lee & Robbins, 1998).

People may assume that in order to connect with others they need to improve their attributes and image so that they will be more desirable to others. However, recent research has been suggesting that when behavior is driven by attempts to manipulate and control how others view the self, to get others to recognize and acknowledge one's positive qualities, sometimes it does not increase others' regard, relationship quality, or social support. Paradoxically, when people try to get others to recognize their desired qualities, they often create the opposite of what they want—others' regard for them declines, relationships become less supportive, and well-being suffers (Crocker, 2011). For example, when people with egoistic caregiving motivations provide more support, they typically do so in ineffective ways that do not actually address the partner's needs (Feeney & Collins 2003). Similarly, self-image goals, defined as the desire to construct, maintain, and defend positive images of oneself and to seek that others see oneself as valuable and worthy, are associated with less responsiveness (Canevello & Crocker 2010) and less social support given (Crocker & Canevello 2008) to relationship partners, as well as more interpersonal conflict (Crocker & Canevello 2008). Self-image goals also predict decreased relationship stability via increased relationship avoidance and anxiety (Canevello, Granillo, & Crocker, 2013). Also, people motivated to manage the impressions others have of them tend to be anxious, confused, and conflicted (Crocker & Canevello 2008; Leary, Hofmann, & DiBartolo, 2001).

In contrast, when people have more other-focused goals and motivations, it can have more benefits for their relationships. As people transcend the self, caring less about how others view them and more about the well-being of others, others are most likely to regard them highly and provide support, and relationship quality improves. For example, research on compassionate goals, that is goals focused on providing support for others, not as a way of acquiring a desirable outcome for them, such as approval or acceptance, but genuinely out of concern for others' well-being, suggests that otherish motivation has relationship benefits, both for others and for the self. When people have compassionate goals, feelings of closeness, support, and trust within their relationships increase (Crocker & Canevello 2008; Hadden et al. 2014). Furthermore, compassionate goals predict increased responsiveness to relationship partners, which in turn predicts increased relationship quality for both people (Canevello & Crocker 2010). Compassionate goals also predict increases in perceived social support (Crocker & Canevello 2008).

This body of evidence indicates that when people have a more self-centered perspective and interpersonal goals focused on creating or maintaining a positive image of the self, it can have the paradoxical effect of decreasing relationship quality, which may contribute to feelings of social disconnection. In contrast, when people have a more selfless perspective and interpersonal goals focused on the well-being of others, their relationship quality increases, which can contribute to greater social connection.

But what accounts for the beneficial effects of other-focused motivation on social connection? Previous research suggests that compassionate goals are associated with positive feelings (Canevello & Crocker, 2015). Not only positive emotions result from satisfying social connections but positive emotions may in turn help solidify social attachments (Baumeister & Leary, 1995). Several studies provide empirical evidence that positive affect can have an evolved interpersonal function, supporting complex and interdependent social relationships (Shiota et al., 2014). For example, empirical studies

suggest that positive emotions signal commitment to close relationships and evoke commitment in return (Gonzaga, Keltner, Londahl, & Smith, 2001), increase trust (Dunn & Schweitzer, 2005), break down a sense of “us versus them” (Dovidio et al., 1995), and promote a sense of “oneness” with close others (Waugh & Fredrickson, 2006), promoting prosocial behavior (Schnall, Roper, & Fessler, 2010). In contrast, selfish motivations have been associated with higher negative affect (Canevello & Crocker, 2015; Crocker & Canevello, 2008).

Although previous studies provide empirical evidence for the relationship between interpersonal goals and indicators that may be related to social connection, such as real and perceived social support, responsiveness, relationship quality, no previous study has explored the impact of such goals on social connectedness, which is particularly related to health and well-being (Cruwys, Haslam, Dingle, Haslam, & Jetten, 2014). Moreover, most of the studies were based on dyadic reports from college roommates, and thus assessed these constructs in a particular relationship context. Social connectedness is defined as a person’s subjective sense of having close and positively experienced relationships with others in the social world (Lee & Robbins, 1995). It includes all aspects of social interaction, and refers to one’s relationship with ‘others’ in general. This general sense of connectedness has been defined as less vulnerable to occasional changes in relationship qualities or social interactions (e.g., disrupted friendships or problems with a co-worker). Social connectedness also differs from social support in that lower scores on measures of social support indicate a lack of support from specific environmental sources, whereas problems with social connectedness are indicative of a more persistent and global inability to connect with the social world (Lee & Robbins, 1995). Additionally, in some of the previous studies, the authors measured the relationship between interpersonal goals and feelings of closeness and loneliness (Crocker & Canevello, 2008), but used

single-items measures such “In the past week, how often did you ‘feel close to others,’ ‘feel lonely’”?

Additionally, although previous studies explored the relationships between interpersonal goals and anxiety and avoidance (Canevello, Granillo, & Crocker, 2013; Crocker & Canevello, 2008), the focus was on attachment anxiety and avoidance and again was specifically related participants’ relationships with their roommates. In the present study, we were interested in assessing the level of distress and avoidance in a wide range of performance and social situations. Finally, although in previous studies interpersonal goals were associated with indicators of positive affect (Crocker & Canevello, 2008; Canevello, Granillo, & Crocker, 2013), most studies assessed experiences related to positive affect (feeling peaceful, connected, loving, present) to form one positive affect construct. However, according to recent findings from neurobiology (see Burgdorf & Panksepp, 2006 for a review) and social neuroscience (McCall & Singer, 2015), there appears to be at least two distinct classes of positive affective states that can be distinguished by distinct neuroanatomical substrates, autonomic responses, motivation, and subjective experience. Approach-motivated states, that increase capacity for action, are associated with excitement when positively valenced, and quiescence states that motivate the absence of any action are associated with positive feelings of warmth and calm. This quiescent state is also particularly important for social affiliation (Depue & Morrone-Strupinsky, 2005; McCall & Singer, 2012).

The purpose of the present research is to explore how self-focused and other-focused motivation differently impact on perceptions of social connectedness and on social anxiety/avoidance. Specifically, we hypothesized that compassionate goals would predict more social connectedness and less social anxiety/avoidance. As people provide support for others out of concern for their well-being they may contribute to the creation and development of cooperative mutually supportive relationships which satisfy their need to

belong and connect. In contrast, we hypothesized that the presence of discomfort, anxiety, or avoidance in social interactions may be related to selfish motivations. In addition, we hypothesize that positive and negative affect would mediate at least in part the associations between interpersonal goals and social connectedness, social anxiety and social avoidance. We tested these hypotheses using a longitudinal design which allowed us to have a pretest and posttest measure of social connectedness, social anxiety and social avoidance, and week-to-week fluctuations in interpersonal goals and positive and negative affect.

Methods

Participants

From the initial sample, 161 university students participated in the longitudinal study. Given the small number of males ($n = 8$), these were excluded. The final sample was composed of 153 female college students, with ages ranging from 18 to 37 ($M = 20.94$; $SD = 2.49$). Regarding marital status, 98% of the sample was single, 7% ($n = 1$) was married and 1.3% was divorced ($n = 2$).

Procedure

A convenience sample of college students was recruited in Portuguese universities. The study was advertised in classes and students were informed about the study aims. Students who volunteered to participate were asked to sign an informed consent form previous to their participation, in which essential information about the study and confidentiality was presented. It took 30 minutes on average to complete the pretest self-report questionnaires, in the classroom. Students completed the biweekly measures online using Lime Survey, an online survey tool. Individuals provided their email and received a link to the online survey every two weeks, for five times. The

biweekly assessments took around 20 minutes to complete. Participants who failed to complete at least three of the weekly surveys were excluded from the study. The posttest survey was also completed online, and included the same questionnaire as the pretest survey. The methodological procedure is similar to Crocker and Canevello's (2008), and some weekly measures used in this study were adapted from Crocker and Canevello's study.

All procedures were in accordance with the Helsinki Declaration of 1975. All participants provided their written informed consent.

Measures

Pre and Posttest measures.

Social Connectedness Scale (SCS; Lee, Draper & Lee, 2001; Portuguese version by Francisco, Crespo, Rocha, Malaquias, & Dias, unpublished manuscript). The 20-item Social Connectedness Scale-Revised measures a psychological sense of belonging, or how individuals cognitively construe interpersonal closeness with others in their social world. The SCS uses a 6-point rating scale (1 = strongly disagree to 6 = strongly agree) in which participants rate the degree of their perceived interpersonal closeness in the social world. In the present study Cronbach's alphas were .92 for pretest and .94 for posttest.

The Social Interaction and Performance Anxiety and Avoidance Scale (SIPAAS; Pinto-Gouveia, Cunha, & Salvador, 2003). The SIPAAS is a 44-item self-report measure designed to assess the degree of distress/anxiety and avoidance associated with social interaction and performance situations. For each situation, respondents are asked to indicate both "the degree of fear or anxiety the situation provokes or would provoke, and how frequently they avoid or would avoid that situation." A 4-point Likert scale was used, ranging between 1 = None and 4 = Severe, for the distress/anxiety subscale, and between 1 = Never and 4 = Usually, for the avoidance subscale. The scale is

therefore formed by two subscales, the distress/anxiety subscale and the avoidance subscale. Two blank items allow the respondents to add two social situations that activate high levels of anxiety and that were not represented in the scale. In the present study Cronbach's alphas for social anxiety scale were .96 for pretest and .97 for posttest, and for social avoidance were .96 for pretest and posttest.

Biweekly measures.

Participants were asked to complete these measures based on their last two weeks, which was the time interval between the surveys. The Cronbach's alpha for such variables is an average of the Cronbach's alpha for the five measurements.

Types of Positive Affect Scale (TPAS; Gilbert, McEwan, Mitra, Franks, Richter, & Rockliff, 2008; Portuguese version by Dinis, Matos, & Pinto-Gouveia, unpublished manuscript). The TPAS was developed to measure the degree to which people experience different positive emotions. Respondents are asked to rate 18 items describing feelings on a 5-point scale to indicate how characteristic it is of them (0 = not characteristic of me to 4 = very characteristic of me). Instructions were adapted so individuals were asked to rate how they usually felt during the previous two weeks. The scale is composed of three factors measuring different types of positive feelings: Activating Positive Affect (e.g., excited, dynamic, active); Relaxed Positive Affect (e.g., relaxed, calm, peaceful) and Safeness/Contentment Positive Affect (e.g., safe, secure, warm). In the present study, the scale showed good psychometric properties with Cronbach's alphas of .91 for Activating Positive Affect, .93 for Relaxed Positive Affect, and .86 for Safe Positive Affect.

The following bi-weekly measures were adapted from Crocker and Canevello (2008).

Compassionate and Self-Image Goals (CSIG; Crocker & Canevello, 2008; Portuguese Version by Duarte, Pinto-Gouveia, & Lopes, unpublished

manuscript). The CSIG is a 13-item scale that uses a 5-point rating scale (1 = not at all to 5 = always) to assess the extent to which subjects hold more compassionate or self-image goals regarding their friendships. There are 7 compassionate goals' items (e.g., 'have compassion for others' mistakes and weaknesses') and 6 self-image goals' items (e.g., 'avoid the possibility of being wrong'). All items begin with: "In the past two weeks, in the area of friendship, how much did you want to or try to..." In the original study Cronbach's Alpha was .83 for Self-Image Goals and .90 for Compassionate Goals. In the present study Cronbach's alpha was .82 for Compassionate Goals and .83 for Self-image Goals.

Negative affect. Participants were asked to rate the extent to which they felt fearful, ambivalent/conflicted, pressured, distracted, confused, critical, isolated, and competitive in the past two weeks, on a scale ranging from 1 (not at all) to 5 (extremely). These items were summed to obtain a total score of negative affect. In the original study, this scale showed good reliability ($\alpha = .90$), as in the present study ($\alpha = .76$).

Data Analytic Plan

As a first step, we averaged compassionate and self-image goals, and positive affect and negative affect across the five reports. These variables were used in several analyses and can be conceptualized as individuals' 'chronic' levels of those variables.

Initially, the association between compassionate and self-image goals and the other variables in study was explored using partial correlations. As compassionate and self-image goals share variation, this analysis allowed us to find out the size of the unique portion of variance removing the portion of variance that was common between the goals. Using multiple regression analysis, we explored whether goals predicted pretest and posttest social connectedness, social anxiety and social avoidance. Also, to explore whether

goals predicted change in these variables over the study period, we conducted hierarchical linear regression, in which social connectedness, social anxiety and social avoidance pretest scores were entered as a first step and compassionate and self-image goals were entered simultaneously in a second step. Using hierarchical regression analyses, we also tested a) whether interpersonal goals predicted positive and negative affect controlling for previous levels of affect, and b) the alternative hypothesis that positive and negative affect predicted interpersonal goals.

We also wanted to test whether fluctuations in interpersonal goals over the study period could predict fluctuations in positive and negative affect. Thus, hierarchical linear modelling (HLM), or random effects modelling, was used to statistically analyse the data structure where the biweekly observations (level-1) were nested within individuals (level-2). These models are appropriate to handle data where observations are not independent, as is the case in repeated measures, correctly modelling correlated error (Twisk, 2006). For all models, we first tested a model with only random intercepts and then we included random slopes. To compare both models we used Likelihood Ratio Test and AIC, and we report the models that presented the best fit. Variables were group-mean centred before entering the analysis to facilitate interpretation. This allows testing changes in individual's interpersonal goals and their effect on the outcome measures, regardless of individual's average levels of goals and outcomes. Using lagged data, we also tested whether interpersonal goals predicted changes in affect the weeks after.

Finally, we also tested whether the association between interpersonal goals and social connectedness, social anxiety and social avoidance could be mediated by positive and negative affect. In these models we used social connectedness, social anxiety and social avoidance residual scores as the outcome variables, i.e., the difference between observed posttest scores and their predicted values from a simple regression using the pretest scores as a predictor. To estimate the hypothesized relations between the variables in

study we used path analysis with Maximum Likelihood (ML) estimation method. The resampling method Bootstrap (with 2000 resamples) was used to estimate the significance of the effects. This method creates 95% bias-corrected confidence intervals (CI) for estimates of total, direct and indirect effects. Normality of the data was assured by checking measures of skewness and kurtosis, and Mahalanobis distance for multivariate outliers. The statistical procedures were computed with software IBM SPSS and AMOS (v. 20).

Results

Descriptive Statistics

Descriptive statistics of the study variables are presented in Table 1.

Table 1

Means, Standard Deviations, Minimum, Maximum, Skewness and Kurtosis of the Study Variables (N = 153)

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skew</i>	<i>Kurtosis</i>
Compassionate Goals	3.40	.58	1.75	5.00	-.02	-.02
Self-image Goals	2.90	.64	1.11	4.46	-.30	-.16
Social Connectedness						
Pretest	4.68	.64	2.00	5.90	-1.06	-1.93
Posttest	4.57	.76	2.20	5.90	-.94	.65
Social Anxiety						
Pretest	2.16	.52	1.20	3.48	.20	-.49
Posttest	2.15	.53	1.09	3.57	.45	-.37
Social Avoidance						
Pretest	1.85	.52	1.00	3.55	.79	.28
Posttest	1.81	.48	1.00	3.27	.79	.27
Negative affect	2.55	.47	1.35	4.00	-.07	.21

Activating positive affect	3.48	.61	2.15	4.78	-.10	-.51
Relaxed positive affect	3.86	.90	1.58	5.96	.07	.38
Safe positive affect	3.46	.65	1.75	4.85	-.30	-.46

Note. Compassionate goals, self-image goals and positive and negative affect were calculated averaging the 5 weekly reports.

Correlations between Averaged Interpersonal Goals, Averaged Positive and Negative Affect, and Outcomes

Table 2 presents the partial correlations between averaged compassionate and self-image goals and pre and posttest social connectedness, social anxiety and social avoidance, and averaged positive and negative affect. Again, given that compassionate and self-image goals were correlated ($r = .57$), we conducted partial correlations.

Table 2.

Partial Correlations Between Compassion and Self-Image Goals and the Other Variables in Study (N = 153)

	Compassionate Goals	Self-image Goals
Social connectedness		
Pre-test	.27**	-.36**
Post-test	.31**	-.38**
Social Anxiety		
Pre-test	-.16	.30**
Post-test	-.11	.31**
Social Avoidance		
Pre-test	-.24*	.37**
Post-test	-.16	.32**
Weekly measures		
Negative Affect	-.17*	.52**
Active affect	.36**	-.27*
Relaxed affect	.37**	-.30*

Safe affect	.37**	-.35**
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Note. * $p \leq .05$; ** $p < .001$

Controlling for self-image goals, compassionate goals were positively associated with social connectedness at pretest and posttest and with positive affect (activating, relaxed and safe), and negatively associated with social avoidance at pretest and average negative affect. Self-image goals were positively associated with social anxiety and social avoidance at pretest and posttest, average negative affect, and negatively associated with social connectedness at pretest and post-test, and average positive affect (activating, relaxed and safe).

Interpersonal Goals and Changes in Outcomes

We explored the associations between interpersonal goals and social connectedness, social anxiety and social avoidance at pretest and posttest and change from pretest to posttest.

Results suggested that increases in compassionate goals were associated with significant increases in pretest, $\beta = .28, t = 2.38, p = .019, CI [.185 - 2.05]$ and posttest social connectedness, $\beta = .37, t = 3.21, p = .002, CI [.657 - 2.78]$. Also, an increase in self-image goals predicted decreases in pretest, $\beta = -.46, t = -3.97, p < .001, CI [-2.66 - -.886]$ and posttest social connectedness, $\beta = -.53, t = -4.67, p < .001, CI [-3.38 - -1.36]$. Finally, changes in social connectedness from pretest to posttest were predicted by increases in compassionate goals, $\beta = .18, t = 2.11, p = .038, CI [.049-1.63]$ and decreases in self-image goals, $\beta = -.22, t = -2.48, p = .015, CI [-1.77- -.20]$.

Regarding social anxiety and social avoidance we found that compassionate goals were only associated with pretest social avoidance, $\beta = -.29, t = -2.45, p = .016, CI [-3.41 - .359]$. Self-image goals were associated with pretest, $\beta = .36, t = 2.96, p = .004, CI [.754 - 3.81]$ and posttest social anxiety, $\beta = .34, t$

= 2.84, $p = .005$, CI [.668 - 3.76], pre, $\beta = .47$, $t = 3.98$, $p < .001$, CI [1.46 - 4.36] and posttest social avoidance, $\beta = .38$, $t = 3.17$, $p = .002$, CI [.942 - 4.09]. Only self-image goals was a significant predictor of change in social anxiety, $\beta = .11$, $t = 2.03$, $p = .044$, CI [.018 - 1.37], but not social avoidance.

Variations in Interpersonal Goals and Positive and Negative Affect

Mixed linear models were used computed to statistically test whether weekly changes in interpersonal goals could predict changes in positive and negative affect in the same weeks. There was a negative association between compassionate goals and negative feelings (coefficient = -0.15, $S.E. = 0.03$, $t = -4.60$, $p < .001$, CI 95% [-0.22 - -0.09]), and a positive association for self-image goals (coefficient = 0.18, $S.E. = 0.03$, $t = 5.82$, $p < .001$, CI 95% [0.12 - 0.24]). There was a positive association between compassionate goals and active (coefficient = 0.39, $S.E. = 0.06$, $t = 6.13$, $p < .001$, CI 95% [-0.27 - 0.52]), relaxed (coefficient = 0.20, $S.E. = 0.05$, $t = 4.10$, $p < .001$, CI 95% [0.11 - 0.29]), and safe positive affect (coefficient = 0.24, $S.E. = 0.04$, $t = 6.78$, $p < .001$, CI 95% [0.17 - 0.31]). Self-image goals were negatively associated with active, (coefficient = -.15, $S.E. = 0.06$, $t = -2.34$, $p = .019$, CI 95% [-0.27 - -0.02]), relaxed (coefficient = -.12, $S.E. = 0.05$, $t = -2.56$, $p < .001$, CI 95% [-0.22 - -0.03]), safe positive affect affect (coefficient = -0.18, $S.E. = 0.03$, $t = -5.33$, $p < .001$, CI 95% [-0.25 - -0.12]).

Mediation Analyses

The next step was to explore whether the effects of interpersonal goals on posttest social connectedness, social anxiety and social avoidance, controlling for pretest levels, could be mediated by negative and positive affect. We thus tested path models in which interpersonal goals were predictors of social connectedness, social anxiety and social avoidance residual scores, and averaged positive and negative affect were the mediators.

Social Connectedness.

Negative affect was a significant predictor of social connectedness, $\beta = -.23$ [-.393 - -.044], $p = .017$, and mediated the relation between self-image goals and social connectedness, $\beta = -.14$ [-.268 - -.035], $p = .011$. Active positive affect was also a significant predictor of social connectedness, $\beta = .19$ [.019 - .355], $p = .025$, and mediated the relation between compassionate goals and social connectedness, $\beta = .09$ [.019 - .204], $p = .015$, and between self-image goals and social connectedness, $\beta = -.07$ [-.165 - -.012], $p = .016$. Finally, safe positive affect significantly predicted social connectedness, $\beta = .28$ [.085 - .455], $p = .006$, and was a mediator of the relation between compassionate goals, $\beta = .14$ [.015 - .078], $p = .002$, and self-image goals, $\beta = -.13$ [-.072 - .013], $p = .002$, on social connectedness. Relaxed affect was not a significant predictor of changes in social connectedness.

Social Anxiety.

Relaxed positive affect was a significant predictor of change in social anxiety, $\beta = -.21$ [-.365 - -.047], $p = .008$, and mediated the relation between compassionate goals, $\beta = -.11$ [-.208 - -.029], $p = .005$, and self-image goals and social anxiety, $\beta = .08$ [.365- .047], $p = .004$. Safe positive affect significantly predicted social anxiety, $\beta = -.21$ [-.357 - -.051], $p = .009$, and was a mediator of the relation between compassionate goals, $\beta = -.10$ [-.205 - -.028], $p = .005$, and self-image goals, $\beta = .10$ [.023 - .197], $p = .006$, on social anxiety. Active positive affect and negative affect were not significantly associated with social anxiety.

Social Avoidance.

Relaxed positive affect was a significant predictor of social avoidance, $\beta = -.25$ [-.405 - -.086], $p = .001$, and mediated the relation between compassionate goals and social avoidance, $\beta = -.13$ [-.227 - -.048], $p = .001$, and between self-image goals and social avoidance, $\beta = .10$ [.037- .196], $p < .001$. Safe positive affect significantly predicted social avoidance, $\beta = -.22$ [-

.384 - -.033], $p = .019$, and was a mediator of the relation between compassionate goals, $\beta = -.11$ [-.216 - -.024], $p = .011$, and self-image goals, $\beta = .10$ [.019 - .202], $p = .013$, on social avoidance. Negative affect significantly predicted social avoidance, $\beta = .22$ [.046 - .380], $p = .009$, and was a mediator of the relation between self-image goals and social avoidance, $\beta = .13$ [.031 - .249], $p = .006$. Active positive affect was not significantly associated with social anxiety.

Discussion

Several theoretical contributions have emphasized the human need to belong, feel connected, and form interpersonal relationships with others (Baumeister & Leary, 1995; Deci & Ryan, 2000) and thus there has been a growing interest in the importance of individuals' engagement with significant others and the social world. People can have different interpersonal goals to satisfy their need to belong. They can seek to gain inclusion, acceptance and status by being perceived and treated in desired ways by other people (e.g., Leary & Baumeister, 2000); and they can create and maintain supportive and mutually caring relationships with others (e.g., Brown & Brown, 2006; Uchino et al., 1996). Different types of motives and goals, in turn, may have different consequences (Deci & Ryan, 2000). Based on the reviewed literature and previous studies, we hypothesized that self-image goals would predict decreased feelings of social connectedness. Although self-image goals are a means to gain acceptance and a sense of belonging and to avoid social exclusion, they may actually thwart efforts to connect, probably because the self-focused orientation may make people less attentive to, and responsive to, others' needs (Crocker et al., 2009). In contrast, compassionate goals are hypothesized to increase social connectedness; as people provide support for others out of concern for their well-being they may contribute to the creation and development of cooperative mutually supportive relationships which satisfy their need to belong and connect.

In addition, we hypothesized that self-image goals would be associated with social anxiety and avoidance of social situations, given that the excessive focus on avoiding social threats and failure, and on creating a positive image to others, are hallmarks of this psychological condition.

In general, our results confirmed our hypotheses. Compassionate goals predicted increases in social connectedness during the study period, while self-image goals predicted a decrease in feelings of social connectedness and increase in social anxiety. These results support the idea that efforts to create and maintain a desirable image of the self in close relations, out of a need to belong and be accepted, actually creates the opposite. On the contrary, having others' needs in mind and trying to be supportive out of a genuine concern for their well-being seems to satisfy the need to belong and feel connected. This paradoxical effect has also been found in previous studies (Crocker & Canevello, 2008; Crocker, 2011).

Our results further suggested that when students reported more compassionate goals, they also felt more energetic, lively, enthusiastic, dynamic, and content, warm, and secure, even when controlling for previous levels of positive affect. These positive emotions, in turn, mediated the association between compassionate goals and increases in social connectedness and decreases in social anxiety and avoidance.

It is widely accepted that positive emotions are necessary for the formation and maintenance of interpersonal bonds (e.g., Shiota et al., 2014). Empirical studies showed that positive emotions increase trust (Duhn & Schweitzer, 2005), promote a sense of "oneness" with close others (Waugh & Fredrickson, 2006) and break down a sense of "us versus them" (Dovidio et al., 1995). People who experience positive emotions show increases in the quality of their close relationships (Gable, Gonzaga, & Strachman, 2006; Waugh & Fredrickson, 2006). Several experimental studies have demonstrated that positive emotions are not only associated to, but can actually cause people to have more successful social interactions (e.g., McIntyre, Watson, Clark, &

Cross, 1991; Vittengl & Holt, 2000). Furthermore, compassionate goals were not only associated with feelings of contentment and safeness, but also with activating feelings such as enthusiasm, eagerness, energy and liveliness. These results suggest that compassionate goals may initially motivate people to form social affiliation, and thus recruit an approach-motivated appetitive state, and that when social affiliation is consumed feelings of warmth and calm prevail due to the activation of the quiescence state (Depue & Morrone-Strupinsky, 2005; McCall & Singer, 2012). Also, the association between compassionate goals and positive affect indicate that these goals may be inherently rewarding. Thus, although the focus of compassionate goals is in other people's needs and welfare, the self is also benefited by genuinely providing support and care to others, which is in accord with literature on the benefits of giving (e.g., Brown & Brown, 2006).

In contrast, we found that self-image goals were associated with decreases in social connectedness and increases in social anxiety over the study period. These results suggest that the more individuals are focused on creating, maintaining or defending a positive image of themselves, to be seen as valuable to others and, ultimately, accepted and loved, the less they actually feel a sense of belonging and closeness to others and the more they feel distress and anxiety in social situations.

Our results further suggested that when individuals were high in self-image goals they reported feeling lower positive affect and higher negative affect. Positive and negative affect, in turn, accounted for the indirect relations between self-image goals and decreases in social connectedness, and increases in social anxiety and social avoidance. These results suggest that when preventing social rejection and creating a positive image to others is the fundamental goal, positive emotions are blunted, feelings of fear and confusion prevail, and other fundamental needs such as need for belonging and connect may be unfulfilled. Previous studies found that when people have self-image goals they create less supportive relationships (Crocker &

Canevello, 2008) and are less responsive to others' needs (Canevello & Crocker, 2010), which is in line with our findings.

In sum, although people naturally try to manage the impression others have of them, and may succeed at times, in ongoing and close relationships the goal to construct desired impressions may be counterproductive. On the contrary, compassionate goals seem to satisfy the need to belong and connect. Although the focus is in other people's needs and welfare, the self is also benefited by genuinely providing support and care to others.

Overall, compassionate goals seem to satisfy our need to belong more effectively than self-image goals. This challenges the idea that pursuing self-interests and self-esteem and not taking into account other people's welfare leads to more well-being. However, we all have the capacity for both interpersonal goals, and they are both needed to navigate the social world, probably responding to different needs in different contexts (Crocker et al., 2009). So it is not the case that compassionate goals are good and self-image goals are inherently bad. They have, however, different consequences for behavior and emotions.

This study is not without limitations. Although results support the theoretical hypotheses, it is not possible to draw conclusions on the direction of causal relations. For example, it is plausible that social connectedness influences compassionate and self-image goals. It has been suggested that if individuals' need for relatedness is consistently thwarted when they are young, they may later compensate by attempting to gain approval or sense of worth by pursuing image-oriented goals (Deci & Ryan, 2000), which can ultimately interfere with the attainment of other fundamental needs. Thus, it could be that there is a downward spiral between lack of social connectedness and self-image goals that is self-reinforcing. It is also plausible to assume that the more people feel they belong and are close to others, recognizing their interconnectedness, the more motivated they will be to focus on others' people well-being, leading to

an upward spiral between feelings of social connectedness and compassionate goals.

These results should also be replicated in populations other than university students and more gender homogenous to test for possible gender differences. Finally, this study is based on self-report measures and thus suffers the limitations inherent to this assessment methodology (e.g., demand characteristics, social desirability bias...). Although we used a non-clinical sample of socially anxious individuals, prior data suggest that social anxiety is best understood as a dimensional construct (e.g., Rapee & Spence, 2004). However, studying interpersonal goals in clinical samples may offer new avenues for research and treatment.

In sum, these findings suggest that shifting our motivational perspective towards others may promote feelings of social connectedness and decrease social anxiety. This may have important implications. For example, the excessive focus on avoiding social threats and failure, and on creating a positive image to others, are hallmarks of social anxiety disorder (SAD), and translate self-image goals. Socially anxious individuals fear being embarrassed or rejected by others, and because they care about how others react to them they ultimately want to make a positive impression. Thus, the goal of avoiding social threat and failure takes precedence over seeking rewarding resources and pursuing other important goals and needs. Socially anxious individuals may adopt chronic and inflexible self-image goals in an attempt to prevent social exclusion and be accepted, but as they create the opposite this may lead to more inflexible and rigid self-image goals, leading to a downward spiral. Thus, directly targeting self-image goals in individuals with SAD could be an interesting new avenue for research and treatment.

Also, there is consistent evidence that lack of social connectedness may play a significant role in the aetiology, maintenance, and treatment of several disorders (e.g., Hawkey & Cacioppo, 2010), such as depression (e.g., Cruwys, Haslam, Dingle, Haslam & Jetten, 2014). Depression is typically

characterized by social isolation and reduced social connectedness (Wade & Kendler, 2000). Although it is likely that lack of social connectedness and depression reinforce each other, some evidence suggests that differences in social connectedness emerge prior to the development of depression symptoms (Cacioppo, Hawkley, & Thisted, 2010). Interventions designed to increase social connectedness in the context of depression, for example, could include strategies targeting directly compassionate goals, and positive affect, to increase the therapeutic benefits. In a recent study, Abelson et al. (2014) found that a brief intervention to shift focus from competitive self-promotion to a goal orientation of helping others can reduce HPA-axis activation to a psychosocial stressor. Another alternative is meditation training. On the one hand, meditation may help reduce self-image goals. By promoting defusion from thoughts and feelings, the practice of meditation may lessen automatic reactivity to negative evaluative judgments for self and others (e.g., Hayes, Follette, & Linehan, 2004). The more people are fused with conceptualizations about themselves, more they will react defensively in the face of social threats, because they react to threats to their self-image as they were threats to their survival. Identifying oneself with being an observer of experience rather than the contents of experience reduces perceptions of threat (Hayes et al., 2004). Meditation may also promote compassionate goals, for example, through loving-kindness meditation (Salzberg, 1997), which has been shown to increase self-other integration (Colzato et al., 2012), prosocial behavior (Leiberg, Klimecki, & Singer, 2011; Condon, Desbordes, Miller, & DeSteno, 2013), and positive emotions toward people who are suffering (Klimecki, Leiberg, Lamm, & Singer, 2012).

Exploring these and other ways to promote a more compassionate motivational approach is timely, and may contribute not only to individuals' well-being but also to a more sustainable and supporting society.

References

- Abelson, J. L., Erickson, T. M., Mayer, S. M., Crocker, J., Briggs, H., Lopez-Duran, N. L., Liberzon, I. (2014). Brief cognitive intervention can modulate neuroendocrine stress responses to the Trier Social Stress Test: Buffering effects of a compassionate goal orientation. *Psychoneuroendocrinology*, *44*, 60-70. doi: 10.1016/j.psyneuen.2014.02.016.
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, *13*, 27-45.
- Batson, D. (2011). *Altruism in Humans*. New York: Oxford University Press.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *111*, 497-529. doi: 10.1037/0033-2909.117.3.497
- Baumeister, R. F., & Tice, D. M. (1990). Anxiety and social exclusion. *Journal of Social and Clinical Psychology*, *9*, 165–195.
- Brown, S. L., & Brown, R. M. (2006). Selective investment theory: Recasting the functional significance of close relationships. *Psychological Inquiry: An International Journal for the Advancement of Psychological Theory*, *17*(1), 1-29, doi: 10.1207/s15327965pli1701_01
- Brown, S. L., Nesse, R. M., Vinokur, A. D., & Smith, D. M. (2003). Providing social support may be more beneficial than receiving it: results from a prospective study of mortality. *Psychological Science*, *14*(4), 320-327.
- Cacioppo, J. T., Hawkey, L. C., Crawford, L. E., Ernst, J. M., Burleson, M. H., & Kowalewski, R. B., ... Berntson, G. G. (2002). Loneliness and health: Potential mechanisms. *Psychosomatic Medicine*, *64*(3), 407–417.
- Cacioppo, J. T., & Patrick, B. (2008). *Loneliness: Human nature and the need for social connection*. New York: W. W. Norton & Company.
- Canevello, A., & Crocker, J. (2010). Creating good relationships: Responsiveness, relationship quality, and interpersonal goals. *Journal of Personality and Social Psychology*, *99*(1), 78. doi: 10.1037/a0018186.
- Canevello, A., & Crocker, J. (2015). How self-image and compassionate goals shape intrapsychic experiences. *Social and Personality Psychology Compass*, *9*(11), 620-629. doi: 10.1111/spc3.12206

- Canevello, A., Granillo, M. T., & Crocker, J. (2013). Predicting change in relationship insecurity: the roles of compassionate and self-image goals. *Personal Relationships, 20*(4), 587-618. doi: 10.1111/pere.12002
- Collins, N. L., & Feeney, B. (2000). A safe haven: An attachment theory perspective on support seeking and caregiving in close relationships. *Journal of Personality and Social Psychology, 78*, 1053–1073. doi: 10.1037/0022-3514.78.6.1053
- Colzato, L. S., Zech, H., Hommel, B., Verdonschot, R., van den Wildenberg, W., & Hsieh, S. (2012). Loving-kindness brings loving-kindness: The impact of Buddhism on cognitive self–other integration. *Psychonomic Bulletin & Review, 19*(3), 541-545. doi: 10.3758/s13423-012-0241-y
- Condon, P., Desbordes, G., Miller, W., & DeSteno, D. (2013). Meditation increases compassionate responses to suffering. *Psychological Science*. Advance online publication. doi: 10.1177/0956797613485603
- Crocker, J. (2011). The paradoxical consequences of interpersonal goals: relationships, distress, and the self. *Psychological Studies, 56*(1), 142-150. doi 10.1007/s12646-011-0064-3
- Crocker, J., & Canevello, A. (2008). Creating and undermining social support in communal relationships: The role of compassionate and self-image goals. *Journal of Personality and Social Psychology, 95*(3), 555–575. doi: 10.1037/0022-3514.95.3.555.
- Crocker, J., Olivier, M., & Nuer, N. (2009). Self-image goals and compassionate goals: Costs and benefits. *Self and Identity, 8*(2-3), 251–269. doi:10.1080/15298860802505160.
- Deci, E. L., & Ryan, R. M. (2003). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227–268. doi: 10.1207/S15327965PLI1104_01
- Depue, R. A., & Morrone-Strupinsky, J. V. (2005). A neurobehavioral model of affiliative bonding: Implications for conceptualizing a human trait of affiliation. *Behavioral and Brain Sciences, 28*(3), 313-349.
- Dovidio, J. Gaertner, S., Isen, A., Rust, M., & Guerra, P. (1995). Positive affect and the reduction of intergroup bias. In C. Sedikides, J. Schopler, & C. A. Insko (Eds.), *Intergroup Cognition and Intergroup Behavior* (pp. 337-366), Mahwah, NJ: Erlbaum.

- Dunn, J. R., & Schweitzer, M. E. (2005). Feeling and believing: The influence of emotion on trust. *Journal of Personality and Social Psychology, 88*(5), 736.
- Feeney, B. C., & Collins, N. L. (2003). Motivations for caregiving in adult intimate relationships: Influences on caregiving behavior and relationship functioning. *Personality and Social Psychology Bulletin, 29*(8), 950-968
- Gable, S. L., Gonzaga, G. C., & Strachman, A. (2006). Will you be there for me when things go right? Supportive responses to positive event disclosures. *Journal of Personality and Social Psychology, 91*(5), 904-917. doi:10.1037/0022-3514.91.5.904
- Glaeser, E. L., Laibson, D. I., Scheinkman, J. A., & Soutter, C. L. (2000). Measuring Trust. *The Quarterly Journal of Economics, 115*(3), 811-846. doi: 10.1162/003355300554926
- Gonzaga, G. C., Keltner, D., Londahl, E. A., & Smith, M. D. (2001). Love and the commitment problem in romantic relations and friendship. *Journal of Personality and Social Psychology, 81*(2), 247.
- Hadden, B. W., Smith, C. V., & Knee, C. R. (2014). The way I make you feel: How relatedness and compassionate goals promote partner's relationship satisfaction. *Journal of Positive Psychology, 9*, 155-162. doi: 10.1080/17439760.2013.858272
- Hagerty, B. M., Williams, R. A., Coyne, J. C., & Early, M. R. (1996). Sense of belonging and indicators of social and psychological functioning. *Archives of Psychiatric Nursing, 10*(4), 235-244. doi:10.1016/S0883-9417(96)80029-X
- Hayes, S. C., Follette, V. M., & Linehan, M. M. (2004). *Mindfulness and acceptance: Expanding the cognitive-behavioral tradition*. New York: The Guilford Press.
- Heikkinen, R. L., & Kauppinen, M. (2004). Depressive symptoms in late life: A 10-year follow-up. *Archives of Gerontology and Geriatrics, 38*(3), 239-250.
- Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLoS Med, 7*(7), e1000316. doi: 10.1371/journal.pmed.1000316
- House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science, 241*(4865), 540-545.

- Jose, P. E., Ryan, N., Pryor, J. (2012). Does social connectedness promote a greater sense of well-being in adolescence over time? *Journal of Research in Adolescence*, 22(2), 235-251. doi: 10.1111/j.1532-7795.2012.00783.x
- Kimweli, D. M., & Stilwell, W. E. (2002). Community subjective well-being, personality traits and quality of life therapy. *Social Indicators Research*, 60(1), 193-225. doi:10.1023/A:1021265115608
- Kirkpatrick, L. A., Waugh, C. E., Valencia, A., & Webster, G. D. (2002). The functional domain specificity of self-esteem and the differential prediction of aggression. *Journal of Personality and Social Psychology*, 82(5), 756-767.
- Klimecki, O. M., Leiberg, S., Lamm, C., & Singer, T. (2012). Functional neural plasticity and associated changes in positive affect after compassion training. *Cerebral Cortex*, 23(7), 1552-1561. doi:10.1093/cercor/bhs142
- Leary, M. R. (2007). Motivational and emotional aspects of the self. *Annual Review of Psychology*, 58, 317-344. doi: 10.1146/annurev.psych.58.110405.085658
- Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 32, pp. 1-62). San Diego, CA: Academic Press.
- Leary, M. R., Hofmann, S. G., & DiBartolo, P. M. (2001). Social anxiety as an early warning system: A refinement and extension of the self-presentation theory of social anxiety. In S. G. Hofmann & P. M. DiBartolo (Eds.), *From Social Anxiety to Social Phobia: Multiple Perspectives*, pp. 321-34. Needham Heights, MA: Allyn & Bacon.
- Leary, M. R., Twenge, J. M., & Quinlivan, E. (2006). Interpersonal rejection as a determinant of anger and aggression. *Personality and Social Psychology Review* 10(2), 111-132.
- Lee, R. M., Dean, B. L., & Jung, K. R. (2008). Social connectedness, extraversion, and subjective well-being: Testing a mediation model. *Personality and Individual Differences*, 45(5), 414-419. doi: 10.1016/j.paid.2008.05.017
- Lee, R. M., Draper, M., & Lee, S. (2001). Social connectedness, dysfunctional interpersonal behaviors, and psychological distress: Testing a mediator model. *Journal of Counseling Psychology*, 48, 310-318. doi: 10.1037/0022-0167.48.3.310

- Lee, R. M., & Robbins, S. B. (1998). The relationship between social connectedness and anxiety, self-esteem, and social identity. *Journal of Counseling Psychology, 45*(3), 338-345. doi: 10.1037/0022-0167.45.3.338
- Leiberg, S., Klimecki, O., & Singer, T. (2011). Short-term compassion training increases prosocial behavior in a newly developed prosocial game. *PLoS ONE, 6*(3), e17798. doi: 10.1371/journal.pone.0017798.
- Maslow, A. H. (1943). A theory of human motivation. *Psychological review, 50*(4), 370-396.
- McCall, C., & Singer, T. (2012). The animal and human neuroendocrinology of social cognition, motivation and behavior. *Nature neuroscience, 15*(5), 681-688. doi: 10.1038/nn.3084
- McIntyre, C. W., Watson, D., Clark, L. A., & Cross, S. A. (1991). The effect of induced social interaction on positive and negative affect. *Bulletin of the Psychonomic Society, 29*, 67-70.
- Pavey, L., Greitemeyer, T., & Sparks, P. (2011). Highlighting relatedness promotes prosocial motives and behavior. *Personality and Social Psychology Bulletin, 37*(7), 905-917. doi: 10.1177/0146167211405994.
- Pinto-Gouveia, J., Cunha, M., & Salvador, M. C. (2003). Assessment of social phobia by self-report questionnaires: The Social Interaction and Performance Anxiety and Avoidance Scale and the Social Phobia Safety Behaviours Scale. *Behavioural and Cognitive Psychotherapy, 31*(3), 291-311. doi: 10.1017/S1352465803003059
- Pressman, S. D., Cohen, S., Miller, G. E., Barkin, A., Rabin, B. S., & Treanor, J. J. (2005). Loneliness, social network size, and immune response to influenza vaccination in college freshmen. *Health Psychology, 24*(3), 297-306
- Rapee, R. M., & Spence, S. H. (2004). The etiology of social phobia: Empirical evidence and an initial model. *Clinical Psychology Review, 24*, 737-767.
- Reis, H. T., Clark, M. S., & Holmes, J. G. (2004). Perceived partner responsiveness as an organizing construct in the study of intimacy and closeness. In D. Mashek & A. P. Aron (Eds.), *Handbook of closeness and intimacy* (pp. 367–389). Mahwah: Erlbaum.
- Salzberg, S. (1997). *Lovingkindness: The revolutionary art of happiness*. Boston, MA: Shambhala.

- Schnall, S., Roper, J., & Fessler, D. M. (2010). Elevation leads to altruistic behavior. *Psychological science*, 21(3), 315-320. doi: 10.1177/0956797609359882
- Shiota, M. N., Neufeld, S. L., Danvers, A. F., Osborne, E. A., Sng, O., & Yee, C. I. (2014). Positive emotion differentiation: A functional approach. *Social and Personality Psychology Compass*, 8(3), 104-117.
- Twenge, J. M., Baumeister, R. F., Tice, D. M., & Stucke, T. S. (2001). If you can't join them, beat them: Effects of social exclusion on aggressive behavior. *Journal of Personality and Social Psychology*, 81(6), 1058-1069.
- Twenge, J. M., Zhang, L., Catanese, K. R., Dolan-Pascoe, B., Lyche, L. F., & Baumeister, R. F. (2007). Replenishing connectedness: Reminders of social activity reduce aggression after social exclusion. *British Journal of Social Psychology*, 46(1), 205-224. doi: 10.1348/014466605X90793
- Uchino, B. N., Cacioppo, J. T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: A review with emphasis on underlying mechanisms and implications for health. *Psychological Bulletin*, 119(3), 488-531. doi: 10.1037/0033-2909.119.3.488
- Vittengl, J. R., & Holt, C. S. (1998). A time-series diary study of mood and social interaction. *Motivation and Emotion*, 22, 255-275.
- Waugh, C. E., & Fredrickson, B. L. (2006). Nice to know you: Positive emotions, self-other overlap, and complex understanding in the formation of a new relationship. *Journal of Positive Psychology*, 1(2), 93-106. doi: 10.1080/17439760500510569

Mindfulness and self-compassion increase compassionate goals and decrease self-image goals: A longitudinal study⁴

Abstract

In this study, we explore the role of trait mindfulness and self-compassion on two types of interpersonal goals, namely compassionate goals and self-image goals, which reflect the motivation and intentions people can have in their relationships with others. While compassionate goals have been related to benefits for the self and others, self-image goals are often detrimental. A sample of 153 female university students was recruited and was asked to fill out self-report measures of self-compassion, mindfulness, and interpersonal goals at baseline, and interpersonal goals every two weeks for five times. Results suggested that self-compassion and the non-judging facet of mindfulness predicted increased compassionate goals and decreased self-image goals, while non-reacting only predicted increased compassionate goals.

Keywords: self-compassion; mindfulness; compassionate goals; self-image goals

Introduction

In recent years, western psychology has devoted much interest to constructs such as self-compassion and mindfulness. A large amount of empirical research has been conducted and has consistently shown that both self-compassion and mindfulness traits are important for individuals' psychological health and well-being. Few studies, in contrast, have explored the role of such traits on interpersonal outcomes. In this study, we explore the

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role of self-compassion and mindfulness on two types of interpersonal goals, namely compassionate goals and self-image goals (Crocker & Canevello, 2008), which reflect the motivation and intentions people can have in their relationship with others (Crocker, Olivier, & Nuer, 2009).

Self-image goals refer to the desire to construct, maintain, and defend positive images of oneself, and to seek that others see oneself as valuable and worthy (Crocker et al., 2009). This allows people to attain social inclusion and support, because when other people think we have desirable qualities they want to include us in social groups and support us (Leary & Baumeister, 2000). Self-image goals reflect a broader motivational perspective of the relation between the self and others – egosystem perspective (Crocker et al., 2009). This motivational paradigm is activated in situations perceived as personally threatening, competitive or zero-sum (i.e., one individual's gain is another individual's loss). In such situations, individuals may believe that they need to attend to their needs over those of others and/or to protect themselves from harm (from physical or social threats). In this scenario, the other is seen as an evaluator or competitor or even as someone who can give something to the self, such as attention, approval or love. Thus, under this motivational perspective, people focus on others only insofar as they can give or withhold something for the self (Leary & Baumeister, 2000), and they seldom take into account the needs of others, which leads to a narrow and incomplete view of the reality.

Seeking to gain inclusion, acceptance and status is a fundamental process for belonging (e.g., Leary & Baumeister, 2000), but individuals also need to create and maintain supportive and mutually caring relationships with others (e.g., Collins & Feeney, 2000; Uchino, Cacioppo, & Kiecolt-Glaser, 1996). Research has suggested that the human motivational repertoire is much broader than self-interest and that human beings are capable of extending value beyond themselves and are motivated to genuinely care about the

welfare of others, to be compassionate, generous and supportive, without concern for their self-image (e.g., Batson, 2011).

When people have compassionate goals they are focused on providing support for others, not as a way of acquiring a desirable outcome for them, such as approval or acceptance, but genuinely out of concern for others' well-being (Crocker & Canevello, 2008). Compassionate goals typically reflect an ecosystem motivational perspective of the relation between the self and others (Crocker et al., 2009). Within such perspective, the self is seen as part of a larger whole, an ecosystem, in which one's actions have consequences for others and the entire system, and vice versa. Understanding this interconnectedness leads people to focus on the needs of others and to see relations as nonzero sum in nature (Crocker et al., 2009). This ecosystem motivational perspective is activated in situations where people understand their connectedness to others and believe that it is possible to meet their own needs by collaborating with others and taking their needs into account. It follows that compassionate goals, and an ecosystem perspective more broadly, should help the creation and development of relationships characterized by cooperation and mutual support (Crocker et al., 2009).

Recent research showed that self-image may have detrimental effects at an intrapersonal and interpersonal level. For example, self-image goals are related to depression, anxiety, stress and dysphoria (Duarte & Pinto-Gouveia, 2015; Crocker, Canevello, Breines, & Flynn, 2010), and alcohol-related problems (Moeller & Crocker, 2009). Self-image goals were associated with perfectionism and mediated the association between self-image goals and depression and burnout (Nepon, Flett, Hewitt, 2016). At an interpersonal level, self-image goals were shown to undermine social support in close relationships (Crocker & Canevello, 2008). Self-image goals decreased regard from others (Canevello & Crocker, 2011), predicted relationship anxiety and avoidance (Canevello, Granillo, & Crocker, 2013), and chronic relationship conflict and hostility (Moeller, Crocker, & Bushman, 2009). People with self-

image goals are also less responsive to relationship partners (Canevello & Crocker, 2010). Compassionate goals, in contrast, are related to personal well-being (e.g., Duarte & Pinto-Gouveia, 2015; Crocker et al., 2010), and to healthy interpersonal outcomes (e.g., Crocker & Canevello, 2008; Canevello & Crocker, 2011; Canevello et al., 2013; Hadden, Smith, & Knee, 2014). Given the important role interpersonal goals have in people's intra and interpersonal lives, it is important to explore which factors may promote such goals, and particularly a shift from an egosystem to an ecosystem motivational framework of the relations between self and others. We hypothesize that self-compassion and trait mindfulness may be potential candidates.

Self-compassion refers to compassion that is directed inward, in which the self is the object of care and concern when faced with the experience of suffering (Neff, 2003a). Self-compassion, therefore, involves being touched by and open to one's suffering, not avoiding or disconnecting from it, generating the desire to alleviate one's suffering and to heal oneself with kindness. Self-compassion also involves a non-judgmental understanding of one's pain, inadequacies, and failures, so that one's experience is held in mindful awareness and seen as part of the larger human condition (Neff, 2003a). Self-compassion received large empirical support in recent years. Meta-analytic research on self-compassion suggested that this construct is strongly related to less psychopathology (MacBeth & Gumbley, 2012), and to well-being (Zessin, Dickhäuser, & Garbade, 2015).

Because the self has an important influence on perceptions and judgments of others (Brown, Young, McConnell, 2009; Dunning, 2009), a compassionate orientation to self may produce more compassion towards others as well. Some studies seem to support this idea. Lindsay and Creswell (2014) found that self-compassion promoted prosocial behaviors following a brief self-affirmation intervention. In the same vein, Welp and Brown (2013) found that self-compassion predicted willingness to help a hypothetical person. In addition, a longitudinal study showed that compassionate goals were

associated with higher levels of self-compassion (Crocker & Canevello, 2008). Self-compassionate individuals also demonstrated more positive relationship behaviors as evaluated by their romantic partners, and rated the quality of the relationship more positively (Neff & Beretvas, 2012). Yarnell and Neff (2012) also found that self-compassionate individuals were more likely to use compromising strategies instead of subordinating strategies when resolving conflict, and felt more authentic, experienced less emotional turmoil and higher relational well-being. Also, Zuroff and colleagues (2016) found that self-criticism (one of the components of self-compassion) was positively associated with self-image goals. Although other studies present a more nuanced picture of self-compassion in relationships (Baker & McNulty, 2011; Neff & Pommier, 2012), in general the literature suggests that self-compassion appears to enhance interpersonal functioning.

Mindfulness is typically defined as non-judgmental attention to experiences in the present moment (Kabat-Zinn, 2013). A similar definition was proposed by Bishop and colleagues (2004) in their two-component model of mindfulness, where the first component is the regulation of attention in order to maintain it on the immediate experience, and the second component involves approaching one's experiences with an orientation of curiosity, openness, and acceptance, regardless of their valence and desirability. Mindfulness has been conceptualized both as a trait, in terms of one's predispositions to be mindful in daily life (e.g., Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), and as a state typically cultivated in formal meditation practices (Kabat-Zinn, 2013), in which the practitioner focuses attention on the experience of thoughts, emotions, and body sensations, simply observing them as they arise and pass away, without getting entangled in them. Recently, a meta-analysis concluded that Mindfulness-Based Stress Reduction (MBSR) is effective in reducing stress, depression, anxiety and distress, and in ameliorating the quality of life, in nonclinical populations (Khoory, Sharma, Rusch, & Fournier, 2016).

Research on the relationship between mindfulness and interpersonal variables is scarce in comparison but provides preliminary evidence that mindfulness may promote positive social outcomes. For example, mindfulness was associated with empathy, better identification and description of feelings, less social anxiety, and less distress contagion (Dekeyser, Raes, Leijssen, Leysen, & Dewulf, 2008). Mindfulness has also been related to romantic relationship satisfaction and adjustment (Barnes, Brown, Krusemark, Campbell, & Rogge, 2007; Burpee & Langer, 2005; Wachs & Cordova, 2007; Carson, Carson, Gil, & Baucom, 2004). Jones and Hansen (2014) showed that mindfulness was associated with improved supportive communication skills. Tan, Lo, and Macrae (2014) found that a brief mindfulness meditation enhanced both mental state attribution and empathic concern, suggesting that mindfulness may be a powerful technique for facilitating core aspects of social-cognitive functioning. Cameron and Fredrickson (2015) found that mindfulness predicted helping and positive and negative emotions during the helping process. Finally, Wayment, Wiist, Sullivan, and Warren (2010) found a positive correlation between meditation experience and a quiet ego (e.g., altruism, wisdom), and a brief mindfulness-based meditation fostered the adoption of a third-person vantage point during mental imagery and diminished perspectives of personal salience, indicative of egocentrism (Golubickis, Tan, Falben, & Macrae, 2016).

In sum, there is still a scarcity of studies exploring the role of self-compassion and mindfulness on interpersonal variables, and no studies to our knowledge with interpersonal goals in particular. In addition, most of the above-mentioned studies used cross-sectional designs. Given the fluctuation in people's interpersonal goals (Crocker and Canevello, 2008), probably depending on contextual cues, it is important to assess such goals at different time points, controlling for previous levels.

The present study aims to explore whether self-compassion and mindfulness predict compassionate and self-image goals measured at several time points.

Based on the reviewed studies, we hypothesize self-compassion and mindfulness facets will predict more compassionate goals and fewer self-image goals over the study period. In the models predicting compassionate goals and self-image goals, we controlled for the potential effect of fears of compassion, which refers to discomfort, difficulty or resistance to affiliative-based emotions, other- or self-directed (Gilbert, McEwan, Matos, & Ravis, 2011). Resistance to feelings of compassion has been associated with poor outcomes, such as depression, anxiety, stress, self-criticism in students (Gilbert et al., 2011, 2012) and in depressed patients (Gilbert, McEwan, Catarino, Baião, & Palmeira, 2014). We hypothesize that holding negative beliefs about giving compassion to others or to the self, and about receiving compassion from others will predict less compassionate goals and more self-image goals.

Method

Participants

The sample was composed of 161 university students. Given the small number of males ($n = 8$), these were excluded. The final sample was composed of 153 female college students, with ages ranging from 18 to 37 ($M = 20.94$; $SD = 2.49$). Regarding marital status, 98% of the sample was single, 7% ($n = 1$) was married and 1.3% was divorced ($n = 2$).

Procedure

A convenience sample of college students was recruited in Portuguese universities. The study was advertised in classes and students were informed about the study aims. Students who volunteered to participate were asked to sign an informed consent form previous to their participation, in which essential information about the study and confidentiality was presented. It took 20 minutes on average to complete the baseline self-report

questionnaires, in a classroom. The biweekly assessments were conducted online using Lime Survey, an online survey tool. Individuals provided their email and received a link to the online survey every two weeks, for five times. Participants who failed to complete at least three of the weekly surveys were excluded from the study. All procedures were in accordance with the Helsinki Declaration of 1975. All participants provided their written informed consent.

Measures

Self-compassion Scale (SCS; Neff, 2003; Portuguese version by Castilho, Pinto-Gouveia, & Duarte, 2015). The SCS is a 26-item self-report scale designed to measure self-compassion. The scale is composed by six subscales, namely self-kindness (e.g., 'I try to be understanding and patient toward those aspects of my personality I don't like'), self-judgment (e.g., 'I'm disapproving and judgmental about my own flaws and inadequacies'), mindfulness (e.g., 'When something painful happens I try to take a balanced view of the situation'), over-identification (e.g., 'When I'm feeling down I tend to obsess and fixate on everything that's wrong'), common humanity (e.g., 'I try to see my failings as part of the human condition'), and isolation (e.g., 'When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world'). The original scale showed good psychometric properties (Neff, 2003), as did the Portuguese version (Castilho et al., 2015). In the present study Cronbach's alpha was .69 for the total scale.

Five Facets of Mindfulness (FFMQ; Baer et al., 2006; Portuguese version by Gregório & Pinto-Gouveia, unpublished manuscript). The FFMQ is a 39-item self-report measure designed to measure five elements of mindfulness, namely observing (e.g., 'When I'm walking, I deliberately notice the sensations of my body moving'), describing (e.g., 'I can easily put my beliefs, opinions, and expectations into words'), acting with awareness (e.g., 'When I do things, my mind wanders off and I'm easily distracted', reversed item), non-judging of inner experience (e.g., 'I tell myself I shouldn't be feeling the way I'm feeling',

reversed item), and non-reactivity to inner experience (e.g., 'I perceive my feelings and emotions without having to react to them'). The original version showed good psychometric properties (Baer et al., 2006). In the present study Cronbach's alphas were: .78 for observing, .90 for describing, .89 for acting with awareness, .88 for non-judging, and .67 for non-reacting.

Fears of Compassion Scales (Gilbert et al., 2011; Portuguese version by Simões, 2012). There are three scales measuring fears of compassion, namely: fears of feeling or expressing compassion for others; fears of receiving compassion from others; and fears of compassion for self. Respondents rate on a Likert scale how much they agree with each statement (0 = 'don't agree at all' to 4 = 'completely agree'). Higher scores indicate greater fears of compassion. In the present study, Cronbach's alphas were .86 for fears of expressing compassion for others, .90 for fears of receiving compassion from others, and .93 for fears of giving compassion to self.

Compassionate and Self-Image Goals (CSIG; Crocker & Canevello, 2008; Portuguese Version by Duarte, Pinto-Gouveia, & Lopes, unpublished manuscript). The CSIG is a 13-item scale that uses a 5-point rating scale (1 = not at all to 5 = always) to assess the extent to which subjects hold more compassionate or self-image goals regarding their friendships. There are 7 compassionate goals' items (e.g., 'have compassion for others' mistakes and weaknesses') and 6 self-image goals' items (e.g., 'avoid the possibility of being wrong'). All items begin with: "In the past two weeks, in the area of friendship, how much did you want to or try to..." In the original study Cronbach's Alpha was .83 for Self-Image Goals and .90 for Compassionate Goals. In the present study Cronbach's alpha was .82 for Compassionate Goals and .83 for Self-image Goals. These Cronbach's alphas are an average of the Cronbach's alpha for the five measurements.

Data Analytic Plan

As a first step, we calculated correlation coefficients to explore the association between all variables in study. Given that compassionate and self-image goals were measured at several time points, we averaged the six measurements. These variables can be conceptualized as individuals' 'chronic' levels of those variables. As compassionate and self-image goals share variation, we used partial correlation as this analysis allows to calculate the size of the unique portion of variance removing the portion of variance that was common between the goals.

Next, we used a linear mixed model to estimate change in compassionate and self-image goals over time. These models are appropriate to handle data where observations are not independent, as is the case in repeated measures, correctly modelling correlated error (Twisk, 2006). For all models, we first tested a model with only random intercepts and then we included random slopes. To compare both models we used Likelihood Ratio Test and AIC, and we report the models that presented the best fit. To estimate model parameters, we used maximum likelihood (ML) estimation. All statistical procedures were computed with software IBM SPSS (v. 23).

Results

Correlations Between Interpersonal Goals and Individual Dispositions

Because compassionate and self-image goals were correlated ($r = .59$, $p < .001$), we conducted partial correlations to explore the size of the unique variances. So, in the correlations for compassionate goals the effect of self-image goals was controlled for, and vice versa. Compassionate goals were positively associated with self-compassion, acting with awareness, non-judging, and non-reacting. In contrast, when controlling for compassionate goals, self-image goals were associated with lower self-compassion, describing, acting with awareness, non-judging and non-reacting (Table 1).

Table 1.

Partial and Bivariate Correlations, Means and Standard Deviations of the Variables in Study

	1	2	3	4	5	6	7	8	9	10	<i>M</i>	<i>SD</i>
1. Compassionate Goals	-										20.45	4.33
2. Self-image Goals	.59**	-									17.34	4.50
3. Self-compassion	.27**	-.43**	-								79.99	15.30
4. Observe	.11*	.14**	-.13*	-							24.27	5.08
5. Describe	.14**	-.22**	.34**	.04	-						25.96	5.56
6. Act with Awareness	.20**	-.23**	.33**	-.12*	.23**	-					26.71	5.11
7. Non-judge	.17**	-.41**	.61**	-.37**	.22**	.40**	-				26.30	5.98
8. Non-react	.29**	-.24**	.40**	.11*	.31**	.23*	.26**				19.83	3.77
9. Fear of compassion for others	-.24**	.34**	-.34**	.01	-.22**	-.30**	-.49**	-.28**			20.07	6.92
10. Fear of receiving compassion	-.20**	.34**	-.51**	.13*	-.39**	-.32**	-.35**	-.28**	.49**		15.98	9.29
11. Fear of self-compassion	-.28**	.29**	-.49**	.11*	-.32**	-.35**	-.45**	-.28**	.40**	.72**	12.64	10.19

Note. * $p < .05$; ** $p < .001$

Individual Dispositions Predict Interpersonal Goals Over Time

The results of the fully adjusted analysis are presented in Table 2. In a random intercept model adjusted for self-image goals, self-compassion predicted a significant increase in compassionate goals (coefficient = -0.51, *S.E.* = 0.14, $p = <.001$). In our second and final model, we added fears of compassion. Self-compassion remained a significant predictor of compassionate goals (coefficient = 0.37, *S.E.* = 0.16, $p = .023$). The coefficient of self-compassion decreased only slightly, indicating that, although fears of compassion explain a portion of the variance, self-compassion also still explains a unique portion of the variance in compassionate goals independent of fears of compassion. In this model, fear of compassion for others was also a significant predictor of compassionate goals (coefficient = -0.84, *S.E.* = 0.34, $p = .016$). In a random intercept model adjusted for self-image goals, several mindfulness facets predicted a significant increase in compassionate goals, namely acting with awareness (coefficient = 0.093, *S.E.* = 0.04, $p = .033$), and non-reacting (coefficient = 0.24, *S.E.* = 0.59, $p = < .001$). Non-reacting remained a significant predictor of compassionate goals (coefficient = .23, *S.E.* = 0.50, $p = < .001$) after the inclusion of fears of compassion, but acting with awareness turned non-significant. Fear of compassion for others was also a significant predictor of compassionate goals in this model (coefficient = -0.37, *S.E.* = 0.34, $p = .033$).

Table 2.
Mixed model predicting change in Compassionate Goals (n = 150)

	<i>Coefficient</i>	<i>S.E.</i>	<i>p value</i>
Model 1			
Self-compassion	.037	.016	.023
Fear of compassion for Others	-.084	.034	.016
Fear of Receiving Compassion	-.003	.034	.923
Fear of Self-compassion	-.006	.029	.838

Self-image Goals	.501	.034	<.001
Model 2			
Observe	.057	.044	.205
Describe	-.016	.040	.681
Act with Awareness	.074	.043	.093
Non-judge	-.006	.044	.882
Non-react	.232	.059	<.001
Fear of compassion for Others	-.073	.034	.033
Fear of Receiving Compassion	-.010	.033	.762
Fear of Self-compassion	-.000	.028	.996
Self-image Goals	.481	.034	<.001

In a random intercept model adjusted for compassionate goals, self-compassion predicted a significant decrease in self-image goals (coefficient = -0.11, *S.E.* = 0.01, $p < .001$). In our second and final model, we added fears of compassion. Self-compassion remained a significant predictor of self-image goals (coefficient = -0.08, *S.E.* = 0.01, $p < .001$). In this model, fear of compassion for others also predicted a significant increase in self-image goals (coefficient = 0.10, *S.E.* = 0.31, $p = .002$).

Finally, in a random intercept model adjusted for compassionate goals, mindfulness facets predicted a significant decrease in self-image goals, namely describing (coefficient = -0.078, *S.E.* = 0.04, $p = .044$), and non-judging (coefficient = -0.21, *S.E.* = 0.40, $p < .001$). Non-Judging remained a significant predictor of self-image goals (coefficient = -0.16, *S.E.* = 0.40, $p < .001$) after the inclusion of fears of compassion, but describing turned non-significant. Again, fear of compassion for others significantly predicted increases in self-image goals (coefficient = .010, *S.E.* = 0.32, $p = .003$).

Table 3.
Mixed model predicting change in Self-image Goals (n = 150)

	<i>Coefficient</i>	<i>S.E.</i>	<i>p value</i>
Model 1			
Self-compassion	-.082	.014	<.001
Fear of compassion for Others	.099	.031	.002
Fear of Receiving Compassion	.038	.032	.227
Fear of Self-compassion	-.010	.027	.704
Compassionate Goals	.493	.032	<.001
Model 2			
Observe	.068	.043	.115
Describe	-.055	.039	.157
Act with Awareness	.012	.042	.784
Non-judge	-.160	.040	<.001
Non-react	-.097	.057	.092
Fear of compassion for Others	.099	.032	.003
Fear of Receiving Compassion	.027	.032	.399
Fear of Self-compassion	.007	.027	.979
Compassionate Goals	.474	.033	<.001

We also investigated whether the models assuming an overall linear trend would be significantly improved when including random slopes. In all models, adding a random slope did not improve model fit, suggesting that individuals didn't show significant variation around the general trend.

Discussion

When people are motivated by caring about the well-being of others (i.e., have compassionate goals), instead of managing impressions others have of them (i.e., have self-image goals), they are more likely to satisfy their fundamental human needs of support and connection (e.g., Canevello & Crocker, 2010; Crocker & Canevello, 2008; Crocker et al., 2009). Of interest, therefore, are factors that may influence a shift from self-image goals, or an egosystem motivation more broadly, to compassionate goals and an ecosystem motivation. In this study, we focused on self-compassion and trait mindfulness.

Results suggested that self-compassion predicted more compassionate goals, and fewer self-image goals, accounting for the variation in interpersonal goals over the study period. These results are in line with previous studies pointing that self-compassion has many benefits at an interpersonal level (e.g., Lindsay & Creswell, 2014; Welp & Brown, 2013; Neff & Beretvas, 2012; Yarnell & Neff, 2012). Because the self is often the anchor to which judgments of others are grounded (Brown et al., 2009; Dunning, 2002), a compassionate orientation to the self is likely to generate more compassion toward others as well. This implies that if a person is able to be open to one's suffering and generates feelings of kindness, acceptance, and understanding so that one's experience is held in mindful awareness and seen as part of the larger human condition, he/she will be more likely to extend these feelings to others. In many Buddhist traditions, in fact, it is equally important to give compassion to others and to oneself (Brach, 2003; Salzberg, 1997), as to give compassion to others but not the self is seen as drawing an artificial distinction between self and others that misrepresent our essential interconnectedness.

Our results also showed that several mindfulness facets predicted interpersonal goals. Particularly, we found that non-judging of personal experiences predicted fewer self-image goals and that non-reacting predicted increases in compassionate goals. These results suggest that the acceptance

component of mindfulness, which includes taking a non-evaluative stance toward internal experiences, and allowing experiences to come and go without getting carried away by them, seems to be the most important in terms of interpersonal goals. The reason why non-judging predicted self-image goals and non-reacting predicted self-compassion is not clear. In a previous study, it was found that self-criticism was positively related to self-image goals but not significantly related to compassionate goals, suggesting that individuals presenting with self-criticism or self-judgment are highly motivated to maintain a positive self-image and to impress others (Zuroff et al., 2015). Also, non-reactivity has been associated with adaptive responses to stress. Meditation activates regions of the brain associated with more adaptive responding to stressful or negative situations (Cahn & Polich, 2006; Davidson et al., 2003). Activation of this region of the brain corresponds with faster recovery to baseline after being negatively provoked (e.g., Davidson, Jackson, & Kalin, 2000). Also, several studies show that cognitive and emotional load may prevent focusing on others (e.g., Hiraoka & Nomura, 2016; Sandi & Haller, 2015). Thus, individuals with lower levels of reactivity may be more cognitively and emotionally available for focusing on others.

The fact that observing, another important mindfulness component, was not related to interpersonal goals may be explained by the fact that this was a sample with no meditation experience. In previous studies (e.g., Baer et al., 2006) it was found that the observing facet of mindfulness showed positive correlations with measures of psychological symptoms and failed to fit in as a component of the overall mindfulness construct, but not in a sample of meditators (Baer et al., 2006), suggesting that the observing facet may be sensitive to changes with meditation experience. So the absence of a significant relation between observing and the outcome variables in the present study might be due to the low level of participants' meditative practice.

Several works give support to the idea that mindfulness can encourage an ecosystem motivational framework (e.g., Dekeyser et al., 2008; Barnes et al., 2007; Burpee & Langer, 2005; Wachs & Cordova, 2007; Jones & Hansen, 2014; Tan et al., 2014; Carson et al., 2004), and decrease an egosystem motivational framework (Wayment et al., 2010; Golubickis et al., 2016). A mechanism through which mindfulness may diminish egocentrism is through the promotion of detachment from the contents of consciousness, a process termed 'reperceiving' or 'decentering' (Carmody, Baer, Lykins, & Olendzki, 2009; Fresco et al., 2007), that triggers the adoption of an observer-based perception of the self. From a Buddhist perspective, identification with a static sense of self is the cause of psychological distress (Olendzki, 2010). In the same vein, McIntosh (1997) argued that trait mindfulness could be beneficial because this trait reflects individuals' ability to lose their strong attachment to 'self'. Mindfulness-based meditation is postulated to elicit just such a shift in self-construal; it allows one to be aware of the transitory nature of the self and one's momentary experience leading to a change in perspective where self-referential processing becomes diminished (Hölzel et al., 2011). Our findings that it is the non-evaluative stance toward internal experiences, and allowing experiences to come and go without getting carried away by them that are related to fewer self-image goals and to more compassionate goals are in line with this theorizing. Finally, we also found that having negative beliefs about giving compassion to others significantly decreased compassionate goals and increased self-image goals. These results suggest that views and conceptualizations about giving compassion ('compassion is weakness, or that other people may take advantage of me') may have direct consequences for interpersonal relations. In general, our findings suggest that although self-compassion and mindfulness, as studied here, are dispositions focused on oneself and one's experiences, they can have a relevant impact on the motivational orientation towards others.

Although these results are promising, several limitations should be taken into account. The sample size was small, which may compromise the power of the analyses. Also, the final sample was composed of female university students, which may limit the generalizability of the present findings. Because we did not manipulate self-compassion and mindfulness, conclusions about causal relationships cannot be drawn from these results. This research relied entirely on self-report measures, and thus bias associated with this methodology should be taken into account (e.g., response bias, social desirability). The use of self-report measures is particularly relevant in mindfulness studies, as several limitations have been identified for the mindfulness measures, including lack of external, objective criteria, potential confusion over semantic interpretation, and the introspection required to recollect mental states (Grossman, 2008). Self-compassion, in turn, seems to be more readily definable, and items may be more easily accessible to respondents (Van Dam, Sheppard, Forsyth, & Earleywine, 2011).

Future studies could improve on these limitations. For example, experimental manipulation of both dispositional measures and interpersonal goals would provide a clearer understanding of the causal relations between these processes. Also, it would be interesting to explore the impact of mindfulness-based interventions and self-compassion interventions on changes in interpersonal goals. Specifically, it would be expected that such interventions would promote a shift from self-image goals to compassionate goals.

Shifting our motivational perspective towards others has been shown to promote intrapersonal and interpersonal well-being. Thus, interventions designed to encourage such shifts are particularly relevant. For example, Abelson et al. (2014) found that a brief intervention to shift focus from competitive self-promotion to a goal orientation of helping others can reduce HPA-axis activation to a psychosocial stressor. Another alternative is meditation training. On the one hand, meditation may help reduce self-image

goals. By promoting defusion from thoughts and feelings, the practice of meditation may lessen automatic reactivity to negative evaluative judgments for self and others (e.g., Hayes, Follette, & Linehan, 2004). The more people are fused with conceptualizations about themselves, more they will react defensively in the face of social threats because they react to threats to their self-image as they were threats to their survival. Identifying oneself with being an observer of experience rather than the contents of experience may reduce perceptions of threat (Hayes et al., 2004). Meditation may also promote compassionate goals, for example, through loving-kindness meditation (Salzberg, 1997), which has been shown to increase self-other integration (Colzato et al., 2012), prosocial behavior (Leiberg, Klimecki, & Singer, 2011; Condon, Desbordes, Miller, & DeSteno, 2013), and positive emotions toward people who are suffering (Klimecki, Leiberg, Lamm, & Singer, 2012).

Exploring these and other ways to promote a more compassionate motivational approach is timely and may contribute not only to individuals' well-being but also to a more sustainable and supporting society.

References

- Abelson, J. L., Erickson, T. M., Mayer, S. M., Crocker, J., Briggs, H., Lopez-Duran, N. L., Liberzon, I. (2014). Brief cognitive intervention can modulate neuroendocrine stress responses to the Trier Social Stress Test: Buffering effects of a compassionate goal orientation. *Psychoneuroendocrinology*, 44, 60-70. doi:10.1016/j.psyneuen.2014.02.016
- Baer, R. A., Hopkins, J., Krietemeyer, J., Smith, G. T., & Toney, L. (2006). Using Self-Report Assessment Methods to Explore Facets of Mindfulness. *Assessment*, 13(1), 27-45. doi: 10.1177/1073191105283504
- Baker, L., & McNulty, J. K. (2011). Self-compassion and relationship maintenance: The moderating roles of conscientiousness and gender. *Journal of Personality and Social Psychology*, 100(5), 853–873. doi:10.1037/a0021884
- Barnes, S., Brown, K. W., Krusemark, E., Campbell, W. K., & Rogge, R. D. (2007). The role of mindfulness in romantic relationship satisfaction and responses to relationship stress. *Journal of Marital and Family Therapy*, 33(4), 482-500. doi: 10.1111/j.1752-0606.2007.00033.x
- Batson, D. (2011). *Altruism in Humans*. New York: Oxford University Press.
- Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., Segal, Z. V., Abbey, S., Speca, M., Velting, D. and Devins, G. (2004), Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, 11(3), 230–241. doi:10.1093/clipsy.bph077
- Brach, T. (2003). *Radical acceptance: Embracing your life with the heart of a Buddha*. New York, NY: Bantam.
- Brown, C. M., Young, S. G., & McConnell, A. R. (2009). Seeing close others as we see ourselves: One's own self- complexity is reflected in perceptions of meaningful others. *Journal of Experimental Social Psychology*, 45, 515–523. doi: 10.1016/j.jesp.2009.02.005
- Burpee, L. C., & Langer, E. J. (2005). Mindfulness and marital satisfaction. *Journal of Adult Development*, 12(1), 43-51. doi: 10.1007/s10804-005-1281-6
- Cahn, B. R., & Polich, J. (2006). Meditation states and traits: EEG, ERP, and neuroimaging studies. *Psychological bulletin*, 132(2), 180-211. doi: 10.1037/0033-2909.132.2.180

- Cameron, C. D., & Fredrickson, B. L. (2015). Mindfulness facets predict helping behavior and distinct helping-related emotions. *Mindfulness*, 6(5), 1211-1218. doi: 10.1007/s12671-014-0383-2
- Canevello, A., & Crocker, J. (2010). Creating good relationships: Responsiveness, relationship quality, and interpersonal goals. *Journal of Personality and Social Psychology*, 99, 78–106. doi: 10.1037/a0018186
- Canevello, A., & Crocker, J. (2011). Interpersonal goals, others' regard for the self, and self-esteem: The paradoxical consequences of self-image and compassionate goals. *European Journal of Social Psychology*, 41, 422–434. doi: 10.1002/ejsp.808
- Canevello, A., Granillo, M. T. and Crocker, J. (2013), Predicting change in relationship insecurity: The roles of compassionate and self-image goals. *Personal Relationships*, 20(4), 587–618. doi:10.1111/per.12002
- Carmody, J., Baer, R. A., Lykins, E., & Olendzki, N. (2009). An empirical study of the mechanisms of mindfulness in a mindfulness-based stress reduction program. *Journal of Clinical Psychology*, 65(6), 613-626. doi: 10.1002/jclp.20579.
- Carson, J. W., Carson, K. M., Gil, K. M., & Baucom, D. H. (2004). Mindfulness-based relationship enhancement. *Behavior Therapy*, 35(3), 471-494. doi: 10.1016/S0005-7894(04)80028-5
- Castilho, P., Pinto-Gouveia, J., & Duarte, J. (2015). Evaluating the multifactor structure of the long and short versions of the self-compassion scale in a clinical sample. *Journal of Clinical Psychology*, 71(9), 856–870. doi:10.1002/jclp.22187
- Collins, N. L., & Feeney, B. (2000). A safe haven: An attachment theory perspective on support seeking and caregiving in close relationships. *Journal of Personality and Social Psychology*, 78, 1053–1073. doi: 10.1037/0022-3514.78.6.1053
- Colzato, L. S., Zech, H., Hommel, B., Verdonschot, R., van den Wildenberg, W., & Hsieh, S. (2012). Loving-kindness brings loving-kindness: The impact of Buddhism on cognitive self–other integration. *Psychonomic Bulletin & Review*, 19(3), 541-545. doi: 10.3758/s13423-012-0241-y
- Condon, P., Desbordes, G., Miller, W., & DeSteno, D. (2013). Meditation increases compassionate responses to suffering. *Psychological Science*, 24(10), 2125-2127. doi: 10.1177/0956797613485603

- Crocker, J., & Canevello, A. (2008). Creating and undermining social support in communal relationships: The role of compassionate and self-image goals. *Journal of Personality and Social Psychology, 95*(3), 555–575. doi: 10.1037/0022-3514.95.3.555.
- Crocker, J., Canevello, A., Breines, J. G., & Flynn, H. (2010). Interpersonal goals and change in anxiety and dysphoria in first-semester college students. *Journal of Personality and Social Psychology, 98*, 1009–1024. doi: 10.1037/a0019400.
- Crocker, J., Olivier, M., & Nuer, N. (2009). Self-image goals and compassionate goals: Costs and benefits. *Self and Identity, 8*(2-3), 251–269. doi:10.1080/15298860802505160.
- Dekeyser, M., Raes, F., Leijssen, M., Leysen, S., & Dewulf, D. (2008). Mindfulness skills and interpersonal behaviour. *Personality and Individual Differences, 44*(5), 1235-1245. doi: 10.1016/j.paid.2007.11.018
- Davidson, R. J., Jackson, D. C., & Kalin, N. H. (2000). Emotion, plasticity, context, and regulation: perspectives from affective neuroscience. *Psychological Bulletin, 126*(6), 890-909. doi: 10.1037/0033-2909.126.6.890
- Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F., ... & Sheridan, J. F. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine, 65*(4), 564-570.
- Duarte, J., & Pinto-Gouveia, J. (2015). Focusing on self or others has different consequences for psychological well-being: A longitudinal study of the effects of distinct interpersonal goals. *Journal of Social and Clinical Psychology, 34*(9), 809-825. doi: 10.1521/jscp.2015.34.9.809
- Dunning, D. (2002). The relation of self to social perception. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (pp. 421–441). New York, NY: Guilford Press.
- Fresco, D. M., Moore, M. T., van Dulmen, M. H., Segal, Z. V., Ma, S. H., Teasdale, J. D., & Williams, J. M. G. (2007). Initial psychometric properties of the experiences questionnaire: validation of a self-report measure of decentering. *Behavior Therapy, 38*(3), 234-246.
- Gilbert, P., McEwan, K., Catarino, F., Baião, R., & Palmeira, L. (2014). Fears of happiness and compassion in relationship with depression,

- alexithymia, and attachment security in a depressed sample. *British Journal of Clinical Psychology*, 53(2), 228-244.
- Gilbert, P., McEwan, K., Gibbons, L., Chotai, S., Duarte, J., & Matos, M. (2012). Fears of compassion and happiness in relation to alexithymia, mindfulness, and self-criticism. *Psychology and Psychotherapy: Theory, Research and Practice*, 85(4), 374-390.
- Gilbert, P., McEwan, K., Matos, M., & Ravis, A. (2011). Fears of compassion: Development of three self-report measures. *Psychology and Psychotherapy: Theory, Research and Practice*, 84(3), 239-255.
- Golubickis, M., Tan, L. B., Falben, J. K., & Macrae, C. N. (2016). The observing self: Diminishing egocentrism through brief mindfulness meditation. *European Journal of Social Psychology*, 46, 521-527. doi: 10.1002/ejsp.2186
- Hadden, B. H., Smith, C. V., & Knee, C. R. (2014). The way I make you feel: How relatedness and compassionate goals promote partner's relationship satisfaction. *The Journal of Positive Psychology*, 9(2), 155-162. doi: 10.1080/17439760.2013.858272
- Hayes, S. C., Follette, V. M., & Linehan, M. M. (2004). *Mindfulness and acceptance: Expanding the cognitive-behavioral tradition*. New York: The Guilford Press.
- Hiraoka, D., & Nomura, M. (2016). The influence of cognitive load on empathy and intention in response to infant crying. *Scientific Reports*, 6, 28247. doi:10.1038/srep28247
- Hölzel, B. K., Lazar, S. W., Gard, T., Schuman-Olivier, Z., Vago, D. R., & Ott, U. (2011). How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. *Perspectives on Psychological Science*, 6(6), 537-559. doi: 10.1177/1745691611419671
- Jones, S. M., & Hansen, W. (2015). The impact of mindfulness on supportive communication skills: Three exploratory studies. *Mindfulness*, 6(5), 1115-1128. doi: 10.1007/s12671-014-0362-7
- Kabat-Zinn, J. (2013). *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness*. London: Piatkus
- Khoury, B., Sharma, M., Rush, S. E., & Fournier, C. (2016). Mindfulness-based stress reduction for healthy individuals: A meta-analysis. *Journal of*

- Psychosomatic Research*, 78(6), 519–528.
doi:10.1016/j.jpsychores.2015.03.009
- Klimecki, O. M., Leiberg, S., Lamm, C., & Singer, T. (2012). Functional neural plasticity and associated changes in positive affect after compassion training. *Cerebral Cortex*, 23(7), 1552-1561.
doi:10.1093/cercor/bhs142
- Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 32, pp. 1-62). San Diego, CA: Academic Press.
- Leiberg, S., Klimecki, O., & Singer, T. (2011). Short-term compassion training increases prosocial behavior in a newly developed prosocial game. *PLoS ONE*, 6(3), e17798. doi: 10.1371/journal.pone.0017798.
- Lindsay, E. K., & Creswell, J. D. (2014). Helping the self help others: Self-affirmation increases self-compassion and pro-social behaviors. *Frontiers in Psychology*, 5, 421. doi: 10.3389/fpsyg.2014.00421
- MacBeth, A., & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review*, 32(6), 545-552.
doi:10.1016/j.cpr.2012.06.003
- McIntosh, W. D. (1997). East meets West: Parallels between Zen Buddhism and social psychology. *International Journal for the Psychology of Religion*, 7, 37–52.
- Moeller, S. J., & Crocker, J. (2009). Drinking and desired self-images: Path models of self-image goals, coping motives, heavy-episodic drinking, and alcohol problems. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors*, 23(2), 334–340.
doi: 10.1037/a0015913
- Moeller, S. J., Crocker, J., & Bushman, B. (2009). Creating hostility and conflict: Effects of entitlement and self-image goals. *Journal of Experimental Social Psychology*, 45, 448-452. doi: 10.1016/j.jesp.2008.11.005
- Neff, K. (2003a). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, 2(2), 85-101.
doi:10.1080/15298860390129863

- Neff, K. D. (2003b). The development and validation of a scale to measure self-compassion. *Self and Identity*, 2, 223–250. doi:10.1080/15298860390209035
- Neff, K. D., & Beretvas, S. N. (2013). The role of self-compassion in romantic relationships. *Self and Identity*, 12(1), 78-98. doi: 10.1080/15298868.2011.639548
- Neff, K. D., & Pommier, E. (2013). The relationship between self-compassion and other-focused concern among college undergraduates, community adults, and practicing meditators. *Self and Identity*, 12(2), 160-176. doi: 10.1080/15298868.2011.649546
- Nepon, T., Flett, G. L., & Hewitt, P. L. (2016). Self-image goals in trait perfectionism and perfectionistic self-presentation: Toward a broader understanding of the drives and motives of perfectionists. *Self and Identity*, 15(6), 683-706. doi: 10.1080/15298868.2016.1197847
- Olendzki, A. (2010). *Unlimiting mind: The radically experiential psychology of Buddhism*. Somerville, MA: Wisdom Publications.
- Salzberg, S. (1997). *Lovingkindness: The revolutionary art of happiness*. Boston, MA: Shambhala.
- Sandi, C., & Haller, J. (2015). Stress and the social brain: Behavioural effects and neurobiological mechanisms. *Nature Reviews Neuroscience*, 16(5), 290-304. doi: 10.1038/nrn3918.
- Tan, L. B., Lo, B. C., & Macrae, C. N. (2014). Brief mindfulness meditation improves mental state attribution and empathizing. *PloS one*, 9(10), e110510.
- Twisk, J. W. R. (2006). *Applied multilevel analysis: A practical guide*. New York: Cambridge University Press.
- Uchino, B. N., Cacioppo, J. T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: A review with emphasis on underlying mechanisms and implications for health. *Psychological Bulletin*, 119(3), 488-531. doi: 10.1037/0033-2909.119.3.488
- Van Dam, N. T., Sheppard, S. C., Forsyth, J. P., & Earleywine, M. (2011). Self-compassion is a better predictor than mindfulness of symptom severity and quality of life in mixed anxiety and depression. *Journal of Anxiety Disorders*, 25(1), 123–30. doi: 10.1016/j.janxdis.2010.08.011

- Wachs, K., & Cordova, J. V. (2007). Mindful relating: Exploring mindfulness and emotion repertoires in intimate relationships. *Journal of Marital and Family Therapy*, 33(4), 464-481.
- Wayment, H. A., Wiist, B., Sullivan, B. M., & Warren, M. A. (2011). Doing and being: Mindfulness, health, and quiet ego characteristics among Buddhist practitioners. *Journal of Happiness Studies*, 12(4), 575-589. doi: 10.1007/s10902-010-9218-6
- Welp, L. R., & Brown, C. M. (2013). Self-compassion, empathy, and helping intentions. *The Journal of Positive Psychology*, 9(1), 54-65. doi: 10.1080/17439760.2013.831465
- Yarnell, L. M., & Neff, K. D. (2013). Self-compassion, interpersonal conflict resolutions, and well-being. *Self and Identity*, 12(2), 146-159. doi: 10.1080/15298868.2011.649545
- Zessin, U., Dickhäuser, O., & Garbade, S. (2015). The relationship between self-compassion and well-being: A meta-analysis. *Applied Psychology: Health and Well-Being*, 7, 340–364. doi:10.1111/aphw.12051
- Zuroff, D. C., Sadikaj, G., Kelly, A. C., & Leybman, M. J. (2016). Conceptualizing and measuring self-criticism as both a personality trait and a personality state. *Journal of Personality Assessment*, 98(1), 14-21. doi: 10.1080/00223891.2015.1044604

Chapter 3

EMPIRICAL STUDIES

PART 2: Self-compassion, positive affective states, and heart rate variability

CONTENTS

Study V. The relationships between self-compassion, positive affect and social connectedness

Study VI. Correlates of psychological inflexibility mediate the relation between alexithymic traits and positive emotions

Study VII. Compassionate and self-image goals predict social connectedness and social anxiety

Study VIII. Feeling safe and content are good of the heart: Evidence for a quadratic relationship between heart rate variability and positive emotions

The relationships between self-compassion, positive affect, and social connectedness⁵

Abstract

This study expands previous research on the association between self-compassion and positive outcomes, and tests the relationships between self-compassion, positive affect, and social connectedness.

Four independent samples (Study 1, $n = 307$; Study 2, $n = 124$; Study 3, $n = 161$; Study 4, $n = 331$) were used. With the exception of Study 4 sample, the remaining samples were recruited among college students. Studies 1 and 2 used a correlational design, while studies 3 and 4 used a longitudinal design.

Results from studies 1 and 4 suggested that self-compassion was associated with more frequent experiences of positive affect (e.g., activated, safeness/contentment), and discrete positive emotions (e.g., joy, contentment, pride). Study 2 suggested that self-compassion predicted positive affect at two months. Finally, Study 3 indicated that self-compassion predicted social connectedness at three months and this relation was mediated by positive affect.

Given the wide range of benefits associated with self-compassion and positive emotions, it is important to uncover ways in which self-compassion and positive emotions can be enhanced.

Keywords: self-compassion; positive emotions; positive affect; social connectedness; mediation

⁵ Duarte, J., & Pinto-Gouveia, J. (2016). The relationships between self-compassion, positive affect, and social connectedness. *Manuscript submitted for publication.*

Introduction

Self-compassion

In the last decade, there has been an increasing interest in the concept of self-compassion. While compassion is defined as the feeling for a person who is suffering, coupled with a deep desire to alleviate that suffering (e.g., Goetz, Keltner, & Simon-Thomas, 2010), self-compassion refers to compassion that is directed inward, in which the self is the object of care and concern when faced with the experience of suffering (Neff, 2003a). Self-compassion, therefore, involves being touched by and open to one's own suffering, not avoiding or disconnecting from it, generating the desire to alleviate one's suffering and to heal oneself with kindness. Self-compassion also involves a non-judgmental understanding of one's pain, inadequacies and failures, so that one's experience is seen as part of the larger human condition (Neff, 2003a).

The research literature consistently suggests that self-compassion is associated with less psychopathological symptoms (MacBeth & Gumley, 2012) and with psychological well-being (Zessin, Dickhäuser, & Garbade, 2015). Self-compassionate people seem to have more adaptive emotion regulation skills, such as lower levels of rumination (Odou, & Brinker, 2014; Raes, 2010; Johnson, & O'Brien, 2013), avoidance (Krieger, Altenstein, Baettig, Doerig, & Holtforth, 2013), and suppression of unwanted thoughts and emotions, and greater emotional validation skills (Leary, Tate, Adams, Allen, & Hancock, 2007; Neff, Hseih, Dejitterat, 2005).

Self-compassion is also associated with positive characteristics such as emotional intelligence, wisdom, life satisfaction, and well-being (Neely, Schallert, Mohammed, Roberts, & Chen, 2009; Neff, 2003a; Neff, Kirkpatrick, & Rude, 2007; Neff, Rude, & Kirkpatrick, 2007). Several experimental studies using self-compassion inductions (e.g., Adams & Leary, 2007; Leary et al., 2007) and interventions (Neff & Germer, 2013) confirm the findings of these studies and suggest that self-compassion can be enhanced and contribute to

well-being and less psychological distress.

Positive Emotions and Positive Affect

Although some empirical literature deals with the link between self-compassion and positive outcomes, such as emotional intelligence, well-being or wisdom, the relationship between self-compassion and positive subjective experiences (i.e. affect) has received less research attention. Positive affect is a broad term normally referring to positively valenced moods and emotions. Positive moods are relatively more stable and are not directed at specific things. Positive emotions are more discrete, usually very brief, and involve not only positive feelings but also patterns of physiological arousal, thoughts, and behaviors (e.g., Gross, 2014). These distinctions between emotions and moods, however, are more at theoretical than at empirical levels (e.g., Fredrickson, 2002).

Positive affect is functionally important as it allows us to take advantage of opportunities and enhance our resources. A growing number of theorists see positive emotions as evolved adaptations to fitness-enhancing challenges and opportunities, and as active ingredients in coping, thriving and flourishing (e.g., Fredrickson, 1998; Isen, 2000; Shiota et al., 2014). According to Fredrickson's broaden-and-build theory (Fredrickson, 1998) positive emotions, such as joy, interest, or contentment, broaden (rather than narrow) an individual's thought-action repertoire, widening the array of habitual modes of thinking or acting. For example, joy creates the urge to play, interest creates the urge to explore, and contentment creates the urge to savor. In turn, these broadened thought-action repertoires can have the effect of building an individual's personal resources, including physical resources, intellectual resources, and social resources. When these enhanced resources are used at a later time, this often leads to heightened positive affect, thus creating an upward spiral (Fredrickson, 1998). Research on the broaden-and-build theory has provided empirical evidence that the experience of positive emotions broadens the scope of attention, cognition, and action (e.g., Fredrickson &

Branigan, 2005), and builds a range of personal resources (e.g., Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008).

Research on positive psychology has also demonstrated that positive emotions are a cause of success and thriving, rather than simply a consequence (Lyubomirsky, King, & Diener, 2005). Additionally, experiencing low positive affect is associated with negative mental health outcomes, and the dysregulation of positive affect can result in psychopathology (e.g., Carl, Soskin, Kerns, & Barlow, 2013; Watson & Naragon-Gainey, 2010). Research is also suggesting that positive affect is associated health-protective biological responses, such as reduced inflammation, lower cortisol values, and increasing heart rate variability (e.g., Steptoe, Dockray, & Wardle, 2009).

Social Connectedness

Positive affect is also important for social connection. Not only positive emotions result from satisfying social connections but positive emotions may in turn help solidify social attachments (Baumeister & Leary, 1995). Several studies provide empirical evidence that positive affect can have an evolved interpersonal function, supporting complex and interdependent social relationships (e.g., Shiota et al., 2014; Shiota, Campos, Keltner, & Hertenstein, 2004). For example, empirical studies suggest that positive emotions signal commitment to close relationships and evoke commitment in return (Gonzaga, Keltner, Londahl, & Smith, 2001), increase trust (Dunn & Schweitzer, 2005), break down a sense of “us versus them” (Dovidio, Gaertner, Isen, & Lowrance, 1995), and promote a sense of “oneness” with close others (Waugh & Fredrickson, 2006), promoting prosocial behavior (Schnall, Roper, & Fessler, 2010).

Social connection, in turn, is related to a broad range of physical and psychological benefits (e.g., Holt-Lunstad, Smith, & Layton, 2010; Pressman et al. 2005), while lack of social connection has been associated with several mental disorders (e.g. Hawkey & Cacioppo, 2010). Interestingly, significant

evidence suggests that subjective, psychological indicators (particularly, sense of belonging, identification and connection) are most powerfully related to health outcomes than more direct measures of social connection, such as number of friends. For example, in a large nationally representative sample, Berry and Welsh (2010) found that individual-level psychological measures of social capital (in particular, sense of belonging) had the strongest relationship with physical and mental health. Specific to depression, Cacioppo and colleagues (2010) found that perceived social isolation was the best predictor of depression symptoms, even after controlling for social network size and social support. This suggests that social connectedness is an important variable for health and well-being, and a potential clinical target.

Only two studies to our knowledge found a positive association between self-compassion and social connectedness (e.g., Neff, 2003b; Neff, Kirkpatrick, et al., 2007). Other studies, however, suggest that self-compassion is associated with other interpersonal outcomes, such as prosocial behaviors, helping intentions, and positive relationships behaviors (e.g., Lindsay & Creswell, 2014; Welp & Brown, 2013; Neff & Beretvas, 2012).

Self-compassion and Positive Affect and Emotions

Some studies offer evidence that self-compassion is associated with positive affect (e.g., Krieger Hermann, Zimmermann, & Holtforth, 2015; López, Sanderman, & Schroevers, 2016; Sirois, Kitner, & Hirsch, 2015; Odou & Brinker, 2015; Woodruff et al., 2013; Wren et al., 2012). Of particular relevance to the present study, Zessin et al. (2015) conducted a meta-analysis on the relationship between self-compassion and well-being. Results suggested that self-compassion was positively related to all measures of well-being (cognitive, affective, and psychological well-being). Of particular interest for the present study was the positive association found between self-compassion and positive affective well-being (defined as the presence of positive or pleasant affects).

However, in the research linking self-compassion and positive affect, the latter variable is often measured using the Positive Affect (PA) scale of the Positive And Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS-PA scale was designed to measure overall high energy and pleasurable engagement with the environment. According to recent findings from neurobiology (see Burgdorf & Panksepp, 2006 for a review) and social neuroscience (McCall & Singer, 2012), however, there appears to be at least two distinct classes of positive affective states that can be distinguished by distinct neuroanatomical substrates, autonomic responses, and motivation. One is associated with an approach-motivated appetitive state, that increases the capacity for action and reward-seeking; the other is associated with a quiescent state, associated with goal achievement (reward acquisition and consumption) and inaction. At the level of subjectivity, approach and quiescence motivational states differ in terms of their affective qualities; while quiescence should be associated with positive feelings of warmth and calm, approach should be associated with excitement (when positively valenced), which is more related to the positive affect tapped by the PANAS-PA. Several theories suggest that the quiescence system is particularly important for homeostasis and for social affiliation (Depue & Morrone-Strupinsky, 2005; McCall & Singer, 2012). There is some evidence that different types of positive affect are differently linked to psychopathology (Gilbert et al., 2008; 2009). For example, it was found that safe/content positive affect that had the highest negative correlations with depression, anxiety and stress, self-criticism, and insecure attachment, when compared to other types of positive affect (Gilbert et al., 2008), which may have important implications for treatment.

Additionally, the PANAS-PA, and most measures used in studies linking self-compassion and positive affect, measures positive affect by assessing experiences of a variety of positive emotions to form one positive affect construct, rather than focusing on a particular positive emotion or the difference between discrete positive emotions. Several theorists, however,

posit the existence of multiple, and functionally distinct, positive emotions (e.g., Ekman, 1992; Fredrickson, 1998; Shiota et al., 2014). Just like negative emotions, discrete positive emotions are thought to help address adaptive problems (or opportunities) by coordinating cognitive, physiological and behavioral mechanisms likely to facilitate fitness-enhancing responses to specific situations (Shiota et al., 2014; Tooby & Cosmides, 2008). For example, compassion likely emerged evolutionarily to help raise vulnerable offspring to the age of viability, thus ensuring that genes are more likely to be replicated (Goetz et al., 2010). Distinguishing between positive emotions may be important as different positive emotions may facilitate distinct broadening tendencies. For example, empirical findings suggest elevation motivates kindness toward others, but not amusement or admiration (Algoe & Haidt, 2009); happiness but not peacefulness increases processing of self-referent health appeals (Agrawal, Menon, & Aaker 2007).

Aims and hypotheses

The aim of this study is to explore the links between self-compassion, positive affect and emotions, and social connectedness. Given that most of the research on the relation between self-compassion and positive affective states has relied on measures of high activation positive affect, we wanted to test whether self-compassion would be differently related to different types of positive affect (activated, relaxed, and safe/content). To test this aim, we used different samples and different study designs (cross-sectional, longitudinal, mediational). We hypothesize that self-compassion would be correlated with all types of positive affect, but particularly with safeness/contentment positive affect (Study 1, hypothesis 1). Accordingly, Gilbert (2009) suggested that compassion and self-compassion evolved from behavioral and affective systems involved in attachment, caring, and affiliation.

In addition, because most of the studies to date rely on cross-sectional data, we aimed to explore the link between self-compassion and positive affect

using a cross-lagged panel design, which allows to control for previous levels of positive affect and self-compassion (Study 2). In this study we also controlled for the effect of negative affect. Research suggests that benefits of positive affect are not just due to the absence of negative affect, as positive affect and negative affect are largely independent, especially as the time frame being measured increases (e.g., Diener & Emmons, 1984). We hypothesize that self-compassion would predict all types of positive affect when controlling for previous levels of positive affect, and that these effects would not be explained simply by the absence of negative affect (hypothesis 2).

Also, we aimed to test the hypothesis that self-compassion would predict greater social connectedness, and that this relationship would be mediated by positive affect, using a longitudinal design. It has been suggested that positive emotions may have evolved because they facilitate social relating. Thus, we hypothesized that the affective resources associated with self-compassion would mediate the positive association between self-compassion and social connectedness (Study 3, hypothesis 3).

Finally, most studies suggesting an association between trait positive affectivity and self-compassion relied on measures of global positive emotions, and no research has examined the varying degrees to which different positive emotions are associated with self-compassion. To this aim, we explored the association between self-compassion and seven dispositional positive emotions. We expect that self-compassion would be related to all positive emotions (Study 4; hypothesis 4). Because self-compassionate individuals have high self-efficacy (Iskender, 2009; Manavipour & Saeedian, 2016) and motivation (e.g., Breines & Chen, 2012; Hope, Koestner, & Milyavskaya, 2014; Williams, Stark, & Foster, 2008), self-compassion is expected to be related to joy, contentment, and pride, on the grounds that these emotions most centrally involve agentic, goal-oriented behavior (with contentment following reward acquisition and consumption; Shiota, Keltner, & John, 2006). Also, because self-compassionate people report greater

relationship quality (e.g., Neff & Beretvas, 2012), and are more compassionate to others (e.g., Neff & Pommier, 2013), self-compassion is expected to be related to love and compassion. In the absence of previous studies and theory, no particular predictions are made regarding the association between self-compassion and emotions of amusement and awe.

Study 1

Method

Participants and Procedure

Participants were 307 undergraduate students enrolled in several courses in the University of Coimbra (psychology, social service, sports, management, educational sciences, law, marketing, design, engineering, medicine, nursing, anthropology, human resources, biology, mathematics, economy), with a mean age of 21.21 ($SD = 1.87$), ranging between 18 and 27 years of age. The majority of the sample was female ($n = 185$, 60.3%) and 122 were male (39.7%), and the majority of participants were single (99.7%). After agreeing to take part in the study, participants provided their written informed consent and were asked to fill out several self-report measures in the classroom.

Measures

Self-Compassion Scale (SCS; Neff, 2003b). The SCS is a widely used self-report measure developed to assess six components of self-compassion: self-kindness ('I try to be understanding and patient toward those aspects of my personality I don't like'); self-judgment ('I'm disapproving and judgmental about my own flaws and inadequacies'); common humanity ('I try to see my failings as part of the human condition'); isolation ('When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world'); mindfulness ('When something painful happens I try to take a

balanced view of the situation’); and over-identification (‘When I’m feeling down I tend to obsess and fixate on everything that’s wrong’). Scores on the six subscales were summed (after reverse-coding negative items) to create an overall self-compassion score. Items are rated on a 5-point scale (e.g., 1 = ‘almost never’ to 5 = ‘almost always’). The SCS has adequate construct and convergent validity (Neff, 2003b). The Portuguese version of the scale also showed good internal consistency and validity (Castilho, Pinto-Gouveia, & Duarte, 2015). SCS scores are presented so that higher scores indicate greater self-compassion. In the present study we used the Portuguese version of the SCS, and Cronbach’s alpha ranged between .75 and .82 for the subscales and was .92 for the total scale.

Types of Positive Affect Scale (TPAS; Gilbert et al., 2008). The TPAS was developed to measure the degree to which people experience different types of positive affect, namely activation and excitement, relaxation, and safeness and contentment. Respondents are asked to rate 18 items describing feelings on a 5-point scale to indicate how characteristic it is of them (0 = ‘not characteristic of me’ to 4 = ‘very characteristic of me’). The scale is composed by three factors measuring different types of positive affect: Activated Positive Affect (e.g., excited, dynamic, active); Relaxed Positive Affect (e.g., relaxed, calm, peaceful) and Safeness/Contentment Positive Affect (e.g., safe, secure, warm). In the original study, the scale showed factorial and convergent validity, and Cronbach’s alpha ranged between .73 and .83 (Gilbert et al., 2008). We used the Portuguese version of the TPAS, which showed good psychometric properties (Dinis, 2015). In the present study, Cronbach’s alphas were .89 for activated positive affect, .92 for relaxed positive affect, and .78 for safeness/contentment positive affect.

Results

Results of the correlational analysis are presented in Table 1, and suggest that self-compassion was significantly and positively associated with all types of

positive affect, and particularly with the safeness/contentment positive affect. As expected, the positive dimensions of self-compassion were positively related to the types of positive affect, while the negative dimensions showed a negative relation. The size of the correlations ranged between small (.17) and moderate (.46). According to Cohen (1988), an effect size of .10 is considered small, .30 is considered moderate, and .50 is considered large.

Table 1.
*Bivariate Correlations Between Self-compassion and
Three Types of Positive Affect (N = 307)*

	Active	Relaxed	Safe
Self-Kindness	.17**	.17**	.30**
Self-Judgment	-.20**	-.27**	-.36**
Common humanity	.24**	.22**	.23**
Isolation	-.28**	-.23**	-.36**
Mindfulness	.24**	.38**	.33**
Over-identification	-.31**	-.37**	-.43**
Total	.32**	.36**	.46**

Discussion

Results from study 1 are in line with our hypothesis, and suggested that individuals with higher levels of self-compassion experience more feelings of elation, relaxation, and safeness/contentment. Self-compassion seems to be particularly related to feelings of safeness and contentment, which suggests that when people are kind to themselves, accepting suffering as part of the human condition, and holding difficult experiences with mindful awareness, positive feelings of safeness, contentment and security may be generated (Neff, 2011). This result is in line with a previous study in which safeness

positive affect was more strongly (and negatively) related to self-criticism, when compared to the other types of positive affect (Gilbert et al., 2008). According to Gilbert et al. (2008), while relaxed positive affect seems to reflect low activation, and probably follows goal attainment, safeness/contentment system is hypothesised to be particularly related to affiliation. At the same time, compassion and self-compassion probably evolved from behavioral and affective systems involved in attachment, caring, and affiliation (e.g., Goetz et al., 2010; Gilbert, 2009), which may explain the particularly strong link between self-compassion and safeness.

Study 2

Method

Participants and Procedure

A total of 124 participants from a college student population participated in the study. This sample had a mean age of 20.77 ($SD = 3.27$); the majority of participants were female (95.9%), and single (97.5%). Students were informed of the study by announcements made at the end of lectures, with previous knowledge and authorization of the professor in charge. In line with the ethical requirements, it was emphasized that participants' cooperation was voluntary and that their answers were confidential and would be used only for the purpose of this study. All participants provided their written informed consent. The study took place in two sessions, 2 months apart. In each session participants completed the validated Portuguese versions the self-report questionnaires in the presence of the researcher, which took, on average, 15 minutes. Positive affect was measured on the two occasions. The fact that prior levels of the outcome construct are controlled for allows one to rule out the possibility that a cross-lagged effect is due simply to the fact that the independent and dependent variables were correlated at time 1 (e.g., Selig & Little, 2012).

Measures

Self-Compassion Scale (SCS; Neff, 2003b). In the present study we used the Portuguese version of the SCS as in Study 1, and Cronbach's alpha was .93 for the total scale.

Types of Positive Affect Scale (TPAS; Gilbert et al., 2008). Respondents were asked to rate the extent to which they have experienced each item in the last two months. In the present study we used the Portuguese version of the TPAS as in Study 1, and Cronbach's alphas were .88 for activated positive affect, .93 for relaxed positive affect, and .83 for safeness/contentment positive affect.

The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). The PANAS consists of two 10-item mood scales and was developed to provide brief measures of positive affect and negative affect. Respondents were asked to rate the extent to which they have experienced each particular emotion in the last two months, using a 5-point scale Likert scale (1 = 'very slightly or not at all', 2 = 'a little', 3 'moderately', 4 = 'quite a bit' and 5 = 'very much'. We used the Portuguese version of the PANAS, which showed good psychometric properties (Galinha & Pais-Ribeiro, 2002). Cronbach's alpha in the present study was .89 for positive and negative affect.

Results

Results of the multiple regression analysis are presented in Table 2. Results suggested that self-compassion significantly predicted positive affect (TPAS) at two months, even when controlling for previous levels of positive affect. Specifically, higher levels of self-compassion at Time 1 predicted higher levels of activated and safe/content positive affect at Time 2, but not relaxed positive affect or general positive affect (PANAS). We also tested the alternative model where positive affect would predict self-compassion at two months, when controlling for previous scores of self-compassion. Results indicated that positive affect did not significantly predict self-compassion. In all models, we

also controlled for the potential effect of negative affect (PANAS). Although not a specific aim of this study, results also indicated that self-compassion at Time 1 did not significantly ($p = .784$) predict negative affect at Time 2, when controlling for negative affect at Time 1.

Table 2.

Multiple Regression Analysis Summary for Self-Compassion Predicting Three Types of Positive Affect and General Positive Affect, Controlling for Negative Affect and Positive Affect at Time 1 (N = 124)

Outcome	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	Lower Bound 95% CI	Upper Bound 95% CI
Activating	.06	.03	.16	2.27	.026	.007	.112
Relaxed	.02	.03	.06	0.82	.413	-.033	.079
Safeness/contentment	.06	.02	.29	3.76	<.001	.030	.098
PANAS Positive	.07	.05	.13	1.47	.144	-.024	.159

Discussion

Results from study 2 extended previous findings from study 1, and suggested that self-compassion may predict activated and safeness/contentment positive feelings, when controlling for previous levels of positive affect and for the effects of negative affect. Self-compassion did not predict relaxed positive affect, which suggests that self-compassion may not particularly related to low activation positive affect. The finding that self-compassion predicted activating positive affect but not PANAS-PA was unexpected, as both measures are hypothesized to measure activation. Given the small sample size, this finding needs to be replicated. Nonetheless, this suggests that using

global measures to assess positive affect (e.g., PANAS-PA) may give an incomplete picture of a more complex phenomenon.

Study 3

Method

Participants and Procedure

Participants were initially 161 college students enrolled in several undergraduate Psychology and Social Services classes. Given the small number of males in the sample ($n = 8$), these were excluded. The final sample was composed of 153 female college students, with ages ranging from 18 to 37 ($M = 20.94$; $SD = 2.49$). Regarding marital status, 98% of the sample was single (never married), 7% ($n = 1$) was married, and 1.3% was divorced ($n = 2$).

The study was advertised in classes and students were informed about the study aims. Students who volunteered to participate were asked to sign an informed consent form previous to their participation, in which essential information about the study and confidentiality was presented. Participants completed the first self-report measures in the classroom. Students completed the biweekly assessments online using Lime Survey, an online survey tool. Individuals provided their email and received a link to the online survey every two weeks, for four times. Participants who failed to complete at least three of the surveys were excluded from the study. The posttest survey was also completed online.

Measures

Self-Compassion Scale (SCS; Neff, 2003b). In the present study we used the Portuguese version of the SCS as in Studies 1 and 2, and Cronbach's alpha was .93 for the total scale.

Types of Positive Affect Scale (TPAS; Gilbert et al., 2008). In the present study we used the Portuguese version of the TPAS as in Study 1 and 2. Participants were asked to complete this measure every two weeks for five times, and were asked to report how they normally felt over the past 2 weeks. Cronbach's alpha was .91 for activated positive affect, .93 for relaxed positive affect, and .86 for safeness/contentment positive affect (these values are an average of the Cronbach's alphas of the five measurements).

Social Connectedness Scale (SCS; Lee, Draper & Lee, 2001). The 20-item Social Connectedness Scale-Revised measures a psychological sense of belonging, or how individuals cognitively construe interpersonal closeness with others in their social world. The SCS uses a 6-point rating scale (1 = 'strongly disagree' to 6 = 'strongly agree') in which participants rate the degree of their perceived interpersonal closeness in the social world. We used the Portuguese version of the scale, which showed good psychometric properties (Francisco, Crespo, Rocha, Malaquias, & Dias, 2011). In the present study Cronbach's alphas were .92 for pretest and .94 for posttest.

Results

First, we tested whether positive affect varied along the study period. Results from a mixed linear model revealed an effect of time on activating (coefficient = -0.69, *S. E.* = .13, $p < .001$), relaxed (coefficient = -0.24, *S. E.* = .11, $p = .021$), and safe positive affect (coefficient = -0.77, *S. E.* = .08, $p < .001$), Figure 1 shows the variation in positive affect across the five time measurements for individuals with high and low levels of self-compassion. To test whether self-compassion predicted changes in the types of positive affect, we conducted mixed linear models. Results suggested that self-compassion predicted increases in activating (coefficient = 0.15, *S. E.* = .023, $t = 6.10$, $p < .001$), relaxed (coefficient = 0.13, *S. E.* = .020, $t = 6.48$, $p < .001$) and safe (coefficient = 0.09, *S. E.* = .012, $t = 7.14$, $p < .001$) positive affect. To test the hypothesis that self-compassion predicted social connectedness, we

conducted a multiple regression analysis. Results suggested that self-compassion at pretest predicted social connectedness at posttest, when controlling for previous levels of social connectedness, $B = .15$, $SE = .07$, $\beta = .15$, $t = 2.21$, $p = .029$, 95% CI [.015 - .279]. Additionally, we tested the hypothesis that this relationship between self-compassion and social connectedness would be mediated by positive affect. We used Time 3 measurements of positive affect as the mediators as these were more separate in time to the time points when self-compassion and social connectedness were assessed. The macro PROCESS for SPSS (Hayes, 2013) with Bootstrap procedure was used to test the significance of the indirect effects. Results suggested significant indirect effects of activated, $B = .028$, $BootSE = .019$, 95% CI [.003 – .082], and safe/content positive affect, $B = .049$, $BootSE = .026$, 95% CI [.011 – .121], but not relaxed positive affect.

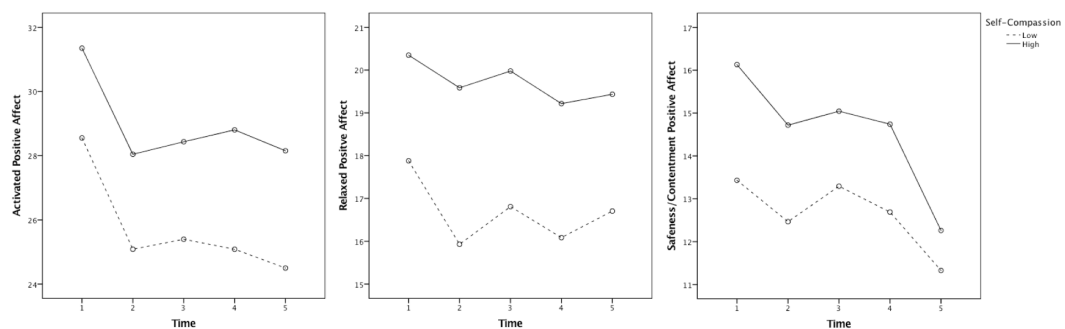


Figure 1. Means of Three Types of Positive Affect Across Time Measurements for High and Low Levels of Self-Compassion.

Discussion

Results from study 3 suggested that there was a significant variation of positive affect across time. Despite this variation, self-compassion predicted higher levels of positive affect across time. Results from study 3 also indicated that self-compassion predicted social connectedness, and that this link may be explained by more frequent experiences of positive affect. This is in line with our hypotheses and the literature that points to the important role of positive emotions in affiliation and social relating (e.g., Shiota et al., 2014) and to the

interpersonal benefits of self-compassion (e.g., Neff & Pommier, 2013). Contrary to study 2, self-compassion predicted relaxed positive affect. One possible explanation is that we did not control for the effect of negative emotions in this study, and it is possible that negative emotions suppress the effect of self-compassion on relaxed positive affect, but not on other types of positive affect.

Study 4

Method

Participants and Procedure

A convenience sample of 331 subjects from the general population was recruited to take part in the study. Participants were, on average, 33.31 years old ($SD = 14.03$), 97 were male and 234 were female. Regarding marital status, the majority of the sample was single (never married; $n = 183$, 55.3%), 121 were married (36.6%), 15 were divorced (4.5%), 2 were widowed (0.6%), and 10 were unmarried couples (3%). Most of participants had a graduate degree ($n = 176$, 53.2%). Participants were recruited through the researchers' personal acquaintances and public services in Portugal's north and center regions (e.g., universities, administrative services centers). All participants provided their written informed consent and were asked to fill out several self-report measures and provide demographic information.

Measures

Self-Compassion Scale (SCS; Neff, 2003b). In the present study we used the Portuguese version of the SCS as in studies 1, 2 and 3, and Cronbach's alphas

ranged between .74 (mindfulness) and .83 (self-kindness) for the subscales and was .91 for the total scale.

The Dispositional Positive Emotion Scales (DPES; Shiota et al., 2006). The DPES is a self-report measure designed to assess the disposition to experience seven discrete emotions, namely joy, contentment, pride, love, compassion, amusement, and awe. It consists of 38 items (5 or 6 items per scale), and uses a 7-point rating format (1 = 'strongly disagree' to 7 = 'strongly agree'). Shiota et al. (2006) reported reliabilities ranging from .75 (amusement) to .92 (contentment) with a median of .80. We used the Portuguese version of DPES (Duarte, Pinto-Gouveia, & Sapeta, 2014) which showed good psychometric properties. In the present study, Cronbach's alpha ranged between .83 (compassion) and .90 (contentment).

Results

Results of the correlational analysis are presented in Table 3. We found that self-compassion total score was positively associated with most of the discrete positive emotions, with the exception of the compassion subscale, contrary to our hypothesis. However, although the self-compassion total scale did not correlate with compassion, we found significant associations between compassion and several dimensions of self-compassion, particularly the positively valenced dimensions (i.e. kindness, mindfulness, and common humanity). The size of the correlations ranged between small (.10) and large (.50).

Table 3.

Bivariate Correlations Between Self-compassion and Dispositional Positive Emotions (N = 331)

	Joy	Contentment	Pride	Love	Compassion	Amusement	Awe
Self-Kindness	.40**	.41**	.47**	.35**	.18**	.17**	.34**
Self-Judgment	-.27**	-.40**	-.26**	-.25**	-.15**	-.16**	-.16**
Common humanity	.29**	.29**	.35**	.27**	.30**	.14*	.24**
Isolation	-.38**	-.49**	-.36**	-.32**	.00	-.18**	-.26**
Mindfulness	.39**	.42**	.45**	.36**	.21**	.15**	.34**
Over-identification	-.32**	-.41**	-.35**	-.26**	.02	-.19**	-.25**
Total	.46**	.55**	.50**	.40**	.10	.23**	.36**

Note. ** $p < .001$

Discussion

Results from study 4 indicated that, as hypothesised, self-compassion was related to more frequent experiences of positive emotions associated with goal-oriented behaviors and motivation (joy, pride, and contentment), and with more affiliative emotions (joy). Only the positive dimensions of self-compassion were positively related to compassion. Surprisingly, self-compassion was also associated with awe and amusement. Previous studies suggest that awe serves important social functions by diminishing the emphasis on the individual self, and by encouraging people to other-oriented, prosocial behaviour (e.g, Piff, Dietze, Feinberg, Stancato, & Keltner, 2015). Because of its non-evaluative and interconnected nature, self-compassion is thought to counter self-centeredness and narcissism (Neff, 2003a), which in turn may make an individual more prone to experiences of awe. The positive association between self-compassion and amusement is in line with a previous study in which self-compassion was found to be associated with healthy humor styles (Khramtsova & Chuykova, 2016).

General Discussion

This study explores the relationships between self-compassion and positive affect. Previous studies used general measures of positive affect, which may provide an incomplete picture of the links between self-compassion and different types of positive affect systems and emotions. Results from study 1 suggest that self-compassion is correlated with more frequent experiences of all types of positive affect, particularly safeness/contentment positive affect, and study 2 indicates that self-compassion predicts more activated and safe/content positive affect, but not relaxed positive affect. These results seem to be in line with studies regarding the autonomic underpinnings of compassion. On one hand, compassion involves orientation to the target individual (in the case of self-compassion the self) and approach-related behavior, which should be associated with feelings of energy and activation

(see Goetz et al., 2010 for a review). On the other hand, compassion is thought to be associated with the parasympathetic nervous system, particularly with the vagus nerve, which may have evolved uniquely in mammals to support attachment and caring behaviors, that are central to compassion (Porges, 2001), and which should be associated with feelings of safeness and warmth (McCall & Singer, 2012). As suggested by Neff (2011), “self-compassion is related to well-being because it helps people feel safe and secure (p. 7)”.

In addition, results from study 2 show that self-compassion predicts positive emotions even when controlling for previous levels of positive emotions. In contrast, positive emotions didn't prospectively predict self-compassion, suggesting that positive emotions may be a result of a self-compassionate attitude. Previous studies found that the experience of positive affect and positive emotions could increase positive perceptions of self. For example, in a correlational study, higher levels of positive affect were related to being less self-critical (Mongrain & Zuroff, 1995). However, our results did not support this hypothesis. Also, the fact that we controlled for negative affect in these models excludes the hypothesis that the effects could be attributed simply to the absence of negative affect.

It should be noted that contrary to the correlational results in study 1 and previous studies, self-compassion did not predict relaxed positive affect nor general positive affect as measured by the PANAS-PA in study 2. Several studies suggest a consistent association between self-compassion (trait and state) and positive affect as measured by the PANAS (see Zessin et al., 2015 for a review). However, no studies to our knowledge explored this association using longitudinal designs, which limits possible causal relations between these processes. Our results seem to suggest that self-compassion does not prospectively predict more frequent experiences of positive affect when positive affect is measured with a global composite of high arousal emotions.

This highlights the importance of using different measures to assess positive affect.

Why is self-compassion related to more frequent experiences of positive emotions? Several studies suggest that self-compassionate individuals may have a more adaptive psychological profile. Self-compassion involves seeing failures and setbacks as part of the human condition and, therefore, they are viewed kindly rather than self-judgmentally, and without becoming entangled in the negative feelings that can arise from such failures. Also, instead of ruminating about such failures, self-compassionate people may experience negative events in a more mindful, less reactive manner. In a previous study designed to understand the cognitions that underlie self-compassionate responses to negative events, the authors found that 1) self-compassionate people may be more accurate in their self-evaluations, possibly because their self-judgments are less characterized by catastrophizing self-criticism or defensive self-enhancement; 2) self-evaluations may not depend as strongly on their outcomes; 3) self-compassionate people see negative events in ways that reduce their impact (Leary et al., 2007). Because self-compassion is not associated with suppression and avoidance, it seems that with self-compassion positive emotions are generated not by trying to exclude negative emotions but by embracing and holding them in a kind and mindful awareness (Neff & Dahm, 2014).

Results from a separate longitudinal study (study 3) offer support for the mediating role of both types of positive affect (activated and safeness/contentment) on the association between self-compassion and feelings of social connectedness. Several authors suggest that positive emotions are necessary for the formation and maintenance of interpersonal bonds (e.g., Shiota et al., 2014; Fredrickson, 1998). Empirical studies showed that positive emotions increase trust (Dunn & Schweitzer, 2005), promote a sense of “oneness” with close others (Vaughn & Fredrickson, 2006) and break down a sense of “us versus them” (Dovidio et al., 1995). People who

experience positive emotions show increases in the quality of their close relationships (Gable, Gonzaga, & Strachman, 2006; Waugh & Fredrickson, 2006). Several experimental studies have demonstrated that positive emotions are not only associated with, but can actually cause people to have more successful social interactions (e.g., Lyubomirsky et al., 2005), which can contribute to feelings of belonging and connectedness with others.

Finally, results from study 4 suggest that the association between self-compassion and positive emotionality is robust across several dispositional positive emotions. Specifically, we found that self-compassion is particularly associated with joy, pride, and contentment. These emotions may involve agentic, goal-oriented behavior, and behavioral activation (with contentment following reward acquisition and consumption; Shiota et al., 2006). Previous studies support the idea that self-compassion enhances motivation (e.g., Breines & Chen, 2012; Neff, Rude, et al., 2007) and is associated with high self-efficacy (Iskender, 2009; Manavipour & Saeedian, 2016). Self-compassion was also associated with more frequent experiences of love, which is line with several studies pointing to the relational benefits of self-compassion (e.g., Neff & Beretvas, 2012). Contrary to our hypothesis, and previous literature (e.g., Neff & Pommier, 2013), self-compassion (total score) was not associated with compassion. In contrast, the positive dimensions of self-compassion (self-kindness, mindfulness, and common humanity) were positively related to compassion. These results indicate that it is the presence of the positive qualities of self-compassion, and not so much the absence of the negative ones, that is particularly relevant for experiencing feelings of compassion for others. This would suggest that the tendency to respond to suffering with caring concern is a general process applied to both oneself and others. However, it is still unclear whether the lack of association between self-compassion total score and compassion for others reflects a genuine independence between these two constructs or whether it reflects definitional

problems or limitations with current measures (e.g. Williams, Dalgleish, Karl, & Kuyken, 2014; Strauss et al., 2016).

In sum, self-compassion seems to foster more frequent experiences of positive affect, and this may be related to the way negative internal and external events are held and embraced with kindness, and mindful presence. We hypothesize that these positive affective experiences may then be the cause of many of other desirable characteristics (e.g., optimism, curiosity, creativity, intrinsic motivation, self-efficacy, coping) and outcomes (e.g., health-related behaviors), that have been associated with self-compassion. Our study gives some support for this hypothesis, as positive affect seems to mediate the association between self-compassion and feelings of social connectedness. Only one other study to our knowledge tested this hypothesis and found that self-compassion was significantly associated with a greater range of positive health behaviors, and high positive and low negative affect were found to mediate these effects (Sirois et al., 2015).

Limitations and future studies

Although the results of this study are promising, several limitations should be taken into account. First, the majority of the samples were college students, which may limit the generalizability of these findings. Also, although individuals' subjective experiences of positive emotions provide important information, research relying on self-report measures is susceptible to several biases. In future, the measurement of dispositions to experience different positive affect and emotions could be improved by including third-parties' reports and alternative measures of positive affect and emotions, such as facial expressions and positive emotional language usage. Also, although we tested a mediation model using assessments at three different points in time, still no causality can be inferred from these results. Experimental designs in which self-compassion and positive emotions are manipulated would provide stronger evidence for the effects we found in this study. Using more ecologically valid methods to explore how people react to difficult situations

and their experiences of positive emotions in their daily lives would also provide more in-depth information. It is also possible that other mediators link self-compassion and social connectedness, and these should also be explored in future studies. Finally, other studies should test whether positive emotions mediate the effects of self-compassion on other outcomes.

We believe that several implications may be drawn from our findings. First, there is consistent evidence that lack of social connectedness may play a significant role in the aetiology, maintenance, and treatment of several disorders (e.g., Hawkley & Cacioppo, 2010). One particular example is depression (e.g., Cruwys, Haslam, Dingle, Haslam & Jetten, 2014). Depression is typically characterized by social isolation and reduced social connectedness (Wade & Kendler, 2000). Although it is likely that lack of social connectedness and depression reinforce each other, some evidence suggests that differences in social connectedness emerge prior to the development of depression symptoms. For example, in one study, Cacioppo, Hawkley, and Thisted (2010) found that perceived social isolation was a longitudinal predictor of depression symptoms even after controlling for other important variables (demographic characteristics, personality, physical health, stress, and a number of objective indicators of social-relationship quality; Cacioppo et al., 2010). Perceived social isolation has therefore been considered an important risk factor for the development and recurrence of depression (Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006; Glass, De Leon, Bassuk, & Berkman, 2006).

Low positive affect is also an important component of various forms of psychopathology (e.g., Naragon-Gainey, Watson, & Markon, 2009; Watson, Gamez, & Simms, 2005). Relating to depression, one of the core symptoms of this disorder (which is as central to diagnosis as low mood) is anhedonia, or loss of interest or pleasure in previously enjoyed activities (American Psychiatric Association, 2013), suggesting that directly improving positive affect, and not only decreasing negative affect, may be important for the

treatment of depression. In this line, a recent meta-analysis of 51 studies revealed that positive psychology interventions are effective for enhancing well-being and ameliorating depressive symptoms (Sin & Lyubomirsky, 2009). Although these findings are preliminary, and thus should be interpreted with caution, they are nevertheless encouraging of the benefits of positive psychology exercises in therapy.

Frequently, anhedonia manifests as withdrawal from social relationships. Loss of positive affect and lack of social connectedness possibly influence each other, as loneliness or lack of social connectedness may motivate an individual to seek connectedness with others, but the symptoms of depression often involve withdrawal from the social world. This suggests that including strategies designed to specifically target positive affect and social connectedness may have potential clinical implications in the treatment of depression. Given the important role of self-compassion on positive affective states and social connectedness found in this study, such interventions may consider including self-compassion as an important 'active' ingredient.

Also, there is some evidence that different types of positive affect are differently linked to psychopathology (Gilbert et al., 2008; Gilbert, 2009). Although activated positive affect derived from achieving/doing is sometimes regarded as a buffer to depression and stress (Martell, Addis, & Jacobson, 2001), data suggest that it is having feelings of safeness and contentment that is linked to lower stress, anxiety, and depression (Gilbert et al., 2008), which can have important implications for treatments.

Finally, several interventions designed to cultivate self-compassion have been implemented with promising results on a range of outcomes (Neff & Germer, 2013; Albertson, Neff, & Dill-Shackleford, 2014; Smeets, Neff, Alberts, & Peters, 2014). Also, loving-kindness meditation was found to promote positive emotions (Fredrickson et al., 2008; Zeng, Chiu, Wang, Oiei, & Leung, 2015), social connectedness (Hutcherson, Seppala, & Gross, 2008), and self-

compassion (Galante, Galante, Bekkers, & Gallacher, 2014), and thus could be a valuable intervention to increase well-being.

Conclusion

In the current study, self-compassion was associated with, and predicted different types of positive affect and discrete positive emotions. Positive affect was a significant mediator of the association between self-compassion and social connectedness. Thus, adopting a self-compassionate attitude towards one's suffering seems to generate positive feelings of love, kindness, and connectedness. Overall, these findings suggest that focusing on ways to increase self-compassion may be a useful strategy for promoting positive emotions and social connectedness.

References

- Adams, C. E., & Leary, M. R. (2007). Promoting self-compassionate attitudes toward eating among restrictive and guilty eaters. *Journal of Social and Clinical Psychology, 26*(10), 1120–1144. doi: 10.1521/jscp.2007.26.10.1120
- Agrawal, N., Menon, G., & Aaker, J. L. (2007). Getting emotional about health. *Journal of Marketing Research, 44*(1), 100-113.
- Algoe, S. B., & Haidt, J. (2009). Witnessing excellence in action: The 'other-praising' emotions of elevation, gratitude, and admiration. *Journal of Positive Psychology, 4* (2), 105-27. doi: 10.1080/17439760802650519
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 111*, 497-529. doi: 10.1037/0033-2909.117.3.497
- Berry, H. L., & Welsh, J. A. (2010). Social capital and health in Australia: An overview from the household, income and labour dynamics in Australia survey. *Social Science & Medicine, 70*, 588-596. doi:10.1016/j.socscimed.2009.10.012
- Breines, J. G., & Chen, S. (2012). Self-compassion increases self-improvement motivation. *Personality and Social Psychology Bulletin, 38*(9), 1133-1143. doi: 10.1177/ 0146167212445599
- Burgdorf, J., & Panksepp, J. (2006). The neurobiology of positive emotions. *Neuroscience & Biobehavioral Reviews, 30*(2), 173-187. doi: 10.1016/j.neubiorev.2005.06.001
- Cacioppo, J. T., Hawkey, L. C., & Thisted, R. A. (2010). Perceived social isolation makes me sad: 5-year cross-lagged analyses of loneliness and depressive symptomatology in the Chicago Health, Aging, and Social Relations Study. *Psychology and Aging, 25*, 453-463. doi:10.1037/a0017216
- Cacioppo, J. T., Hughes, M. E., Waite, L. J., Hawkey, L. C., & Thisted, R. A. (2006). Loneliness as a specific risk factor for depressive symptoms: Cross-sectional and longitudinal analyses. *Psychology and Aging, 21*, 140-151. doi:10.1037/0882-7974.21.1.140

- Carl, J. R., Soskin, D. P., Kerns, C., & Barlow, D. H. (2013). Positive emotion regulation in emotional disorders: A theoretical review. *Clinical Psychology Review, 33*(3), 343-360. doi: 10.1016/j.cpr.2013.01.003
- Castilho, P., Pinto-Gouveia, J., & Duarte, J. (2015). Evaluating the multifactor structure of the long and short version of the self-compassion scale in a clinical sample. *Journal of Clinical Psychology*. Advanced online publication. doi: 10.1002/jclp.22187
- Cruwys, T., Haslam, S. A., Dingle, G. A., Haslam, C., & Jetten, J. (2014). Depression and Social Identity: An integrative review. *Personality and Social Psychology Review, 18*(3), 215 - 238. 10.1177/1088868314523839
- Depue, R. A., & Morrone-Strupinsky, J. V. (2005). A neurobehavioral model of affiliative bonding: Implications for conceptualizing a human trait of affiliation. *Behavioral and Brain Sciences, 28*(3), 313-349. doi: 10.1017/S0140525X05000063
- Diener, E., & Emmons, R. A. (1984). The independence of positive and negative affect. *Journal of Personality and Social Psychology, 47*(5), 1105-1117.
- Dinis, A. (2015). *O estudo da psicopatologia numa perspectiva transdiagnóstica da regulação emocional* (Unpublished Doctoral Thesis). University of Coimbra, Portugal.
- Dovidio, J. F., Gaertner, S. L., Isen, A. M., & Lowrance, R. (1995). Group representations and intergroup bias: Positive affect, similarity, and group size. *Personality and Social Psychology Bulletin, 21*, 856–865.
- Duarte, J., Pinto-Gouveia, J., & Sapeta, J. (2015). *Validation of a measure of dispositional positive emotions in a Portuguese sample*. Unpublished manuscript.
- Dunn, J. R., & Schweitzer, M. E. (2005). Feeling and believing: The influence of emotion on trust. *Journal of Personality and Social Psychology, 88*(5), 736-748. doi: 10.1037/0022-3514.88.5.736
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion, 6*, 169–200. doi: 10.1080/02699939208411068
- Francisco, R., Crespo, C., Rocha, I., Malaquias, S., & Dias, E. (2011). *Versão portuguesa do Social Connectedness Scale – Revised*. Universidade de Lisboa, Lisboa.

- Fredrickson, B. L. (1998). What Good Are Positive Emotions? *Review of General Psychology*, 2(3), 300–319. doi: 10.1037/1089-2680.2.3.300
- Fredrickson, B. L. (2002). Positive Emotions. In C. R. Snyder & S. J. Lopez (Eds), *Handbook of Positive Psychology* (pp.120-134). New York: Oxford University Press.
- Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*, 95(5), 1045-1062. doi: 10.1037/a0013262.
- Gable, S. L., Gonzaga, G. C., & Strachman, A. (2006). Will you be there for me when things go right? Supportive responses to positive event disclosures. *Journal of Personality and Social Psychology*, 91(5), 904-917.
- Galante, J., Galante, I., Bekkers, M.-J., & Gallacher, J. (2014). Effect of kindness-based meditation on health and well-being: A systematic review and meta-analysis. *Journal of Consulting and Clinical Psychology*, 82(6), 1101-1114. doi: 10.1037/a0037249
- Galinha, I. C., & Pais-Ribeiro, J. L. (2005). Contribuição para o estudo da versão portuguesa da Positive and Negative Affect Schedule (PANAS): II - Estudo psicométrico. *Análise Psicológica*, 23(2), 219-227.
- Gilbert, P. (2009). *The compassionate mind*. London: Constable.
- Gilbert, P., McEwan, K., Mitra, R., Franks, L., Richter, A., & Rockliff, H. (2008). Feeling safe and content: A specific affect regulation system? Relationship to depression, anxiety, stress, and self-criticism. *The Journal of Positive Psychology*, 3(3), 182–191. doi: 10.1080/17439760801999461
- Glass, T. A., De Leon, C. F. M., Bassuk, S. S., & Berkman, L. F. (2006). Social engagement and depressive symptoms in late life: Longitudinal findings. *Journal of Aging and Health*, 18, 604-628. doi:10.1177/0898264306291017
- Goetz, J. L., Keltner, D., & Simon-Thomas, E. (2010). Compassion: An evolutionary analysis and empirical review. *Psychological Bulletin*, 136(3), 351–374. doi: 10.1037/a0018807
- Gonzaga, G. C., Keltner, D., Londahl, E. A., & Smith, M. D. (2001). Love and the commitment problem in romantic relations and friendship. *Journal of Personality and Social Psychology*, 81(2), 247.

- Gross, J. J. (2014). Emotion regulation: Conceptual and empirical foundations. In J. J. Gross (Ed.), *Handbook of Emotion Regulation*. 2nd ed. (pp. 3-20). New York: Guilford Press
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
- Hawkley, L. C., & Cacioppo, J. T. (2010). Loneliness Matters: A theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine*, 40(2). doi: 10.1007/s12160-010-9210-8.
- Hope, N., Koestner, R., & Milyavskaya, M. (2014). The role of self-compassion in goal pursuit and well-being among university freshmen. *Self and Identity*, 13(5), 579-593. doi: 10.1080/15298868.2014.889032
- Hutcherson, C. A., Seppala, E. M., & Gross, J. J. (2008). Loving-kindness meditation increases social connectedness. *Emotion*, 8(5), 720-724. doi: 10.1037/a0013237
- Isen, A.M. (2000). Positive affect and decision making. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions*. 2nd ed (pp. 417-435). New York: Guilford Press.
- Iskender, M. (2009). The relationship between self-compassion, self-efficacy, and control belief about learning in Turkish university students. *Social Behavior and Personality: An international journal*, 37(5), 711-720.
- Johnson, E. A., & O'Brien, K. A. (2013). Self-compassion soothes the savage ego-threat system: Effects on negative affect, shame, rumination, and depressive symptoms. *Journal of Social and Clinical Psychology*, 32(9), 939-963. doi: 10.1521/jscp.2013.32.9.939
- Khramtsova, I. I., & Chuykova, T.S. (2016). Mindfulness and self-compassion as predictors of humor styles in US and Russia. *Social Psychology and Society*, 7(2), 93-108. doi: 10.17759/sps.2016070207
- Krieger, T., Altenstein, D., Baettig, I., Doerig, N., & Holtforth, M. G. (2013). Self-compassion in depression: Associations with depressive symptoms, rumination, and avoidance in depressed outpatients. *Behavior Therapy*, 44, 501-513.
- Krieger, T., Hermann, H., Zimmermann, J., & Holtforth, M. G. (2015). Associations of self-compassion and global self-esteem with positive and negative affect and stress reactivity in daily life: Findings from a

- smart phone study. *Personality and Individual Differences*, 87, 288-292. doi: 10.1016/j.paid.2015.08.009
- Leary, M. R., Tate, E. B., Adams, C. E., Allen, A. B., & Hancock, J. (2007). Self-compassion and reactions to unpleasant self-relevant events: The implications of treating oneself kindly. *Journal of Personality and Social Psychology*, 92(5), 887–904. doi: 10.1037/0022-3514.92.5.887
- Lee, R. M., Draper, M., & Lee, S. (2001). Social connectedness, dysfunctional interpersonal behaviors, and psychological distress: Testing a mediator model. *Journal of Counseling Psychology*, 48, 310-318. doi: 10.1037/0022-0167.48.3.310
- Lindsay, E. K., & Creswell, J. D. (2014). Helping the self help others: Self-affirmation increases self-compassion and pro-social behaviors. *Frontiers in Psychology*, 5, 421. doi: 10.3389/fpsyg.2014.00421
- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin*, 131(6), 803-855. doi: 10.1037/0033-2909.131.6.803
- López, A., Sanderman, R. & Schroevers, M. J. (2016). Mindfulness and self-compassion as unique and common predictors of affect in the general population. *Mindfulness*. Advanced online publication. doi:10.1007/s12671-016-0568-y
- Manavipour, D., & Saeedian, Y. (2016). The role of self-compassion and control belief about learning in university students' self-efficacy. *Journal of Contextual Behavioral Science*. Advance online publication. doi: 10.1016/j.jcbs.2016.02.003
- MacBeth, A., & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review*, 32(6), 545-552. doi: 10.1016/j.cpr.2012.06.003
- Martell, C.R., Addis, M.E., & Jacobson, N.S. (2001). *Depression in context: Strategies for guided action*. New York: Norton.
- McCall, C., & Singer, T. (2012). The animal and human neuroendocrinology of social cognition, motivation and behavior. *Nature Neuroscience*, 15(5), 681–688. doi: 10.1038/nn.3084
- Mongrain, M., & Zuroff, D. C. (1995). Motivational and affective correlates of dependency and self-criticism. *Personality and Individual Differences*, 18, 347–354. doi: 10.1016/0191-8869(94)00139-J

- Naragon-Gainey, K., Watson, D., & Markon, K. E. (2009). Differential relations of depression and social anxiety symptoms to the facets of extraversion/positive emotionality. *Journal of Abnormal Psychology, 118*(2), 299-310. doi: 10.1037/a0015637
- Neff, K. D. (2003a). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity, 2*, 85-102. doi: 10.1080/15298860390129863
- Neff, K. D. (2003b). Development and validation of a scale to measure self-compassion. *Self and Identity, 2*, 223-250. doi: 10.1080/15298860390209035
- Neff, K. D. (2011). Self-compassion, self-esteem, and well-being. *Social and Personality Psychology Compass 5*(1). 1-12. doi: 10.1111/j.1751-9004.2010.00330.x
- Neff, K. D., & Beretvas, S. N. (2012). The role of self-compassion in romantic relationships. *Self and Identity, 12*(1), 78-98. doi: 10.1080/15298868.2011.639548
- Neff, K. D., & Germer, C. K. (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of clinical psychology, 69*(1), 28-44. doi: 10.1002/jclp.21923
- Neff, K. D., & Rude, S. S., & Kirkpatrick, K. (2007). An examination of self-compassion in relation to positive psychological functioning and personality traits. *Journal of Research in Personality, 41*, 908-916. doi:10.1016/j.jrp.2006.08.002
- Neff, K. D., Hsieh, Y., & Dejithirat, K. (2005). Self-compassion, achievement goals, and coping with academic failure. *Self and Identity, 4*, 263-287. doi: 10.1080/13576500444000317
- Neff, K. D., Kirkpatrick, K. & Rude, S. S. (2007). Self-compassion and adaptive psychological functioning. *Journal of Research in Personality, 41*, 139-154. doi:10.1016/j.jrp.2006.03.004
- Neff, K. D., Pommier, E. (2013). The relationship between self-compassion and other-focused concern among college undergraduates, community adults, and practicing meditators. *Self and Identity, 12*(2), 160-176. doi: 10.1080/15298868.2011.649546
- Neff, K. D., & Dahm, K. A. (2014). Self-Compassion: What it is, what it does, and how it relates to mindfulness. In M. Robinson, B. Meier, & B.

- Ostafin (Eds.), *Mindfulness and Self-regulation* (pp. 121-140). New York: Springer
- Odou, N., & Brinker, J. (2014). Exploring the relationship between rumination, self-compassion, and mood. *Self and Identity, 13*(4), 449-459. doi: 10.1080/15298868.2013.840332
- Odou, N., & Brinker, J. (2015). Self-compassion, a better alternative to rumination than distraction as a response to negative mood. *The Journal of Positive Psychology, 10*(5), 447-457. doi: 10.1080/17439760.2014.967800
- Piff, P. K., Dietze, P., Feinberg, M., Stancato, D. M., & Keltner, D. (2015). Awe, the small self, and prosocial behavior. *Journal of Personality and Social Psychology, 108*(6), 883-899. doi: 10.1037/pspi0000018
- Porges, S. W. (2001). The polyvagal theory: Phylogenetic substrates of a social nervous system. *International Journal of Psychophysiology 42*, 123-146.
- Pressman, S. D., Cohen, S., Miller, G. E., Barkin, A., Rabin, B. S., & Treanor, J. J. (2005). Loneliness, social network size, and immune response to influenza vaccination in college freshmen. *Health Psychology, 24*(3), 297-306. doi: 10.1037/0278-6133.24.3.297
- Raes, F. (2010). Rumination and worry as mediators of the relationship between self-compassion and depression and anxiety. *Personality and Individual Differences, 48*, 757–761. doi:10.1016/j.paid.2010.01.023
- Schnall, S., Roper, J., & Fessler, D. M. (2010). Elevation leads to altruistic behavior. *Psychological science, 21*(3), 315-320. doi: 10.1177/0956797609359882
- Selig, J. P., & Little, T. D. (2012). Autoregressive and cross-lagged panel analysis for longitudinal data. In B. Laursen, T. D. Little, & N. A. Card (Eds.). *Handbook of Developmental Research Methods* (pp. 265-278). New York: Guilford Press.
- Shiota, M. N., Campos, B., Keltner, D., & Hertenstein, M. J. (2004). Positive emotion and the regulation of interpersonal relationships. In P. Philippot & R. S. Feldman (Eds.), *The Regulation of Emotion* (pp. 127–155). Mahwah, N.J.: Lawrence Earlbaum Associates, Inc.
- Shiota, M. N., Keltner, D., & John, O. P. (2006). Positive emotion dispositions differentially associated with Big Five personality and attachment style. *Journal of Positive Psychology, 1*, 61–71.

doi:10.1080/17439760500510833

- Shiota, M. N., Neufeld, S. L., Danvers, A. F., Osborne, E. A., Sng, O., & Yee, C. I. (2014). Positive Emotion Differentiation: A Functional Approach. *Social and Personality Psychology Compass*, 8(3), 104–117. doi: 10.1111/spc3.12092
- Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology*, 65(5), 467-487. doi: 10.1002/jclp.20593
- Sirois, F. M., Kitner, R., & Hirsch, J. K. (2015). Self-compassion, affect, and health-promoting behaviors. *Health Psychology*, 34(6), 661-669. doi: 10.1037/hea0000158
- Stephens, A., Dockray, S., & Wardle, J. (2009). Positive affect and psychobiological processes relevant to health. *Journal of Personality*, 77(6), 1747–1776. doi: 10.1111/j.1467-6494.2009.00599.x
- Strauss, C., Taylor, B. L., Gu, J., Kuyken, W., Baer, R., Jones, F., & Cavanagh, K. (2016). What is compassion and how can we measure it? A review of definitions and measures. *Clinical Psychology Review*, 47, 15-27. doi: 10.1016/j.cpr.2016.05.004
- Tooby, J., & Cosmides, L. (2008). The evolutionary psychology of the emotions and their relationship to internal regulatory variables. In M. Lewis, J. M. Haviland-Jones, & L. F Barrett (Eds.), *Handbook of emotions* (2nd ed., pp. 114–137). New York: Guilford Press.
- Wade, T., & Kendler, K. S. (2000). The relationship between social support and major depression: Cross-sectional, longitudinal, and genetic perspectives. *The Journal of Nervous and Mental Disease*, 188, 251-258.
- Watson, D., Clark, L., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.
- Watson, D., Gamez, W., & Simms, L. J. (2005). Basic dimensions of temperament and their relation to anxiety and depression: A symptom-based perspective. *Journal of Research in Personality*, 39(1), 46-66. doi:10.1016/j.jrp.2004.09.006
- Watson, D., & Naragon-Gainey, K. (2010). On the specificity of positive emotional dysfunction in psychopathology: Evidence from the mood and

- anxiety disorders and schizophrenia/schizotypy. *Clinical Psychology Review*, 30(7), 839-848. doi: 10.1016/j.cpr.2009.11.002
- Waugh, C. E., & Fredrickson, B. L. (2006). Nice to know you: Positive emotions, self–other overlap, and complex understanding in the formation of a new relationship. *The Journal of Positive Psychology*, 1(2), 93–106. doi: 10.1080/17439760500510569
- Welp, L. R., & Brown, C. M. (2013). Self-compassion, empathy, and helping intentions. *The Journal of Positive Psychology*, 9(1), 54-65. doi: 10.1080/17439760.2013.831465
- Williams, M. J., Dalgleish, T., Karl, A., & Kuyken, W. (2014). Examining the factor structures of the five facet mindfulness questionnaire and the self-compassion scale. *Psychological Assessment*, 26(2), 407–418. doi: 10.1037/a0035566
- Williams, J. G., & Stark, S. K., & Foster, E. E. (2008). Start today or the very last day? The relationships among self-compassion, motivation, and procrastination. *Journal of Psychological Research*, 4, 37-44.
- Woodruff, S. C., Glass, C. R., Arnkoff, D. B., Crowley, K. J., Hindman, R. K., & Hirschhorn, E. W. (2013). Comparing self-compassion, mindfulness, and psychological inflexibility as predictors of psychological health. *Mindfulness*, 5, 410–421. doi: 10.1007/s12671-013-0195-9
- Wren, A. A., Somers, T. J., Wright, M. A., Goetz, M. C., Leary, M. R., Fras, A. M., ... & Keefe, F. J. (2012). Self-compassion in patients with persistent musculoskeletal pain: Relationship of self-compassion to adjustment to persistent pain. *Journal of Pain and Symptom Management*, 43(4), 759-770. doi: 10.1016/j.jpainsymman.2011.04.014
- Zeng, X., Chiu, C. P. K., Wang, R., Oei, T. P. S., & Leung, F. Y. K. (2015). The effect of loving-kindness meditation on positive emotions: A meta-analytic review. *Frontiers in Psychology*, 6, 1693. doi: 10.3389/fpsyg.2015.01693
- Zessin, U., Dickhäuser, O., & Garbade, S. (2015). The relationship between self-compassion and well-being: A meta-analysis. *Applied Psychology: Health and Well-Being*, 7(3), 340-364.

Correlates of psychological inflexibility mediate the relation between alexithymic traits and positive emotions⁶

Abstract

Objectives: There is growing interest in the construct of alexithymia as it has been increasingly associated with a wide range of psychological disorders, in clinical samples and general population. In comparison to studies relating alexithymia and negative affectivity, there has been a scarcity of studies exploring such links with positive emotions. This study aims to explore the association between alexithymia and several discrete positive emotions, and to explore the mediating role of psychological inflexibility-related processes (decentering, experiential avoidance, resistance to feelings of compassion, and self-compassion) in such association.

Method and Participants: Using a cross-sectional design, 331 participants were recruited from the general population ($M_{age} = 33.31$, $SD = 14.03$; 97 male and 234 female). Participants were asked to fill out the Portuguese version of the questionnaires.

Results: Correlational analyses showed that alexithymia was associated with decreased positive emotions. Intraclass correlations suggested that people presenting with alexithymia showed lower positive emotional granularity, particularly regarding high arousal emotions. Alexithymia was also negatively associated with decentering and self-compassion, and positively associated with experiential avoidance and resistance to feelings of compassion. Mediation analyses showed that all variables were significant mediators of the association between alexithymia and positive emotions,

⁶ Duarte, J., & Pinto-Gouveia, J. (in press). Correlates of psychological inflexibility mediate the relation between alexithymic traits and positive emotions. *Journal of Contextual and Behavioral Sciences*.

Conclusions: Psychological inflexibility and related constructs may be important targets for therapeutic interventions with individuals with increased alexithymia.

Introduction

People differ in how hard they find it to identify and describe emotions. Sifneos (1973) termed this personality trait 'alexithymia', which literally means having no words for feelings. The alexithymia construct has been refined more specifically into a difficulty in identifying feelings, difficulty in describing feelings, and a tendency for externally oriented thinking, or a concentration on external, often fantastic, events (e.g., Taylor, 2000; Taylor & Bagby, 2004). Alexithymia is not a discrete psychiatric diagnosis, and it has been observed in a vast array of psychiatric disorders and mental health problems, and in the general population (e.g., Fewen, Dozois, Neufeld, & Lanius, 2008; Kokkonen et al., 2001; Nowakowski, McFarlane, & Cassin, 2013; Roh, Kim, & Kim, 2011). Alexithymia has also been identified as a negative predictor of medical outcomes (e.g., Porcelli et al., 2003) and interferes with psychotherapy (e.g., Ogrodniczuk, Piper, & Joyce, 2011).

Corresponding with negative affectivity, alexithymia is strongly correlated to neuroticism, negative emotions, depression, and anxiety (e.g., Ciarrochi, Heaven, & Supavadeepravit, 2014; De Gucht, Fontaine, & Fischler, 2004; Foran & O'Leary, 2013; Taylor & Bagby, 2004; Li, Zhang, Guo, & Zhang, 2015; Marchesi, Bertoni, Cantoni, & Maggini, 2005).

Although Bagby and Taylor (1997) suggested that individuals with alexithymia have, at the same time, limited experiences of positive emotions, such as joy, happiness and love, there has been little research on this association. The few existent studies, however, point to an association between alexithymia and lower positive affect (e.g., De Gucht, Fischler, & Heiser, 2004; Yelsma, 2007; Ciarrochi et al., 2014) or a lower tendency to experience positive emotions

(Luminet, Bagby, Wagner, Taylor, & Parker, 1999). In this line, a recent meta-analysis of neural correlates of alexithymia found preliminary evidence for a decreased activation in several brain areas (right anterior and posterior insula and precuneus) in alexithymia indicative of a reduced emotional awareness of positive affect in (van der Velde et al., 2013), which may underlie the lower positive affect that individuals with alexithymia experience.

This may be particularly problematic given the prominent role of positive emotions on individuals' health and well-being. Recent research suggests that positive emotions help people broaden their perspectives, build their resources, and are active ingredients in coping, thriving and flourishing (e.g., Fredrickson, 1998; Isen, 2000; Shiota et al., 2014). Positive emotions can trigger an upward spiral of emotional well-being independently of negative emotions (Fredrickson & Joiner, 2002). Also, a high level of positive emotions increases stress resilience (Tugade & Fredrickson, 2004; Tugade, Fredrickson, & Barrett, 2004) and sociability (Eid, Riemann, Angleitner, & Borkenau, 2003). In addition, recent research is suggesting that positive affect and cognitions may represent unique components of psychobiological resilience (Sin, Graham-Engeland, & Almeida, 2015; Aschbacher et al., 2012; Steptoe, Dockray, & Wardle 2009), which may have implications for the prevention and psychological treatment of depression and other mental health problems.

Although alexithymia may be directly associated with decreased positive emotions, (e.g., via poor activation of specific brain areas involved in emotional awareness), we hypothesize that psychological processes may also play an important role in such link.

Specifically, we focus on the construct of psychological inflexibility, which describes an individual's inability of choosing behavior in line with identified values and goals due to difficulties in connecting with the present moment fully, following rigid rules and attempting to control or avoid difficult internal experiences (Hayes, Strosahl, & Wilson, 1999; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Psychological inflexibility can be thought of as being

excessively entangled in experiential avoidance and cognitive fusion. Experiential avoidance is defined as the tendency to attempt to suppress, inhibit or control the frequency or severity of emotions, thoughts, and memories (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Using these strategies ultimately produces a maladaptive coping style and, as a result, it is associated with a wide range of psychopathology (e.g., Begotka, Woods, & Wetterneck, 2004; Kashdan, Breen, Afram, & Terhar, 2010; Kingston, Clarke, & Remington, 2010; Masuda & Tully, 2012). Cognitive fusion, which supports experiential avoidance, occurs when an individual's verbal processes (i.e., thoughts) markedly regulate overt behavior in ineffective ways due to the inability or failure to notice the process of thinking (context) over the products of thinking (content; Hayes et al., 2006; Pierson, Gifford, Smith, Bunting, & Hayes, 2004). A process that appears to be substantially similar to cognitive defusion is decentering (Bernstein et al., 2015). Decentering is often defined as the means by which an individual is able to view his or her thoughts and feelings as temporary, objective events in mind, instead of personally identifying with them (Teasdale et al., 2002; Safran and Segal, 1990; Fresco et al., 2007). This decentered perspective, and change in the relationship towards inner experiences, facilitates that a person non-judgmentally accepts the own mental events as what they are. If a person is able to objectively view their emotions aside from any personal connections or personal distress, this would allow for a person to become more aware of their emotions, leading to better coping strategies or ways in which to handle them. Like experiential acceptance, decentering is viewed as a necessary concept for mental health and a healthy development, whereas the absence of this ability leads to psychological dysfunction (e.g., Fresco et al. 2007; Kessel et al., 2016).

Psychological flexibility involves being willing to experience emotions without needing to change them. If an individual is low in psychological flexibility, this means he or she will be more likely to avoid, distract or ignore emotions which may limit opportunities for identifying and clearly labeling

emotions. Some studies suggest that psychological inflexibility may be related to alexithymia. For example, Panayiotou et al. (2015) found that experiential avoidance was a significant mediator of the relation between alexithymia and psychosomatic and depressive symptoms in a clinical sample. The authors suggested that difficulties in describing and identifying emotions are, in fact, an effort (deliberate or not) to avoid experiencing difficult affect, and that it is this mechanism that ultimately predicts the development of mental and physical health problems. Another study conducted with inpatient adolescents found evidence for the mediator role of experiential avoidance on the link between alexithymia and emotion regulation (Venta, Hart, & Sharp, 2012), suggesting that while the inability to effectively use language to identify and describe emotional states is strongly correlated with difficulties in regulating one's emotions, this relation is mediated by the unwillingness to tolerate aversive private experiences.

To our knowledge, no study explored the association between alexithymia and decentering. However, it is theoretically plausible that in order for a person to be able to decenter, or take a step back from one's feelings and emotions and to view them from an objective point of view, one must first be able to identify the particular emotion.

Typically, the focus of psychological inflexibility is on how people respond to thoughts, feelings, and physiological sensations that most people would find unpleasant. However, individuals may also attempt to avoid or control experiences normatively viewed as pleasant, as when people avoid feelings of joy for fear of future disappointment (Bond et al., 2011), or when they avoid feeling compassion for others for fear of being taken advantage of. In this line, the construct of fear of compassion has been recently introduced and refers to discomfort, difficulty or resistance to affiliative-based emotions, other- or self-directed (Gilbert, McEwan, Matos, & Rivas, 2011). Resistance to feelings of compassion has been associated with poor outcomes, such as depression, anxiety, stress, self-criticism in students (Gilbert et al., 2011, 2012) and in

depressed patients (Gilbert, McEwan, Catarino, Baião, R. & Palmeira, 2014). Resistance to receive compassion from others was found to moderate the association between self-criticism and depression in a cross-cultural study (Hermanto et al., 2016), and resistance to self-compassion was associated with PTSD symptom severity and psychological inflexibility (Miron, Sherrill, & Orcutt, 2015). It is plausible that difficulties in identifying and expressing feelings may extend to particular feelings, such as compassion. In this line, one study found a positive association between alexithymia and resistance to feelings of compassion (Gilbert et al., 2012).

Contrary to the experience of resistance to compassion is the concept of self-compassion, which involves adopting a kind and compassionate attitude towards oneself when suffering, recognizing one's experiences as part of the larger human condition, and bringing nonjudgmental awareness to one's painful experiences rather over-identifying with them (Neff, 2003a). Recently, it has been suggested that self-compassion can somewhat overlap with psychological flexibility (Yadavaia, Hayes, & Vilardaga, 2014). In fact, self-compassion involves an ability to willingly experience difficult emotions; to mindfully observe self-judging and distressing thoughts without allowing them to control behavior or states of mind; and to be able to take a perspective on experiences as simply parts of being human, that don't need to be avoided, changed, or escaped. Like psychological flexibility, self-compassion is negatively correlated with depression, anxiety, and psychopathology (MacBeth & Gumbley, 2012) and is positively correlated with well-being (Zessin, Dickhäuser, & Garbade, 2015).

It is plausible that individuals who have difficulty experiencing their emotions will also have difficulties accepting those emotions with kindness instead of judgment, and with mindful awareness. However, few studies to date explored the links between self-compassion and alexithymia (Aydin, Campus, & Kadıköy, 2014; Rusk, 2015).

Although there is a theoretical rationale for the associations between experiential avoidance, decentering, fears of compassion and self-compassion, the precise relation between these concepts remains unclear. Some studies and theoretical considerations suggest that these processes, although related, may be non-overlapping components of psychological inflexibility. For example, preliminary research has supported ACT's conceptualization of cognitive fusion and experiential avoidance (Hayes, Strosahl, & Wilson, 2012) as both unique and interrelated processes (Bardeen & Fergus, 2016; Dinis, Carvalho, Pinto-Gouveia, J. & Estanqueiro, 2015). Also, it has been suggested that fear of self-compassion differs from the absence of self-compassion, and instead describes the active resistance of extending compassion toward oneself (Gilbert et al., 2011).

Aims

Against this background, the aim of the present study is to explore the relationship between alexithymia and positive emotions, and the potential mediational effect of several psychological inflexibility-related processes (decentering, experiential avoidance, resistance to compassion, and self-compassion). These processes relate to psychological inflexibility in that they conceptually refer to fear and/or avoidance of private events (self-compassion and decentering inversely). Thus we hypothesize that these processes will be significantly inter-correlated, but not as high as to suggest that they are overlapping constructs.

We also hypothesize that individuals with elevated levels of alexithymia will report less frequent experiences of positive emotions, and will be less able to distinguish between different positive emotions (low emotional granularity). We also hypothesize that the association between alexithymia and positive emotions would be, at least partially, accounted for by an inability to decenter, or take a step back from one's feelings and emotions, by avoidance and denial of internal experiences, by resistance to feelings of compassion, and by difficulties in holding negative experiences with kindness, mindful

awareness and a sense of shared humanity. We also hypothesize that decentering and self-compassion would be positively related to positive emotions and that experiential avoidance and resistance to compassion would be negatively related to positive emotions. Finally, given that these processes are normally researched separately, we aimed to concurrently test the mediating role of each process in the relation between alexithymia and positive emotions. We hypothesize that these processes, although related, would independently account for the association between alexithymia and positive emotions.

Methods

Participants and Procedure

A convenience sample of 331 subjects from the general population was recruited to take part in the study. Participants were, on average, 33.31 years old ($SD = 14.03$), 97 were male and 234 were female. Regarding marital status, the majority of the sample was single ($n = 183$, 55.3%), and had a graduate degree ($n = 176$, 53.2%).

In line with the ethical requirements, it was emphasized that participants' cooperation was voluntary and that their answers were confidential and would be used only for the purpose of this study. All participants provided their written informed consent. Participants were asked to complete the validated Portuguese versions the self-report questionnaires, which took, on average, 15 minutes. All procedures were in accordance with the Helsinki Declaration of 1975, as revised in 2000.

Measures

Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor, 1994; Portuguese version by Prazeres, Parker, & Taylor, 2000). The TAS-20

measures three factors of alexithymia, namely: difficulty identifying feelings, or the inability to identify feelings and to distinguish them from the somatic sensations that accompany emotional arousal; difficulty describing feelings, or the inability to describe feelings to other people; and externally-oriented thinking, which measures the tendency of individuals to focus their attention externally. Each of the 20 items is rated on a five-point Likert scale ranging from 1 ('strongly disagree') to 5 ('strongly agree'). Higher scores indicate greater alexithymia. In the present study, Cronbach's alphas were .72 for describing, .85 for identifying, .48 for externally-oriented thinking, and .84 for the total scale.

Dispositional Positive Emotion Scales (DPES; Shiota, Keltner, John, 2006; Portuguese version by Duarte, Pinto-Gouveia, & Sapeta, 2013). The DPES is a self-report measure designed to assess the disposition to experience seven discrete emotions, namely joy, contentment, pride, love, compassion, amusement, and awe. It consists of 38 items (5 or 6 items per scale), and uses a 7-point rating format (1 = 'strongly disagree' to 7 = 'strongly agree'). Higher scores indicate greater experience of each positive emotion. In the present study, Cronbach's alpha ranged between .83 (compassion) and .90 (contentment).

Experiences Questionnaire (EQ; Fresco et al., 2007; Portuguese version by Gregório, Pinto-Gouveia, Duarte, & Simões, 2015). The EQ consists of 20 items designed to measure decentering (14 items), and rumination (6 items). Items are rated on a scale from 1 to 5 ('never' to 'all the time'). Higher scores indicate greater decentering. For the purposes of this study, only the decentering scale was used. Cronbach's alpha was .77 for the decentering scale.

Acceptance and Action Questionnaire – II (AAQ-II; Bond et al., 2011; Portuguese version by Pinto-Gouveia, Gregório, Dinis, & Xavier, 2012). The AAQ-II is a 7-item measure of experiential avoidance. Answers are given on a 7-point scale ranging from 1 = 'never true' to 7 = 'always true'. Higher scores

indicate greater experiential avoidance. In the present study, Cronbach's alpha was .92.

Fears of Compassion Scales (Gilbert et al., 2011; Portuguese version by Simões, 2012). There are three scales measuring fears of compassion, namely: fears of feeling or expressing compassion for others; fears of receiving compassion from others; and fears of compassion for self. Respondents rate on a Likert scale how much they agree with each statement (0 = 'don't agree at all' to 4 = 'completely agree'). Higher scores indicate greater fears of compassion. In the present study, Cronbach's alphas were .86 for fears of expressing compassion for others, .90 for fears of receiving compassion from others, and .93 for fears of giving compassion to self.

Self-Compassion Scale (SCS; Neff, 2003b; Portuguese version by Castilho, Pinto-Gouveia, & Duarte, 2015). The SCS is a widely used self-report measure developed to assess six components of self-compassion: self-kindness; self-judgment; common humanity; isolation; mindfulness; and over-identification. Scores on the six subscales were summed (after reverse-coding negative items) to create an overall self-compassion score. Items are rated on a 5-point scale (e.g., 1 = 'almost never' to 5 = 'almost always'). Higher scores indicate greater self-compassion. In the present study, Cronbach's alpha ranged between .55 and .83 for the subscales and was .90 for the total scale.

Statistical Analyses

Pearson correlation coefficients were computed to test the associations between the variables in study. To test the hypothesis that individuals with higher levels of alexithymia would show less positive emotional granularity, or ability to make fine-grained distinctions between emotional experiences, we computed intraclass correlations (ICCs) between the seven positive emotions for 'people not presenting with alexithymia' and 'people presenting with alexithymia'. Larger ICCs indicate a greater relation between emotions

(i.e., lower degree of emotion granularity), while lower ICCs indicate less relation between emotions (i.e., higher degree of emotion granularity). We used the recommended cutoff scoring for the TAS total score (< 51 non-alexithymia and > 61 possible alexithymia; Bagby et al., 1994).

To test the mediation hypotheses, the Hayes' PROCESS macro was used (Hayes, 2013). Direct and indirect effects were computed using a series of ordinary least squares regressions and the bootstrapping procedure (Preacher & Hayes, 2004; Preacher & Hayes, 2008). The significance of the indirect effect, based on the 95% confidence interval (CI) derived from 5,000 bootstrap resamples, is indicated when the CI values do not cross zero. The Bootstrap is helpful because total and indirect effects are often not multivariate normally distributed (Preacher & Hayes, 2008). We report the unstandardized coefficient (*B*) and standard error (*SE*) for each regression equation to indicate the predicted change in the dependent variable given a one-unit change in the independent variable, while controlling for the other variables in the equation. We also report *t* statistic, *p*-value and 95% confidence intervals for the direct effects. With the exception of the self-compassion model, we conducted multiple mediator analysis to explore the unique contribution of the mediators. Including several mediators in one model allows determining the relative magnitudes of the indirect effects. Thus, in the first model experiential avoidance and decentering were entered simultaneously, and in the second model all three fear of compassion scales were also entered simultaneously. We also conducted a final multiple mediator model including all significant variables of the association between alexithymia and positive emotions. A conceptual diagram of the direct and indirect effects of alexithymia on positive emotions is presented in Figure 1. Statistical significance was set at .05 and IBM SPSS version 23 was used for all analyses.

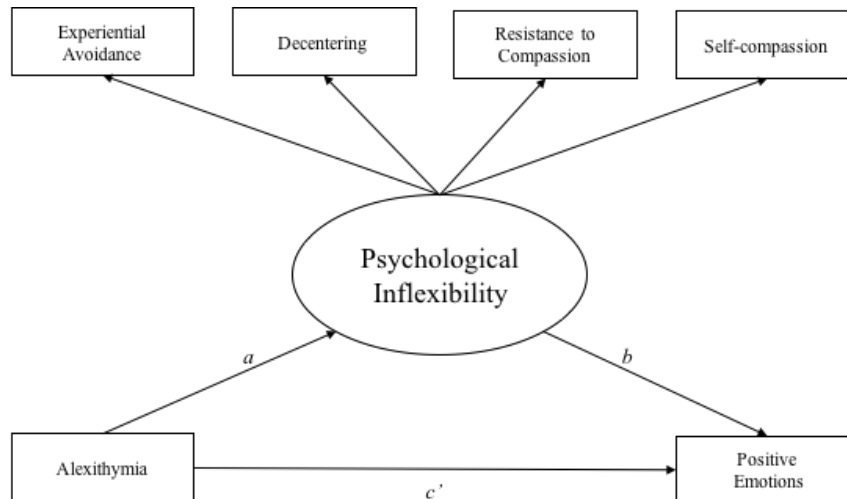


Figure 1. Conceptual model of the association between alexithymia and positive emotions, mediated by correlates of psychological inflexibility. *a* = effect of alexithymia on mediator; *b* = effect of the mediator on positive emotions; *c'* = direct effect of alexithymia on positive emotions; Multiplying 'a' and 'b' yields the indirect effect.

Results

Relationships between Alexithymia and Positive Emotions

Correlations between alexithymia and positive emotions are presented on Table 1, and suggested that alexithymia is associated with decreased positive emotions.

To test a secondary hypothesis that individuals with higher levels of alexithymia would show an inability in noting fine distinctions between positive emotions (low positive emotional differentiation), when compared to individuals with lower scores of alexithymia, we conducted intraclass correlations (ICC) between the seven discrete positive emotions. Results indicated that individuals with higher levels of alexithymia presented higher scores of ICC than individuals with lower scores of alexithymia (.88 vs .83). In addition, we conducted ICC separately for positive emotions characterized by high arousal (joy, pride and amusement) and low arousal (contentment, love, compassion and love). Results indicated that for high arousal emotions individuals with higher levels of alexithymia presented higher ICC scores

when compared with individuals with lower levels of alexithymia (.81 vs .67). For low arousal emotions, this difference was less expressive (.76 vs .75).

Table 1

Bivariate Correlations Between Alexithymia and Positive Emotions

	Describing	Identifying	External Thinking	TAS Total
Joy	-.26**	-.26**	-.20**	-.20**
Contentment	-.33**	-.35**	-.17**	-.28**
Pride	-.32**	-.31**	-.19**	-.23**
Love	-.32**	-.31**	-.18**	-.25**
Compassion	-.15**	-.13*	-.31**	-.06
Amusement	-.16**	-.14*	-.17**	-.14*
Awe	-.19**	-.16**	-.15**	-.13*
DPES Total	-.33**	-.32**	-.25**	-.25**

Note. ** $p < .05$; DPES = Dispositional Positive Emotions Scale; TAS = Toronto Alexithymia Scale

Relationships between Alexithymia, Positive Emotions, Decentering, and Experiential Avoidance

We began our analyses by exploring the correlations between the study variables. Results suggested that higher scores of decentering were significantly and positively correlated with the experience of all positive emotions. In contrast, higher scores of experiential avoidance were negatively associated with positive emotions, with the exception of compassion. We also found that decentering was negatively associated with alexithymia, and experiential avoidance was positively associated with alexithymia (Table 2).

Results for the mediation suggested that both decentering and experiential avoidance significantly mediated the relation between alexithymia and positive emotions. Specifically, we found significant indirect effects of decentering, $B = -0.25$, $BootSE = 0.08$, $BootCI [-0.43 - -0.12]$, $z = 3.86$, $p < .001$, and experiential avoidance, $B = -0.47$, $BootSE = 0.11$, $BootCI [-0.68 - -$

0.27], $z = 4.45$, $p < .001$. There were no significant differences between the two indirect effects, $B = 0.22$, $BootSE = 0.14$, $BootCI [-0.06 - 0.49]$. There were also significant direct effects of alexithymia on experiential avoidance, $B = 0.53$, $SE = 0.04$, $t = 12.55$, $p < .001$, 95% CI [0.44 - 0.61], and decentering, $B = -0.11$, $SE = 0.02$, $t = -4.79$, $p < .001$, 95% CI [-0.16 - -0.07], and of experiential avoidance, $B = -0.89$, $SE = 0.19$, $t = -4.78$, $p < .001$, 95% CI [-1.24 - -0.52], and decentering, $B = 2.19$, $SE = 0.33$, $t = 6.66$, $p < .001$, 95% CI [1.54 - 2.84] on positive emotions. These results indicate that two individuals who differ by one unit in their alexithymia scores are estimated to differ by 0.47 units in their reported positive emotions as a result of the tendency for those with higher levels of alexithymia to present higher experiential avoidance (because a is positive), which in turn translates into decreased positive emotions (because b is negative). At the same time, two individuals who differ by one unit in their alexithymia scores are estimated to differ by 0.25 units in their reported positive emotions as a result of the tendency for those with higher levels of alexithymia to present lower decentering (because a is negative), which in turn translates into greater positive emotions (because b is positive).

Relationships between Alexithymia, Positive emotions, and Resistance to Compassion

Results for the correlational analyses suggested that higher scores of resistance to receive and give compassion was significantly and negatively correlated with the experience of positive emotions. We also found that resistance to give, and especially to receive compassion, was positively associated with alexithymia (Table 2).

Results for the mediation analyses suggested that both fear of receiving compassion and fear of self-directed compassion mediated the relation between alexithymia and positive emotions. Specifically, we found significant

indirect effects for fear of receiving compassion, $B = -0.25$, $BootSE = 0.12$, $BootCI [-0.48 - -0.02]$, $z = 2.27$, $p = .024$, and fear of self-directed compassion, $B = -0.29$, $BootSE = 0.10$, $BootCI [-0.52 - -0.11]$, $z = 3.21$, $p = .001$, but not fear of giving compassion. There were no significant differences between the two significant indirect effects, $B = 0.05$, $BootSE = 0.18$, $BootCI [-0.30 - 0.42]$. There were also significant direct effects of alexithymia on fear of receiving compassion, $B = 0.47$, $SE = 0.05$, $t = 10.33$, $p < .001$, 95% CI [0.38 - 0.56], fear of giving compassion, $B = 0.18$, $SE = 0.04$, $t = 4.47$, $p < .001$, 95% CI [0.10 - 0.26], and fear of self-compassion, $B = 0.48$, $SE = 0.06$, $t = 8.55$, $p < .001$, 95% CI [0.37 - 0.59]. There were also significant direct effects of fear of receiving compassion, $B = -0.53$, $SE = 0.23$, $t = -2.33$, $p = .020$, 95% CI [-0.97 - -0.09], and fear of self-compassion, $B = -0.61$, $SE = 0.18$, $t = -3.491$, $p = .001$, 95% CI [-0.95 - -0.27], on positive emotions.

Relationships between Alexithymia, Positive emotions, and Self-compassion

As presented in Table 2, self-compassion was positively associated with positive emotions, in particular joy, contentment and pride, and was negatively associated with alexithymia, in particular the inability to identify emotions.

Results for the mediation analyses suggested that self-compassion was a significant mediator of the relation between alexithymia and positive emotions, $B = -0.55$, $BootSE = 0.09$, $BootCI [-0.75 - -0.38]$, $z = 6.05$, $p < .001$. There was a significant direct of alexithymia on self-compassion, $B = -0.56$, $SE = 0.07$, $t = -8.13$, $p < .001$, 95% CI [-0.70 - -0.43], and a direct effect of self-compassion on positive emotions, $B = 0.98$, $SE = 0.11$, $t = 9.10$, $p < .001$, 95% CI [0.76 - 1.19].

Table 2.

Bivariate Correlations Between Alexithymia, Decentering, Experiential Avoidance, Fears of Compassion, Self-Compassion and Positive Emotions

	Decentering	Experiential avoidance	Fear of receiving compassion	Fear of giving compassion	Fear of self-compassion	Self-compassion
Joy	.41**	-.39**	-.26**	-0.05	-.32**	.46**
Contentment	.39**	-.55**	-.28**	-.12*	-.31**	.55**
Pride	.48**	-.42**	-.31**	-.03	-.29**	.50**
Love	.35**	-.39**	-.42**	-.14*	-.36**	.39**
Compassion	.23**	0.00	-.19**	-.09	-.22**	.10
Amusement	.22**	-.18**	-.16**	.03	-.23**	.22**
Awe	.33**	-.24**	-.17**	-.07	-.19**	.37**
DPES Total	.46**	-.43**	-.34**	-.09	-.37**	.51**
Describing	-.33**	.46**	.41**	.13*	.37**	-.39**
Identifying	-.36**	.63**	.46**	.21**	.47**	-.50**
External Thinking	-.24**	.24**	.25**	.24**	.23**	-.23**
TAS Total	-.25**	.57**	.50**	.22**	.44**	-.41**

Note. ** $p < .05$; DPES = Dispositional Positive Emotions Scale; TAS = Toronto Alexithymia Scale

Multiple Mediation Model of the Relationship Between Alexithymia and Positive Emotions

To explore the individual effect of each mediator, over and above the effects of other mediators, we conducted multiple mediation analyses with the significant mediators found in the previous models. Table 3 presents the correlation between the mediator variables.

Table 3

Bivariate Correlations Between the Mediator Variables

	1	2	3	4	5	6
1. Experiential Avoidance	-	-.39**	.48**	.23**	.47**	-.62**
2. Decentering		-	-.39**	-.28**	-.19**	-.30**
3. Fear of receiving compassion			-	.41**	.69**	-.42**
4. Fear of giving compassion				-	.30**	-.20**
5. Fear of self-compassion					-	-.39**
6. Self-compassion						-

Note. ** $p < .01$

Results suggested that increases in self-compassion, experiential avoidance, and decentering independently mediated alexithymia's effects on positive emotions. Specifically, the total indirect effect was $B = -0.90$, $BootSE = 0.14$, $BootCI [-1.19 - -0.63]$, the indirect effect of self-compassion was $B = -0.27$, $BootSE = 0.08$, $BootCI [-0.45 - -0.12]$, the indirect effect of experiential avoidance was $B = -0.23$, $BootSE = 0.11$, $BootCI [-0.45 - -0.02]$, and the indirect effect of decentering was $B = -0.16$, $BootSE = 0.06$, $BootCI [-0.31 - -0.06]$. Fear of receiving compassion and fear of self-compassion were no longer significant mediators in this model. Pairwise comparisons between the mediators showed that self-compassion, experiential avoidance, and decentering did not significantly differ in their mediating effects on positive emotions.

Discussion

Alexithymia has been consistently associated with poor mental health outcomes, such as depression, anxiety, and negative emotions, in clinical and non-clinical samples. Although fewer in comparison, some studies suggested that alexithymia is also associated with decreased positive emotions. Positive emotions play an important role in mental health and well-being, and thus individuals with higher levels of alexithymia may be deprived of such positive benefits. This study aimed to contribute to this literature. Although alexithymia may be directly associated with decreased positive emotions, we also hypothesized that psychological inflexibility would play an important mediating role in such link. Specifically, we hypothesized that an individual's unwillingness or inability to be in contact with internal experiences, without trying to avoid or control them, would be related to alexithymia and would help explain the link between alexithymia and decreased experience of positive emotions. In this study, we measured several psychological processes related to psychological inflexibility, namely experiential avoidance, decentering (inversely), resistance to feelings of compassion, and self-compassion (inversely).

Given that few studies to date explored the relationship between alexithymia and positive emotions, we began by testing whether there was such a relationship, and whether individuals with higher levels of alexithymia experienced positive emotions differently. Results suggested that alexithymia was associated with decreased experience of several positive emotions. This finding is in line with previous studies (De Gucht et al., 2004; Yelsma, 2007; Luminet et al., 1999). Results also suggested that people presenting with alexithymia showed less emotional granularity, or emotional differentiation, of positive emotions, particularly for high arousal emotions. This result is in line with previous studies that showed an association between alexithymia and lack of emotional awareness, and low emotional granularity (e.g., Erbas et al., 2014; Kashdan et al., 2015). The fact that emotional differentiation was

particularly low for high arousal positive emotions may be related to some findings from the psychophysiological literature that suggested that people presenting with alexithymia may have a problem processing the arousal dimension of emotion, regardless of its valence (e.g., Peasley-Miklus, Panayiotou, Vrana, 2016). Results of the mediation analyses were in line with our hypotheses, and suggested that the association between alexithymia and decreased positive emotions was mediated by several psychological inflexibility-related constructs.

Specifically, we found that decentering was a significant mediator of the relation between alexithymia and positive emotions, and was negatively related to alexithymia and positively related to positive emotions. This is the first published study to our knowledge to explore the relations between decentering and alexithymia. This finding suggests that an inability to identify and distinguish emotions may prevent one from being able to take a step back from one's emotions and to view them from an objective point of view. This, in turn, seems to lead to decreased positive emotions. We suggest that when distressing feelings and bodily sensations arise, instead of letting these experiences dominate attention or dictate behavior, individuals with low levels of alexithymia may be able to distance themselves, probably because they are more aware of their conscious states and thus find it easier to shift attention and maintain emotional stability (Fogarty et al., 2013; Pond et al., 2012). With this psychological distance, there is greater opportunity to direct effort behavior toward personally valued goals, which may promote more frequent positive emotions.

Experiential avoidance was also a significant mediator of the relation between alexithymia and positive emotions. This finding is in accordance with a previous study in which experiential avoidance was found to be correlated with alexithymia, especially its difficulty in identifying feelings dimension (Panayiotou et al., 2015). The authors concluded that alexithymia may be a learned behavior used to avoid unwanted emotions and that this avoidant

behavior may form the link between alexithymia and psychopathology. Experiential avoidance, in turn, may decrease positive emotions. For example, one study found that experiential avoidance was negatively associated with daily positive emotions, and the authors suggested that experiential avoidance may disrupt pleasant and spontaneous activities and decrease positive affective experiences (Kashdan, Barrios, Forsyth, & Steger, 2006). These results suggest that while the inability to effectively identify and describe emotional states is correlated with less positive emotions, this relation is mediated by the inability or unwillingness to tolerate aversive private experiences.

Results also indicated that alexithymic traits are positively associated with resistance or unwillingness to experience compassion, whether from others, to others, or self-directed. Only resistance to give compassion to others was not a significant mediator of the relationship between alexithymia and positive emotions. These results suggest that individuals with alexithymia may have difficulties experiencing and processing feelings of care, kindness, concern or support, which in turn, probably through impairments in social skills and interpersonal relatedness, leads to decreased positive emotions. These results may be interpreted in the light of the studies linking alexithymia and lack of empathic abilities. The majority of people who experience alexithymia not only have little to no functional awareness of their own emotions but also struggle to comprehend many standard emotions in other people. This may be because understanding and recognizing internal feelings is a fundamental basis for empathizing with others (Moriguchi et al., 2007; Decety & Jackson 2004). Difficulties in recognizing the suffering of others, in turn, may inhibit feelings of compassion. Also, difficulties in identifying one's feelings may prevent one from interpersonally communicating one's emotions, which in turn may prevent them from enjoying the support, and care that loved ones could otherwise provide. However, when all variables were included in the final model, fear of compassion was no longer a significant mediator. These

results suggest that, relative to self-compassion, decentering, and experiential avoidance, fears of compassion may not be as important in the association between alexithymia and decreased positive emotions.

Our results also showed that self-compassion also mediated the alexithymia-positive emotions link. It seems that individuals who have difficulty experiencing their emotions will also have difficulties accepting those emotions with kindness instead of judgment, and with mindful awareness, which is in line with previous studies (Aydin et al., 2014; Rusk, 2015).

Finally, we found that the correlates of psychological inflexibility were significantly related to each other in the expected direction. Overall, the pattern of correlations was not so high as to suggest that the constructs are overlapping (the strongest correlation coefficient was .62 between experiential avoidance and self-compassion, which indicates that these processes share 38% of variance), nor so low as to suggest absence of association. These results are in line with the few studies exploring the relationships between these constructs. For example, in a sample of patients with chronic pain, experiential avoidance and self-compassion were significantly correlated ($r = .61$; Costa & Pinto-Gouveia, 2013). In another study, fear of self-compassion was positively related ($r = .47$) to experiential avoidance (Miron et al., 2015), and experiential avoidance and decentering have been shown to be negatively correlated ($r = -.43$; Gregório et al., 2015).

In conclusion, individuals with higher levels of alexithymia seem to experience diminished positive emotions as a function of their habitual 1) failure to take a step back and viewing one's thoughts and feelings as temporary, objective events in mind; 2) unwillingness to be in contact with inner experiences without trying to alter their form or frequency; 3) inability to experience affiliative-related emotions; 4) failure to hold negative experiences with kindness, mindful awareness and with a sense of shared humanity.

Implications

Alexithymia is associated with poor psychotherapy outcomes (e.g., Ogrodniczuk et al., 2011). Fortunately, at the same time, several intervention studies demonstrate that those with heightened alexithymia across clinical diagnoses have the potential to benefit from psychotherapy (e.g., Cameron et al., 2014; Pinna et al., 2015). It is crucial to investigate factors that may be related to alexithymia and that may contribute to these individuals' difficulties. Our findings suggest that the therapeutic targeting of alexithymia alone may not be sufficient without also targeting the mediating processes in an explicit way, namely psychological inflexibility-related processes. In this line, one of the main goals of Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) is to increase psychological flexibility, which involves helping clients to disentangle themselves from the cycle of experiential avoidance and cognitive fusion. An increased interest in self-compassion by the contextual behavioral community is now manifesting in empirical studies (e.g., Yadavaia et al., 2014), adding to the growing body of research showing that self-compassion can be cultivated (e.g., Neff & Germer, 2013; Birnie, Speca, Carlson, 2010). However, clinical strategies may also be needed to identify and undermine potential resistances of feelings of compassion.

We believe that these constructs, although relatively independent, may mutually enhance one another. So for example, by targeting experiential avoidance and decentering abilities, patients may increase their willingness to be in contact with their resistance and fear of experiencing compassion, and to experience self-criticisms as passing events in the mind, without having to be believed, proven wrong, or engaged. At the same, self-compassion may be a value which would allow to embrace the suffering parts of the self with love and acceptance rather than avoiding thoughts and feelings linked to them (Yadavaia et al., 2014). In addition, our study provides preliminary evidence that alexithymia may be related to low positive emotional granularity. Thus,

it may also be important to provide these clients with opportunities to learn richer and functional repertoires of verbal behaviors about emotional contexts.

Despite these promising findings, several limitations should be taken into account. First, the cross-sectional nature of the design does not allow to establish causality in the relations between the variables. Although it is theoretically plausible that people presenting with alexithymia may have difficulties identifying, distinguishing, and expressing positive emotions, it is also possible that positive emotions may influence alexithymic traits. In this line, some studies have suggested that levels of alexithymia are dependent on fluctuations in emotional distress (e.g., Honkalampi, Hintikka, Laukkanen, Viinamaki, 2001). Similarly, it is not possible to establish a causal relation between alexithymia and the psychological processes explored in this study (experiential avoidance, decentering, fear of compassion, and self-compassion). Thus, future studies using experimental and longitudinal designs could provide important cues to the temporal relations between these constructs. In addition, the relations between the mediating processes should be further explored. For example, in a previous study fear of self-compassion and psychological inflexibility interacted to predict PTSD symptom severity (Miron et al., 2015), and in another study experiential avoidance and cognitive fusion interacted to predict several emotional distress indicators (Bardeen & Fergus, 2016).

Also, this study relied entirely on self-report measures, and thus the possible effect of shared method variance and of bias associated with such methodology (e.g., response bias, social desirability) should be taken into account. For example, the AAQ-II is the most widely used measure of experiential avoidance. However, it has been suggested that the AAQ-II may not be precisely measuring experiential avoidance, but related constructs (e.g., psychological inflexibility, general distress; Wolgast, 2014). As such, the present results should be replicated using other measures of experiential

avoidance. Recent studies are also using more direct techniques to explore fundamental assumptions underlying the alexithymia construct (e.g., van der Velde et al., 2013). More ecologically valid methods of exploring daily emotions and the ways people react to day-to-day situations may also offer a richer understanding of such processes.

Conclusion

It is now widely recognized that positive emotions contribute to our psychological and physical well-being. However, some people struggle to understand and recognize their emotional states, and such traits may impact their ability to experience positive emotions. Psychological inflexibility, marked by processes such as experiential avoidance, inability to decenter, resistance to compassionate feelings, and lack of self-compassion, may be important in the association between alexithymia and decreased positive emotions. As the first study exploring the relationship between alexithymia, psychological flexibility-related constructs and decreased experience of positive emotions, our findings may be useful in advancing both conceptual understandings of these constructs and the therapies that target them.

References

- Aschbacher, K., Epel, E., Wolkowitz, O. M., Prather, A. A., Puterman, E., & Dhabhar, F. S. (2012). Maintenance of a positive outlook during acute stress protects against pro-inflammatory reactivity and future depressive symptoms. *Brain, Behavior, and Immunity, 26*(2), 346-352.
- Aydin A., Campus, G., & Kadıköy, İ. T. (2014). An investigation of the relationship between self-compassion, humor and alexithymic characteristics of parents with autistic children. *International Journal on New Trends in Education and Their Implications, 5*, 145-159.
- Bagby, M., & Taylor, G. (1997). Affect dysregulation and alexithymia. In Taylor, G., Bagby, M., & Parker, J. (Eds.), *Disorders of Affect Regulation* (pp. 26-45). Cambridge: Cambridge University Press.
- Bagby, R. M., Parker, J. D., & Taylor, G. J. (1994). The twenty-item Toronto Alexithymia Scale—I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research, 38*(1), 23-32.
- Bardeen, J. R., & Fergus, T. A. (2016). The interactive effect of cognitive fusion and experiential avoidance on anxiety, depression, stress and posttraumatic stress symptoms. *Journal of Contextual Behavioral Science, 5*(1), 1-6. doi: 10.1016/j.jcbs.2016.02.002
- Begotka, A. M., Woods, D. W., & Wetterneck, C. T. (2004). The relationship between experiential avoidance and the severity of trichotillomania in a nonreferred sample. *Journal of Behavior Therapy and Experimental Psychiatry, 35*(1), 17-24.
- Bernstein, A., Hadash, Y., Lichtash, Y., Tanay, G., Shepherd, K., & Fresco, D. M. (2015). Decentering and related constructs: A critical review and metacognitive processes model. *Perspectives on Psychological Science, 10*(5), 599-617. doi: 10.1177/1745691615594577
- Birnie, K., Speca, M., & Carlson, L. E. (2010). Exploring self-compassion and empathy in the context of mindfulness-based stress reduction (MBSR). *Stress and Health, 26*(5), 359-371. doi: 10.1002/smi.1305
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., ... & Zettle, R. D. (2011). Preliminary psychometric properties of the Acceptance and Action Questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy, 42*(4), 676-688.

- Castilho, P., Pinto-Gouveia, J., & Duarte, J. (2015). Evaluating the multifactor structure of the long and short versions of the self-compassion scale in a clinical sample. *Journal of Clinical Psychology, 71*(9), 856-870.
- Ciarrochi, J., Heaven, P. C. L., & Supavadeeprasit, S. (2014). The link between emotion identification skills and socio-emotional functioning in early adolescence: A 1-year longitudinal study. *Journal of Adolescence, 31*(5), 565-582. doi: 10.1016/j.adolescence.2007.10.004
- Costa, J., & Pinto-Gouveia, J. (2013). Experiential avoidance and self-compassion in chronic pain. *Journal of Applied Social Psychology, 43*(8), 1578–1591. doi:10.1111/jasp.12107
- De Gucht, V., Fischler, B., & Heiser, W. (2004). Neuroticism, alexithymia, negative affect, and positive affect as determinants of medically unexplained symptoms. *Personality and Individual Differences, 36*(7), 1655-1667.
- Decety, J., & Jackson, P. L. (2004). The functional architecture of human empathy. *Behavioral and Cognitive Neuroscience Reviews, 3*(2), 71-100.
- Dinis, A., Carvalho, S., Pinto-Gouveia, J., & Estanqueiro, C. (2015). Shame memories and depression symptoms: The role of cognitive fusion and experiential avoidance. *International Journal of Psychology and Psychological Therapy, 15*(1), 63-86.
- Duarte, J., Pinto-Gouveia, J., & Sapeta, R. (2013). [Confirmatory Factor Analysis of the Portuguese version of the Dispositional Positive Emotions Scale]. Unpublished raw data.
- Eid, M., Riemann, R., Angleitner, A., & Borkebau, P. (2003). Sociability and positive emotionality: Genetic and environmental contributions to the covariation between different facets of extraversion. *Journal of Personality, 71*(3), 319-346.
- Erbas, Y., Ceulemans, E., Lee Pe, M., Koval, P., & Kuppens, P. (2014). Negative emotion differentiation: Its personality and well-being correlates and a comparison of different assessment methods. *Cognition and Emotion, 28*(7), 1196-1213.
- Fogarty, F. A., Lu, L. M., Sollers, J. J., III, Krivoschekov, S. G., Booth, R. J., & Consedine, N. S. (2013). Why it pays to be mindful: Trait mindfulness predicts physiological recovery from emotional stress and greater differentiation among negative emotions. *Mindfulness 6*(2), 175-185. doi:10.1007/ s12671-013-0242-6

- Foran, H. M., & O'Leary, K. D. (2013). The role of relationships in understanding the alexithymia–depression link. *European Journal of Personality, 27*(5), 470-480.
- Fredrickson, B. L. (1998). What Good Are Positive Emotions? *Review of General Psychology, 2*(3), 300–319. doi: 10.1037/1089-2680.2.3.300
- Fredrickson, B. L., & Joiner, T. (2002). Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science, 13*(2), 172-175.
- Fresco, D. M., Moore, M. T., van Dulmen, M. H., Segal, Z. V., Ma, S. H., Teasdale, J. D., & Williams, J. M. G. (2007). Initial psychometric properties of the experiences questionnaire: validation of a self-report measure of decentering. *Behavior Therapy, 38*(3), 234-246.
- Gilbert, P., McEwan, K., Catarino, F., Baião, R., & Palmeira, L. (2014). Fears of happiness and compassion in relationship with depression, alexithymia, and attachment security in a depressed sample. *British Journal of Clinical Psychology, 53*(2), 228-244.
- Gilbert, P., McEwan, K., Gibbons, L., Chotai, S., Duarte, J., & Matos, M. (2012). Fears of compassion and happiness in relation to alexithymia, mindfulness, and self-criticism. *Psychology and Psychotherapy: Theory, Research and Practice, 85*(4), 374-390.
- Gilbert, P., McEwan, K., Matos, M., & Ravis, A. (2011). Fears of compassion: Development of three self-report measures. *Psychology and Psychotherapy: Theory, Research and Practice, 84*(3), 239-255.
- Gregório, S., Pinto-Gouveia, J., Duarte, C., & Simões, L. (2015). Expanding research on decentering as measured by the Portuguese version of the Experiences Questionnaire. *The Spanish Journal of Psychology, 18*, E23. doi: 10.1017/sjp.2015.18.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
- Hayes, S. C., Luoma, J., Bond, F., Masuda, A., & Lillis, J. (2006). Acceptance and Commitment Therapy: Model, processes, and outcomes. *Behaviour Research and Therapy, 44*(1), 1-25.
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York: Guilford Press.

- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (2012). *Acceptance and commitment therapy: The process and practice of mindful change* (2nd ed.). New York: Guilford.
- Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., & Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology, 64*(6), 1152-1168. doi: 10.1037/0022-006X.64.6.1152
- Hermanto, N., Zuroff, D. C., Kopala-Sibley, D. C., Kelly, A. C., Matos, M., Gilbert, P., & Koestner, R. (2016). Ability to receive compassion from others buffers the depressogenic effect of self-criticism: A cross-cultural multi-study analysis. *Personality and Individual Differences, 98*, 324-332.
- Honkalampi, K., Hintikka, J., Laukkanen, E., & Viinamäki, J. L. H. (2001). Alexithymia and depression: A prospective study of patients with major depressive disorder. *Psychosomatics, 42*(3), 229-234.
- Izen, A.M. (2000). Positive affect and decision making. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions. 2nd ed* (pp. 417–435). New York: Guilford Press.
- Kashdan, T. B., Barrios, V., Forsyth, J. P., & Steger, M. F. (2006). Experiential avoidance as a generalized psychological vulnerability: Comparisons with coping and emotion regulation strategies. *Behaviour Research and Therapy, 44*(9), 1301-1320.
- Kashdan, T. B., Breen, W. E., Afram, A., & Terhar, D. (2010). Experiential avoidance in idiographic, autobiographical memories: Construct validity and links to social anxiety, depressive, and anger symptoms. *Journal of Anxiety Disorders, 24*(5), 528-534.
- Kashdan, T. B., Barrett, L. F., & McKnight, P. E. (2015). Unpacking emotion differentiation transforming unpleasant experience by perceiving distinctions in negativity. *Current Directions in Psychological Science, 24*(1), 10-16.
- Kessel, R., Gecht, J., Forkmann, T., Drueke, B., Gauggel, S., & Mainz, V. (2016). Exploring the relationship of decentering to health related concepts and cognitive and metacognitive processes in a student sample. *BMC Psychology, 4*(11). doi: 10.1186/s40359-016-0115-6

- Kingston, J., Clarke, S., & Remington, B. (2010). Experiential avoidance and problem behavior: A mediational analysis. *Behavior Modification, 34*(2), 145-163.
- Kokkonen, P., Karvonen, J. T., Veijola, J., Läksy, K., Jokelainen, J., Järvelin, M. R., & Joukamaa, M. (2001). Prevalence and sociodemographic correlates of alexithymia in a population sample of young adults. *Comprehensive psychiatry, 42*(6), 471-476.
- Li, S., Zhang, B., Guo, Y., & Zhang, J. (2015). The association between alexithymia as assessed by the 20-item Toronto Alexithymia Scale and depression: A meta-analysis. *Psychiatry research, 227*(1), 1-9.
- Luminet, O., Bagby, R. M., Wagner, H., Taylor, G. J., & Parker, J. D. (1999). Relation between alexithymia and the five-factor model of personality: A facet-level analysis. *Journal of Personality Assessment, 73*(3), 345-358.
- MacBeth, A., & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review, 32*(6), 545-552. doi: 10.1016/j.cpr.2012.06.003
- Marchesi, C., Bertoni, S., Cantoni, A., & Maggini, C. (2008). Is alexithymia a personality trait increasing the risk of depression? A prospective study evaluating alexithymia before, during and after a depressive episode. *Psychological Medicine, 38*(12), 1717-1722.
- Masuda, A., & Tully, E. C. (2012). The role of mindfulness and psychological flexibility in somatization, depression, anxiety, and general psychological distress in a nonclinical college sample. *Journal of Evidence-Based Complementary & Alternative Medicine, 17*(1), 66-71.
- Miron, L. R., Sherrill, A. M., & Orcutt, H. K. (2015). Fear of self-compassion and psychological inflexibility interact to predict PTSD symptom severity. *Journal of Contextual Behavioral Science, 4*(1), 37-41.
- Moriguchi, Y., Decety, J., Ohnishi, T., Maeda, M., Mori, T., Nemoto, K., ... & Komaki, G. (2007). Empathy and judging other's pain: An fMRI study of alexithymia. *Cerebral Cortex, 17*(9), 2223-2234.
- Neff, K. D. (2003a). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity, 2*, 85-102. doi: 10.1080/15298860390129863
- Neff, K. D. (2003b). Development and validation of a scale to measure self-compassion. *Self and Identity, 2*, 223-250. doi: 10.1080/15298860390209035

- Neff, K. D., & Germer, C. K. (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Clinical Psychology, 69*(1), 28-44. doi: 10.1002/jclp.21923
- Nowakowski, M. E., McFarlane, T., & Cassin, S. (2013). Alexithymia and eating disorders: a critical review of the literature. *Journal of Eating Disorders, 1*(21). doi: 10.1186/2050-2974-1-21
- Ogrodniczuk, J. S., Piper, W. E., & Joyce, A. S. (2011). Effect of alexithymia on the process and outcome of psychotherapy: A programmatic review. *Psychiatry Research, 190*, 43–48. doi: 10.1016/j.psychres.2010.04.026
- Panayiotou, G., Leonidou, C., Constantinou, E., Hart, J., Rinehart, K. L., Sy, J. T., & Björgvinsson, T. (2015). Do alexithymic individuals avoid their feelings? Experiential avoidance mediates the association between alexithymia, psychosomatic, and depressive symptoms in a community and a clinical sample. *Comprehensive psychiatry, 56*, 206-216.
- Pinto-Gouveia, J., Gregório, S., Dinis, A., & Xavier, A. (2012). Experiential avoidance in clinical and non-clinical samples: AAQ-II Portuguese version. *International Journal of Psychology and Psychological Therapy, 12*(2), 139-156.
- Pond Jr, R. S., Kashdan, T. B., DeWall, C. N., Savostyanova, A., Lambert, N. M., & Fincham, F. D. (2012). Emotion differentiation moderates aggressive tendencies in angry people: A daily diary analysis. *Emotion, 12*(2), 326.
- Porcelli, P., Bagby, R. M., Taylor, G. J., De Carne, M., Leandro, G., & Todarello, O. (2003). Alexithymia as predictor of treatment outcome in patients with functional gastrointestinal disorders. *Psychosomatic Medicine, 65*, 911–918.
- Prazeres, N., Parker, J. D. A., & Taylor, G. J. (2000) Adaptação portuguesa da Escala de Alexitimia de Toronto de 20 Itens (TAS-20). *Revista Iberoamericana de Diagnóstico Y Evaluación Psicológica, 9*(1), 9-21.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*(4), 717-731.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879-891.

- Roh, D., Kim, W. J., & Kim, C. H. (2011). Alexithymia in obsessive-compulsive disorder: clinical correlates and symptom dimensions. *The Journal of Nervous and Mental Disease*, 199(9), 690-695. doi: 10.1097/NMD.0b013e318229d209
- Rusk, D. A. (2015). *Exploration of the relationship between self-compassion, alexithymia and emotion regulation in a clinical population* (Unpublished Doctoral Thesis). The University of Edinburgh, Scotland.
- Safran, J. D., & Segal, Z. V. (1990). *Interpersonal process in cognitive therapy*. New York: Basic Books.
- Shiota, M. N., Keltner, D., & John, O. P. (2006). Positive emotion dispositions differentially associated with Big Five personality and attachment style. *The Journal of Positive Psychology*, 1(2), 61-71.
- Shiota, M. N., Neufeld, S. L., Danvers, A. F., Osborne, E. A., Sng, O., & Yee, C. I. (2014). Positive emotion differentiation: A functional approach. *Social and Personality Psychology Compass*, 8(3), 104–117. doi: 10.1111/spc3.12092
- Sifneos, P. (1973). The prevalence of “alexithymic” characteristics in psychosomatic patients. *Psychotherapy and Psychosomatics*, 22, 255–262.
- Simões, D. (2012). *Medo da compaixão: Estudo das propriedades psicométricas da Fears of Compassion Scales (FCS) e da sua relação com medidas de vergonha, compaixão e psicopatologia*. (Unpublished Master Thesis). The University of Coimbra, Portugal.
- Sin, N. L., Graham-Engeland, J. E., & Almeida, D. M. (2015). Daily positive events and inflammation: Findings from the National Study of Daily Experiences. *Brain, Behavior, and Immunity*, 43, 130-138.
- Steptoe, A., Dockray, S., & Wardle, J. (2009). Positive affect and psychobiological processes relevant to health. *Journal of Personality*, 77(6), 1747-1776.
- Taylor, G. (2000). Recent developments in alexithymia theory and research. *The Canadian Journal of Psychiatry*, 45, 134–142.
- Taylor, G. J., & Bagby, R. M. (2004). New trends in alexithymia research. *Psychotherapy and Psychosomatics*, 73(2), 68-77.
- Teasdale, J. D., Moore, R. G., Hayhurst, H., Pope, M., Williams, S., & Segal, Z. V. (2002). Metacognitive awareness and prevention of relapse in

depression: Empirical evidence. *Journal of Consulting and Clinical Psychology, 70*, 275–287.

- Tugade, M. M., & Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology, 86*(2), 320.
- Tugade, M. M., Fredrickson, B. L., & Feldman Barrett, L. (2004). Psychological resilience and positive emotional granularity: Examining the benefits of positive emotions on coping and health. *Journal of Personality, 72*(6), 1161-1190.
- van der Velde, J., Servaas, M. N., Goerlich, K. S., Bruggeman, R., Horton, P., Costafreda, S. G., & Aleman, A. (2013). Neural correlates of alexithymia: A meta-analysis of emotion processing studies. *Neuroscience & Biobehavioral Reviews, 37*(8), 1774-1785.
- Venta, A., Hart, J., & Sharp, C. (2012). The relation between experiential avoidance, alexithymia and emotion regulation in inpatient adolescents. *Clinical Child Psychology and Psychiatry, 0*(0) 1–13. doi: 10.1177/1359104512455815
- Yadavaia, J. E., Hayes, S. C., & Vilardaga, R. (2014). Using acceptance and commitment therapy to increase self-compassion: A randomized controlled trial. *Journal of Contextual Behavioral Science, 3*(4), 248-257.
- Yelsma, P. (2007). Associations among alexithymia, positive and negative emotions, and self-defeating personality. *Psychological Reports, 100*(2), 575-584.
- Wolgast, M. (2014). What does the Acceptance and Action Questionnaire (AAQ-II) really measure? *Behavior Therapy, 45*(6), 831–839. doi:10.1016/j.beth.2014.07.002
- Zessin, U., Dickhäuser, O., & Garbade, S. (2015). The relationship between self-compassion and well-being: A meta-analysis. *Applied Psychology: Health and Well-Being, 7*(3), 340-364.

Feeling safe and content is good for the heart: Evidence for a quadratic relationship between heart rate variability and positive emotions⁷

Abstract

There has been an increased interest in the study of underlying autonomic correlates of emotions. This study tests the hypothesis that high levels of high-frequency heart rate variability (HF HRV) are associated with positive emotions. In addition, we hypothesize that this association will differ according to the type of positive emotion. Also, based on recent findings, we tested the hypothesis that this relationship would be nonlinear.

Resting-state HRV was collected and self-report measures of different positive emotions were administered to a sample of 96 volunteers.

Results suggested that there was a quadratic relationship between high-frequency heart rate variability and positive emotions associated with calmness, warmth and contentment, but not with positive emotions associated with excitement or lack of arousal.

Given the role of positive emotions in social affiliation, and particularly positive emotions associated with a quiescence motivational state, results are interpreted in light of theoretical accounts that highlight the importance of vagal regulation in social behavior.

Our data also suggest that different positive emotions may be characterized by qualitatively distinct profiles of autonomic activation, and thus HRV may be an important marker for physiologically distinct positive emotions.

⁷ Duarte, J., & Pinto-Gouveia, J. (2016). Feeling safe and content is good for the heart: Evidence for a quadratic relationship between heart rate variability and positive emotions. *Manuscript submitted for publication.*

Introduction

The autonomic nervous system activity (ANS) is seen as a major component of the emotional response in many theories of emotion (Kreibig, 2010). Heart Rate Variability (HRV) is a measure of the continuous interplay between sympathetic and parasympathetic influences on the heart rate. Increases in this measure reflect increased parasympathetic or vagal (inhibitory) control over sympathetic nervous system activity, and thus reflect greater autonomic flexibility.

Most of the studies exploring the role of HRV in emotion have mainly focused on negative emotionality. Negative states and moods such as anxiety and depression have been found to be associated with lower parasympathetic activity (e.g., Carney & Freedland, 2009; Friedman & Thayer, 1998; Kemp, Quintana, Felmingham, Matthews, & Jelinek, 2012; Rechlin, Weis, & Kaschka 1994; Watkins, Grossman, Krishnan, & Sherwood, 1998). Emotional states such as fear or anger have also been associated with decreased HRV (e.g., Rainville, Bechara, Naqvi, & Damasio, 2006). Decreased HRV has also been associated with less psychological flexibility and capacity for emotional regulation (e.g., Appelhans & Luecken, 2006; Butler, Wilhelm, & Gross, 2006; Thayer & Lane, 2009).

A growing number of studies, however, have been examining the relationship between positive emotions and measures of HRV, and overall results point that high resting vagal activity is associated with positive emotionality. For example, Kok and Fredrickson (2010) measured vagal tone at the beginning and end of a 9-week period in which participants reported their daily positive emotions (amusement, awe, gratitude, hope, inspiration, interest, joy, love, pride and serenity) and found that individuals who possessed higher initial levels of vagal tone increased in positive emotions more rapidly than others. Oveis, Cohen, Gruber, Shiota, and Haidt (2009) examined the association between resting RSA and positive emotionality (extraversion, agreeableness,

positive mood and optimism) and found that resting RSA was associated with trait positive affect (positive mood).

Still, the extent to which specific positive emotional states are characterized by increased parasympathetic activation is still in debate, since most of the studies used general measures of positive emotionality or composites of discrete positive emotions. However, there are reasons to believe that different positive emotions may be differently associated with ANS functioning and with HRV.

Discrete emotions are thought to help address adaptive problems (or opportunities) by coordinating cognitive, physiological and behavioral mechanisms likely to facilitate fitness-enhancing responses to the situations (Tooby & Cosmides, 2008; Kenrick & Shiota 2008). Thus, it is not unexpected that different positive emotions that may have evolved for different purposes (e.g., reward approach, exploration, social connectedness) show different motivational and neurophysiological correlates. For example, Shiota et al. (2011) found that different positive emotions (anticipatory enthusiasm, attachment love, nurturant love, amusement and awe) were characterized by distinct profiles of autonomic activation. Also, Kogan et al. (2014) found a relation between vagal activity and prosocial emotions (compassion and gratitude) but not with other general positive emotions (contentment, joy, desire, amusement and interest).

There are some contradictory findings in the literature that may suggest that autonomic functioning and positive emotionality may be non-linearly associated. For instance, extremely high levels of vagal activity are associated with mania (Gruber, Harvey, & Purcell, 2011; Gruber, Johnson, Oveis, & Keltner, 2008), indicating that greater vagal activity may not always be adaptive. Rainville et al. (2006) observed a reduction in HRV during happiness, also reported in another study (Lane, Reiman, Ahern, & Thayer, 2001). In a recent study, Kogan et al. (2014) reported through a series of studies a nonlinear relationship between vagal activity and prosociality

(prosocial traits, prosocial emotions and outside ratings of prosociality by complete strangers).

These studies highlight the complexity of the relationship between vagal activity and positive emotions, and suggest that a linear account of this relation may not adequately fit these phenomena.

The aim of this study is to explore linear and nonlinear relationships between resting parasympathetic activity and different types of self-reported positive emotions. We hypothesize that positive emotions associated with activation and excitement will not be associated with parasympathetic activation and that positive emotions related to low arousal and activation will be associated with increased parasympathetic activity, linearly and/or nonlinearly. The relationship between HRV and a widely used measure of positive emotions (PANAS) was also tested.

Method

Participants

One hundred and twenty-four undergraduate students from the University of Coimbra were recruited to participate in exchange for psychology course credits. Due to faulty recordings, extreme values in HRV measurement (above or below 3 *SD*), missing data in questionnaires, and presence of cardiovascular disease or use of medication, the final sample consisted of ninety-six participants (mean age = 20.96 years, *SD* = 3.85; 96.9 % female).

Procedure

Participants arrived at the laboratory and were asked to fill in several self-report measures. They were then asked to sit in a comfortable position while their heart rate was monitored. It took 30 minutes on average to complete the self-report questionnaires and HRV measurement.

Measures

Self-report measures.

Types of Positive Affect Scale (TPAS; Gilbert et al., 2008). The scale is composed of three factors measuring different types of positive affect: Activating Positive Affect (e.g., excited, dynamic, active); Relaxed Positive Affect (e.g., relaxed, calm, peaceful) and Safeness/Contentment Positive Affect (e.g., safe, secure, warm). While relaxed positive affect seems to capture absence of activity or arousal, the safeness/contentment factor seems to tap positive affect in the presence of safeness as conferred by self or others, and thus is thought to be associated with the quiescence motivational state (Gilbert et al., 2008). Participants were asked to rate how they felt during the last two months. The scale showed good psychometric properties with Cronbach alphas of .88 for Activating Positive Affect, .93 for Relaxed Positive Affect, and .83 for Safe/contentment Positive Affect in this study.

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) consists of two 10-item mood scales and was developed to provide brief measures of positive affect and negative affect. Respondents were asked to rate the extent to which they have experienced each particular emotion in the last two months. Only the positive scale was used in this study, and showed good psychometric properties with a Cronbach alpha of .89.

Heart rate variability.

Interbeat intervals (IBI) were measured for 5 min via the eMotion HRV (Mega Electronics), an ambulatory heart rate variability (HRV) measurement system at 1000 Hz, which receives heart rate data from two disposable Ag-AgCl electrodes placed in participants. Participants' IBIs were recorded while they were relaxed in a seated position in a well-lit room without distracting stimuli. Participants were breathing spontaneously during the recording period. It has

been suggested that respiration rate does not affect HRV in resting state recordings (Denver, Reed, & Porges, 2007). This procedure allowed to obtain a measure of resting-state heart rate variability.

Height and weight were also measured to calculate Body Mass Index (BMI). To control for other potentially confounding influences on the psychophysiological functioning, participants were also asked regarding their health status (medical conditions such as cardiovascular disease or diabetes), current use of medication, smoking habits, ingestion of caffeine or alcohol on the days of the testing, and physical activity on the previous 24 hours. All participants were tested in the afternoon (1500h-1800h) to control for daily oscillations in HRV.

All samples were inspected for artefacts. Frequency-domain analyses were computed, compliant with the established guidelines (Task Force of the European Society of Cardiology and the North American Society of Pacing and Electrophysiology, 1996). *Artiifact* (version 2; Kaufmann, Sütterlin, Schulz, & Vögele, 2011), a tool for heart rate artifact processing and heart rate variability analysis, was used to calculate High Frequency (HF) band (0.15–0.4 Hz; normalized units) using the Fast Fourier transformation. The HF band of frequency domain is influenced almost exclusively by parasympathetic activity and has been argued to be an index of vagal tone (Akselrod et al., 1981; Lane et al., 2009).

Results

First, we tested associations between BMI and HRV. No significant associations were found. Then, we conducted a hierarchical linear regression with HF HRV entered in the first step, and a quadratic HF HRV term in the second step. This procedure allows us to test both the linear and quadratic relationship between HRV and emotions, and also whether introducing a

quadratic term increases the variance explained in the model. The HF HRV variable was centered before entering the model.

Hierarchical Linear Regressions

Results for the first step of the analysis showed that there were no statistically significant linear relationships between HRV and different types of positive emotions. However, when a quadratic term of the HF HRV was introduced in the second step of the analysis, we found a statistically significant quadratic effect for the safeness/contentment positive affect. Also, when the quadratic term was introduced in the model there was a significant *R*change (.06, $p = .02$) (Table 1).

These results suggest that as HRV increased, the relationship between HRV and safe positive affect progressively became more and more negative. Graphical inspection of the curves (see Figure 1) demonstrates an inverted U-shape curve.

Table 1

Hierarchical Multiple Regression for Linear and Quadratic Models of the Effect of Heart Rate Variability on Positive Emotions (N = 96)

Outcome	Linear Model					Quadratic Model					
	HF HRV					HF HRV					
	<i>B</i>	95 % CI	β	<i>t</i>	<i>p</i>	<i>B</i>	95% CI	β	<i>t</i>	<i>p</i>	<i>R</i> ² Change
Activating Affect	.032	-.039, .103	.092	.892	.375	-.003	-.007, .002	-.124	-1.20	.234	.015
Relaxed Affect	.010	-.058, .079	.031	.300	.765	.000	-.005, .004	-.022	-.211	.834	.000
Safeness/contentment Affect	.008	-.034, .051	.041	.396	.693	-.003	-.006, -.001	-.244	-2.40	.018	.058*
Positive emotions (PANAS)	-.012	-.107, .084	-.025	-.239	.812	-.004	-.010, .002	-.129	-1.24	.217	.016

Note. * $p < .05$; HF HRV = High Frequency Heart Rate Variability; CI = Confidence Interval

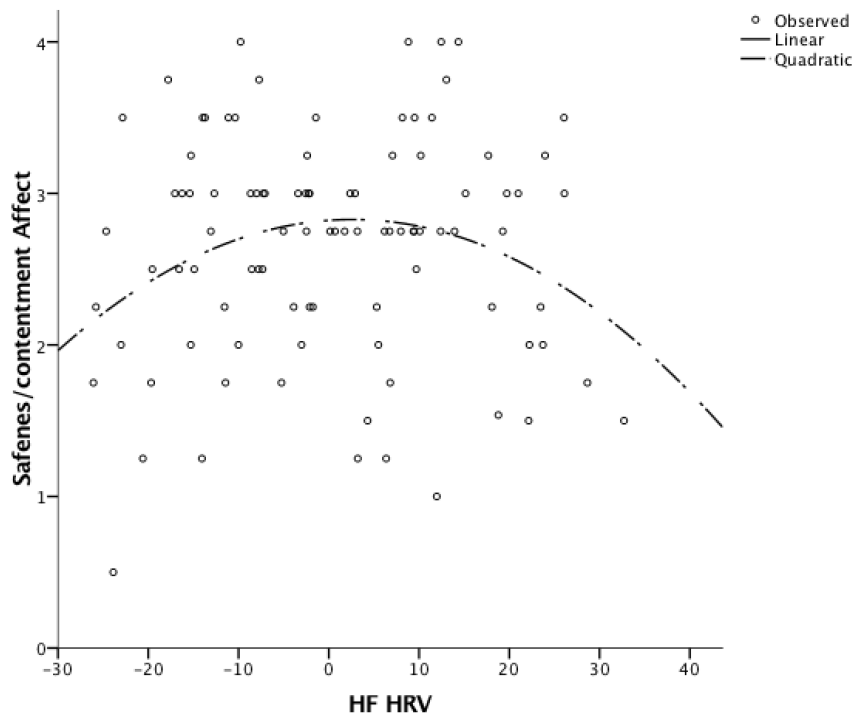


Figure 1. Vagal activity (resting high frequency heart rate variability) association with safeness/contentment positive affect.

Discussion

In the present study, guided by theorizing and previous findings of neurophysiological differences in positive emotions, relationships between autonomic function and positive emotions were tested. Given contradicting findings in the literature regarding the association between vagal function and positive emotions (e.g., Kogan et al., 2014), linear and non-linear relations were explored.

Contrary to previous findings, we found no evidence for a linear relationship between vagal activity and positive emotions in all measures. However, we found a significant quadratic relationship between vagal activity and safeness/contentment affect, but not with relaxed and activating positive affect nor with a measure of general positive emotions (PANAS).

The finding that only safeness and contentment affect was related to vagal activity is in line with recent theories derived from social neuroscience, and suggests that these positive emotions in particular may have important functions for social relationships (e.g., Depue & Morrone-Strupinsky, 2005). McCall and Singer (2014) suggested that positive feelings of warmth and calm are associated with parasympathetic activity and may be activated when the individual is in a quiescence motivational state, essential for homeostatic regulation and social affiliation.

In this line, Porges' Polyvagal Theory (Porges, 2001) proposes that the mammalian autonomic nervous system (ANS) developed the myelinated vagus nerve to facilitate engagement with the environment, and in particular social interactions, through its inhibitory influence on the the heart's sinoatrial node. Thus, when the surrounding environment is seen as safe, the vagal regulation of cardiac output slows the heart and encourage social behavior and homeostatic functions. According to this theory, a calm physiological state is essential for optimal social interaction. Higher HRV reflects not only autonomic regulation but also a physiological state that is compatible with social interaction.

In support of these accounts, a growing body of studies is providing evidence for an association between vagal activity and socially-related variables. For example, vagal activity is positively associated with perceived social support (Schwerdtfeger & Schlagert, 2011), positive emotions and feelings of connectedness during social interactions (Kok & Fredrickson, 2010), having more supportive friends (Holt-Lunstad, Uchino, Smith, & Hicks, 2007), affiliation with a minimal group (Sahdra, Ciarrochi, & Parker, 2015), prosociality (Kogan et al., 2014) and daily couple positive interaction (Diamond, Hicks, & Otter-Henderson, 2011).

The finding that general positive emotions and positive emotions associated with an approach motivation system (activating positive affect) were not significantly associated with vagal activity suggests that the relationship

between emotions related to the quiescence state and vagal activity is not a reflection of a general relation between vagal activity and positive emotionality.

The existence of a quadratic relationship between vagal activity and positive emotions suggests that there may be an optimal level of vagal activity, and that very low or very high levels may be maladaptive.

On one hand, these results indicate that participants experiencing low safeness and contentment affect also present low levels of HRV. This is in line with empirical evidence relating low HRV with low positive emotions (e.g., Oveis et al., 2009), and can be interpreted in light of the neurovisceral integration model (Thayer & Lane, 2000, 2009). According to this model, low HRV may indicate a predisposition to chronic threat perception and amygdala hyperactivation, and an inability to recognize safety signals, via the associations between HRV and neural structures that are involved in the appraisal of threat and safety, such as the prefrontal cortex and the amygdala (Thayer, Åhs, Fredrickson, Sollers III, & Wager, 2012). Thus, this model helps explain the link between low HRV and low levels of positive affect, and particularly an inability to feel safeness.

On the other hand, these results suggest that very high levels of HRV may be maladaptive as they are associated with less positive emotions, which is also in line with previous studies (e.g., Gruber et al., 2008, 2011; Kogan et al., 2014; Rainville et al., 2006).

Limitations

Despite the promising findings, this study has several limitations that should be taken into account. First, the sample size was relatively small, and only female participants were recruited. Although this allows controlling for gender differences in HRV (e.g., Diamond et al., 2011), at the same time limits the generalizability of the findings. Also, data on emotions was derived entirely through self-report measures and thus the findings are subject to the

limitations associated with this type of methodology. Experiencing sampling method, for example, may be a more ecologically valid way to explore how people typically feel in their daily lives. Finally, no conclusions can be made over causality due to study design. Thus, it remains unclear whether change in HF HRV impacts on safeness and contentment emotions, or whether the experience of such emotions could impact on HF HRV – which could help explain the links between positive emotions and several indicators of physical health (e.g., Cohen & Pressman, 2006). Future work would benefit from experimental manipulation of HF HRV to observe the consequence in terms of positive emotions.

Conclusion

In sum, the results of this study are in accordance with recent accounts of a quadratic relation between positive emotionality and vagal activity (Kogan et al., 2014; Gruber, Mennin, Fields, Purcell, & Murray, 2015). In addition, these findings add to the growing body of literature showing that positive emotion is not a single, unidimensional phenomenon, and support recent conceptualizations that favor a functional approach to positive emotions (e.g., Shiota et al., 2014). The fact that no relationship was found between vagal activity and relaxed positive affect, for example, supports this idea given that both contentment and relaxation are at the same end of the arousal continuum. This suggests that our data may not be well explained by models of emotion that limit differentiation to high versus low arousal states.

In addition, our findings add to the literature on the importance of positive emotions, and particular emotions associated with a quiescence motivation state. Although causality cannot be established, it is possible that the wide benefits associated positive emotions (Fredrickson, 1998) may be vagally mediated. This can have important clinical applications, as promoting optimal levels of safeness and contentment affect could translate into benefits to physical and mental health.

References

- Akselrod, S., Gordon, D., Ubel, F. A., Shannon, D. C., Barger, A. C., Cohen, R.J. (1981). Power spectrum analysis of heart rate fluctuation: a quantitative probe of beat-to-beat cardiovascular control. *Science*, *213*, 220–222.
- Appelhans, B. M., & Luecken, L. J. (2006). Heart rate variability as an index of regulated emotional responding. *Review of General Psychology*, *10*(3), 229–240. doi: 10.1037/1089-2680.10.3.229
- Butler, E. a, Wilhelm, F. H., & Gross, J. J. (2006). Respiratory sinus arrhythmia, emotion, and emotion regulation during social interaction. *Psychophysiology*, *43*(6), 612–22. doi: 10.1111/j.1469-8986.2006.00467.x
- Carney, R. M., & Freedland, K. E. (2009). Depression and heart rate variability in patients with coronary heart disease. *Cleveland Clinic Journal of Medicine*, *76*(Suppl 2), S13-17. 10.3949/ccjm.76.s2.03
- Cohen, S., & Pressman, S. D. (2006). Positive affect and health. *Current Directions in Psychological Science*, *15*(3), 122-125.
- Depue, R. A., & Morrone-Strupinsky, J. V. (2005). A neurobehavioral model of affiliative bonding: Implications for conceptualizing a human trait of affiliation. *Behavioral and Brain Sciences*, *28*(3), 313-349. doi: 10.1017/S0140525X05000063
- Diamond, L. M., Hicks, A. M., & Otter-Henderson, K. D. (2011). Individual differences in vagal regulation moderate associations between daily affect and daily couple interactions. *Personality & Social Psychology Bulletin*, *37*(6), 731–44. doi: 10.1177/0146167211400620
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*, *2*, 300–319. doi: 10.1037/1089-2680.2.3.300
- Friedman, B. H., & Thayer, J. F. (1998). Anxiety and autonomic flexibility: A cardiovascular approach. *Biological Psychology*, *47*(3), 243-263. doi: 10.1016/S0301-0511(98)00051-9
- Gilbert, P., McEwan, K., Mitra, R., Franks, L., Richter, A., & Rockliff, H. (2008). Feeling safe and content: A specific affect regulation system? Relationship to depression, anxiety, stress, and self-criticism. *The Journal of Positive Psychology*, *3*(3), 182–191. doi: 10.1080/17439760801999461
- Gruber, J., Mennin, D. S., Fields, A., Purcell, A., Murray, G. (2015). Heart Rate Variability as a potential indicator of positive valence system disturbance:

- A proof of concept investigation. *International Journal of Psychophysiology*. doi: 10.1016/j.ijpsycho.2015.08.005
- Kaufmann, T., Sütterlin, S., Schulz, S. M., & Vögele, C. (2011). ARTiiFACT: A tool for heart rate artifact processing and heart rate variability analysis. *Behavior Research Methods*, *43*(4), 1161–1170. doi: 10.3758/s13428-011-0107-7
- Kemp, A. H., Quintana, D. S., Felmingham, K. L., Matthews, S., & Jelinek, H. F. (2012). Depression, comorbid anxiety disorders, and heart rate variability in physically healthy, unmedicated patients: implications for cardiovascular risk. *PloS One*, *7*(2), e30777. doi: 10.1371/journal.pone.0030777
- Kok, B. E., & Fredrickson, B. L. (2010). Upward spirals of the heart: autonomic flexibility, as indexed by vagal tone, reciprocally and prospectively predicts positive emotions and social connectedness. *Biological Psychology*, *85*(3), 432–6. doi: 10.1016/j.biopsycho.2010.09.005
- Kreibig, S. D. (2010). Autonomic nervous system activity in emotion: A review. *Biological Psychology*, *84*(3), 394–421. doi: 10.1016/j.biopsycho.2010.03.010
- Lane, R. D., McRae, K., Reiman, E. M., Chen, K., Ahern, G. L., & Thayer, J. F. (2009). Neural correlates of heart rate variability during emotion. *NeuroImage*, *44*(1), 213–22. doi: 10.1016/j.neuroimage.2008.07.056
- McCall, C., & Singer, T. (2012). The animal and human neuroendocrinology of social cognition, motivation and behavior. *Nature Neuroscience*, *15*(5), 681–688. doi: 10.1038/nn.3084
- Oveis, C., Cohen, A. B., Gruber, J., Shiota, M. N., & Haidt, J. (2009). Resting respiratory sinus arrhythmia is associated with tonic positive emotionality. *Emotion*, *9*(2), 265–270. doi: 10.1037/a0015383
- Porges, S. W. (2001). The polyvagal theory: phylogenetic substrates of a social nervous system. *International Journal of Psychophysiology*, *42*(2), 123–46. doi: 10.1016/S0167-8760(01)00162-3
- Rainville, P., Bechara, A., Naqvi, N., & Damasio, A. R. (2006). Basic emotions are associated with distinct patterns of cardiorespiratory activity. *International Journal of Psychophysiology*, *61*(1), 5–18. doi: 10.1016/j.ijpsycho.2005.10.024
- Sahdra, B. K., Ciarrochi, J., & Parker, P. D. (2015). High-Frequency Heart Rate Variability Linked to Affiliation with a New Group. *PloS One*, *10*(6),

e0129583. doi: 10.1371/journal.pone.0129583

- Shiota, M. N., Neufeld, S. L., Danvers, A. F., Osborne, E. A., Sng, O., & Yee, C. I. (2014). Positive Emotion Differentiation: A Functional Approach. *Social and Personality Psychology Compass*, 8(3), 104–117. doi: 10.1111/spc3.12092
- Thayer, J. F., Åhs, F., Fredrikson, M., Sollers III, J. J., & Wager, T. D. (2012). A meta-analysis of heart rate variability and neuroimaging studies: Implications for heart rate variability as a marker of stress and health. *Neuroscience and Biobehavioral Reviews*, 36(2), 747–756. doi: 10.1016/j.neubiorev.2011.11.009
- Thayer, J. F., & Lane, R. D. (2000). A model of neurovisceral integration in emotion regulation and dysregulation. *Journal of Affective Disorders*, 61(3), 201–216. doi: 10.1016/S0165-0327(00)00338-4
- Thayer, J. F., & Lane, R. D. (2009). Claude Bernard and the heart-brain connection: further elaboration of a model of neurovisceral integration. *Neuroscience and Biobehavioral Reviews*, 33(2), 81–8. doi: 10.1016/j.neubiorev.2008.08.004
- Tooby, J., & Cosmides, L. (2008). The evolutionary psychology of the emotions and their relationship to internal regulatory variables. In M. Lewis, J. M. Haviland-Jones, & L. F Barrett (Eds.), *Handbook of emotions* (2nd ed., pp. 114–137). New York: Guilford Press.
- Watson, D., Clark, L., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.

Chapter 3

EMPIRICAL STUDIES

PART 3: Compassion in Action: Assessment and Intervention

CONTENTS

Study VIII. Professional Quality of Life in nursing: Contribution for the validation of the Portuguese version of the Professional Quality of Life Scale (ProQOL)

Study IX. Relationships between nurses' empathy, self-compassion and dimensions of professional quality of life: a cross-sectional study

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Study XI. The protective role of empathy, self-compassion and psychological flexibility on oncology nurses' burnout and compassion fatigue symptoms

Study XII. Effectiveness of a Mindfulness-Based Intervention on Oncology Nurses' Burnout and Compassion Fatigue Symptoms: A Non-Randomized Study

Study XIII. Mindfulness, self-compassion and psychological inflexibility mediate the effects of a mindfulness-based intervention in a sample of oncology nurses

Professional Quality of Life in nursing: Contribution for the validation of the Portuguese version of the Professional Quality of Life Scale (ProQOL)⁸

Abstract

Job stress and burnout are highly prevalent in healthcare professionals, and nurses in particular. Given its deleterious consequences not only for professionals' well-being but also for patients and organizations, it is important to have adequate measures to assess professional quality of life.

This study aimed to offer a contribution for the Portuguese validation of the Professional Quality of Life Scale-5. This scale was designed to measure three dimensions of professional quality of life: compassion satisfaction, burnout and compassion fatigue.

The sample was composed by 390 nurses recruited from five public hospitals from Portugal's north and center regions. Participants had on average 38.58 years of age ($SD = 9.10$) and were mainly female, married and practiced nursing in a variety of fields with an average of 15.66 ($SD = 9.09$) years of practice.

Results from the exploratory and confirmatory factor analysis indicated that the original version of the scale had several problematic items and that a revised version showed superior model fit. In addition, we found that female scored higher than men on compassion satisfaction. We also found that nurses working in an oncology hospital had higher scores of compassion fatigue. Finally, higher scores of burnout and compassion fatigue, and lower scores of compassion satisfaction, were associated with greater depression, anxiety and

⁸ Duarte, J., & Pinto-Gouveia, J. (2016). Professional Quality of Life in nursing: Contribution for the validation of the Portuguese version of the Professional Quality of Life Scale (ProQOL). *Manuscript submitted for publication.*

stress symptoms.

The ProQOL-5 is thus an adequate instrument to assess professional quality of life in nurses and may be valuable for designing effective interventions to tackle burnout and compassion fatigue.

Introduction

Job stress and burnout are common in healthcare professionals (e.g., McCray, Cronholm, Bogner, Gallo, & Neill, 2008) and in nurses in particular (Sermeus et al., 2011; Dominguez-Gomez & Rutledge, 2009). Several studies reported that stress and burnout in healthcare professionals are associated with several physical and mental health problems, such as depression, anxiety and low self-esteem (e.g., Maslach, Schaufeli, & Leiter, 2001; Schulz et al., 2011). Stress and burnout also impact on professional effectiveness and has been associated with suboptimal patient care (Shanafelt et al., 2002), and self-reported medical errors (West et al., 2006).

In addition to objective errors in care, stress and burnout may impact on the relationship with patients (Ratanawongsa et al., 2008). Burnout has been associated with decreased patient satisfaction, suboptimal self-reported patient care, and longer patient-reported recovery times (Vahey, Aiken, Sloane, Clarke, & Vargas, 2004; Shanafelt et al., 2002).

Although there are few studies in Portugal exploring burnout and work-related stress in nurses, a recent study with a large representative sample of Portuguese nurses conclude that the majority of nurses (49.4%) presented high levels of burnout (Marôco et al., 2016). These results are in accordance with a previous study with a large sample of Portuguese nurses (Elvio, Pinto, Fronteira, & Mendes, 2014).

Burnout has been described a form of job stress characterized by emotional exhaustion, depersonalization and reduced personal accomplishment (Maslach et al., 2001). In recent years, the term compassion fatigue has emerged in the literature to describe a related but different condition specific

to professionals in helping contexts (healthcare professionals, teachers, police officers), who are in direct contact with the suffering of others. Compassion fatigue has been used interchangeably with secondary traumatic stress and vicarious trauma, because it is used to describe secondary stress reactions (e.g., re-experiencing the traumatic events, avoidance/ numbing of reminders, and persistent arousal) related to the provision of care to people who experienced some form of trauma or severe stress (Figley, 1995; Stamm, 2010). Given the nature of their work, nurses are particularly vulnerable to develop compassion fatigue (Joinson, 1992).

Also, less studied in the literature is the opposite end of job burnout and compassion fatigue, that is, the experience of fulfillment and satisfaction resulting from the work of caring for others, also known as compassion satisfaction (Stamm, 2010), and which is also an intrinsic aspect of professional quality of life.

Having in mind these different dimensions of quality of life, Stamm (2005) developed the Professional Quality of Life Scale (ProQOL). This scale is a revision of Figley's Compassion Fatigue Self Test (2005) and tried to overcome its psychometric problems. The ProQOL is composed of three discrete subscales. The burnout subscale measures feelings of hopelessness and difficulties in dealing with work or in doing one's job effectively. The compassion fatigue/secondary traumatic stress subscale refers to work-related trauma as a result of secondary exposure to people who have experienced extremely or traumatically stressful events. Signs may include fear sleep difficulties, intrusive images, or avoiding reminders of the person's traumatic experiences. Finally, the compassion satisfaction subscale measures the pleasure and satisfaction derived from doing a good work in helping others.

Despite being a relatively recent instrument, the ProQOL is the most commonly used measure of the positive and negative effects of working with people who have experienced extremely stressful events, and has been used across different samples such as mental health caregivers (Sprang, Clark, &

Whitt-Woosley, 2007), nurses (Hunsaker, Chen, Maughan, & Heaston, 2015), social workers (Bloomquist, Wood, Friedmeyer-Trainor, & Kim, 2016), volunteers working with trauma victims (Avieli, Ben-David, & Levy, 2015) and therapists working with traumatized patients (Sodeke-Gregson, Holttum, & Billings, 2013).

Notwithstanding its widely used, there are few studies exploring the factorial structure of the scale. To our knowledge, only one published study using a sample of Italian accident and emergency workers provided a contribution for the factor validity of the scale (Palestini, Prati, Pietrantonio, & Cicognani, 2009). The results confirmed the validity of a revised version of the original tool, developed by taking into account the psychometric problems highlighted in the literature and a detailed analysis of the content of the items.

The cultural adaption and validation study of the Portuguese version of the ProQOL-5 was conducted in a sample of 73 palliative caregivers (Carvalho, 2011). Despite being a preliminary contribution to the validation of the ProQOL to the Portuguese population, the sample used was small, specific to a palliative setting, and included mixed healthcare professionals, such as physicians, nurses, and psychologists. Also, a detailed exploration of the factorial structure of the scale was not conducted.

This study

The aim of this study is to contribute to the validation of the Portuguese version of the Professional Quality of Life Scale-5, using a sample of nurses. Specifically, we aimed to explore and confirm the factorial validity of the scale, given the scarcity of studies published thus far. We also aimed to explore possible differences in the ProQOL scores according to several sociodemographic and work-related variables.

Methods

Participants and Procedures

A total of 390 registered nurses from public hospitals participated in the study. This sample had a mean age of 38.58 ($SD = 9.10$), ranging between 22 and 60 years of age; the majority of participants were female ($n = 332$; 87.6%) and married ($n = 202$; 53.4%). Also, the mean years of schooling was 15.66 ($SD = 2.22$). Participants practiced nursing in several fields, with 15.62 ($SD = 9.09$) mean years of practice. This sample was found to be quite similar to other samples of international (Budden, Zhong, Moulton, & Cimiotti, 2013; Heinen et al., 2013), and national nurses (Marôco et al., 2016; Jesus et al., 2014).

Participants were recruited from five public hospitals from Portugal's north and center regions, during 2014 and 2015. After approval of hospitals' ethics committee, department chief nurses were directly contacted by the researcher who explained the study aims and the importance of participation. Department chief nurses were asked to advertise the study among the nurses in their services and to deliver the questionnaire pack to those who agreed to participate. The questionnaires were preceded by a page informing about the study aims, the importance of participation, and confidentiality. In line with the ethical requirements, it was emphasized that participants' cooperation was voluntary and that their answers were confidential and would be used only for the purpose of this study. All participants provided their written informed consent. The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans was followed.

Measures

The Professional Quality of Life Scale, version 5 (ProQOL-5; Stamm, 2010; Carvalho, 2011). The ProQOL is a 30-item self-report measure composed by three subscales: compassion satisfaction, burnout, and secondary traumatic stress (STS). We will use the term 'compassion fatigue' to refer to this factor.

Respondents are instructed to indicate how frequently each item was experienced in the previous 30 days, on a 5-item Likert scale (from 1 = never to 5 = very often). Scoring requires summing the item responses for each 10-item subscale. In the present study, Cronbach's alpha was .86 for compassion satisfaction, and .74 for burnout and compassion fatigue.

Depression, Anxiety, Stress Scale (DASS-21; (Lovibond & Lovibond, 1995; Antony, Bieling, Cox, Enns, & Swinson, 1998). The DASS-21 comprises 3 subscales, each with 14 items, measuring depression, anxiety and stress symptoms. Participants were asked to indicate the degree to which each statement applied to them in the last two months. The DASS-21 uses a 4-point rating scale (0 = Did not apply to me at all to 3 = Applied to me very much, or most of the time). Validity and reliability of this scale across different samples have been well established (e.g., Lovibond & Lovibon 1995; Pais-Ribeiro, Honrado, & Leal, 2004). Subscale scores were computed by calculating the sum of subscale item responses, and higher scores indicate higher levels of psychological symptoms. Cronbach's alphas were .86 for depression, .83 for anxiety and .89 for stress.

Statistical Analysis

For the exploratory study of the factorial structure of the ProQOL-5 we used Factor Analysis with Maximum Likelihood (ML) estimation and oblimin rotation, which allows the factors to be correlated. Items were eliminated based on low factor loadings ($< .30$; Stevens, 2002).

The factorial structure of the ProQOL was then assessed through confirmatory factor analysis (CFA). Specifically, we used structural equation modelling with the maximum likelihood estimation method. An evaluation of skewness (Sk) and kurtosis (Ku) was conducted to assess the assumption of normality of the items. To check for possible outliers, the quadratic Mahalanobis distance (MD2) was used. The models' global adjustment was assessed through the

following fit statistics: normed chi-square ($\chi^2/\text{degrees of freedom, } df$), Tucker–Lewis index (TLI), comparative fit index (CFI) and root mean square error of approximation (RMSEA). A very good fit is obtained when the χ^2/df is 2 or lower, the CFI, and TLI are 0.90 or higher and the RMSEA is 0.10 or lower.

We also analysed items' factor loadings (λ) of the observed variables and the square of the factor loadings, which provides the amount of variance in the observed variable that the underlying construct is able to explain. Normally, it is expected that all items of the factor present values of $\lambda \geq 0.50$. We calculated the average variance extracted (AVE), or average

shared variance, of each latent construct to assess convergent validity which is indicated by values of $AVE < .50$ (Marôco, 2011). We compared the value of the AVE with the square multiple correlation between constructs to assess discriminant validity; the value of AVE should be greater than the square multiple correlation between the respective variables (Hair, Anderson, Tatham, & Black, 1998).

Regarding scale reliability, we computed Cronbach's alpha and composite reliability, which provides a much less biased estimate of reliability than alpha and is more appropriate for multidimensional scales (Marôco, 2010). Pearson product–moment correlation coefficients were used to assess the association between professional quality of life and other continuous variables (e.g., age, years of practice, depression, anxiety and stress). Student's *t*-tests and one-way analysis of variance (ANOVA) were conducted to explore mean differences in compassion satisfaction, burnout and compassion fatigue according to several demographic and work-related variables. Effect sizes are classified as small (= .10), medium (= .30) and large (= .50), according to Cohen's classification (1988). Statistical significance was set at .05 and IBM SPSS version 23 was used for all analyses.

Results

Exploratory Factor Analysis

According to the rule eigenvalue > 1 , 5 factors were initially extracted, explaining 52% of the total variance. The KMO was .903 and Bartlett's Test of Sphericity was significant. However, the analysis of the items' loadings on the three factors extracted led us to conclude that a five-factor structure wasn't appropriate (i.e., it didn't reflect the theoretical model and there were several cross-loadings). Also, the examination of the Scree Plot suggested a three-factor structure.

Thus, we specified the extraction of a three-factor solution. These three factors explained 38% of the variance, and were comparable to the original factors, with some exceptions. Regarding factor 1, the majority of the items belonged to the original compassion satisfaction factor. Additionally, eight items originally from the burnout factor also loaded on factor 1. These items were reversed, and thus were phrased in the positive, which can explain why they loaded with the positive worded items of the compassion satisfaction scale.

Factor 2 was composed by 6 items belonging to the original compassion fatigue factor, with the exception of item 8 that originally belonged to the burnout factor.

Factor 3 was composed by 5 items belonging to the original burnout factor with the exception of item 11 that originally belonged to the compassion fatigue factor. Items 2, 7, 28, that originally belonged to the compassion fatigue factor presented factor loading below the acceptable cut-off point of .30 and thus were eliminated from the analysis.

We then conducted another EFA, excluding items 2, 7 and 28. Deleting these items resulted in a clearer factor structure, comparable to the original scale. This solution explained 47% of the total variance. The correlation between the factors was -.08 between factor 1 and factor 2, -.27 between factor 1 and factor 3, and .47 between factor 2 and factor 3. All items' standardized

loadings and communalities regarding the initial and final solutions are presented in Table 2.

Table 1

Summary of Factor Loadings and Communalities of the Professional Quality of Life Scale - 5 (PROQOL-5) (N = 390)

Item	Initial Solution				Final Solution			
	1	2	3	h ²	1	2	3	h ²
24. I am proud of what I can do to [help].	.74			.53	.75			.53
30. I am happy that I chose to do this work.	.73			.62	.74			.61
12. I like my work as a [helper].	.68			.53	.69			.52
20. I have happy thoughts and feelings about those I [help] and how I could help them.	.66			.45	.66			.45
22. I believe I can make a difference through my work.	.65			.45	.66			.44
18. My work makes me feel satisfied.	.60		-.36	.61	.60			.60
3. I get satisfaction from being able to [help] people.	.59			.38	.59			.38
29. I am a very caring person.	.55			.32	.56			.32
6. I feel invigorated after working with those I [help].	.55			.44	.55			.44
4. I feel connected to others.	.51			.37	.51			.33
17. I am the person I always wanted to be.	.47			.43	.48			.42
16. I am pleased with how I am able to keep up with [helping] techniques and protocols.	.45			.32	.45			.32
27. I have thoughts that I am a "success" as a [helper].	.41			.27	.42			.27

14. I feel as though I am experiencing the trauma of someone I have [helped].	.35	.22	.36	.21
1. I am happy.	.33	.32	.33	.32
15. I have beliefs that sustain me.	.31	.15	.32	.14
13. I feel depressed because of the traumatic experiences of the people I [help].	.68	.58	.67	.57
25. As a result of my [helping], I have intrusive, frightening thoughts.	.67	.46	.66	.45
9. I think that I might have been affected by the traumatic stress of those I [help].	.66	.53	.66	.53
23. I avoid certain activities or situations because they remind me of frightening experiences of the people I [help].	.65	.38	.65	.37
8. I am not as productive at work because I am losing sleep over traumatic experiences of a person I [help].	.64	.44	.63	.43
5. I jump or am startled by unexpected sounds.	.30	.22		.19
21. I feel overwhelmed because my case [work] load seems endless.	.79	.58	.78	.58
19. I feel worn out because of my work as a [helper].	.74	.56	.73	.55
11. Because of my [helping], I have felt "on edge" about various things.	.65	.55	.65	.53
10. I feel trapped by my job as a [helper].	.64	.57	.65	.57
26. I feel "bogged down" by the system.	.63	.50	.63	.50

2. I am preoccupied with more than one person I [help].	.29		.22
7. I find it difficult to separate my personal life from my life as a [helper].	.25	.26	.27
28. I can't recall important parts of my work with trauma victims.		.05	.09

Note. 1 – Compassion satisfaction; 2 – Compassion fatigue; 3 - Burnout; h^2 = communalities; Items 2, 7 and 28 were eliminated from the initial solution to the final solution

Confirmatory Factor Analysis

A confirmatory factor analysis was conducted to test the factorial structure informed by the results of the EFA. We then tested a model from which eight items were eliminated (items 1, 2, 4, 14, 15, 17, 28, 29), and two items were relocated. Specifically, item 8 originally from the burnout scale was relocated to the compassion fatigue scale, and item 11, originally from the compassion fatigue scale was relocated to the burnout scale. Model fit statistics for this model were: $\chi^2/df = 2.986$, CFI = .878, TLI = .864 and RMSEA = .071. Model fit statistics for the original 30-item model were $\chi^2/df = 3.802$, CFI = .721, TLI = .700 and RMSEA = .085. These results suggest that the revised model presented a better fit to the data when compared to the original model.

Scale's reliability.

The composite reliability of the revised scale was very good ($> .70$), with .91 for compassion satisfaction, .86 for compassion fatigue and .82 for burnout. Internal consistency assessed through Cronbach's alpha was .87 for Compassion satisfaction, .78 for Compassion fatigue and .86 for Burnout. Convergent validity analysed through the average variance extracted (AVE) was also very good ($> .05$; Hair et al., 1998) for all the subscales, with the

exception of Compassion fatigue: $AVE_{compassion_satisfaction} = .52$; $AVE_{compassion_fatigue} = .46$; $AVE_{burnout} = .66$.

In sum, results from the EFA and CFA suggest that the revised version of the ProQOL is superior to the original 30-item version. However, given this is the first to explore its factorial validity in a Portuguese sample subsequent analyses were conducted with the original factor structure of the scale so results could be compared with previous studies.

Cut-off Scores

To calculate cut scores for the present sample, we first converted raw scores into *t* scores (with a mean score of 50 with a standard deviation of 10), and then calculated the cut scores for the 25th, 50th and 75th percentile as suggested by Stamm (2010). The cut scores for the compassion satisfaction component were 44, 50 and 57, respectively. For the burnout component, cut scores were 44, 50 and 57, respectively. Finally, for the compassion fatigue component, cut off scores were 42, 50 and 58, respectively. These results indicate that, for example, about 25% of people scored higher than 57 and about 25% of people score below 44 on compassion satisfaction. The proportion of participants classified into the bottom quartile, mean and top quartile of the ProQOL components are presented in Table 2. These results are similar to the cut-off scores provided by the original manual (Stamm, 2010).

Table 2

Proportion of Participants Classified into the Bottom Quartile, Mean and Top Quartile of the ProQOL Components (N = 390)

	Percentile	N	%
Compassion Satisfaction	25	120	30.8
	50	188	48.2
	75	82	21.0
Burnout	25	85	21.8
	50	223	57.2
	75	82	21.0
Compassion Fatigue	25	102	26.2
	50	213	54.6
	75	75	19.2

Scores across Demographic Categories

There was a significant difference between male and female nurses on the compassion satisfaction score ($t_{366} = 2.58, p = .013, d = .33$), with women scoring significantly higher than men ($M = 45.64, SD = 12.76$ vs $M = 50.61, SD = 9.37$). There were no significant differences between marital status and levels of compassion satisfaction ($F_{4,377} = .38, p = .820$), burnout ($F_{4,377} = 2.07, p = .084$), and compassion fatigue ($F_{4,377} = 1.62, p = .167$).

No significant associations were found between age and compassion satisfaction ($r = .09, p = .090$), burnout ($r = -.04, p = .417$), and compassion fatigue ($r = -.02, p = .742$). Also, no associations were found between years of practice and compassion satisfaction ($r = .08, p = .127$), burnout ($r = -.05, p = .346$), and compassion fatigue ($r = -.03, p = .582$). However, we found a small but significant correlation between years in the current position and burnout ($r = .13, p = .012$), but not compassion satisfaction ($r = -.07, p = .212$) nor compassion fatigue ($r = .06, p = .256$).

Scores Across Nursing Specialty and Work Context

We were also interested in exploring the distribution of compassion satisfaction, burnout and compassion fatigue scores across nursing specialties. We conducted a one-way analysis of variance to explore whether levels of professional quality of life dimensions differed across nursing specialties. Results from this analysis suggested that there were no differences across specialties on levels of compassion satisfaction ($F_{12, 380} = 1.43, p = .150$), burnout ($F_{12, 380} = 1.07, p = .385$), and compassion fatigue ($F_{12, 380} = 1.45, p = .143$). However, post-hoc analysis using Fisher's LSD test revealed several statistically significant differences. For compassion fatigue, we found that internal medicine nurses ($M = 50.20; SD = 9.76$) scored significantly higher than psychiatry nurses ($M = 43.13; SD = 11.16$). On the other hand, psychiatry nurses' scored lower than paediatric nurses ($M = 50.66; SD = 9.76$), surgery nurses ($M = 50.71; SD = 10.66$), oncology medicine nurses ($M = 51.28; SD = 8.95$), and outpatient nurses ($M = 55.69; SD = 7.48$). We also found that oncology nurses scored higher than family medicine nurses ($M = 43.51; SD = 10.80$), and that outpatient nurses scored higher than palliative care nurses ($M = 47.56; SD = 11.89$) and family medicine nurses.

Figures 1 and 2 show the percentage of participants with low, medium and high scores of burnout and compassion fatigue for each nursing specialty. It should be taken into account that some specialties are underrepresented and thus these results should be interpreted with caution.

We compared professional quality of life between work places between the two major categories represented in our sample, namely general hospitals and oncology hospitals. Results suggest that nurses from oncology hospitals scored significantly higher on compassion fatigue scores when compared to nurses from general hospitals ($t_{366} = -2.26, p = .025, d = .24$). No significant differences were found for compassion satisfaction ($t_{366} = -.38, p = .707, d = .04$) and burnout scores ($t_{366} = -.54, p = .592, d = .06$).

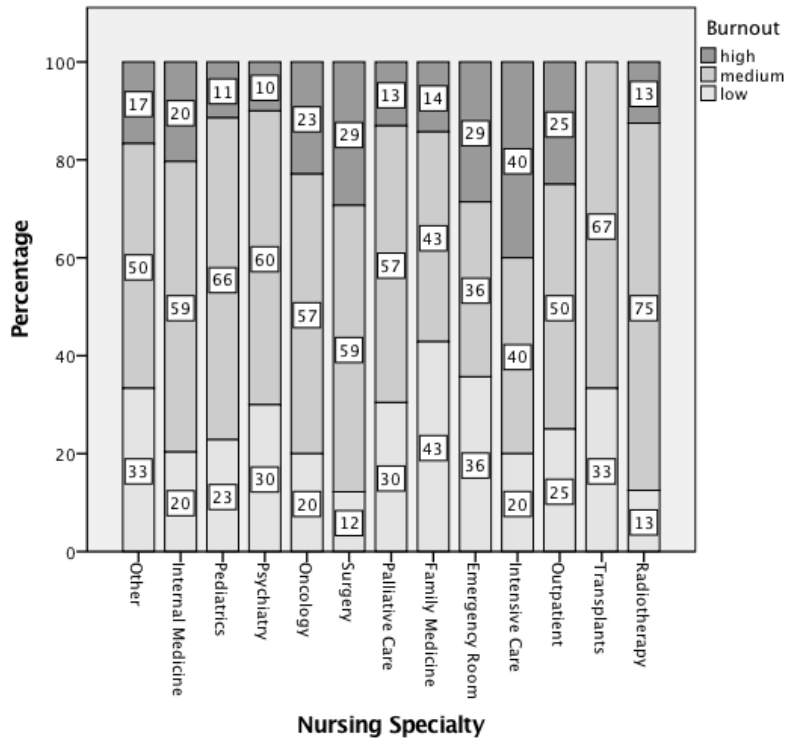


Figure 1. Percentage of nurses with low, medium and high scores of burnout for each nursing specialty

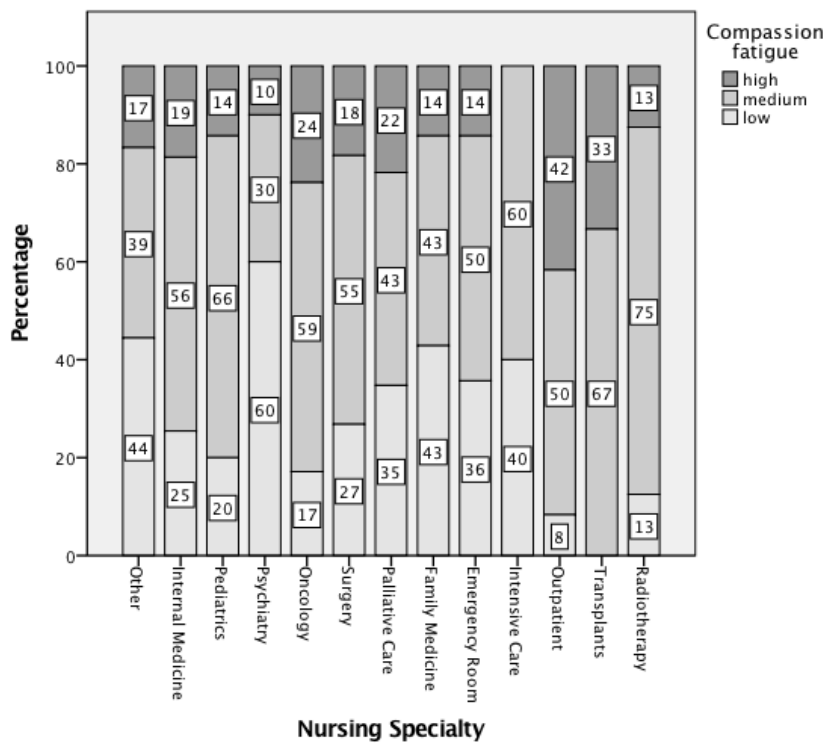


Figure 2. Percentage of nurses with low, medium and high scores of compassion fatigue for each nursing specialty

Professional Quality of Life and Psychological Symptoms

Finally, we explored the presence of comorbid psychological symptoms. Depressive symptoms were significantly correlated with compassion satisfaction ($r = -.30, p < .01$), burnout ($r = .55, p < .01$) and compassion fatigue ($r = .35, p < .01$); anxiety symptoms were significantly associated with compassion satisfaction ($r = -.17, p < .01$), burnout ($r = .42, p < .01$) and compassion fatigue ($r = .50, p < .01$); and stress symptoms were also significantly associated with compassion satisfaction ($r = -.14, p < .01$), burnout ($r = .46, p < .01$) and Compassion fatigue ($r = .47, p < .01$).

Discussion

This study represents the first attempt to explore the factorial structure and psychometric properties of the ProQOL-5 in a sample of Portuguese nurses. In addition, we also explored the relationship between professional quality of life and several demographic variables, such as age and gender, and work-related variables, such as years of practice, nursing specialty, and hospital affiliation. Finally, we also wanted to test the association between professional quality of life and other psychological symptoms.

The structure and reliability of the ProQOL-5

Exploratory Factor Analysis suggested that although the three-factor structure originally proposed was somewhat replicated in our sample, there were some problematic items. Specifically, although Factor 1 loaded all compassion satisfaction items, it also loaded all positively worded items originally from the burnout scale. It has been suggested that the use of positively- and negatively- worded items may introduce systematic measurement errors that disrupt analyses and interpretations of the results (e.g., Horan, DiStefano, & Motl, 2003). Also, an analysis of the content of such items suggests they are not specific of burnout but have a more general meaning and thus aggregate with the other positive items of the instrument.

Factor 2 was similar to the original compassion fatigue scale. Three items, however, presented low factor loadings and were excluded. Also, item 8 originally from the burnout scale loaded on this factor. An analysis of the content of this item, however, suggests that it represents an expression of the symptomatology associated with compassion fatigue.

Factor 3 loaded the remaining burnout items and one compassion fatigue item (item 11). Again, a close examination of its content suggests that this item seems to reflect more appropriately burnout as it expresses a sense of continuous 'wear and tear,' and not so much a consequence of secondary exposure to a traumatic event.

Finally, three items presented low factor loadings, namely item 2, 7, 28, and were excluded. These items are, in fact, very general and are not specific to burnout or compassion fatigue. For example, item 2 refers to the preoccupation regarding the recipients of help. However, it may be that preoccupation is not in the negative sense, but instead represents a positive aspect of concern and interest for the patients that allow to develop competence in the profession. The fact that this item also loaded, albeit low, in the compassion satisfaction scale, gives support for this interpretation.

Results from this analysis clearly suggest that not all items proposed by Stamm (2010) show acceptable psychometric properties and clear theoretical content and thus a revision of such items is advised. The model of the revised version of the scale taking into account these issues showed superior model fit.

The separation between a burnout and compassion fatigue factor was also sustained by our results. Correlation analysis suggested that the two constructs only share 22% of the variance. Correlational data also suggested that there isn't a juxtaposition between these negative factors and compassion satisfaction, suggesting that an individual with high risk for compassion fatigue can, at the same time, obtain a great satisfaction from developing the caregiving work. Results from the discriminant analysis also support these findings.

Professional Quality of Life and Socio-Demographic Variables

In the present sample, there were significant differences between female and male nurses in compassion satisfaction scores, but not in burnout or compassion fatigue. Research has produced mixed results regarding the role of gender on professional quality of life. In a recent meta-analysis, women exhibited more burnout than men, which was not found in the present study (Purvanova & Muros, 2010). Results for nurses, in particular, also seem to suggest more burnout (specifically emotional exhaustion) in women (Innstrand, Langballe, Falkum, & Aasland, 2011).

Regarding studies that used the ProQOL-5, results from a large data bank found no significant differences across gender (Stamm, 2010), and a recent study found that men scored higher in compassion satisfaction, although with small effect sizes (Gleichgerrcht & Decety, 2013). We also failed to find an association between age and professional quality of life, a result consistent with some studies using the ProQOL (e.g., Stamm, 2010) but not others (e.g., Palestini et al., 2009).

The result that professional experience was not associated with professional quality is consistent with previous findings (Gleichgerrcht & Decety, 2013; Potter et al., 2010; Stamm, 2010). However, we found that more time in the current position was associated with greater levels of burnout, which was not found in previous studies (e.g., Vargas, Cañadas, Aguayo, Fernández, & De la Fuente, 2014).

Regarding other work-related variables, results suggested that nurses working in an oncology hospital presented higher scores of compassion fatigue, but no differences in burnout or compassion satisfaction. Oncology nursing is one of the areas most affected by occupational stress (e.g., Barnard et al., 2006; Potter et al., 2010). In addition to the well-documented stressors found in other areas, oncology nurses face additional challenges associated with the management of complex pathologies with poor prognosis, close and constant contact with patients who are in severe pain and approaching death, and

difficult patient and family situations, which may put them at greater risk of compassion fatigue (Najjar, Davis, Beck-Coon, & Doebbeling, 2009).

Finally, nurses that presented higher scores of burnout and compassion fatigue, and lower scores of compassion satisfaction, also presented higher levels of depression, anxiety, and stress symptoms. These results provide some support for the convergent and discriminant validity of the measure, given that burnout was particularly associated with depression symptoms and compassion fatigue was particularly associated with anxiety, as would be expected.

Although this study reports promising findings several limitations should be taken into account. The sample size was small and participants were mainly women, which limits the generalizability of these findings. However, the proportion of female and male nurses in our sample matches other international and national samples (e.g., Budden et al., 2013; Marôco et al., 2016). In addition, we used a convenience sample of hospitals and nurses which, by being a nonprobability sampling method, may not adequately represent the population. Also, it was not possible to conduct several measurements in different time points in order to assess test-retest reliability. Finally, this study did not include other instruments to explore convergent and divergent validity.

In conclusion, results from this study provide preliminary support for the use of the ProQOL-5 as a reliable measure to assess professional quality of life in nurses. This scale is particularly suited to use in nursing, and in healthcare in general, given the specificity of its items that were developed taken into account the consequences that may result from the working of providing care to others in need. Also, the fact that this scale comprises not only the negative but also the positive aspects associated with work gives a broader and more complete perspective of professional quality of life which may be particularly important not only for research purposes but also for designing interventions aimed at increasing workers' quality of life.

References

- Antony, M., Bieling, P. J., Cox, B. J., Enns, M. W., Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and community a sample. *Psychological Assessment, 10*, 176–181.
- Avieli, H., Ben-David, S., & Levy, I. (2015). Predicting professional quality of life among professional and volunteer caregivers. *Psychological Trauma: Theory, Research, Practice, and Policy, 8*(1), 80-87. doi: 10.1037/tra0000066
- Barnard, D., Street, A., & Love, A. W. (2006). Relationships between stressors, work supports, and burnout among cancer nurses. *Cancer Nursing, 29*(4), 338–345. doi: 10.1097/00002820-200607000-00013
- Bloomquist, K. R., Wood, L., Friedmeyer-Trainor, K., & Kim, H.-W. (2016). Self-care and Professional Quality of Life: Predictive factors among MSW practitioners. *Advances in Social Work, 16*(2), 292-311. doi: 10.18060/18760
- Budden, J. S., Zhong, E. H., Moulton, P., & Cimiotti, J. (2013). Highlights of the National Workforce Survey of Registered Nurses. *Journal of Nursing Regulation, 4*(2), 10. doi: 10.1016/S2155-8256(15)30151-4
- Dominguez-Gomez, E., & Rutledge, D. N. (2009). Prevalence of secondary traumatic stress among emergency nurses. *Journal of Emergency Nursing, 35*(3), 199–204. doi: 10.1016/j.jen.2008.05.003
- Figley, C. R. (1995). Compassion fatigue as secondary traumatic stress disorder: An overview. In *Compassion fatigue: Coping with secondary traumatic stress disorder in those who treat the traumatised* (pp. 1–20). New York, NY: Routledge.
- Gleichgerrcht, E., & Decety, J. (2013). Empathy in clinical practice: How individual dispositions, gender, and experience moderate empathic concern, burnout, and emotional distress in physicians. *PLoS ONE, 8*(4), e61526. doi: 10.1371/journal.pone.0061526
- Heinen, M. M., van Achterberg, T., Schwendimann, R., Zander, B., Matthews, A., Kózka, M., ... Schoonhoven, L. (2013). Nurses' intention to leave their profession: A cross sectional observational study in 10 European countries. *International Journal of Nursing Studies, 50*(2), 174–184. doi: 10.1016/j.ijnurstu.2012.09.019
- Horan, P. M., DiStefano, C., & Motl, R. W. (2003). Wording effects in self-

- esteem scales: methodological artifact or response style? *Structural Equation Modeling: A Multidisciplinary Journal*, 10, 435–455. doi: 10.1207/S15328007SEM1003_6
- Hunsaker, S., Chen, H.-C., Maughan, D., & Heaston, S. (2015). Factors that influence the development of compassion fatigue, burnout, and compassion satisfaction in emergency department nurses. *Journal of Nursing Scholarship*, 47(2), 186–194. doi: 10.1111/jnu.12122
- Innstrand, S. T., Langballe, E. M., Falkum, E., & Aasland, O. G. (2011). Exploring within- and between-gender differences in burnout: 8 different occupational groups. *International Archives of Occupational and Environmental Health*, 84(7), 813–824. doi: 10.1007/s00420-011-0667-y
- Jesus, E. H., Pinto, A. M., Fronteira, I., & Mendes, A. (2014). Estudo RN4CAST em Portugal: Percepção dos enfermeiros sobre burnout. *Revista Investigação em Enfermagem*, 47-59.
- Joinson, C. (1992). Coping with compassion fatigue. *Nursing*, 22(4), 116-121.
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335–343. doi: 10.1016/0005-7967(94)00075-U
- Marôco, J., Marôco, A., Leite, E., Bastos, C., Vazão, M. J., & Campos, J. (2016). Burnout em profissionais da saúde portuguesas: Uma análise a nível nacional. *Acta Médica Portuguesa*, 29(1), 24-30.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52, 397–422. doi: 10.1146/annurev.psych.52.1.397
- McCray, L. W., Cronholm, P. F., Bogner, H. R., Gallo, J. J., & Neill, R. a. (2008). Resident physician burnout: is there hope? *Family Medicine*, 40(9), 626–32.
- Najjar, N., Davis, L. W., Beck-Coon, K., & Doebbeling, C. C. (2009). Compassion fatigue: A review of the research to date and relevance to cancer-care providers. *Journal of Health Psychology*, 14(2), 167–277.
- Palestini, L., Prati, G., Pietrantoni, L., & Cicognani, E. (2009). La qualità della vita professionale nel lavoro di soccorso: Un contributo alla validazione italiana della Professional Quality of Life Scale (ProQOL). *Psicoterapia Cognitiva E Comportamentale*, 15(2), 205–227.

- Potter, P., Deshields, T., Divanbeigi, J., Berger, J., Cipriano, D., Norris, L., & Olsen, S. (2010). Compassion fatigue and burnout: Prevalence among oncology nurses. *Clinical Journal of Oncology Nursing, 14*(5), e56–62. doi: 10.1188/10.CJON.E56-E62
- Purvanova, R. K., & Muros, J. P. (2010). Gender differences in burnout: A meta-analysis. *Journal of Vocational Behavior, 77*(2), 168–185. doi: 10.1016/j.jvb.2010.04.006
- Ratanawongsa, N., Roter, D., Beach, M. C., Laird, S. L., Larson, S. M., Carson, K. A., & Cooper, L. A. (2008). Physician burnout and patient-physician communication during primary care encounters. *Journal of General Internal Medicine, 23*(10), 1581–1588. doi: 10.1007/s11606-008-0702-1
- Schulz, M., Damkroger, A., Voltmer, E., Lowe, B., Driessen, M., Ward, M., & Wingefeld, K. (2011). Work-related behaviour and experience pattern in nurses: Impact on physical and mental health. *Journal of Psychiatric and Mental Health Nursing, 18*(5), 411–417. doi: 10.1111/j.1365-2850.2011.01691.x
- Sodeke-Gregson, E. A., Holttum, S., & Billings, J. (2013). Compassion satisfaction, burnout, and secondary traumatic stress in UK therapists who work with adult trauma clients. *European Journal of Psychotraumatology, 4*, 1–10. doi: 10.3402/ejpt.v4i0.21869
- Sprang, G., Clark, J. J., & Whitt- Woosley, A. (2007). Compassion fatigue, compassion satisfaction, and burnout: Factors impacting a professional's quality of life. *Journal of Loss and Trauma, 12*(3), 259–280.
- Stamm, B. H. (2005). *The professional quality of life scale: Compassion Satisfaction, Burnout, and Compassion Fatigue/secondary trauma scales*. Latherville, MD: Sidran Press.
- Stamm, B. H. (2010). *The Concise ProQOL Manual, 2nd ed.* Pocatello, ID: ProQOL.org.
- Vahey, D. C., Aiken, L. H., Sloane, D. M., Clarke, S. P., & Vargas, D. (2004). Nurse burnout and patient satisfaction. *Medical Care, 42*(2), 1157–1166. doi: 10.1097/01.mlr.0000109126.50398.5a
- Vargas, C., Cañadas, G. A., Aguayo, R., Fernández, R., & De la Fuente, E. I. (2014). Which occupational risk factors are associated with burnout in nursing? A meta-analytic study. *International Journal of Clinical and Health Psychology, 14*(1), 28–38. doi:10.1016/S1697-2600(14)70034-1

West, C. P., Huschka, M. M., Novotny, P. J., Sloan, J. A., Kolars, J. C., Habermann, T. M., & Shanafelt, T. D. (2006). Association of perceived medical errors a prospective longitudinal study. *Journal of the American Medical Association*, 296(9), 1071–1078. <http://doi.org/10.5688/ajpe76224>

Relationships between nurses' empathy, self-compassion and dimensions of professional quality of life: A cross-sectional study⁹

Abstract

Background: Job stress and burnout are common among healthcare professionals, and nurses in particular. In addition to the heavy workload and lack of recourses, nurses are also confronted with emotionally intense situations associated with illness and suffering, which require empathic abilities. Although empathy is one of the core values in nursing, if not properly balanced it can also have detrimental consequences, such as compassion fatigue. Self-compassion, on the other hand, has been shown to be a protective factor for a wide range of well-being indicators and has been associated with compassion for others.

Objectives: The main goal of this study was to explore how empathy and self-compassion related to professional quality of life (compassion satisfaction, compassion fatigue and burnout). In addition, we wanted to test whether self-compassion may be a protective factor for the impact of empathy on compassion fatigue.

Methods and Participants: Using a cross-sectional design, 280 registered nurses from public hospitals in Portugal's north and center region were surveyed. Professional quality of life (Professional Quality Of Life), empathy (Interpersonal Reactivity Index) and self-compassion (Self-compassion Scale) were measured using validated self-report measures.

⁹ Duarte, J. Pinto-Gouveia, J., & Cruz, B. (2016). Relationships between nurses' empathy, self-compassion and dimensions of professional quality of life: A cross-sectional study. *International Journal of Nursing Studies*, 60, 1-11. doi: 10.1016/j.ijnurstu.2016.02.015.

Results: Correlations and regression analyses showed that empathy and self-compassion predicted the three aspects of professional quality of life. Empathic concern was positively associated with compassion satisfaction as well as with compassion fatigue. Mediation models suggested that the negative components of self-compassion explain some of these effects, and self-kindness and common humanity were significant moderators. The same results were found for the association between personal distress and compassion fatigue.

Conclusions: High levels of affective empathy may be a risk factor for compassion fatigue, whereas self-compassion might be protective. Teaching self-compassion and self-care skills may be an important feature in interventions that aim to reduce burnout and compassion fatigue. Keywords: empathy; compassion fatigue; nurses; professional quality of life; self-compassion.

Keywords: Empathy; Compassion fatigue; Nurses; Professional quality of life; Self-compassion

Introduction

Empathy is a central aspect of healthcare, and has been associated with positive outcomes not only for the patient (e.g., Blatt et al., 2010; Hojat et al., 2011; Rakel et al., 2011) but also for the healthcare professional (Shanafelt et al., 2005; Thomas et al., 2007).

However, given the constant exposure to highly distressing situations, such as illness, suffering and death, healthcare professionals are particularly vulnerable to the development of professional stress and compassion fatigue, especially if they are not able to effectively regulate their capacity to empathize and their empathic feelings (Decety et al., 2010).

Stress and burnout among nurses

Job stress and burnout are common in healthcare professionals (e.g., McCray et al., 2008) and in nurses in particular (Dominguez-Gomez and Rutledge, 2009; Sermeus et al., 2011). Several studies have reported that stress and burnout in healthcare professionals are associated with several physical and mental health problems, such as depression, anxiety and low self-esteem (e.g., Maslach et al., 2001; Schulz et al., 2011). Stress and burnout also impact on professional effectiveness and has been associated with suboptimal patient care (Shanafelt et al., 2002), and self-reported medical errors (West et al., 2006).

In addition to objective errors in care, stress and burnout may decrease compassion in the caregiver (Neumann et al., 2011; Nunes et al., 2011; Wilson et al., 2012), and impact on their relationship with patients (Ratanawongsa et al., 2008). Thus, it is not surprising that burnout has been associated with decreased patient satisfaction, suboptimal self-reported patient care, and longer patient-reported recovery times (Shanafelt et al., 2002; Shapiro et al., 2005; Vahey et al., 2004). A survey of intensive care unit nurses and physicians in Europe and Israel indicates that one fourth of those surveyed report providing less than optimal care (Hand, 2011).

Apart from the heavy workload and lack of resources that are important risk factors for burnout (Maslach et al., 2001), healthcare providers are also confronted daily with emotionally stressful situations associated with illness, suffering and dying, which require empathic abilities.

Empathy

There have been many definitions of empathy (see Batson, 2009). In general, empathy is activated when observing or imagining another person's affective state triggers an isomorphic affective response, and requires some differentiation of one's own and the other's emotional states (see Batson, 2009; Singer and Leiberg, 2009). Current approaches converge to consider empathy not as a single ability but a complex socio-emotional competency

that encompasses different but interacting components (e.g., Decety and Svetlova, 2012).

Having an idea of the other person's thoughts, feelings and motives can be considered the cognitive component of empathy. There are two main categories of affective empathy responses to observing another person in pain. Self-oriented responses are feelings of distress and anxiety when witnessing another's negative state (personal distress), whereas other-focused responses are feelings that focus on the well-being of the other person (empathic concern; Davis, 1983). These two types of affective responses can have different motivational tendencies. Self-oriented feelings will motivate the observer to reduce his/her own distress, whereas other-focused feelings will motivate the observer to focus on the needs of the other and to provide care (Batson et al., 1987).

Empathy is particularly important in healthcare provider–patient relations, and is associated with improved patient satisfaction and compliance with recommended treatment (Epstein et al., 2007).

However, there can be costs associated with empathy (Hodges and Biswas-Diener, 2007). Literature suggests that being overly sensitive to others' suffering in the course of caring for patients experiencing trauma or pain can lead to deleterious effects, such as burnout or compassion fatigue (Figley, 2002, 2012). However, there are few empirical studies to date directly exploring such hypothesis.

Compassion

While empathy can be seen as double-edge sword, facilitating care but at the same time leaving the healthcare provider vulnerable to compassion fatigue, compassion may instead be a protective factor (Boellinghaus et al., 2012). Compassion appears to buffer the effects of stress on well-being (Poulin et al., 2013). Also, the other-oriented focus of the compassionate response may allow the observer to empathize with the other's suffering but without

identifying with it, providing a self-other distinction which is essential to regulate personal distress feelings and to provide adequate care to the sufferer (Klimecki and Singer, 2012).

Research suggests that compassion can also be important for the successful treatment of patients. For example, in one study watching 40 s of compassionate communication from a provider on videotape was sufficient to reduce anxiety in breast cancer patients (Fogarty et al., 1999).

Self-compassion

Several studies have suggested that compassion for others is closely linked to self-compassion (Lindsay and Creswell, 2014; Neff and Pommier, 2013; Welp and Brown, 2014). Self-compassion is simply compassion directed inward, relating to oneself as the object of care and concern when faced with the experience of suffering (Neff, 2003a).

Self-compassion, therefore, involves being touched by and open to one's own suffering, not avoiding or disconnecting from it, generating the desire to alleviate one's suffering and to heal oneself with kindness. Self-compassion also involves a non-judgmental understanding of one's pain, inadequacies and failures, so that one's experience is seen as part of the larger human experience (Neff, 2003a). The research literature consistently suggests that self-compassion is associated with fewer psychological symptoms and with indices of psychological well-being (MacBeth and Gumley, 2012). Self-compassionate people seem to have a more adaptive psychological profile, which may explain such findings. For example, self-compassion has been associated with lower levels of rumination (Johnson and O'Brien, 2013; Odou and Brinker, 2014; Raes, 2010), avoidance (Krieger et al., 2013), suppression of unwanted thoughts and emotions, and with emotional validation skills (Leary et al., 2007; Neff et al., 2005). Self-compassion is also associated with positive psychological characteristics such as emotional intelligence, wisdom, life satisfaction, well-being and feelings of social connectedness (Neff et al., 2007a, 2007b; Neely et al., 2009). Experimental studies confirmed some of

these findings (e.g., Adams and Leary, 2007; Leary et al., 2007) and suggest that self-compassion can be enhanced and contribute to well-being and less psychological distress.

Moreover, self-compassion has been shown to improve interpersonal functioning. It is linked to such traits as more empathic concern, altruism, perspective-taking, and forgiveness of others (Neff and Pommier, 2013).

Self-compassion could be helpful to healthcare professionals, and nurses in particular, because it may play an important role in maintaining their mental health and because of the emerging evidence that self-compassion is associated with compassion for others, which has been shown to have a significant impact on patient outcomes. Thus, developing self-compassion may be vital for preventing compassion fatigue and promoting compassionate care (Gustin and Wagner, 2013).

Although recent review papers argued for the importance of exploring self-compassion in healthcare professionals (Mills et al., 2015; Raab, 2014), so far no empirical studies have been published.

Compassion Fatigue

The concept of compassion fatigue was first introduced by Joinson (1992) to describe a state of reduced capacity for compassion as a consequence of being exhausted from dealing with the suffering of others (Figley, 2002, 2012; Sabo, 2006). The term compassion fatigue has been used interchangeably with secondary traumatic stress. It has been suggested that empathy for patients may be at the very root of compassion fatigue (Figley, 2002; Schulz et al., 2007). Nurses may be at particular risk for compassion fatigue because compassion and empathy are at the core of their work (Figley, 1995; Stebnicki, 2002).

Although healthcare providers are at risk of developing compassion fatigue, many do not. Rather, some healthcare providers are motivated by a sense of satisfaction derived from helping others also known as compassion

satisfaction (Stamm, 2010), which enables them to engage in meaningful interactions with patients rather than withdrawing from them. Compassion fatigue and compassion satisfaction are opposite results from helping others and are intrinsic properties of healthcare providers' professional quality of life.

Objectives

In this study we aim to address issues and gaps in previous research by exploring the relations between self-compassion and empathy, and three aspects of quality of life: compassion satisfaction, burnout and compassion fatigue. The literature has been pointing that empathy is vital for the work of healthcare professionals. However, it has also been suggested that empathy may also be a vulnerability factor for the development of compassion fatigue. Thus, we hypothesize that empathic feelings will be negatively associated with burnout but positively associated with compassion fatigue and compassion satisfaction (Hypothesis 1a). Regarding the other empathy components, we hypothesize that perspective taking will be positively associated with compassion satisfaction and negatively associated with burnout and compassion fatigue (Hypothesis 1b), and personal distress will be negatively associated with compassion satisfaction and positively associated with burnout and compassion fatigue (Hypothesis 1c). Based on previous research on the relation between self-compassion and mental health, it is hypothesized that self-compassionate individuals (i.e., high levels of self-kindness, mindfulness and common humanity, and low levels of self-judgment, over-identification and isolation) experience less burnout and compassion fatigue symptoms and more compassion satisfaction (Hypothesis 2). Finally, we wanted to explore the finding that empathic emotions are associated with compassion fatigue, and the role of self-compassion in this relationship. We hypothesize that self-compassion may mediate and/or moderate the relationship between empathy and compassion fatigue (Hypothesis 3). We used a cross-sectional design to test these hypotheses.

Method

Participants and Procedures

Participants were recruited from four public hospitals from Portugal's north and center regions, between February 2014 and February 2015. This was a convenience sample of hospitals. After approval of the hospitals' ethics committees, department chief nurses were directly contacted by the researcher who explained the study aims and the importance of participation. Department chief nurses were asked to advertise the study among the nurses in their services and to deliver and receive the questionnaire pack from those who agreed to participate. Around 46% of the questionnaires delivered were completed and returned to the researcher. The questionnaires were self-administered and were preceded by an information sheet about the study aims, the importance of participation, and confidentiality. In line with the ethical requirements, it was emphasized that participants' cooperation was voluntary and that their answers were confidential and would be used only for the purpose of this study. All participants provided their written informed consent. Permission was obtained to use the scales. This study is part of a larger study exploring the role of psychological factors on professional quality of life (see Acknowledgments). The second part of this study explores the impact of an intervention to reduce burnout and compassion fatigue. The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans was followed.

Measures

Interpersonal Reactivity Index (IRI; Davis, 1983). This scale measures several components of empathy, namely perspective taking (7 items; "I try to look at everybody's side of a disagreement before I make a decision"), empathic concern (7 items; "I often have tender, concerned feelings for people less fortunate than me"), personal distress (7 items; "I sometimes feel helpless when I am in the middle of a very emotional situation") and fantasy (6 items;

“I really get involved with the feelings of the characters in a novel.”). Perspective taking is considered a cognitive component of empathy, while empathic concern and personal distress are considered the affective component. These subscales should be used separately since the instrument is not intended to measure global empathy. Respondents are instructed to rate how well each statement describes them on a 5-point Likert scale (from 0 = Not well to 4 = Very well). The scale was found reliable in past research (Davis, 1980) and reliabilities for the scales in the Portuguese version were adequate: empathic concern $\alpha = .77$; perspective taking $\alpha = .74$; and personal distress $\alpha = .81$ and fantasy $\alpha = .83$ (Limpo, Alves & Castro, 2010). Cronbach’s alphas in this study were .67 for empathic concern .74 for personal distress and .71 for perspective taking. The subscale “fantasy” was not included as it was not relevant to the current study.

Self-Compassion Scale (SCS; Neff, 2003b). The SCS is a widely used self-report measure developed to assess six components of self-compassion: self-kindness (5 items; “I try to be understanding and patient toward those aspects of my personality I don’t like”); self-judgment (5 items; “I’m disapproving and judgmental about my own flaws and inadequacies”); common humanity (4 items; “I try to see my failings as part of the human condition”); isolation (4 items; “When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world”); mindfulness (4 items; “When something painful happens I try to take a balanced view of the situation”); and over-identification (4 items; “When I’m feeling down I tend to obsess and fixate on everything that’s wrong”). Items are rated on a 5-point scale (e.g., 1 = almost never to 5 = almost always). Scores of the six subscales can be summed (after reverse-coding negative items) to create an overall self-compassion score. However, recent psychometric studies do not support the use of a SCS total score as a measure of self-compassion (Lopez et al., 2015). In this study, we use the six factors separately. The SCS has adequate construct and convergent validity (Neff, 2003b). The Portuguese version of the scale

also showed good internal consistency and validity (Castilho, Pinto-Gouveia, & Duarte, 2015). SCS scores are presented so that higher scores indicate greater self-compassion. Cronbach's alphas for this study were: self-kindness $\alpha = .79$; self-judgment $\alpha = .79$; mindfulness $\alpha = .78$; over-identification $\alpha = .80$; common humanity $\alpha = .70$; isolation $\alpha = .80$; and total scale $\alpha = .91$.

The Professional Quality of Life Scale, version 5 (ProQOL-5; Stamm, 2009). The ProQOL is a 30-item self-report measure comprised of three discrete subscales. The first subscale measures Compassion Satisfaction, defined as the pleasure derived from being able to do one's work (helping others) well (10 items; "I get satisfaction from being able to help people"). Higher scores on this scale represent greater satisfaction related to one's ability to be an effective caregiver. The second subscale measures burnout, or feelings of hopelessness and difficulties in dealing with work or in doing one's job effectively (10 items; "I feel worn out because of my work as a health care provider). The third subscale measures secondary traumatic stress, defined as work-related, secondary exposure to people who have experienced extremely or traumatically stressful events (10 items; "I feel depressed because of the traumatic experiences of the people I help"). Given that the terms 'compassion fatigue' and 'secondary traumatic stress' have been used interchangeably in the literature, we will use the term 'compassion fatigue' to refer to this factor. Higher scores on these two subscales indicate greater levels of burnout and compassion fatigue, respectively. Respondents are instructed to indicate how frequently each item was experienced in the previous 30 days, on a 5-item Likert scale (from 1 = never to 5 = very often). Scoring requires summing the item responses for each 10-item subscale. Cronbach's alphas for the subscales are reported as .88 for the compassion satisfaction scale, .75 for the burnout scale, and .81 for the compassion fatigue/secondary trauma scale (Stamm, 2010). The Portuguese version also showed good internal consistency ($\alpha = .86$ for the compassion satisfaction scale, $\alpha = .71$ for the burnout scale, and $\alpha = .83$ for the compassion fatigue/secondary trauma scale;

Carvalho, 2011). In this study Cronbach's alphas were .85 for compassion satisfaction, .74 for burnout and .73 for compassion fatigue.

Statistical analysis

Descriptive statistics of the variables in study included means, standard deviations, minimum and maximum scores, and skewness and kurtosis values. The association between the variables was initially explored using Pearson's coefficient correlations. Hierarchical multiple regressions were undertaken to explore the predictive power of empathy and self-compassion variables on professional quality of life (Hypotheses 1 and 2). Empathy variables were included in the first step of the regression and self-compassion variables were entered in the second step. The unstandardized coefficient (B), standard error (SE), standardized coefficient (β), t statistic, p -value and 95% confidence intervals are reported. The strength of each predictor variable was based on its standardized beta value (β), which represents to what degree each predictor affects the outcome. To test hypothesis 3, the Hayes PROCESS macro was used for moderator and mediator analyses (Hayes, 2013). For moderation, this macro runs a series of ordinary least squares regressions with the centered product term representing the interaction of empathy \times self-compassion as a predictor of the outcome (compassion fatigue). Regarding mediation, direct and indirect effects were computed using a series of ordinary least squares regressions and the bootstrapping procedure (Preacher & Hayes, 2004; Preacher & Hayes, 2008). The significance of the indirect effect, based on the 95% confidence interval (CI) derived from 1,000 bootstrap resamples, is indicated when the CI values do not cross zero. The Bootstrap is helpful because total and indirect effects are often not multivariate normally distributed (Preacher & Hayes, 2008). We report the unstandardized coefficient (B) and standard error (SE) for each regression equation to indicate the predicted change in the dependent variable given a one-unit change in the independent variable, while controlling for the other variables in the

equation. We also report *t* statistic, *p*-value and 95% confidence intervals. Statistical significance was set at .05 and IBM SPSS version 22 was used for all analyses.

Results

Sample Profile

A total of 280 registered nurses from different clinical services in Portugal participated in the study. This sample had a mean age of 37.66 (*SD* = 9.34), ranging between 22 and 60; the majority of participants were female (*n* = 227; 81.1%) and married (*n* = 160; 57.1%). Also, the mean years of schooling was 15.90 (*SD* = 2.14) indicating that the average education level is university. Participants reported a mean years of practice of 14.74 (*SD* = 9.30).

Descriptive statistics

Descriptive statistics for the study variables are presented in Table 1. As the table reveals, nurses reported self-compassion scores that were slightly above the midpoint (3.22, by dividing the self-compassion score by the number of items) which is in accordance with previous studies (e.g., Neff & Pommier 2013). Mean values for professional quality of life scales were also similar to previous studies with nurses (e.g., Sekol & Kim, 2014), as were mean values for the empathy components (e.g., Gleichgerrcht & Decety, 2013).

Table 1

Means, Standard Deviations, Minimum, Maximum, Skewness and Kurtosis of the Study Variables (N = 280)

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skew</i>	<i>Kurtosis</i>
Compassion Satisfaction (ProQOL)	38.11	5.09	22	49	-.22	.20
Burnout (ProQOL)	25.01	5.12	12	44	.17	.43
Compassion Fatigue (ProQOL)	25.31	4.84	14	42	.30	.21
Empathic Concern (IRI)	17.34	3.50	6	24	-.08	-.28
Personal Distress (IRI)	9.24	4.19	0	20	-.08	-.32
Perspective Taking (IRI)	16.70	3.31	6	24	-.15	.07
Self-kindness (SCS)	15.10	3.25	5	25	-.03	.75
Self-judgment (SCS)	13.96	3.51	5	25	.15	.60
Mindfulness (SCS)	13.17	2.50	4	20	.02	.89
Over-identification (SCS)	10.95	3.03	4	20	.26	-.05
Common Humanity (SCS)	12.99	2.61	4	20	-.15	.24
Isolation (SCS)	10.61	2.96	4	20	.23	.36
Total score (SCS)	83.74	13.12	32	125	-.30	1.42

Note. ProQOL = Professional Quality of Life; SCS = Self-compassion Scale; IRI = Interpersonal Reactivity Index

Correlational Analysis

Pearson's coefficient correlations are presented in Table 2. As expected, compassion satisfaction was positively associated with empathic concern and perspective taking and negatively associated with personal distress. More compassion satisfaction was also associated with higher levels of self-kindness, mindfulness and common humanity and lower levels of self-judgment and isolation. In contrast, burnout was positively associated with

personal distress and negatively associated with empathic concern and perspective taking. More burnout was also associated with lower levels of self-kindness, mindfulness and common humanity, and higher levels of self-judgment, over-identification and isolation. Compassion fatigue was positively associated with personal distress and empathic concern. More compassion fatigue was associated with lower levels of mindfulness and higher levels of self-judgment, over-identification and isolation. We also found significant associations between empathy and self-compassion. Specifically, we found that perspective taking was positively associated with self-kindness, mindfulness and common humanity but there were no significant associations with the negative components of self-compassion. Personal distress was negatively associated with the positive components of self-compassion and positively associated with the negative components. Empathic concern showed a more mixed pattern. We found positive associations with self-judgment, over- identification, isolation and with common humanity.

Table 2

Correlations Between Compassion Satisfaction, Burnout, Compassion Fatigue, Self-compassion and Empathy (N = 280)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Compassion Satisfaction (ProQOL)	-											
2. Burnout (ProQOL)	-.58**	-										
3. Compassion Fatigue (ProQOL)	-.04	-.58**	-									
4. Self-kindness (SCS)	.34**	-.34**	-.09	-								
5. Self-judgment (SCS)	-.16**	.38**	.36**	-.38**	-							
6. Mindfulness (SCS)	.37**	-.35**	-.14**	.67**	-.33**	-						
7. Over-identification (SCS)	-.11	.30**	.36**	-.36**	.72**	-.43**	-					
8. Common Humanity (SCS)	.30**	-.19**	.04	.48**	-.07	.59**	-.09	-				
9. Isolation (SCS)	-.18**	.37**	.34**	-.38**	.70**	-.44**	.80**	-.17**	-			
10. Self-compassion Total (SCS)	.32**	-.44**	-.30**	.74**	-.76**	.76**	-.79**	.51**	-.81**	-		
11. Empathic concern (IRI)	.41**	-.19**	.18**	-.01	.15*	.01	.24**	.21**	.13*	-.08	-	
12. Personal distress (IRI)	-.22**	.18**	.21**	-.29**	.26**	-.35**	.37**	-.12*	.35**	-.39**	.12	-
13. Perspective taking (IRI)	.32**	-.15*	-.03	.24**	.01	.35**	.02	.34**	-.02	.19**	.41**	-.10

Note. * $p \leq .05$; ** $p < .01$; ProQOL = Professional Quality of Life; SCS = Self-compassion Scale; IRI = Interpersonal Reactivity Index

Regression Analysis

Several hierarchical multiple regression models were tested to explore the predictive power of empathy and self-compassion variables on compassion satisfaction, compassion fatigue and burnout. Results are presented in Table 3.

Empathy variables explained 26% of the variance of compassion satisfaction, $F(3, 276) = 31.64, p < .001$, and the best predictor was empathic concern, based on β values. For compassion fatigue, empathy variables explained 8% of the variance, $F(3, 276) = 7.76, p < .001$, and the best predictor was also empathic concern. Finally, empathy variables explained 8% of the variance of burnout, $F(3, 276) = 8.21, p < .001$, which was predicted equally by empathic concern (negatively) and personal distress (positively). These results generally support hypotheses 1a, 1b and 1c, and suggest that empathy variables seem to have a more evident contribution for compassion satisfaction.

Self-compassion variables explained 17% of the variance of compassion satisfaction, $F(6, 276) = 9.30, p < .001$, and the only significant predictor was mindfulness. Self-compassion variables explained 22% of the variance of burnout, $F(6, 276) = 12.71, p < .001$, and self-judgment, isolation and mindfulness (negatively) were significant predictors. Self-compassion variables explained 16% of the variance of compassion fatigue, $F(6, 276) = 8.80, p < .001$, and the only significant predictor from all the other variables considered was self-judgment. These results support hypothesis 2.

Table 3.

Multiple Regression Analysis Summary for Empathy and Self-Compassion Variables Predicting Compassion Satisfaction, Compassion Fatigue and Burnout (N = 280)

	B	SE	β	t	p	95% CI
Compassion Satisfaction						
(ProQOL)						
Perspective Taking (IRI)	0.21	0.09	.13	2.32	.021	[0.03, 0.38]
Empathic Concern (IRI)	0.56	0.08	.39	6.69	<.001	[0.40, 0.73]
Personal Distress (IRI)	-0.30	0.06	-.25	-4.70	<.001	[0.43, 0.18]
Mindfulness (SCS)	0.48	0.18	.24	2.72	.006	[0.13, 0.83]
Compassion Fatigue						
(ProQOL)						
Empathic Concern (IRI)	0.27	0.09	.20	3.08	.002	[0.10, 0.45]
Personal Distress (IRI)	0.21	0.07	.18	3.10	.002	[0.08, 0.35]
Self-judgment (SCS)	0.26	0.12	.19	2.25	.025	[0.03, 0.50]
Burnout (ProQOL)						
Empathic Concern (IRI)	-0.29	0.09	-.20	-3.05	.003	[0.47, 0.10]
Personal Distress (IRI)	0.24	0.07	.20	3.38	.001	[0.10, 0.39]

Self-Judgment (SCS)	0.35	0.12	.24	2.95	.003	[0.12, 0.59]
Isolation (SCS)	0.33	0.16	.19	2.02	.043	[0.01, 0.66]
Mindfulness (SCS)	-0.38	0.17	-.19	-2.20	.028	[-0.72, -0.04]

Note. Only significant results are presented; CI = confidence intervals for *B*; ProQOL = Professional Quality of Life; SCS = Self-compassion Scale; IRI = Interpersonal Reactivity Index

Mediation and Moderation Analyses

Results so far suggest that eliciting empathic emotions towards others and trying to understand their thoughts and feelings seem to be beneficial as they lead to compassion satisfaction. How is it that these feelings may also lead to severe negative consequences, such as compassion fatigue? This question was addressed by examining nurses' trait self-compassion as a possible mediator/moderator between affective empathy and compassion fatigue.

To test hypothesis 3, we ran several models in which empathic concern/personal distress were the dependent variables, compassion fatigue the outcome variable, and self-compassion components as the proposed mediators and/or moderators.

Empathic Concern

Model 1

Results suggested that the negative components of self-compassion significantly mediated the relation between empathic concern and compassion fatigue. Specifically, we found significant indirect effects for self-judgment, $B = 0.07$, $BootSE = 0.04$, $BootCI [0.01 - 0.15]$, isolation, $B = 0.06$,

BootSE = 0.04, BootCI [0.03 - 0.15], and over-identification, $B = 0.11$, BootSE = 0.04, BootCI [0.05 - 0.21].

Model 2

Results supported our hypothesis and indicated that self-kindness was a significant moderator between empathic concern and compassion fatigue, $B = -0.05$, $SE = 0.02$; $t = -2.20$, $p = .029$, CI [-0.10 - -0.01]. An analysis of the conditional effect of empathic concern on compassion fatigue at different levels of the moderator (self-kindness) suggests that at higher levels of self-kindness the relation between empathic concern and compassion fatigue was non-significant, $B = 0.07$, $SE = 0.12$; $t = 0.60$, $p = .552$, CI [-0.16 - 0.30], but was significant at lower levels, $B = 0.40$, $SE = 0.10$; $t = 3.80$, $p < .001$, CI [0.19 - 0.60].

Similar results were found for common humanity. Results indicated that common humanity was a significant moderator between empathic concern and compassion fatigue, $B = -0.05$, $SE = 0.03$; $t = -1.94$, $p = .050$, CI [-0.10 - -0.00]. At higher levels of common humanity, the relation between empathic concern and compassion fatigue was non-significant, $B = 0.12$, $SE = 0.11$; $t = 1.17$, $p = .243$, CI [-0.09 - 0.33], but was significant at lower levels, $B = 0.38$, $SE = 0.11$; $t = 3.59$, $p < .001$, CI [0.17 - 0.59].

Personal Distress

Model 3

Results suggested that the negative components of self-compassion significantly mediated the relation between personal distress and compassion fatigue. We found significant indirect effects for self-judgment, $B = 0.10$, BootSE = 0.03, BootCI [0.05 - 0.17], isolation, $B = 0.12$, BootSE = 0.04, BootCI [0.06 - 0.20], and over-identification, $B = 0.14$, BootSE = 0.04, BootCI [0.07 - 0.23].

Model 4

Results indicated that common humanity was a significant moderator between personal distress and compassion fatigue, $B = -0.05$, $SE = 0.02$; $t = -2.22$, $p = .027$, CI [-0.10 - -0.01]. At higher levels of common humanity, the relation between personal distress and compassion fatigue was non-significant, $B = 0.11$, $SE = 0.09$; $t = 1.19$, $p = .235$, CI [-0.07 - 0.30], but was significant at lower levels, $B = 0.39$, $SE = 0.09$; $t = 4.31$, $p < .001$, CI [0.21 - 0.57].

Discussion

Repeated exposure to the suffering of others in healthcare professionals may be associated with the adverse consequences of personal distress, burnout and compassion fatigue, which are detrimental to their well-being. By the very nature of their work, healthcare professionals encounter people with various injuries and suffering in their everyday practice. In this case, being overly sensitive to others' suffering and pain may be detrimental and cause several negative effects, such as compassion fatigue (Figley, 2002, 2012). Although the potentially negative effects of being empathic have been previously described in the literature, few studies directly tested this hypothesis. Furthermore, components of empathy are rarely examined in applied research. In addition, despite the proven benefits of compassion for self and others, there were no studies to our knowledge exploring self-compassion in healthcare professionals, and particularly nurses.

In line with Hypotheses 1 and 2, results from hierarchical multiple regressions suggested that empathy and self-compassion components significantly predicted changes in compassion satisfaction, compassion fatigue and burnout.

Specifically, we found that perspective taking (positively), empathic concern (positively), personal distress (negatively) and mindfulness (positively) were

closely associated with compassion satisfaction. In a previous study similar results were found for the empathy variables (Gleichgerrcht and Decety, 2013). This indicates that empathic feelings of concern for others in distress, with an understanding that those feelings are different from one's own, and the ability to hold negative experiences in mindful awareness, seem to contribute to the positive experiences that come from caring for others. This is an interesting finding, which is in accord with the literature on the benefits of caregiving (e.g., Brown and Brown, 2006). Also, it stresses the importance of certain minimum levels of empathy, given that by not having them nurses may be losing the positive outcome of helping their patients, namely, compassion satisfaction.

On the contrary, we found that personal distress (positively), empathic concern (negatively), self-judgment, isolation and over-identification (positively), were associated with burnout. Personal distress (positively), empathic concern (positively), and self-judgment (positively) were also associated with compassion fatigue. In other words, negative self-oriented emotions elicited by others' distress, a tendency to be self-critical and to feel cut off from others when in distress and over-identification with negative experiences can lead to burnout and compassion fatigue. These results are in line with a previous study on the association between empathy and negative aspects of professional quality of life (Gleichgerrcht and Decety, 2013), and with the literature on the effects of self-compassion on well-being (e.g., MacBeth and Gumley, 2012).

In line with Hypothesis 1a, empathic concern predicted more compassion satisfaction and more compassion fatigue, and less burnout. This is an interesting finding and supports previous literature that beyond a certain level empathic feelings and sensibility to others' suffering may be a vulnerability factor for the development of compassion fatigue (Figley, 2002, 2012), but not burnout (Lamothe et al., 2014), but at the same time may promote positive clinical outcomes (Gleichgerrcht and Decety, 2013).

Perspective taking only predicted compassion satisfaction, but not compassion fatigue or burnout. In a previous study with general practitioners, perspective taking was found to be negatively associated with burnout (Lamothe et al., 2014).

Results so far seem to support the idea that nurses may be at particular risk of developing compassion fatigue, perhaps because they constantly witness the suffering and pain of others. Thus, nurses and healthcare professionals in general may need to regulate their capacity to empathize with their patients so that their emotional reaction does not interfere with their treatment nor impact their well-being. Without regulatory mechanisms it is likely that healthcare professionals would experience personal distress when facing other people in pain which can impact on their ability to treat (Decety et al., 2010). We hypothesized that self-compassionate individuals would be more able to regulate their negative states and thus experience less compassion fatigue. Results from mediation and moderation models generally confirmed Hypothesis 3. We found that all negative components of self-compassion (self-judgment, isolation and over-identification) were significant mediators of the relation between empathic concern/ personal distress and compassion fatigue. These results suggest that individuals that are particularly harsh and critical of themselves, who feel isolated and cut off from others when considering their own struggles and failures, and who feel overwhelmed and carried away by their negative emotional reactions and thoughts may be more vulnerable to develop compassion fatigue when they experience empathic and distressing feelings. Also, we found that the positive components of self-compassion (self-kindness and common humanity) significantly moderated the relation between empathic concern/personal distress and compassion fatigue. That is, for individuals who are able to be caring, supportive and understanding toward themselves, particularly when faced with suffering or failure, and who feel interconnected with other people, there is no link between their empathic and distress feelings and compassion fatigue. Several

mechanisms may help explain such findings. On one hand, self-compassionate people may have psychological characteristics that make them more able to regulate their emotions. In previous studies it was found that self-compassion was associated with less rumination (Johnson and O'Brien, 2013; Odou and Brinker, 2014; Raes, 2010), avoidance (Krieger et al., 2013) and suppression (Leary et al., 2007) and with more emotion validation (Leary et al., 2007; Neff et al., 2005, 2007a, 2007b). So, it may be that these psychological characteristics that have been associated with self-compassion may render individuals more resilient and less vulnerable to the potential negative impact of empathic feelings. Thus, when witnessing others' suffering or in pain self-compassionate nurses seem to be able to regulate their empathic feelings in a way that reduces its negative impact, presumably by accepting distressful feelings with kindness and holding negative experiences in mindful awareness rather than judging and identifying with them.

On the other hand, self-compassionate people may be more other-focused when witnessing others in pain and suffering. In previous studies it was found that self-compassion was associated with compassion for others (Lindsay and Creswell, 2014; Neff and Pommier, 2013; Welp and Brown, 2014). Klimecki and Singer (2012) argue that compassion for others can protect against the risk of burnout and compassion fatigue. The authors propose that the other-oriented focus of the compassionate response prevents identification with the suffering of others and allows for regulation of negative feelings caused by the empathic response. In this case, the healthcare professional responds with feelings of love and concern and is motivated to provide care and assistance. However, empathy can also lead to personal or empathic distress. In this case, the empathizer is overwhelmed by the experience of negative emotions because there is an identification with the suffering of others. As a consequence, the empathizer will be motivated not to provide help but instead to try to reduce these negative feelings and withdraw from the distressful situation. These findings have been supported by data from cognitive

neuroscience (Klimecki et al., 2013; Lamm et al., 2007) and other empirical studies (e.g., Batson et al., 1987). This distinction has led Klimecki and Singer (2012) to propose that ‘compassion fatigue’ could more helpfully be thought of as ‘empathetic distress fatigue’, because compassion as defined in this context can actually be protective of burnout and compassion fatigue. Thus, when witnessing others’ suffering or pain self-compassionate nurses may be more able to adopt an other-focused perspective which prevents their empathic feelings from turning into personal distress and compassion fatigue.

In sum, several important findings can be drawn from this study. First, this is the first study reporting a positive association between empathic feelings and compassion fatigue in nurses, although this hypothesis has been described in the literature. Second, this is also the first study to explore how trait self-compassion relates to different aspects of professional quality of life. Finally, although suggested previously (Raab, 2014) this study offers the first empirical evidence that self-compassion may be an essential skill to prevent nurses from developing burnout and compassion fatigue.

Implications

Although empathy is a key component in nurse–patient relationship, results from this study suggest that being overly sensitive to others’ pain and suffering may have deleterious effects on caregivers’ mental health, which can limit their ability to provide effective care. This is particularly so when nurses lack self-compassionate abilities. This suggests that training in self-compassion might be valuable to avoid compassion fatigue and to promote compassion satisfaction. Given the close link between self-compassion and compassion for others, such training could also promote compassionate care which has been shown to have a great impact not only on professionals’ well-being but also on patients’ health outcomes. Mindfulness-based interventions have been shown to be an effective way not only develop self-compassion (e.g., Birnie et al., 2010; Titch, 2010), but also compassion for others (Wallmark et al., 2013). A recent review suggests that mindfulness-based

interventions can increase self-compassion and other-focused concern in healthcare professionals (Boellinghaus et al., 2012). Also, some studies have provided evidence that such interventions may be particularly effective to reduce burnout in nurses (e.g., Cohen-Katz et al., 2005; Mackenzie et al., 2006).

Limitations

Although these findings are notable, several limitations should be taken into account. First, the cross-sectional nature of this study does not allow causality inferences to be drawn between empathy and self-compassion and professional quality of life. Also, in the mediation and moderation models there were still significant direct effects between empathy and compassion fatigue suggesting that other variables may have a potential role in this relationship. The sample size was small and participants were mainly women, which limits the generalizability of these findings. In addition, we used a convenience sample of hospitals and nurses which, by being a nonprobability sampling method, may not adequately represent the population. Finally, the data was derived entirely through self-report measures and thus is subject to the limitations associated with this type of methodology (e.g., social desirability). Research that is not solely based on self-report measures (e.g., experimental manipulations) would further enhance the understanding of the complex relations between empathy, self-compassion and professional quality of life. Reliability and validity of such measures was assessed only with Cronbach's alpha. Although this is a widely used estimate of internal consistency, it suffers from several limitations (e.g., Sijtsma, 2009). The lack of other reliability/validity estimates is a limitation of this study.

Conclusion

Nurses face the challenge of finding the balance that allows them to resonate with patients' suffering without becoming emotionally overinvolved in a way that might lead to burnout and compassion fatigue. This study's findings suggest that teaching self-compassion and self-care skills, i.e., a tendency to

be kind and understanding toward oneself, to feel interconnected with other people and to hold negative experiences with mindful awareness, may be an important feature in nursing educational interventions that aim to reduce burnout and compassion fatigue.

References

- Adams, C. E., & Leary, M. R. (2007). Promoting self-compassionate attitudes toward eating among restrictive and guilty eaters. *Journal of Social and Clinical Psychology, 26*(10), 1120–1144. doi: 10.1521/jscp.2007.26.10.1120
- Batson, C. D. (2009). These things called empathy: Eight related but distinct phenomena. In J. Decety & W. J. Ickes (Eds.), *The social Neuroscience of empathy* (pp. 3-15). Cambridge, MA: MIT Press.
- Batson, C. D., Fultz, J., & Schoenrade, P. A (1987). Distress and empathy: Two qualitatively distinct vicarious emotions with different motivational consequences. *Journal of Personality, 55*(1), 19–39.
- Birnie, K., Speca, M., & Carlson, L. E. (2010) Exploring self-compassion and empathy in the context of mindfulness-based stress reduction (MBSR). *Stress & Health 26*(5), 359–371. doi:10.1002/smi.1305
- Blatt, B., LeLacheur, S. F., Galinsky, A. D., Simmens, S. J., & Greenberg, L. (2010). Does perspective-taking increase patient satisfaction in medical encounters? *Academic Medicine, 85*(9), 1445–1452. doi: 10.1097/ACM.0b013e3181eae5ec
- Boellinghaus, I., Jones, F. W., & Hutton, J. (2012). The role of mindfulness and loving-kindness meditation in cultivating self-compassion and other-focused concern in health care professionals. *Mindfulness, 5*, 129–138. doi: 10.1007/s12671-012-0158-6
- Brown, S. L., & Brown, R. M. (2006). Selective investment theory: Recasting the functional significance of close relationships. *Psychological Inquiry: An International Journal for the Advancement of Psychological Theory, 17*(1), 1-29, doi: 10.1207/s15327965pli1701_01
- Carvalho, P. (2011). Estudo da fadiga por compaixão nos cuidados paliativos em Portugal: Tradução e adaptação cultural da escala “Professional Quality of Life 5”. Unpublished Master Thesis. Universidade Católica Portuguesa, Porto.
- Castilho, P., Pinto-Gouveia, J., & Duarte, J. (2015). Evaluating the multifactor structure of the long and short version of the self-compassion scale in a clinical sample. *Journal of Clinical Psychology*. Advanced online publication. doi: 10.1002/jclp.22187
- Cohen-Katz, J., Wiley, S. D., Capuano, T., Baker, D. M., Kimmel, S. & Shapiro, S. (2005). The effects of mindfulness-based stress reduction on nurse

- stress and burnout, part II: A quantitative and qualitative study. *Holistic nursing practice*, 19, 26–35.
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, 44, 113-126.
- Decety, J., & Svetlova, M. (2012). Putting together phylogenetic and ontogenetic perspectives on empathy. *Developmental cognitive neuroscience* 2(1), 1–24. doi: 10.1016/j.dcn.2011.05.003
- Decety, J., Yang, C-Y, & Cheng, Y. (2010). Physicians down-regulate their pain empathy response: An event-related brain potential study. *NeuroImage*, 50(4), 1676–1682. doi: 10.1016/j.neuroimage.2010.01.025
- Dominguez-Gomez, E., & Rutledge, D. N. (2009). Prevalence of secondary traumatic stress among emergency nurses. *Journal of Emergency Nursing*, 35(3), 199-204. doi: 10.1016/j.jen.2008.05.003
- Epstein, R.M., Hadee, T., Carroll, J., Meldrum, S.C., Lardner, J., & Shields, C.G. (2007). “Could this be something serious?” Reassurance, uncertainty, and empathy in response to patients' expressions of worry. *Journal of General Internal Medicine*, 22(12), 1731–1739. doi: 10.1007/s11606-007-0416-9
- Figley, C. R. (1995). Compassion fatigue as secondary traumatic stress disorder: An overview. In C. R. Figley (Ed.), *Compassion fatigue: Coping with secondary traumatic stress disorder in those who treat the traumatized* (pp. 1–20). New York, NY: Routledge.
- Figley, C. R. (2002). Compassion fatigue: Psychotherapists' chronic lack of self care. *Journal of Clinical Psychology*, 58(11), 1433–1441. doi: 10.1002/jclp.10090
- Figley, C. R. (2012). The empathic response in clinical practice: Antecedents and consequences. In J. Decety (Ed.), *Empathy: From Bench to Bedside* (pp 263-273). Cambridge: MIT Press.
- Fogarty, L. A., Curbow, B. A., Wingard, J. R., McDonnell, K., & Somerfield, M. R. (1999). Can 40 seconds of compassion reduce patient anxiety? *Journal of Clinical Oncology*, 17(1), 371–379.
- Gleichgerrcht, E., & Decety, J. (2013). Empathy in clinical practice: How individual dispositions, gender, and experience moderate empathic

- concern, burnout, and emotional distress in physicians. *PLoS ONE*, 8(4), e61526. doi:10.1371/journal.pone.0061526
- Gustin, L. W., & Wagner, L. (2013). The butterfly effect of caring – clinical nursing teachers' understanding of self-compassion as a source to compassionate care. *Scandinavian Journal of Caring Sciences*, 27(1), 175–183. doi: 10.1111/j.1471-6712.2012.01033.x.
- Hand, L. (2011). One fourth of ICU clinicians report inappropriate care. *Medscape*. December 27, 2011. Available at <http://www.medscape.com/viewarticle/756089>
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
- Hodges, S. D., & Biswas-Diener, R. (2007). Balancing the empathy expense account: Strategies for regulating empathic response. In Farrow, T.F.D., & Woodruff, P.W.R. (Eds.), *Empathy in Mental Illness* (pp 389-405). Cambridge: Cambridge University Press.
- Hojat, M., Louis, D. Z., Markham, F. W., Wender, R., Rabinowitz, C., & Gonnella, J. S. (2011). Physicians' empathy and clinical outcomes for diabetic patients. *Academic Medicine*, 86(3), 359–364. doi: 10.1097/ACM.0b013e3182086fe1
- Johnson, E. A., & O'Brien, K. A. (2013). Self-compassion soothes the savage ego-threat system: Effects on negative affect, shame, rumination, and depressive symptoms. *Journal of Social and Clinical Psychology*, 32(9), 939-963. doi: 10.1521/jscp.2013.32.9.939
- Joinson, C. (1992). Coping with compassion fatigue. *Nursing*, 22(4), 116-121.
- Klimecki, O. M., Leiberg, S., Lamm, C., & Singer, T. (2013). Functional neural plasticity and associated changes in positive affect after compassion training. *Cerebral Cortex*, 23(7), 1552-1561. doi:10.1093/cercor/bhs142
- Klimecki, O., & Singer, T. (2011). Empathic distress fatigue rather than compassion fatigue? Integrating findings from empathy research in psychology and social neuroscience. In B. Oakley, A. Knafo, G. Madhavan, & D. S. Wilson (Eds.), *Pathological altruism* (pp. 368–383). New York: Oxford University Press.
- Krieger, T., Altenstein, D., Baettig, I., Doerig, N., & Holtforth, M. G. (2013). Self-compassion in depression: Associations with depressive

- symptoms, rumination, and avoidance in depressed outpatients. *Behavior Therapy*, *44*, 501–513.
- Lamm, C., Batson, C. D., & Decety, J. (2007). The neural substrate of human empathy: Effects of perspective-taking and cognitive appraisal. *Journal of Cognitive Neuroscience* *19*(1), 42-58. doi: 10.1162/jocn.2007.19.1.42
- Lamothe, M., Boujut, E., Zenasni, F., & Sultan, S. (2014). To be or not to be empathic: the combined role of empathic concern and perspective taking in understanding burnout in general practice. *BMC Family Practice*, *15*, 15. doi:10.1186/1471-2296-15-15
- Leary, M. R., Tate, E. B., Adams, C. E., Allen, A. B., & Hancock, J. (2007). Self-compassion and reactions to unpleasant self-relevant events: The implications of treating oneself kindly. *Journal of Personality and Social Psychology*, *92*(5), 887–904. doi: 10.1037/0022-3514.92.5.887
- Limpo, T., Alves, R. A., & Castro, S. L. (2010). Medir a empatia: Adaptação do Índice de Reactividade Interpessoal [Portuguese adaptation of the Interpersonal Reactivity Index]. *Laboratório de Psicologia*, *8*, 171-184.
- Lindsay, E. K., & Creswell, J. D. (2014). Helping the self help others: Self-affirmation increases self-compassion and pro-social behaviors. *Frontiers in Psychology*, *5*, 421. doi:10.3389/fpsyg.2014.00421
- López, A., Sanderman, R., Smink, A., Zhang, Y., van Sonderen, E., Ranchor, A., Schroevers, M.J., 2015. A reconsideration of the Self-Compassion Scale's total score: self-compassion versus self-criticism. *PloS one* *10* (7), e0132940.
- MacBeth, A., & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review*, *32*(6), 545-552. doi: 10.1016/j.cpr.2012.06.003
- Mackenzie, C. S., Poulin, P. A., & Seidman-Carlson, R. (2006). A brief mindfulness-based stress reduction intervention for nurses and nurse aides. *Applied Nursing Research*, *19*, 105-109. doi: 10.1016/j.apnr.2005.08.002
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2011). Job burnout. *Annual Review Psychology*, *52*, 397–422.

- McCray, L. W., Cronholm, P. F., Bogner, H. R., Gallo, J. J., & Neill, R. A. (2008). Resident physician Bburnout: Is there hope? *Family Medicine*, *40*(9), 626–632.
- Mills, J., Wand, T., & Fraser, J. A. (2014). On self-compassion and self-care in nursing: Selfish or essential for compassionate care? *International Journal of Nursing Studies*, *52*(4), 791-793. doi: 10.1016/j.ijnurstu.2014.10.009
- Neely, M. E., Schallert, D. L., Mohammed, S. S., Roberts, R. M., & Chen, Y.-J. (2009). Self-kindness when facing stress: The role of self-compassion, goal regulation, and support in college students' well-being. *Motivation Emotion*, *33*, 88–97. doi: 10.1007/s11031-008-9119-8
- Neff, K. D. (2003a). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, *2*, 85-102. doi: 10.1080/15298860390129863
- Neff, K. D. (2003b). Development and validation of a scale to measure self-compassion. *Self and Identity*, *2*, 223-250. doi: 10.1080/15298860390209035
- Neff, K. D., & Rude, S. S., & Kirkpatrick, K. (2007). An examination of self-compassion in relation to positive psychological functioning and personality traits. *Journal of Research in Personality*, *41*, 908-916. doi:10.1016/j.jrp.2006.08.002
- Neff, K. D., Hseih, Y., & Dejithirat, K. (2005). Self-compassion, achievement goals, and coping with academic failure. *Self and Identity*, *4*, 263-287. doi: 10.1080/13576500444000317
- Neff, K. D., Kirkpatrick, K. & Rude, S. S. (2007). Self-compassion and adaptive psychological functioning. *Journal of Research in Personality*, *41*, 139-154. doi:10.1016/j.jrp.2006.03.004
- Neff, K. D., Pommier, E. (2013). The relationship between self-compassion and other-focused concern among college undergraduates, community adults, and practicing meditators. *Self and Identity*, *12*(2),160-176. doi: 10.1080/15298868.2011.649546
- Neumann, M., Edelhäuser, F., Tauschel, D., Fischer, M. R., Wirtz, M., Woopen, C., Haramati, A., & Scheffer, C. (2011). Empathy decline and its reasons: A systematic review of studies with medical students and residents. *Academic Medicine*, *86*, 996–1009. doi: 10.1097/ACM.0b013e318221e615

- Nunes, P., Williams, S., Sa, B., & Stevenson, K. (2011). A study of empathy decline in students from five health disciplines during their first year of training. *International Journal of Medical Education, 2*, 12–17. doi: 10.5116/ijme.4d47.ddb0
- Odou, N., & Brinker, J. (2014). Exploring the relationship between rumination, self-compassion, and mood. *Self and Identity, 13*(4), 449-459. doi: 10.1080/15298868.2013.840332
- Poulin, M. J., Brown, S. L., Dillard, A. J., & Smith, D. M. (2013). Giving to others and the association between stress and mortality. *American Journal of Public Health, 103*(9), 1649–1655. doi:10.2105/AJPH.2012.300876
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers, 36*(4), 717–731.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879-891. doi: 10.3758/BRM.40.3.879
- Raab, K. (2014). Mindfulness, self-compassion, and empathy among health care professionals: A review of the literature. *Journal of Health Care Chaplaincy, 20*(3), 95-108. doi: 10.1080/08854726.2014.913876
- Raes, F. (2010). Rumination and worry as mediators of the relationship between self-compassion and depression and anxiety. *Personality and Individual Differences, 48*, 757–761. doi:10.1016/j.paid.2010.01.023
- Rakel, D., Barrett, B., Zhang, Z., Hoeft, T., Chewing, B., Marchand, L., & Sheder, J. (2011). Perception of empathy in the therapeutic encounter: Effects on the common cold. *Patient Education Counselling, 85*, 390–397. doi: 10.1016/j.pec.2011.01.009
- Ratanawongsa, N., Roter, D., Beach, M. C., Laird, S. L., Larson, S. M., Carson, K. A., & Cooper, L. A. (2008). Physician burnout and patient-physician communication during primary care encounters. *Journal of General Internal Medicine, 23*(10), 1581–1588. doi:10.1007/s11606-008-0702-1
- Sabo, B. M. (2006). Compassion fatigue and nursing work: can we accurately capture the consequences of caring work. *International Journal of Nursing Practice, 12*(3), 136–142. doi: 10.1111/j.1440-172X.2006.00562.x

- Schulz, M., Damkröger, A., Voltmer, E., Löwe, B., Driessen, M., Ward, M., & Wingenfeld K. (2011). Work-related behaviour and experience pattern in nurses: Impact on physical and mental health. *Journal of Psychiatric and Mental Health Nursing*, 18(5), 411–417. doi: 10.1111/j.1365-2850.2011.01691.x.
- Schulz, R., Hebert, R. S., Dew, M. A., Brown, S. L., Scheier, M. F., Beach, S. R., ... Nichols, L., (2007). Patient suffering and caregiver compassion: New opportunities for research, practice, and policy. *The Gerontologist*, 47(1), 4-13. doi:10.1093/geront/47.1.4
- Sekol, M. A., & Kim, S. C. (2014). Job satisfaction, burnout, and stress among pediatric nurses in various specialty units at an acute care hospital. *Journal of Nursing Education and Practice*, 4(12),115-124. doi: 10.5430/jnep.v4n12p115
- Sermeus, W., Linda, H. A., Koen, V. H., Anne, M. R., Peter, G., & Moreno-Casbas, M. T. (2011). RN4CAST consortium. *BMC Nursing*, 10(6). doi:10.1186/1472-6955-10-6
- Shanafelt, T. D., Bradley, K. A., Wipf, J. E., & Back, A. L. (2002). Burnout and self-reported patient care in an internal medicine residency program. *Annals of Internal Medicine*, 136(5), 358-367. doi:10.7326/0003-4819-136-5-200203050-00008
- Shanafelt, T. D., West, C., Zhao, X., Novotny, P., Kolars, J., Habermann, T., & Sloan, J. (2005). Relationship between increased personal well-being and enhanced empathy among internal medicine residents. *Journal of General Internal Medicine*, 20(7), 559–564. doi: 10.1111/j.1525-1497.2005.0108.x
- Shapiro, S. Astin, J., Bishop, S., & Cordova, M. (2005). Mindfulness-based stress reduction for health care professionals: Results from a randomized trial. *International Journal of Stress Management*, 12(2), 164–176. doi: 10.1037/1072-5245.12.2.164
- Sijtsma, K. (2009). On the Use, the Misuse, and the Very Limited Usefulness of Cronbach's Alpha. *Psychometrika*, 74(1), 107–120. doi: 10.1007/s11336-008-9101-0
- Singer, T., & Leiberg, S. (2009). Sharing the emotions of others: The neural bases of empathy. In M. S. Gazzaniga (Ed.), *The cognitive neurosciences IV*. Cambridge MA: MIT Press

- Stamm, B. H. (2009). *Professional Quality of Life: Compassion Satisfaction and Fatigue Version 5 (ProQOL)*. Retrieved from: www.isu.edu/~bhstamm or www.proqol.org.
- Stamm, B. H. (2010). *The Concise ProQOL Manual, 2nd Ed.* Pocatello, ID: ProQOL.org.
- Stebnicki, M. (2002). Stress and grief reactions among rehabilitation professionals: Dealing effectively with empathy fatigue. *Journal of Rehabilitation, 66*(1), 23–30.
- Thomas, M. R., Dyrbye, L. N., Huntington, J. L., Lawson, K. L., Novotny, P. J., Sloan, J. A., & Shanafelt, T. D. (2007). How do distress and well-being relate to medical student empathy? A multicenter study. *Journal of General Internal Medicine, 22*(2), 177–183. doi: 10.1007/s11606-006-0039-6
- Tirch, D. D. (2010). Mindfulness as a context for the cultivation of compassion. *International Journal of Cognitive Therapy, 3*, 113–123. doi:10.1521/ijct.2010.3.2.113
- Vahey, D. C., Aiken, L. H., Sloane, D. M., Clarke, S. P., & Vargas, D. (2004). Nurse burnout and patient satisfaction. *Medical Care, 42*, 57–66. doi: 10.1097/01.mlr.0000109126.50398.5^a
- Wallmark, E., Safarzadeh, K., Daukantaitė, D., & Maddux, R. E. (2013). Promoting altruism through meditation: An 8-week randomized controlled pilot study. *Mindfulness, 4*(3), 223-234. doi: 10.1007/s12671-012-0115-4
- Welp, L. R., & Brown, C. M. (2014). Self-compassion, empathy, and helping intentions. *The Journal of Positive Psychology, 9*(1), 54–65. doi:10.1080/17439760.2013.831465
- West, C. P., Huschka, M. M., Novotny, P. J., Sloan, J. A., Kolars, J. C., Habermann, T. M., & Shanafelt, T. D. (2006). Association of perceived medical errors with resident distress and empathy: A prospective longitudinal study. *JAMA, 296*(9), 1071-1078. doi:10.1001/jama.296.9.1071
- Wilson, S. E., Prescott, J., & Becket, G. (2012). Empathy levels in first- and third-year students in health and non-health disciplines. *The American Journal of Pharmaceutical Education, 76*(2), 1-4. doi: 10.5688/ajpe76224

Empathy and feelings of guilt experienced by nurses: a cross-sectional study of their role in burnout and compassion fatigue symptoms¹⁰

Abstract

Aims: The main goal of this study was to explore the relationships between empathy, empathy-based pathogenic guilt and professional quality of life (burnout and compassion fatigue). We aim to test a model in which we hypothesize that when empathic feelings are related to pathogenic guilt, burnout and compassion fatigue symptoms may be increased.

Background: Empathy is at the core of nursing practice, and has been associated with positive outcomes not only for the healthcare provider but also for the patient. However, empathy is also at the core of guilt feelings that, when excessive and misdirected, can lead to pathogenic guilt beliefs. We focused on two types of empathy-based guilt characterized by excessive responsibility over others' well-being and how these can be related to professional quality of life.

Methods and Participants: This study is a cross-sectional self-report survey. Data were collected during 2014 and 2015. 298 nurses from public hospitals in Portugal's north and center region were surveyed. Professional quality of life (ProQoL), empathy (IRI), and empathy-based guilt (IGQ) were measured using validated self-report measures.

Results: Correlation analyses showed that empathy-based guilt was positively associated with empathy, and with burnout and compassion fatigue. Results from the multiple mediation models further indicated that when empathy is

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associated with empathy-based guilt, this leads to greater levels of burnout and compassion fatigue.

Conclusions: Given the nature of their work, proneness to experience pathogenic guilt feelings may compromise nurses' well-being, and this should be addressed in training programs aiming at preventing or treating burnout and compassion fatigue.

Keywords: empathy; empathy-based guilt; compassion fatigue; burnout; nurses.

Introduction

Empathy is a central aspect of healthcare. It has been associated with positive outcomes for the patient, such as patient satisfaction, compliance to treatments and improved health (e.g., Blatt *et al.* 2010; Del Canale *et al.* 2012; Epstein *et al.* 2007, Hojat *et al.* 2011, Rakel *et al.* 2011). Being empathic has also a positive impact upon the healthcare provider who can be more effective and provide better care (Di Blasi *et al.* 2001), experience more well-being and less distress (Thomas *et al.* 2007; Shanafel *et al.* 2005), and is less likely to experience burnout (e.g., Lamothe *et al.* 2014; Gleichgerrcht & Decety 2013).

There have been many definitions of empathy (see Batson 2009). Current approaches informed by findings from social neuroscience suggest that empathy is not a single ability but a complex socio-emotional competency that includes different but interacting components (e.g., Decety & Svetlova 2012). A widely used measure of empathy by Davis (1983) proposed four components of empathy. Fantasy was defined as being able to transpose oneself (imaginatively) into the feelings of a fictional character. Perspective taking was defined as the ability to place oneself in another's shoes and understand his or her point of view. These two dimensions have come to be regarded as the cognitive components of empathy. Empathic concern was defined as feelings of care about the welfare of others and becoming upset

over their misfortunes. Personal distress was defined as feelings of distress and anxiety when witnessing another's negative state. These two dimensions are considered the affective components of empathy. In contrast to the prosocial effects of perspective taking and empathic concern, personal distress does not appear to have positive effects on personal relations.

Previous theoretical and empirical work (e.g., Hoffman 2000, Leith & Baumeister 1998) suggests that empathy is closely related to guilt, so that more empathic people are more likely to experience guilt than less empathic people.

Empathy-based guilt, often nonpathogenic, is necessary in many social situations. Our ability to respond to one another with empathy, to experience guilt when we believe we have harmed another, or simply when we perceive inequity, allows us to overcome many common social conflicts that might, without empathy-based guilt, undermine our relationships. Empathy-based guilt becomes pathogenic when it leads to cognitive errors in understanding causality. When people who feel empathy at witnessing another's suffering falsely believe they cause others' problems, or falsely believe that they have the means to relieve the person of suffering, they have erred in their analysis of the situation. Pathogenic guilt is thus associated with incorrect explanations of causality and can result in maladaptive outcomes, such as psychopathology and pathological acts of altruism (O'Connor *et al* 2012).

We particularly focused on survivor guilt and omnipotence guilt, both of which involve an exaggerated sense of responsibility for others. Survivor guilt can be seen as an extreme symptom of a more general pattern in which people feel guilty over positive inequities, and this general pattern would presumably be extremely beneficial for promoting fair, equitable, and hence strong and durable relationships (Baumeister *et al.* 1994). Although the term was originally coined to describe the guilt people feel when someone else dies, it broadly defines the feeling people may experience for "surviving" harm while others do not, with erroneous beliefs that in some way one is responsible or

contributed to that harm. Omnipotent responsibility guilt also arises out of empathy and involves an exaggerated sense of responsibility and concern for the happiness and well-being of others, even in instances where one has no power to change another's situation (O'Connor *et al.* 1997).

Adaptive guilt, which concerns feeling anxious and distressed about real and specific wrongful behaviors and the desire to make reparation, is associated with good social adjustment and healthy personality development (Tangney 1991, Zahn-Waxler & Kochanska 1990). In contrast, survivor guilt and omnipotent responsibility guilt have been empirically associated with several psychopathology indicators (e.g., O'Connor *et al.* 1999, Locke *et al.* 2015).

In certain jobs where one is responsible for others' lives and well-being, such as nursing, guilt can be especially acute when things go wrong. However, few studies to date explored the impact of feelings of guilt in nurses' well-being. In a previous qualitative study exploring the experience of witnessing trauma and suffering among acute care nurses, there was a common experience of feeling guilty that bad things were happening to people who didn't deserve to be sick, which added an extra layer to the nurses' workplace stress (Walsh & Buchanan 2011). We hypothesize that nurses who are more prone to experience pathogenic empathy-based guilt (e.g., survivor and omnipotent guilt) may be particularly vulnerable to symptoms of burnout and compassion fatigue.

Aims

In this study we set out to explore the complex relationships between empathy and guilt, and how these can be related to professional ill-health. Understanding the pathways between empathy, which is an inherent part of the nursing profession, and burnout and compassion fatigue symptoms remains largely unclear. Although empathic engagement is positively related to indices of job satisfaction and thus is a possible protective factor it may also leave healthcare providers more vulnerable to the negative effects of trauma exposure (Figley, 1995; Jenkins & Baird 2002). Given the close relation

between empathy and guilt, we hypothesize that, in a job where one is responsible for others' lives, proneness to experience excessive feelings of guilt may be particularly problematic and can be a possible link between empathy and burnout/compassion fatigue. Specifically, we aim to test a model in which we hypothesize that pathogenic empathy-based guilt mediates the association between empathy and burnout/compassion fatigue symptoms. Understanding these relationships in more depth is important to providing nurses with targeted support for preventing and treating burnout and compassion fatigue.

Method

Design

A descriptive, correlational, cross-sectional study design was used to investigate the relationships among empathy, empathy-based guilt and professional quality of life in nurses recruited from public hospitals in central and northern Portugal, using a non-probability based sampling method. Self-report questionnaires were used to test the study's aims.

Participants

A convenience sample of nurses was recruited from five public hospitals in Portugal. Exclusion criteria included respondents who were non-nurses, nurse managers, educators, or researchers with no direct patient care activities.

Data Collection

Data was collected between 2014 and 2015. After approval of hospitals' ethics committees, department chief nurses were contacted by the researcher who explained the study aims and the importance of participation. Department chief nurses were asked to advertise the study among the nurses

in their services and to deliver and receive the questionnaire pack from those who agreed to participate. The questionnaire included an information sheet explaining the study aims, the importance of participation, and confidentiality.

Measures

The Professional Quality of Life Scale, version 5 (ProQOL-5; Stamm 2010). The ProQOL is a 30-item self-report measure composed of three discrete subscales. The first subscale measures Compassion Satisfaction (CS), defined as the pleasure derived from being able to do one's work (helping others) well (e.g., "I get satisfaction from being able to help people"). The second subscale measures burnout (BO), or feelings of hopelessness and difficulties in dealing with work or in doing one's job effectively (e.g., "I feel worn out because of my work as a health care provider). The third subscale measures secondary traumatic stress (STS), defined as work-related, secondary exposure to people who have experienced extremely or traumatically stressful events (e.g., "I feel depressed because of the traumatic experiences of the people I help"). We will use the term 'compassion fatigue' to refer to this factor. Respondents are instructed to indicate how frequently each item was experienced in the previous 30 days, on a 5-item Likert scale (from 1 = never to 5 = very often). Scoring requires summing the item responses for each 10-item subscale. The subscale compassion satisfaction was not included in this study.

Interpersonal Reactivity Index (IRI; Davis 1983). This scale measures perspective taking (7 items; e.g., "I try to look at everybody's side of a disagreement before I make a decision"), empathic concern (7 items; e.g., "I often have tender, concerned feelings for people less fortunate than me"), personal distress (7 items; e.g., "I sometimes feel helpless when I am in the middle of a very emotional situation") and fantasy (6 items; "I really get involved with the feelings of the characters in a novel."). Perspective taking is considered a cognitive component of empathy, while empathic concern and

personal distress are considered the affective component. Respondents are instructed to rate how well each statement describes them on a 5-point Likert scale (from 0 = not well to 4 = very well). The subscale “fantasy” was not included as it was not relevant to the current study.

Interpersonal Guilt Questionnaire-67 (IGQ-67; O'Connor *et al.* 1997). The IGQ-67 is a self-report measure that uses Likert scales to assess pathogenic empathy-based guilt. It includes four subscales, but for the purpose of this study only two subscales were used: Survivor Guilt, defined as the belief that pursuing normal goals will harm others (e.g., "It makes me very uncomfortable to receive better treatment than the people I am with"); Omnipotence Responsibility Guilt, defined as the belief that one is responsible for the happiness and well-being of others (e.g., "I often find myself doing what someone else wants me to do rather than doing what I would most enjoy").

Ethical Considerations

The study was approved by the hospitals' ethics committees. In line with the ethical requirements, it was emphasized that participants' cooperation was voluntary and that their answers were confidential and would be used only for the purpose of this study. All participants provided their written informed consent. The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans was followed.

Data Analyses

Descriptive statistics of the variables in study included means, standard deviations, minimum and maximum scores, and skewness and kurtosis values. The association between the variables was initially explored using Pearson's coefficient correlations. Multiple mediation analyses with bootstrap methods were conducted using the Hayes PROCESS macro for SPSS (Hayes 2013). In this macro, direct and indirect effects are estimated using a series of

ordinary least squares (OLS) regressions and the bootstrapping procedure (Preacher & Hayes 2004, 2008). The significance of the indirect effect, based on the 95% confidence interval (CI) derived from 5.000 bootstrap resamples, is indicated when the CI values do not cross zero. The Bootstrap is adequate when total and indirect effects are not multivariate normally distributed (Preacher & Hayes, 2008). We report the unstandardized coefficient (*B*) and standard error (*SE*) for each regression equation to indicate the predicted change in the dependent variable (DV), given a one-unit change in the independent variable, while controlling for the other variables in the equation. Statistical significance was set at .05 and IBM SPSS version 23 was used for all analyses.

Validity and Reliability

This study used previously validated and reliable self-report measures. Regarding the ProQOL, internal consistency estimates for the original subscales are reported as .88 for the compassion satisfaction scale, .75 for the burnout scale, and .81 for the compassion fatigue/secondary trauma scale. The Portuguese version also showed good internal consistency (.86 for the compassion satisfaction scale, .71 for the burnout scale, and .83 for the compassion fatigue/secondary trauma scale; Carvalho 2011). In the present study, Cronbach's alphas were .86 for compassion satisfaction, .74 for burnout and compassion fatigue. Regarding the IRI, Cronbach's alphas for the scales in the Portuguese version were adequate: Empathetic concern = .77; Perspective taking = .74; and Personal distress = .81 and Fantasy = .83 (Limpo *et al.* 2010). Cronbach's alphas for the present sample were .67 for empathic concern, .72 for perspective taking, and .75 for personal distress. Regarding the IGQ-67, the original subscales had good internal consistency estimated by Cronbach's alpha, namely .85 for survivor guilt and .83 for omnipotence guilt. Cronbach's alpha in the present study was .80 for survivor guilt and .75 for omnipotence guilt.

Results

Sample's Characteristics

A total of 298 registered nurses from public hospitals participated in the study. This sample had a mean age of 37.86 ($SD = 9.22$), ranging between 22 and 60 years of age; the majority of participants were female ($n = 245$; 82.2%) and married ($n = 171$; 57.4%). Also, the mean years of schooling was 15.80 ($SD = 2.18$). Participants practiced nursing in a wide variety of fields, with 14.98 ($SD = 9.19$) mean years of practice. This sample consisted primarily of nurses who are women, married, living and working in an urban area, and working for an average of 15 years.

Descriptive Statistics

Descriptive statistics are presented in Table 1. Mean values for professional quality of life scales were similar to previous studies with nurses (e.g., Sekol & Kim 2014), as were mean values for the empathy components (e.g., Gleichgerrcht & Decety 2013). Regarding empathy-based guilt, mean values were also similar to those obtained in a previous study (O'Connor *et al.* 1997).

Table 1

Means, Standard Deviations, Minimum, Maximum, Skewness, Kurtosis, and Cronbach's Alpha (α) of the Study Variables (N = 298)

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skew</i>	<i>Kurtosis</i>
Burnout (ProQOL)	25.05	5.15	12.00	44.00	.20	.39
Compassion Fatigue (ProQOL)	25.34	4.85	4.00	42.00	.32	.22
Empathic Concern (IRI)	17.38	3.49	6.00	24.00	-.09	.06
Personal Distress (IRI)	9.28	4.24	0	20.00	-.04	-.32
Perspective Taking (IRI)	16.76	3.33	6.00	24.00	-.10	.06
Survival Guilt (IGQ)	63.76	8.49	43.00	94.00	.56	.81
Omnipotence Guilt (IGQ)	48.61	6.49	27.00	66.00	-.03	.23

Note. ProQOL = Professional Quality of Life; IRI = Interpersonal Reactivity Index; IGQ = Interpersonal Guilt Questionnaire

Correlational Analysis

Correlations between the variables are presented in Table 2. Burnout and compassion fatigue were positively associated with personal distress and interpersonal guilt. Burnout was negatively associated with empathic concern and perspective taking, while compassion fatigue was positively associated with empathic concern. As expected, interpersonal guilt was positively associated with all dimensions of empathy.

Table 2

Correlations Between Burnout, Compassion Fatigue, Empathy and Empathy-based Guilt (N = 298)

	1	2	3	4	5	6	7
1. Burnout (ProQOL)	-						
2. Compassion Fatigue (ProQOL)	.47**	-					
3. Empathic concern (IRI)	-.18**	.20**	-				
4. Personal distress (IRI)	.20**	.23**	-.09	-			
5. Perspective taking (IRI)	-.16**	-.02	.42**	-.12*	-		
6. Survival Guilt (IGQ)	.19**	.38**	.39**	.31**	.13**	-	
8. Omnipotence Guilt (IGQ)	.16**	.32**	.39**	.23**	.13**	.57**	-

Note. * $p \leq .05$; ** $p < .01$; ProQOL = Professional Quality of Life; IRI = Interpersonal Reactivity Index; IGQ = Interpersonal Guilt Questionnaire

Mediation Analyses

Mediation analyses were conducted to test a theoretical model of the relationships between empathy dimensions (empathic concern and perspective taking), empathy-based pathogenic guilt and professional quality of life. We hypothesized that when empathy is associated with pathogenic guilt, i.e. survival and omnipotence guilt, it may contribute for professional ill-being (compassion fatigue and burnout symptoms). Because perspective

taking was not significant associated with compassion fatigue we did not test a mediation model. Figure 1 presents a conceptual diagram of the mediation models.

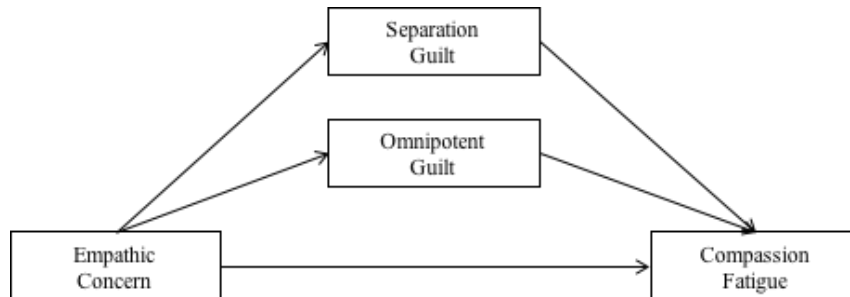


Figure 1. Conceptual diagram of the direct and indirect effects of empathy on professional quality of life.

Burnout

In line with our hypothesis we found a significant indirect effect of empathic concern on burnout through survivor guilt estimated as $B = 0.13$, $BootSE = 0.05$, $BootCI [0.136 - 0.325]$, and through omnipotent guilt, $B = 0.09$, $BootSE = 0.04$, $BootCI [0.014 - 0.173]$. These indirect effects suggest that two nurses who differ by one unit in their reported empathic concern are estimated to differ by 0.13 and 0.09 units in their reported burnout scores as a result of the tendency for those who have more empathic feelings of concern to have more survival and omnipotent guilt respectively. These indirect effects were statistically different from zero, as revealed by 95% bias-corrected bootstrap confidence intervals that were entirely above zero. We also found a negative significant direct effect of empathic concern on burnout in this model, $B = -0.42$ ($SE = .08$), $t(259) = -4.76$, $p < .001$, $CI [-0.589 - -0.245]$, which represents the estimated difference in burnout scores between two nurses experiencing the same level of interpersonal guilt but who differ by one unit in their reported empathic concern. The coefficient is negative suggesting that the nurse feeling more empathic concern but has equal scores of interpersonal guilt is estimated to be 0.42 units lower in his or her reported burnout scores.

We also found a significant indirect effect of perspective taking on burnout through survivor guilt, $B = 0.03$, $BootSE = 0.02$, $BootCI [0.004 - 0.089]$, but not omnipotent guilt. There was a significant direct effects of perspective taking on burnout, $B = -0.29$ ($SE = .09$), $t(259) = -3.31$, $p = .001$, $CI [-0.464 - -0.118]$.

Compassion fatigue

There were significant indirect effects of survivor guilt, $B = 0.15$, $BootSE = 0.04$, $BootCI [0.074 - 0.241]$, and omnipotent guilt, $B = 0.08$, $BootSE = 0.04$, $BootCI [0.009 - 0.167]$, on the relation between empathic concern and compassion fatigue. The direct effect of empathic concern on compassion fatigue was not statistically different from zero in this model.

Discussion

The main purpose of the present investigation was to explore the concept of empathy-based guilt in nurses, and to determine the role of empathy-based guilt on the association between empathy and professional quality of life.

Results from the correlations suggested that empathy and empathy-based guilt were associated with professional quality of life. Specifically, we found that negative self-oriented emotions elicited by others' distress were associated with burnout and compassion fatigue. These results are in line with a previous study exploring the association between empathy and negative aspects of professional quality of life in a large sample of physicians (Gleichgerrcht & Decety, 2013). We also found that perspective taking was associated with burnout but not with compassion fatigue. This result suggests that having an ability to infer others' thoughts and feelings while understanding that they may differ from one's own may be protective of burnout, but not compassion fatigue. Also, although empathic feelings of care and concern were associated with lower scores of burnout, they were associated with higher scores of

compassion fatigue. These results may indicate that beyond a certain level empathic feelings and sensibility to others' suffering may be a vulnerability factor for the development of compassion fatigue, as previously suggested in the literature (Figley 2002, 2012).

We also found positive associations between empathy-based guilt and all empathy variables. Specifically, survivor and omnipotent guilt were associated with higher scores of personal distress, perspective taking and especially empathic concern. These results are in line with a previous study (O'Connor *et al.* 2002), and support the interpersonal perspective that describes feelings of guilt as deriving from empathy (e.g., Baumeister *et al.* 1994, Hoffman 2000, Zahn-Waxler & Kochanska 1990).

Results also indicated that survivor and omnipotent responsibility guilt were associated with higher levels of burnout and especially compassion fatigue. These results provided the first empirical evidence of the relationships between empathy-based guilt and professional quality of life, and are in line with other studies linking empathy-based guilt to the experience of psychological difficulties (O'Connor *et al.* 2007, Wilson, personal communication 2006).

Using a multiple mediation procedure, we tested our hypotheses about the relationships between empathy, empathy-based pathogenic guilt and professional quality of life. We hypothesized that when empathy is associated with pathogenic guilt, this may impact on nurses' professional quality of life. Results confirmed these hypotheses, suggesting that nurses with more empathic feelings of care and concern may be more vulnerable to experience burnout symptoms and compassion fatigue, as a result of their proneness to experience more survival guilt and omnipresent responsibility guilt, i.e., when associated with their empathic feelings are irrational beliefs regarding causality that give rise to pathogenic guilt. In the burnout model, empathic concern remained negatively associated with burnout, which suggests that only when empathic feelings give rise to pathogenic guilt-related beliefs they

may be a vulnerability factor for burnout symptoms. Otherwise, empathic feelings of care and concern may buffer against burnout, which is in line with other studies (e.g., Lamothe *et al.* 2014, Gleichgerrcht & Decety 2013), and highlight the importance of promoting empathy in the healthcare context.

Implications

The results of this study suggest that pathogenic empathy-based guilt may help explain some of the links between clinical empathy and symptoms of burnout and compassion fatigue. Given the nature of their work, nurses are particularly exposed to situations that constantly recruit their empathic abilities. Given the close association between guilt and empathy, it is likely that nurses more prone to experience pathogenic empathy-based guilt may experience excessive and misplaced responsibility for their patients. In turn, this unbalanced empathy and unrealistic beliefs about responsibility can lead to caregiving that may not only be depleting and damaging to the life of the caregiver but also may lead to unprofessional and intrusive caring.

Thus, interventions and training programs targeting pathogenic empathy-based guilt and empathic distress may be particularly important to help reduce burnout and compassion fatigue. In a recent study, O'Connor and colleagues (2015) found that people engaged in contemplative practices (e.g., mindfulness, Tibetan, Theravada) appear to be less vulnerable to empathic distress and maladaptive or pathological guilt, when compared to a sample from the general population. Also, some studies have been providing some evidence that such interventions may be particularly effective to reduce burnout in nurses (e.g., Mackenzie *et al.* 2006, Cohen-Katz *et al.* 2005).

Limitations and future directions

Although these findings are very promising, several limitations should be taken into account. First, the cross-sectional nature of this study does not allow to draw causality inferences between empathy, pathogenic empathy-based guilt and professional quality of life. Also, the sample size was small

and participants were mainly women. However, the proportion of female and male nurses in our sample matches other international samples (Budden *et al.* 2013, Heinen *et al.* 2013). We used a convenience sample of hospitals and nurses which, by being a nonprobability sampling method, may limit external validity. In addition, the data was derived entirely through self-report measures and thus is subject to the limitations associated with this type of methodology (e.g., response bias, introspective ability).

Given this is the first study to explore the concept of pathogenic guilt in this population, future studies should try to replicate these findings, in larger samples, using experimental and longitudinal designs to test particular hypotheses based on the present findings, and with alternative ways to measure these processes (e.g., functional neuroimaging studies; observational and experimental studies; qualitative data) to further enhance the understanding of the complex relationships between these variables.

Conclusions

Guilt is very important for social relations and is associated with empathy and prosocial behavior. However, when empathy-based guilt becomes excessive, unrealistic in scope and perspective and leads to erroneous beliefs about causality, it can lead to psychological problems. Given the nature of their caregiving work and responsibility for others' well-being, nurses especially prone to experience pathogenic empathy-based guilt may be more vulnerable to experience burnout and compassion fatigue symptoms. Finding ways to identify and target pathogenic guilt may be important to burnout and compassion fatigue prevention and treatment.

References

- Batson C. D. (2009) These things called empathy: Eight related but distinct phenomena. In: Decety J. and Ickes W. J. (eds.) *The Social Neuroscience of Empathy*. Cambridge, MA: MIT Press, 3-15.
- Baumeister R. F., Stillwell A. M. & Heatherton, T. F. (1994) Guilt: An interpersonal approach. *Psychological Bulletin*, 115(2), 243.
- Blatt B., LeLacheur, S. F., Galinsky A. D., Simmens S. J. & Greenberg L. (2010) Does perspective-taking increase patient satisfaction in medical encounters? *Academic Medicine*, 85(9), 1445–1452. doi: 10.1097/ACM.0b013e3181eae5ec
- Budden J. S., Zhong E. H., Moulton P. & Cimiotti J. P. (2013) Highlights of the national workforce survey of registered nurses. *Journal of Nursing Regulation*, 40(2), 5-14.
- Carvalho P. (2011) *Estudo da Fadiga por Compaixão nos Cuidados Paliativos em Portugal: Tradução e Adaptação Cultural da Escala Profissional Quality of Life 5* (Unpublished master dissertation). Universidade Católica Portuguesa, Porto.
- Cohen-Katz J., Wiley S. D., Capuano T., Baker D. M., Kimmel S. & Shapiro S. (2005) The effects of mindfulness-based stress reduction on nurse stress and burnout, part II: A quantitative and qualitative study. *Holistic nursing practice*, 19, 26–35.
- Davis M. H. (1983) Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, 44, 113-126.
- Decety J. & Svetlova, M. (2012) Putting together phylogenetic and ontogenetic perspectives on empathy. *Developmental cognitive neuroscience* 2(1), 1–24. doi: 10.1016/j.dcn.2011.05.003
- Del Canale S., Lopuis D. Z., Maio V., Wang X., Rossi G., Hojat M. & Gonnella J. S. (2012) The relationship between physician empathy and disease complications: An empirical study of primary care physicians and their diabetic patients in Parma, Italy. *Academic Medicine*, 87, 1243–1249. doi: 10.1097/ACM.0b013e3182628fbf
- Di Blasi Z. D., Harkness E., Ernest E., Georgiou A. & Kleijnen J. (2001) Influence of context effects on health outcomes: A systematic review. *Lancet*, 357, 757–762. doi: 10.1016/S0140-6736(00)04169-6

- Epstein R. M., Hadee T., Carroll J., Meldrum S. C., Lardner J. & Shields C. G. (2007) "Could this be something serious?" Reassurance, uncertainty, and empathy in response to patients' expressions of worry. *Journal of General Internal Medicine*, 22(12), 1731–1739. doi: 10.1007/s11606-007-0416-9
- Figley C. R. (2002) Compassion fatigue: Psychotherapists' chronic lack of self care. *Journal of Clinical Psychology*, 58(11), 1433–1441. doi: 10.1002/jclp.10090
- Figley C. R. (2012) The empathic response in clinical practice: Antecedents and consequences. In: Decety J. (Ed.) *Empathy: From Bench to Bedside*. Cambridge: MIT Press, 263-273.
- Gleichgerricht E. & Decety, J. (2013) Empathy in clinical practice: How individual dispositions, gender, and experience moderate empathic concern, burnout, and emotional distress in physicians. *PLoS ONE*, 8(4), e61526. doi:10.1371/journal.pone.0061526
- Hayes A. F. (2013) *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
- Heinen M. M., van Achterberg T., Schwendimann R., Zander B., Matthews A., Kózka M., ... Schoonhoven L. (2013) Nurses' intention to leave their profession: A cross sectional observational study in 10 European countries. *International Journal of Nursing Studies*, 50, 174–184. doi: 10.1016/j.ijnurstu.2012.09.019
- Hoffman M. L. (2000) *Empathy and moral development – implications for caring and justice*. New York: Cambridge University Press.
- Hojat M., Louis D. Z., Markham F. W., Wender R., Rabinowitz C. & Gonnella J. S. (2011) Physicians' empathy and clinical outcomes for diabetic patients. *Academic Medicine*, 86(3), 359–364. doi: 10.1097/ACM.0b013e3182086fe1
- Jenkins S. R. & Baird, S. (2002) Secondary traumatic stress and vicarious trauma: A validation study. *Journal of Traumatic Stress*, 15, 423–432.
- Lamothe M., Boujut E., Zenasni F. & Sultan S. (2014) To be or not to be empathic: the combined role of empathic concern and perspective taking in understanding burnout in general practice. *BMC Family Practice*, 15, 15. doi:10.1186/1471-2296-15-15

- Leith K. P. & Baumeister R. F. (1998) Empathy, shame, guilt, and narratives of interpersonal conflicts: Guilt-prone people are better at perspective taking. *Journal of Personality*, 66(1), 1-37.
- Limpo T., Alves R. A. & Castro S. L. (2010) Medir a empatia: Adaptação do Índice de Reactividade Interpessoal [Portuguese adaptation of the Interpersonal Reactivity Index]. *Laboratório de Psicologia*, 8, 171-184.
- Locke G. W., Shilkret R., Everett J. E. & Petry N. M. (2015) Interpersonal guilt and substance use in college students. *Substance Abuse*, 36(1), 113-118, doi: 10.1080/08897077.2014.885482
- Mackenzie C. S., Poulin P. A. & Seidman-Carlson R. (2006). A brief mindfulness-based stress reduction intervention for nurses and nurse aides. *Applied Nursing Research*, 19, 105-109. doi: 10.1016/j.apnr.2005.08.002
- O'Connor L. E., Rangan R., Berry J., Stiver D., Hanson R., Ark W. & Li T. (2015) Empathy, compassionate altruism and psychological well-being in contemplative practitioners across five traditions. *Psychology*, 6, 989-1000. doi: 10.4236/psych.2015.68096.
- O'Connor L. E., Berry J. W. & Weiss J. (1999) Interpersonal guilt, shame, and psychological problems. *Journal of Social and Clinical Psychology*, 18(2), 181-203.
- O'Connor L. E., Berry J. W., Lewis T. B. & Stiver D. J. (2012) Empathy-based pathogenic guilt, pathological altruism, and psychopathology. In: Oakley B, Knafo A., Madhavan G. & Wilson D. S. (Eds.) *Pathological altruism*. New York: Oxford University Press., 368–383
- O'Connor L. E., Berry J. W., Weiss J. & Gilbert P. (2002) Guilt, fear, submission and empathy in depression. *Journal of Affective Disorders*, 71, 19-27.
- O'Connor L. Berry J. Weiss J. Bush M. & Sampson H. (1997) Interpersonal guilt: The development of a new measure. *Journal of Clinical Psychology*, 53, 73–89.
- Preacher K. J. & Hayes A. F. (2004) SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers*, 36(4), 717–731.
- Preacher K. J. & Hayes A. F. (2008) Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879-891. doi: 10.3758/BRM.40.3.879

- Rakel D., Barrett B., Zhang Z., Hoeft T., Chewning B., Marchand L. & Sheder J. (2011) Perception of empathy in the therapeutic encounter: Effects on the common cold. *Patient Education Counselling*, 85, 390–397. doi: 10.1016/j.pec.2011.01.009
- Sekol M. A. & Kim S. C. (2014) Job satisfaction, burnout, and stress among pediatric nurses in various specialty units at an acute care hospital. *Journal of Nursing Education and Practice*, 4(12), 115-124. doi: 10.5430/jnep.v4n12p115
- Stamm B. H. (2010) *The Concise ProQOL Manual, 2nd Ed.* Pocatello, ID: ProQOL.org.
- Tangney J. P. (1991) Moral affect: The good, the bad, and the ugly. *Journal of Personality and Social Psychology*, 61, 598-607.
- Thomas M. R., Dyrbye L. N., Huntington J. L., Lawson K. L., Novotny P. J., Sloan J, A. & Shanafelt T. D. (2007) How do distress and well-being relate to medical student empathy? A multicenter study. *Journal of General Internal Medicine*, 22(2), 177–183. doi: 10.1007/s11606-006-0039-6
- Walsh M. & Buchanan M. J. (2011) The experience of witnessing patients' trauma and suffering among acute care nurses. *Canadian Journal of Counselling and Psychotherapy*, 45(4), 349-364.
- Zahn-Waxier C. & Kochanska G. (1990) The origins of guilt. In: Thompson R. A. (Ed.) *The Nebraska symposium on motivation 1988: Socioemotional development (Vol. 36)*. Lincoln: University of Nebraska Press, 182-258.

The protective role of empathy, self-compassion and psychological flexibility on oncology nurses' burnout and compassion fatigue symptoms¹¹

Abstract

Purpose: This study explored the role of several psychological factors on professional quality of life in nurses. Specifically, we tried to clarify the relationships between several dimensions of empathy, self-compassion, and psychological inflexibility or experiential avoidance, and positive (compassion satisfaction) and negative (burnout and compassion fatigue) domains of professional quality of life.

Methods: Using a cross-sectional design, a convenience sample of 221 oncology nurses recruited from several public hospitals filled out a battery of self-report measures.

Results: Results suggested that nurses that benefit more from their work of helping and assisting others seem to have more empathic feelings and sensibility towards others in distress and make an effort to see things from others' perspective; they are less disturbed by negative feelings associated with seeing others' suffering and are more self-compassionate. Nurses more prone to experience the negative consequences associated with care-providing (burnout and compassion fatigue) are more self-judgmental and have more psychological inflexibility; they also experience more personal feelings of distress when seeing others in suffering and less feelings of empathy and sensibility to others' suffering. Psychological factors explained 39% of compassion satisfaction, 35% of burnout and 17% of compassion fatigue.

¹¹ Duarte, J., & Pinto-Gouveia, J. (2016). The protective role of empathy, self-compassion and psychological flexibility on oncology nurses' burnout and compassion fatigue symptoms. *Manuscript submitted for publication.*

Conclusion: We discuss the results in terms of the importance of taking into account the role of these psychological factors in oncology nurses' professional quality of life, and of designing nursing education training and interventions aimed at targeting such factors.

Introduction

Most of the research looking at professional quality of life has examined the role of demographic variables (such as professional experience, gender) and situational factors (such as workload, time pressure, role conflicts, job control, etc.). Relatively little attention has been paid to intrapersonal variables or psychological dispositions, which may influence nurses', and other healthcare providers', capacity to effectively cope with the potential negative effects associated with their work.

The purpose of this study is to explore the relationships between several psychological dispositions (namely empathy, self-compassion, and psychological inflexibility), and professional quality of life (compassion fatigue, burnout, and compassion satisfaction) in a sample of registered oncology nurses.

Empathy

There have been many definitions of empathy (Batson, 2009). In general, "empathy occurs when observing or even simply imagining another person's affective state triggers an isomorphic affective response. The person experiencing empathy is aware that the source of his or her emotional response is the other person's affective state" (Klimecki and Singer, 2012, p. 370; Singer and Lamm, 2009). Current approaches informed by findings from social neuroscience suggest that empathy is a multidimensional psychological phenomenon (e.g., Decety and Svetlova, 2012). For example, several researchers differentiate between the cognitive and affective aspects of empathy (e.g., Davis, 1983). While cognitive empathy is defined as

understanding what the other person is feelings and thinking, affective empathy is related to the ability to feel what the other person is feelings. Also, when witnessing another's negative state, some people experience self-oriented responses, such as feelings of distress and anxiety, also known as personal distress; while others may experience other-focused responses, with feelings that focus on the well-being of the other person, labeled empathic concern (Batson et al., 1987; Davis, 1983; Decety and Lamm, 2011). Empathy is a core feature of the patient-healthcare professional relationship, and is associated with greater patient satisfaction (Epstein et al., 2007). However, there can be costs associated with empathy (Hodges and Biswas-Diener, 2007). Being overly sensitive to patients' suffering can lead to deleterious effects, such as burnout or compassion fatigue (Figley, 2002; 2012), especially if one lacks adequate emotional regulation and control (Decety et al., 2010).

Self-compassion

Self-compassion has been recently suggested as an effective way to deal with negative emotions. Self-compassion "involves being touched by and open to one's own suffering, not avoiding or disconnecting from it, generating the desire to alleviate one's suffering and to heal oneself with kindness. Self-compassion also involves offering nonjudgmental understanding to one's pain, inadequacies and failures, so that one's experience is seen as part of the larger human experience" (Neff, 2003a, p. 87). This definition entails the three components of self-compassion, namely self-kindness (as opposed to self-judgment), mindfulness (as opposed to identification with negative thoughts or emotions), and common humanity (as opposed to feeling isolated by one's problems or shortcomings).

A vast research literature suggests that self-compassion is associated with less psychological symptoms (MacBeth and Gumley, 2012), with positive psychological characteristics such as wisdom, happiness, well-being and emotional intelligence (Hollis-Walker and Colosimo, 2011; Neff et al., 2007,

2005), and with interpersonal outcomes, such as empathy, altruism, and forgiveness (Neff and Pommier, 2013).

Experiential avoidance

Experiential avoidance can be defined as “a verbal process that involves the unwillingness to remain in contact with particular thoughts, feelings, memories, bodily sensations or behavioral predispositions and the direct and deliberate attempts to alter the form and frequency of those events or the context in which they appear” (Hayes et al., 1996, p.1154). Experiential avoidance is conceptualized as one of the core processes of psychological inflexibility, which broadly refers to an individual’s inability to embrace and connect with the experiences in the present moment, even when it compromises the attainment of important values (Hayes et al., 2006, 1999). Although adopting experiential avoidance as a way to deal with stressor may provide a short-term relief from discomfort, it may lead to negative consequences in the long-run. Experiential avoidance is associated with lowered functioning in both clinical and non-clinical populations and a broad range of psychological and behavioral problems, including depression, anxiety, substance abuse, and PTSD symptoms (Boulanger et al., 2010). In contrast to the large body of research on experiential avoidance across several conditions and populations, only one study to our knowledge explored the association between experiential avoidance and burnout syndrome, in a small sample of critical care nurses in Spain (Losa Iglesias et al., 2010).

Professional Quality of Life

There has been a growing recognition of the effects of indirect, secondary exposure to trauma on helping professionals, such as compassion fatigue, or secondary traumatic stress, and burnout. The term compassion fatigue has emerged in the literature in recent years and has been used interchangeably with secondary traumatic stress and vicarious trauma, because it is used to describe secondary stress reactions (e.g., re-experiencing the traumatic events, avoidance/ numbing of reminders, and persistent arousal) related to

the provision of care to people who experienced some form of trauma or severe stress (Figley, 1995; Stamm, 2010).

Burnout has been described a form of job stress characterized by emotional exhaustion, depersonalization and reduced personal accomplishment (Maslach et al., 2001). By its definition, burnout can affect any worker in any professional field, while compassion fatigue is specific to professionals in helping contexts (healthcare professionals, teachers, police officers), who are in contact with the suffering of others. Given the nature of their work, it has been suggested that nurses may be particularly vulnerable to develop compassion fatigue (Joinson, 1992).

In the opposite end of job-related stress, and less discussed in the literature, is the experience of fulfillment and satisfaction resulting from the work of caring for others, also known as compassion satisfaction (Stamm, 2010), which is also an intrinsic aspect of professional quality of life.

Oncology nursing is one of the areas most affected by occupational stress and burnout (e.g., Barnard et al., 2006; Potter et al., 2010). In addition to the well-documented stressors found in other areas, oncology nurses face additional challenges associated with the management of complex pathologies with poor prognosis, close and constant contact with patients who are in severe pain, distress and approaching death, and difficult patient and family situations, which may put them at greater risk of job dissatisfaction, stress and burnout.

Despite the high prevalence rates of burnout and work-related distress and its recognized deleterious consequences, there is a dearth of literature pertaining to burnout, and especially compassion fatigue, in oncology nurses. In addition, the role of psychological dispositions as risk factors for burnout and compassion fatigue remains understudied, not only in oncology nurses but in healthcare workers in general. In particular, self-compassion and psychological flexibility are widely recognized as important factors for well-

being across conditions and populations, but few studies to date investigated their role on professional quality of life.

This study aims to explore and clarify the links between several dispositional factors (including empathy, self-compassion, and experiential avoidance) and compassion fatigue, burnout, and compassion satisfaction in oncology nurses.

Method

Participants and Procedures

A total of 221 registered nurses from public hospitals participated in the study. This study is part of a larger project exploring the role of psychological factors on professional quality of life. Participants were recruited from five public hospitals from Portugal's north and center regions. Two were oncology hospitals and three were general hospitals with oncology/palliative care units. After approval of hospitals' ethics committees, department chief nurses were contacted by the researcher who explained the study aims and the importance of participation. Department chief nurses were asked to advertise the study among the nurses in their services and to deliver and receive the questionnaire pack from those who agreed to participate. All participants provided their written informed consent. The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans was followed.

Measures

The Portuguese versions of the following scales were used.

The Professional Quality of Life Scale, version 5 (ProQOL-5; Stamm, 2010). The ProQOL is a 30-item self-report measure composed of three subscales: compassion satisfaction, defined as the "pleasure derived from being able to do one's work (helping others) well"; burnout, defined as "feelings of

hopelessness and difficulties in dealing with work or in doing one's job effectively"; and secondary traumatic stress (STS), defined as "work-related, secondary exposure to people who have experienced extremely or traumatically stressful events" (Stamm, 2010, p. 12-13). We will use the term 'compassion fatigue' to refer to this factor. Respondents are instructed to indicate how frequently each item was experienced in the previous 30 days, on a 5-item Likert scale (from 1 = never to 5 = very often). Scoring requires summing the item responses for each 10-item subscale. In the present study, Cronbach's alpha was .88 for compassion satisfaction, and .75 for burnout and .67 for compassion fatigue.

Interpersonal Reactivity Index (IRI; Davis, 1983). This scale measures perspective taking (7 items; e.g., 'I try to look at everybody's side of a disagreement before I make a decision'), empathic concern (7 items; e.g., 'I often have tender, concerned feelings for people less fortunate than me'), personal distress (7 items; e.g., 'I sometimes feel helpless when I am in the middle of a very emotional situation') and fantasy (6 items; 'I really get involved with the feelings of the characters in a novel.'). Perspective taking is considered a cognitive component of empathy, while empathic concern and personal distress are considered the affective component. Respondents are instructed to rate how well each statement describes them on a 5-point Likert scale (from 0 = not well to 4 = very well). The scale has been found to be reliable in past research (Davis, 1983; Limpo et al., 2010). Cronbach's alpha for the present sample were .71 for empathic concern, .74 for personal distress, and .67 for perspective taking. The subscale "fantasy" was not included as it was not relevant to the current study.

Self-Compassion Scale (SCS; Neff, 2003b). The SCS is a widely used self-report measure developed to assess six components of self-compassion: self-kindness (5 items: "I try to be understanding and patient toward those aspects of my personality I don't like"); self-judgment (5 items: "I'm disapproving and judgmental about my own flaws and inadequacies"); common humanity (4

items: “I try to see my failings as part of the human condition”); isolation (4 items: “When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world”); mindfulness (4 items: “When something painful happens I try to take a balanced view of the situation”); and over-identification (4 items: “When I’m feeling down I tend to obsess and fixate on everything that’s wrong”). Scores on the six subscales were summed (after reverse-coding negative items) to create a self-compassion score. Items are rated on a 5-point scale (e.g., 1 = ‘almost never’ to 5 = ‘almost always’). The SCS has adequate construct and convergent validity (Neff, 2003b). The Portuguese version of the scale also showed good internal consistency and validity (AUTHORS, 2015). In the present study, Cronbach’s alpha was .91.

Acceptance and Action Questionnaire – II (AAQ-II; (Bond et al., 2011). The AAQ-II is a 7-item measure of experiential avoidance. Answers are given on a 7-point scale ranging from 1= never true to 7 = always true. The Portuguese version of the scale showed good internal consistency ($\alpha = .89$) and good convergent and discriminant validity (AUTHORS, 2012). In the present study, Cronbach’s alpha was .92.

Statistical Analyses

Several statistical methodologies were employed to explore the relationships between individual dispositions and professional quality of life. Initially, the association between the variables in study was explored using Pearson’s coefficient correlations. Values of .10 represent a small effect, .30 is a medium effect and .50 is a large effect. For example, a value of .50 suggests that the two variables share 25% of variance. Hierarchical multiple regressions were then conducted to test the predictive power of the psychological variables on professional quality of life (compassion satisfaction, compassion fatigue and burnout). Hierarchical multiple regression is useful to explore the contribution of each variable over and beyond previously entered variables (Tabachnick and Fidell, 2013). Assumptions of linearity and multicollinearity were

checked. Student's *t* tests were used to explore mean differences between two categories (e.g., gender). Statistical significance was set at .05 and IBM SPSS version 23 was used for all analyses.

Results

Demographic Profile and Professional Background

The present sample had a mean age of 39.06 ($SD = 8.85$), ranging between 24 and 58 years of age; the majority of participants were female ($n = 196$; 91.2%) and married ($n = 103$; 47.9%). Also, the mean years of schooling was 15.37 ($SD = 2.25$). Participants had on average 16.25 ($SD = 8.89$) years of practice. This sample was found to be quite similar to other international samples of nurses (Budden et al., 2013; Heinen et al., 2013).

Dispositional Measures

Empathy, self-compassion and experiential avoidance.

Descriptive statistics are presented in Table 2. Mean values for empathy subscales were similar to previous studies (e.g., Davis, 1983), as were mean values for self-compassion (e.g., AUTHORS, 2015), and experiential avoidance (e.g., Bond et al., 2011). All scales presented appropriate levels of skewness and kurtosis, indicating normal or close to normal distribution.

Professional quality of life.

The proportion of participants classified into the low, average and high levels of the ProQOL components are presented in Table 1. Approximately 25% of the nurses in the sample presented high scores of burnout and compassion fatigue, and low scores of compassion satisfaction.

Table 1.
*Proportion of Participants Classified into the Bottom
 Quartile, Mean and Top Quartile of the ProQOL
 Components (N = 221)*

		<i>N</i>	<i>%</i>
Compassion Satisfaction	Low	59	26.7
	Average	106	48.0
	High	56	25.3
Burnout	Low	43	19.5
	Average	119	53.8
	High	59	26.7
Compassion Fatigue	Low	29	13.1
	Average	137	62.0
	High	55	24.9

Note. Compassion satisfaction: low ≤ 44 , high ≥ 57 ; Burnout: low ≤ 43 , high ≥ 56 ; Compassion Fatigue: low ≤ 42 , high ≥ 56 . Cut-off scores proposed by the original manual.

The Effect of Gender and Years of Practice on Professional Quality of Life

There were no significant differences between men and women on professional quality of life dimensions: compassion satisfaction ($t_{(213)} = 1.73$, $p = .086$), burnout, ($t_{(213)} = -.33$, $p = .74$), and compassion fatigue ($t_{(231)} = .51$, $p = .609$). Age was significantly associated with compassion satisfaction ($r = .19$, $p < .05$) and burnout ($r = -.14$, $p < .05$).

Years of practice correlated significantly with compassion satisfaction ($r = .17$, $p < .05$), and burnout ($r = -.14$, $p < .05$). However, no significant differences were found after controlling for the effect of age, suggesting that the years of experience do not independently influence the dispositional variables. Years in the current position significantly correlated with burnout ($r = .19$, $p < .05$) and compassion fatigue ($r = .14$, $p < .05$), even when controlling for age.

The Effect of Psychological Variables on Professional Quality of Life

Correlation analysis.

Correlations between the variables in study are presented in Table 2. As expected, compassion satisfaction was positively associated with cognitive and affective empathy and self-compassion, and negatively associated with burnout, experiential avoidance, and personal distress. Burnout and compassion fatigue were positively associated with experiential avoidance, and negatively associated with self-compassion. Burnout was also positively associated with personal distress and negatively with perspective taking. Finally, compassion fatigue was positively associated with empathic concern.

Table 2.

Pearson's Product-moment Correlation Coefficients Between all Variables in Study (N = 221)

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Compassion Satisfaction	49.93	10.11	1						
2. Burnout	50.01	9.80	-.67**	1					
3. Compassion Fatigue	50.57	9.58	-.04	.42**	1				
4. Experiential Avoidance	19.40	8.40	-.22**	.47**	.36**	1			
5. Perspective taking	16.70	2.94	.43**	-.23*	.06	.06	1		
6. Empathic concern	17.70	3.27	.38**	-.09	.21*	.20*	.61**	1	
7. Personal distress	9.41	3.82	-.38**	.23**	.06	.31**	-.28**	-.04	1
8. Self-compassion	82.86	14.03	.35**	-.51**	-.24**	-.61**	.18*	-.13	-.34**

Note. * $p < .05$; ** $p < .01$

Hierarchical regression.

Table 3 presents the results of the hierarchical regressions for each domain of professional quality of life.

Empathic concern significantly predicted higher levels of compassion satisfaction and compassion fatigue. Personal distress significantly predicted lower levels of compassion satisfaction and higher levels of burnout.

Adding self-compassion significantly increased the variance explained in all models. Self-compassion significantly predicted higher levels of compassion satisfaction and lower levels of burnout and compassion fatigue.

Finally, experiential avoidance significantly predicted higher levels of burnout and compassion fatigue, but not compassion satisfaction.

Results for the final steps of each model indicated that, when all variables were entered, empathic concern ($\beta = .39, p < .001$), personal distress ($\beta = -.24, p = .004$), and self-compassion ($\beta = .28, p = .003$) significantly predicted compassion satisfaction and explained 39% of the variance; self-compassion ($\beta = -.33, p = .001$) and experiential avoidance ($\beta = .31, p = .001$) predicted burnout and explained 35% of the variance; and experiential avoidance ($\beta = .33, p = .003$) predicted compassion fatigue and explained 17% of the variance.

Table 3.

Hierarchical Regression Analysis Summary for Psychological Dispositions

Variables Predicting Professional Quality of Life (N = 221)

	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	ΔR^2
Compassion Satisfaction					
Step 1				.30	
Perspective Taking	0.38	0.33	.12		
Empathic Concern	0.83	0.27	.30*		
Personal Distress	-0.84	0.20	-.35*		
Step 2				.39	.08**

Self-compassion	0.22	0.05	.32**		
Step 3				.39	.00
Experiential avoidance	-0.07	0.11	-.07		
<hr/>					
Burnout					
Step 1				.08	
Perspective Taking	-0.53	0.40	-.16		
Empathic Concern	0.06	0.33	.02		
Personal Distress	0.51	0.23	.20*		
Step 2				.29	.21*
Self-compassion	-0.35	0.06	-.51*		
Step 3				.35	.06*
Experiential avoidance	0.39	0.12	.31*		
<hr/>					
Compassion Fatigue					
Step 1				.05	
Perspective Taking	-0.38	0.45	-.10		
Empathic Concern	0.89	0.37	.27*		
Personal Distress	0.10	0.26	.04		
Step 2				.11	.06*
Self-compassion	-0.21	0.07	-.26**		
Step 3				.17	.06*
Experiential avoidance	0.45	0.15	.33**		

Note. * $p < .05$; ** $p < .01$; ΔR^2 = change in R^2

Discussion

The current study explored the way individual dispositions, such as empathy, self-compassion, and experiential avoidance, and age, gender, and practice in nursing, impact on professional quality of life, in its positive (compassion satisfaction) and negative components (compassion fatigue and burnout).

Professional Quality of Life and Socio-Demographic Variables

There were no significant differences between female and male nurses in professional quality of life scores. Research has produced mixed results regarding the role of gender on professional quality of life. In a recent meta-analysis, women exhibited more burnout than men, which was not found in the present study (Purvanova and Muros, 2010), but other studies failed to find such differences (Stamm, 2010). Results for nurses in particular also seem to suggest more burnout (specifically emotional exhaustion) in women (Innstrand et al., 2011). Regarding compassion satisfaction, results from a large data bank also found no significant differences across gender (Stamm, 2010) and a recent study found that men scored higher in compassion satisfaction, although with small effect sizes (Gleichgerrcht and Decety, 2013).

Professional experience had no impact on professional quality of life when the effect of age was controlled for. This result is consistent with previous findings (Gleichgerrcht and Decety, 2013; Potter et al., 2010; Stamm, 2010). We also found that more time in the current position was associated with greater levels of burnout, which was not found in previous studies (e.g, Vargas et al., 2014).

Professional Quality of Life and Psychological Variables

Regarding empathy, results from regression analysis indicated that empathic concern and personal distress predicted compassion satisfaction. This suggests that having concern for others in distress, rather than self-focused aversive emotional states, is good as it contributes to the nurses' sense of

meaning and accomplishment in their work. Since compassion satisfaction is related to the nurse's sense of satisfaction in helping others, it makes sense conceptually that higher levels of concern for patients would contribute to an increased satisfaction in doing the work of helping. Similar results were found in a previous study with physicians (Gleichgerrcht and Decety, 2013).

Empathic concern also predicted lower levels of burnout, suggesting that feelings of care and concern may be protective factors for burnout, which has been previously suggested (e.g., Halpern, 2003). However, the cross-sectional nature of this study does not allow to establish causal directions and the inverse relation may also be true. In fact, several studies have shown that in professionals suffering from burnout empathic capabilities are significantly diminished (e.g., Brazeau et al., 2010).

Interestingly, empathic concern predicted higher levels of compassion fatigue. This finding suggests that beyond a certain level empathic feelings and sensibility to others' suffering may be a vulnerability factor for the development of compassion fatigue, which has been proposed in the literature (Figley, 2002; 2012) but not yet empirically supported. These finding also highlights important phenomenological differences between compassion fatigue and burnout, which should be taken into account when designing interventions.

Personal distress, the set of self-oriented negative emotions resulting from witnessing others in distress, was associated with lower levels of compassion satisfaction and higher scores of burnout. These results are in line with previous studies in different samples of health care professionals (e.g., Gleichgerrcht and Decety, 2013; Thomas, 2012). This has major implications for care providers. Given that personal distress is characterized by negative affectivity and is associated with a reduced urge to help those who are suffering this could translate in practice into the nurse avoiding the patient or giving reduced attention to the case, having a weakened therapeutic relationship or experiencing bias which might affect effective caring and job

satisfaction. In fact, personal distress has been associated with difficulty in communication with patients and social competencies (Riggio and Taylor, 2000) and with frequency of clinical errors and speed of recognizing errors in practicing professionals (Larson et al., 2010; West et al., 2006).

Self-compassion predicted higher levels of compassion satisfaction and lower levels of compassion fatigue. In previous studies it was found that self-compassion was associated with less rumination (Johnson and O'Brien, 2013; Raes, 2010), avoidance (Krieger et al., 2013) and suppression (Leary et al., 2007) and with more emotion validation (Leary et al., 2007). These psychological characteristics may render self-compassionate individuals less vulnerable to distress. Also, self-compassionate people may be more other-focused when witnessing others in pain and suffering. In previous studies it was found that self-compassion was associated with more compassion for others and prosocial behaviors (Lindsay and Creswell, 2014; Neff and Pommier, 2013; Welp and Brown, 2014). Klimecki and Singer (2012) argue that compassion for others can protect against the risk of burnout and compassion fatigue. The authors propose that the other-oriented focus of the compassionate response prevents identification with the suffering of others and allows for regulation of negative feelings caused by the empathic response. Thus, when witnessing patients' suffering or pain self-compassionate nurses may be more able to adopt an other-focused perspective which may prevent their empathic feelings from turning into personal distress and compassion fatigue.

Finally, experiential avoidance significantly predicted higher levels of burnout and especially compassion fatigue. This suggests that the more nurses see their thoughts, feelings, memories, physical sensations, or other internal experiences, as "bad" or "unwanted" and as a consequence make efforts to control or avoid them, the more they experience burnout and compassion fatigue. In the context of healthcare, caregivers frequently have to cope with the experience of traumatic memories, negative thoughts, unpleasant

emotions and physiological sensations associated with the constant exposure to suffering, trauma and losses. This is especially true in oncology nursing. While experiential avoidance can provide some relief of discomfort in the short-term, it ultimately becomes maladaptive, increasing distress and getting in the way of other important and valued aspects of life. The finding that experiential avoidance was more strongly related to compassion fatigue than to burnout may be explained by their distinct phenomenological nature. Compassion fatigue differs from burnout in that it primarily represents the experience of secondary trauma, probably including intrusive thoughts or images, numbing or distancing reactions, and persistent arousal. Several studies point to the role of experiential avoidance in the development and maintenance of post-traumatic stress disorder (e.g., Plumb et al., 2004). Thus, individuals with compassion fatigue may develop coping behaviors similar to those common in post-trauma reactions, including experiential avoidance.

Overall, our results suggest that several psychological dispositions are differently associated with the positive and negative dimensions of professional quality of life. Individuals that seem to benefit more from their work of helping and assisting others seem to have more empathic feelings and sensibility towards others in distress and make an effort to see things from the other's perspective. At the same time, they are less disturbed by negative feelings associated with seeing others' suffering and are more self-compassionate when in distress. On the contrary, individuals more prone to experience the negative consequences associated with care providing seem to be more self-judgmental, over-identify with their negative thoughts and feelings, feel cut off from others when in distress, and to have more psychological inflexibility. Also, they experience more personal feelings of distress when seeing others in suffering and less feelings of empathy and sensibility to others' suffering.

These results suggest that nurses' psychological dispositions may be important vulnerability and maintenance factors for burnout and compassion fatigue and at the same prevent compassion satisfaction.

Although the cross-sectional nature of the study does not allow to infer causality between the variables, several hypotheses may be drawn from these findings. For example, we hypothesize that self-compassion and experiential avoidance may be mediators/moderators of the relationship between empathy and burnout/compassion fatigue. Thus, when witnessing patients' suffering and pain self-compassionate nurses may be able to regulate their empathic feelings in a way that reduces their negative impact, probably by accepting distressful feelings with kindness and holding negative experiences in mindful awareness rather than judging and identifying with them, or trying to control and avoid them. The associations between self-compassion, experiential avoidance and empathy lend some support to this hypothesis.

Implications

Findings from this study suggest that oncology nurses who are most vulnerable to burnout and compassion fatigue are those who have difficulties regulating their negative internal states, indicated by their low levels of self-compassion and high levels of experiential avoidance. These nurses are also less empathic but at the same time experience high levels of distress when witnessing others' suffering. Given the nature of their work, the ability to empathize with their patients and to manage one's emotions is crucial to provide effective care, to promote patients' satisfaction and also to cultivate one's well-being and satisfaction with work. Thus, training programs aimed at improving professional well-being should include components targeting adaptive empathy, self-compassion and psychological flexibility.

Mindfulness-based interventions have been shown to be effective in promoting self-compassion (e.g., Birnie et al., 2010) and also compassion for others (Wallmark et al., 2013). In addition, it has been suggested that experiential avoidance may be a mechanism of change in mindfulness-based

interventions (e.g., Weinrib, unpublished). A recent review suggests that mindfulness-based interventions can increase self-compassion and other-focused concern in healthcare professionals (Boellinghaus et al., 2012). Also, some studies have provided evidence that such interventions may be particularly effective to reduce burnout in nurses (e.g., Cohen-Katz et al., 2005; Mackenzie et al., 2006).

Also, it was recently found that burnout symptoms were associated with impairments in several cortical areas associated with high-order cognitive function (e.g., dorsolateral prefrontal cortex, posterior cingulate cortex, frontal gyrus), which may explain how burnout impact on clinical reasoning and the quality of patient care (Durning et al., 2013). Interestingly, recent findings from functional neuroimaging studies are suggesting that mindfulness may change brain function in these same areas (e.g., Marchand, 2014).

Limitations

Although these findings are very promising, several limitations should be taken into account. First, the cross-sectional nature of this study does not allow to draw causality inferences between the psychological dispositions and professional quality of life. In future, experimental and longitudinal studies could test particular hypotheses based on the present findings. Also, the sample size was small and participants were mainly women, which limits the generalizability of these findings. However, the proportion of female and male nurses in our sample matches other international samples. We used a convenience sample of hospitals and nurses which, by being a nonprobability sampling method, may not adequately represent the population. In addition, the data was derived entirely through self-report measures and thus is subject to the limitations associated with this type of methodology (e.g., response bias, introspective ability). There is some controversy, for example, over how well self-report measures of empathy predict empathic action and behavior (e.g., Melchers et al., 2015). Future studies should find alternative ways to measure these processes (functional neuroimaging studies; observational and

experimental studies; qualitative data) to further enhance the understanding of the complex relations between the psychological dispositions and professional quality of life. Finally, the psychological variables used in this study explained only a part of the variation in professional quality of life, suggesting that other variables not explored in the present study may also play an important role. This should also be addressed in future studies.

Conclusion

The constant exposure to the suffering of others places high emotional demands on oncology nurses and other healthcare professionals, making them vulnerable to burnout and compassion fatigue as a result of this exposure. Although interventions targeting work-site factors, such as workload and time pressure, social support or job security, may be helpful in reducing burnout, they can be difficult to implement at times, and may not adequately address the problem of burnout, and especially compassion fatigue. Interventions and training programs aimed at targeting psychological factors such as the ones explored in the present study may improve the individual's ability to cope with stress and thus may be an alternative and effective pathway to the prevention and treatment of burnout and compassion fatigue.

References

- Author (2012). Reference blinded for review.
- Author (2015). Reference blinded for review.
- Barnard, D., Street, A., Love, A.W., 2006. Relationships between stressors, work supports, and burnout among cancer nurses. *Cancer Nurs.* 29, 338-345. doi: 10.1097/00002820-200607000-00013
- Batson, C.D., Fultz, J., Schoenrade, P.A., 1987. Distress and empathy: two qualitatively distinct vicarious emotions with different motivational consequences. *J. Pers.* 55, 19–39. doi:10.1111/j.1467-6494.1987.tb00426.x
- Batson, D.C., 2009. These things called empathy: Eight related but distinct phenomena, in: Decety, J., Williams, I. (Eds.), *The Social Neuroscience of Empathy*. Social Neuroscience. MIT Press, Cambridge, MA, pp. 3–16. doi:10.7551/mitpress/9780262012973.001.0001
- Birnie, K., Speca, M., Carlson, L.E., 2010. Exploring self-compassion and empathy in the context of mindfulness-based stress reduction (MBSR). *Stress Heal.* 26, 359–371. doi:10.1002/smi.1305
- Boellinghaus, I., Jones, F.W., Hutton, J., 2012. The Role of Mindfulness and Loving-Kindness Meditation in cultivating self-compassion and other-focused concern in health care professionals. *Mindfulness*, 5, 129–138. doi:10.1007/s12671-012-0158-6
- Bond, F.W., Hayes, S.C., Baer, R.A., Carpenter, K.M., Guenole, N., Orcutt, H.K., Waltz, T., Zettle, R.D., 2011. Preliminary psychometric properties of the Acceptance and Action Questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behav. Ther.* 42, 676–688. doi:10.1016/j.beth.2011.03.007
- Boulanger, J.L., Hayes, S.C., Pistorello, J., 2010. Experiential avoidance as a functional contextual concept., in: Kring, A., Slian, A. (Eds.), *Emotion regulation and psychopathology: A transdiagnostic approach to etiology and treatment*. Guilford Press, New York. pp. 107–136.
- Brazeau, C.M.L.R., Schroeder, R., Rovi, S., Boyd, L., 2010. Relationships between medical student burnout, empathy, and professionalism climate. *Acad. Med.* 85, S33–6. doi:10.1097/ACM.0b013e3181ed4c47
- Budden, J.S., Zhong, E.H., Moulton, P., Cimiotti, J., 2013. Highlights of the National Workforce Survey of Registered Nurses. *J. Nurs. Regul.* 4, 5–14. doi:10.1016/S2155-8256(15)30151-4

- Cohen-Katz, J., Wiley, S., Capuano, T., Baker, D.M., Deitrick, L., Shapiro, S., 2005. The Effects of Mindfulness-based Stress Reduction on nurse stress and burnout. *Holist. Nurs. Pract.* 19, 26–35. doi:10.1097/00004650-200503000-00009
- Davis, M.H., 1983. Measuring individual differences in empathy: Evidence for a multidimensional approach. *J. Pers. Soc. Psychol.* 44, 113–126. doi:10.1037/0022-3514.44.1.113
- Decety, J., Lamm, C., 2011. Empathy versus personal distress: Recent evidence from social neuroscience, in: Decety, J., Ickes, W.J. (Eds.), *The social neuroscience of empathy*. MIT Press, Cambridge, MA, pp. 199–213.
- Decety, J., Svetlova, M., 2012. Putting together phylogenetic and ontogenetic perspectives on empathy. *Dev. Cogn. Neurosci.* 2, 1–24. doi:10.1016/j.dcn.2011.05.003
- Decety, J., Yang, C.Y., Cheng, Y., 2010. Physicians down-regulate their pain empathy response: An event-related brain potential study. *Neuroimage* 50, 1676–1682. doi:10.1016/j.neuroimage.2010.01.025
- Durning, S.J., Costanzo, M., Artino, A.R., Dyrbye, L.N., Beckman, T.J., Schuwirth, L., Holmboe, E., Roy, M.J., Wittich, C.M., Lipner, R.S., van der Vleuten, C., 2013. Functional neuroimaging correlates of burnout among internal medicine residents and faculty members. *Front. Psychiatry.* 4, 1–7. doi:10.3389/fpsy.2013.00131
- Epstein, R.M., Hadee, T., Carroll, J., Meldrum, S.C., Lardner, J., Shields, C.G., 2007. “Could this be something serious?”: Reassurance, uncertainty, and empathy in response to patients’ expressions of worry. *J. Gen. Intern. Med.* 22, 1731–1739. doi:10.1007/s11606-007-0416-9
- Figley, C. R., 2012. The empathic response in clinical practice: Antecedents and consequences, in: Decety, J. (Ed.), *Empathy: From Bench to Bedside*. MIT Press, Cambridge, CA, pp 263-273.
- Figley, C.R., 2002. Compassion fatigue: Psychotherapists’ chronic lack of self care. *J. Clin. Psychol.* 58, 1433-1441. doi:10.1002/jclp.10090
- Figley, C.R., 1995. Compassion fatigue as secondary traumatic stress disorder: An overview, in: Figley, C.R. (Ed.), *Compassion Fatigue: Coping with Secondary Traumatic Stress Disorder in Those Who Treat the Traumatized*. Routledge, New York, pp. 1–20.

- Gleichgerrcht, E., Decety, J., 2013. Empathy in Clinical Practice: How individual dispositions, gender, and experience moderate empathic concern, burnout, and emotional distress in physicians. *PLoS One* 8, e61526. doi:10.1371/journal.pone.0061526
- Hayes, S.C., Luoma, J.B., Bond, F.W., Masuda, A., Lillis, J., 2006. Acceptance and Commitment Therapy: Model, processes and outcomes. *Behav. Res. Ther.* 44, 1-25. doi:10.1016/j.brat.2005.06.006
- Hayes, S.C., Strosahl, K.D., Wilson, K.G., 1999. *Acceptance and Commitment Therapy: An experiential approach to behavior change.* Guilford Press, New York.
- Hayes, S.C., Wilson, K.G., Gifford, E. V, Follette, V.M., Strosahl, K., 1996. Experimental avoidance and behavioral disorders: a functional dimensional approach to diagnosis and treatment. *J. Consult. Clin. Psychol.* 64, 1152–1168. doi:10.1037/0022-006X.64.6.1152
- Heinen, M.M., van Achterberg, T., Schwendimann, R., Zander, B., Matthews, A., Kózka, M., Ensio, A., Sjetne, I.S., Casbas, T.M., Ball, J., Schoonhoven, L., 2013. Nurses' intention to leave their profession: A cross sectional observational study in 10 European countries. *Int. J. Nurs. Stud.* 50, 174–184. doi:10.1016/j.ijnurstu.2012.09.019
- Hodges, S. D., & Biswas-Diener, R., 2007. Balancing the empathy expense account: Strategies for regulating empathic response. In Farrow, T.F.D., Woodruff, P.W.R. (Eds.), *Empathy in Mental Illness.* Cambridge University Press, Cambridge, pp 389–405.
- Hollis-Walker, L., Colosimo, K., 2011. Mindfulness, self-compassion, and happiness in non-meditators: A theoretical and empirical examination. *Pers. Individ. Dif.* 50, 222–227. doi:10.1016/j.paid.2010.09.033
- Iglesias, M.E., Vallejo, R.B. de B., Fuentes, P.S., 2010. The relationship between experiential avoidance and burnout syndrome in critical care nurses: A cross-sectional questionnaire survey. *Int. J. Nurs. Stud.* 47, 30–37. doi:10.1016/j.ijnurstu.2009.06.014
- Innstrand, S.T., Langballe, E.M., Falkum, E., Aasland, O.G., 2011. Exploring within- and between-gender differences in burnout: 8 different occupational groups. *Int. Arch. Occup. Environ. Health.* 84, 813–824. doi:10.1007/s00420-011-0667-y
- Johnson, E.A., O'Brien, K.A., 2013. Self-compassion soothes the savage EGO-threat system: Effects on negative affect, shame, rumination, and

- depressive symptoms. *J. Soc. Clin. Psychol.* 32, 939–963. doi:10.1521/jscp.2013.32.9.939
- Klimecki, O., Singer, T., 2012. Empathic distress fatigue rather than compassion fatigue? Integrating findings from empathy research in psychology and social neuroscience, in: Oakley, B., Kanfo, A., Madhavan, G., Wilson, D.S., (Eds.), *Pathological Altruism*. Oxford University Press, New York, pp. 368–383. doi:10.1093/acprof:oso/9780199738571.003.0253
- Krieger, T., Altenstein, D., Baettig, I., Doerig, N., Holtforth, M.G., 2013. Self-compassion in depression: Associations with depressive symptoms, rumination, and avoidance in depressed outpatients. *Behav. Ther.* 44, 501–513. doi:10.1016/j.beth.2013.04.004
- Larson, M.J., Fair, J.E., Good, D.A., Baldwin, S.A., 2010. Empathy and error processing. *Psychophysiology* 47, 415–424. doi:10.1111/j.1469-8986.2009.00949.x
- Leary, M.R., Tate, E.B., Adams, C.E., Allen, A.B., Hancock, J., 2007. Self-compassion and reactions to unpleasant self-relevant events: the implications of treating oneself kindly. *J. Pers. Soc. Psychol.* 92, 887–904. doi:10.1037/0022-3514.92.5.887
- Limpo, T., Alves, R. a, Catro, S.L., 2010. Medir a empatia : Adaptação portuguesa do Índice de Reactividade Interpessoal. *Laboratório Psicol.* 8, 171–184.
- Lindsay, E.K., Creswell, J.D., 2014. Helping the self help others: Self-affirmation increases self-compassion and pro-social behaviors. *Front. Psychol.* 5, 421. doi:10.3389/fpsyg.2014.00421
- MacBeth, A., Gumley, A., 2012. Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clin. Psychol. Rev.* 32, 545–542. doi:10.1016/j.cpr.2012.06.003
- Mackenzie, C.S., Poulin, P. a, Seidman-Carlson, R., 2006. A brief mindfulness-based stress reduction intervention for nurses and nurse aides. *Appl. Nurs. Res.* 19, 105–109. doi:10.1016/j.apnr.2005.08.002
- Marchand, W.R., 2014. Neural mechanisms of mindfulness and meditation: Evidence from neuroimaging studies. *World J. Radiol.* 6, 471–479. doi:10.4329/wjr.v6.i7.471
- Maslach, C., Schaufeli, W.B., Leiter, M.P., 2001. Job burnout. *Annu. Rev. Psychol.* 52, 397–422. doi:10.1146/annurev.psych.52.1.397

- Melchers, M., Montag, C., Markett, S., Reuter, M., 2015. Assessment of empathy via self-report and behavioural paradigms: Data on convergent and discriminant validity. *Cogn. Neuropsychiatry* 20, 157–171. doi:10.1080/13546805.2014.991781
- Neff, K., 2003a. Self-Compassion: An alternative conceptualization of a healthy attitude toward oneself, *Self Identity* 85–101. doi:10.1080/15298860390129863
- Neff, K., 2003b. The development and validation of a scale to measure self-compassion. *Self Identity* 2, 223–250. doi:10.1080/15298860390209035
- Neff, K.D., Hsieh, Y.-P., Dejitterat, K., 2005. Self-compassion, achievement goals, and coping with academic failure. *Self Identity* 4, 263–287. doi:10.1080/13576500444000317
- Neff, K.D., Pommier, E., 2013. The relationship between self-compassion and other-focused concern among college undergraduates, community adults, and practicing meditators. *Self Identity* 12, 160–176. doi:10.1080/15298868.2011.649546
- Neff, K.D., Rude, S.S., Kirkpatrick, K.L., 2007. An examination of self-compassion in relation to positive psychological functioning and personality traits. *J. Res. Pers.* 41, 908–916. doi:10.1016/j.jrp.2006.08.002
- Plumb, J.C., Orsillo, S.M., Luterek, J.A., 2004. A preliminary test of the role of experiential avoidance in post-event functioning. *J. Behav. Ther. Exp. Psychiatry* 35, 245–257. doi:10.1016/j.jbtep.2004.04.011
- Potter, P., Deshields, T., Divanbeigi, J., Berger, J., Cipriano, D., Norris, L., Olsen, S., 2010. Compassion Fatigue and Burnout: Prevalence among oncology nurses. *Clin. J. Oncol. Nurs.* 14, e56–62. doi:10.1188/10.CJON.E56-E62
- Purvanova, R.K., Muros, J.P., 2010. Gender differences in burnout: A meta-analysis. *J. Vocat. Behav.* 77, 168–185. doi:10.1016/j.jvb.2010.04.006
- Raes, F., 2010. Rumination and worry as mediators of the relationship between self-compassion and depression and anxiety. *Pers. Individ. Dif.* 48, 757–761. doi:10.1016/j.paid.2010.01.023
- Riggio, R.E., Taylor, S.J., 2000. Personality and communication skills as predictors of hospice nurse performance. *J. Bus. Psychol.* 15, 351–359. doi:10.1023/A:1007832320795

- Singer, T., Lamm, C., 2009. The social neuroscience of empathy. *Ann. N. Y. Acad. Sci.* 1156, 81–96. doi:10.1111/j.1749-6632.2009.04418.x
- Stamm, B.H., 2010. *The Concise ProQOL Manual*, second ed. ProQOL.org, Pocatello.
- Tabachnick, B.G., Fidell, L.S., 2013. *Using Multivariate Statistics*, PsycCRITIQUES. doi:10.1037/022267
- Thomas, J.T., 2012. Does personal distress mediate the effect of mindfulness on professional quality of life? *Adv. Soc. Work* 13, 561–585.
- Vargas, C., Cañadas, G.A., Aguayo, R., Fernández, R., De la Fuente, E.I., 2014. Which occupational risk factors are associated with burnout in nursing? A meta-analytic study. *Int. J. Clin. Heal. Psychol.* 14, 28–38. doi:10.1016/S1697-2600(14)70034-1
- Wallmark, E., Safarzadeh, K., Daukantaite, D., Maddux, R.E., 2013. Promoting altruism through meditation: An 8-week randomized controlled pilot study. *Mindfulness* 4, 223–234. doi:10.1007/s12671-012-0115-4
- Welp, L.R., Brown, C.M., 2014. Self-compassion, empathy, and helping intentions. *J. Posit. Psychol.* 9, 54–65. doi:10.1080/17439760.2013.831465
- West, C.P., Huschka, M.M., Novotny, P.J., Sloan, J.A., Kolars, J.C., Habermann, T.M., Shanafelt, T.D., 2006. Association of perceived medical errors: A prospective longitudinal study. *J. Am. Med. Assoc.* 296, 1071–1078.

Effectiveness of a mindfulness-based intervention on oncology nurses' burnout and compassion fatigue symptoms: A non-randomized study¹²

Abstract

Background: Job stress and burnout are highly frequent in healthcare professionals, and prevalence in nurses can be as high as 40%. Mindfulness-based interventions have been shown to be effective in reducing stress and increasing well-being in a wide range of populations and contexts. However, controlled studies with healthcare professionals, and especially nurses, are scarce.

Objectives, design and setting: The aim of this study was to explore the effectiveness of an on-site, abbreviated mindfulness-based intervention for nurses, using a nonrandomized, wait-list comparison design. The effectiveness of the intervention was measured through several validated self-report measures that participants completed before and after the intervention, assessing burnout, compassion fatigue, psychological symptoms, mindfulness, self-compassion, experiential avoidances, rumination, and satisfaction with life.

Participants: A sample of 94 oncology nurses agreed to participate in the study and self-selected into an experimental ($n = 45$) and comparison condition ($n = 48$). Complete data was obtained for 48 of the initial 94 participants, mainly due to poor follow-up data rather than high drop-out rate. Results: Statistical analyses included a series of 2X2 ANOVAs and ANCOVAs. Results indicated that nurses in the intervention reported significant decreases

¹² Duarte, J., & Pinto-Gouveia, J. (2016). Effectiveness of a mindfulness-based intervention on oncology nurses' burnout and compassion fatigue symptoms: A non-randomized study. *International Journal of Nursing Studies*, 64, 98-107. doi: 10.1016/j.ijnurstu.2016.10.002

in compassion fatigue, burnout, stress, experiential avoidance, and increases in satisfaction with life, mindfulness and self-compassion, with medium to large effect sizes. Nurses in the comparison group didn't present significant changes in these variables. Results also pointed to a high degree of acceptability of the intervention.

Conclusions: This study provides preliminary evidence that mindfulness-based interventions may be efficacious in reducing oncology nurses' psychological symptoms and improving their overall well-being, and thus may be worthy of further study in this population.

Introduction

Job stress and burnout are highly frequent in healthcare professionals (e.g., McCray et al., 2008) and prevalence in nurses can be as high as 40% (Dominguez-Gomez and Rutledge, 2009; Sermeus et al., 2011; Vahey et al., 2004). Several studies have reported that stress and burnout in healthcare professionals are associated with several physical and mental health problems, such as fatigue, insomnia, hypertension, depression, and anxiety (e.g., Maslach et al., 2011; Schulz et al., 2011). Stress and burnout also impact on professional effectiveness and have been associated with suboptimal patient care (Shanafelt et al., 2002) and self-reported medical errors (West et al., 2006). In addition to the impact on healthcare professionals and patients' well-being, stress and burnout have potential economic costs to the organizations. It is estimated that stressed workers can be 46% more costly than non-stressed workers, and this number can as high as 147% if workers are also depressed (Goetzel et al., 1998).

Oncology nursing is one of the areas most affected by occupational stress and burnout (Barnard et al., 2006; Potter et al., 2010). Oncology nursing involves the management of complex pathologies with poor prognosis, close and constant contact with patients who are in severe pain, distress and

approaching death, and difficult patient and family situations, which poses an additional challenge to these professionals and further contributes to job dissatisfaction, stress and burnout (Barrett and Yates, 2002; Potter et al., 2010). In addition, oncology nursing is one area that has been particularly affected by the nursing shortage (e.g., Buerhaus et al., 2001; Glaus, 2007), which significantly contributes to the job dissatisfaction, stress and burnout in oncology nurses, and increased intent to leave the profession (Toh et al., 2012).

In contrast to the large body of research examining stress and burnout in healthcare professionals, little attention has been paid towards preventive interventions and the promotion of health and well-being. Among the most frequently identified and empirically validated interventions to help address stress in several contexts are mindfulness-based interventions.

Mindfulness-based interventions (MBIs) are designed to teach participants to become more aware of thoughts, feelings and body sensations, while approaching these internal states with a non-judgmental curiosity. Mindfulness practice allows for greater awareness of the present moment, and helps cultivate healthier and adaptive ways of responding to stress, rather than habitual and often maladaptive reactions. The cultivation of concentration, attention, and non-judgmental acceptance of whatever is being experienced in the present moment is central to the practice of mindfulness (Kabat-Zinn, 1990; Bishop et al., 2004).

A meta-analysis of 20 studies in a wide-range of clinical populations found consistent improvements in depression, anxiety, coping style, and quality-of-life measures following Mindfulness-Based Stress Reduction (MBSR; Grossman et al., 2004). Recently, a meta-analysis concluded that MBSR is effective in reducing stress, depression, anxiety and distress and in ameliorating the quality of life, in nonclinical populations (Khoury et al., 2015). A recent review also outlined evidence to support the impact of mindfulness meditation on many stress-related medical conditions including

psoriasis, type 2 diabetes, fibromyalgia, rheumatoid arthritis, and chronic low back pain, as well as reducing stress among individuals with chronic illness (Greeson, 2009).

Specific to the healthcare field, a systematic review and meta-analysis of 8 studies of the impact of MBIs on healthcare professionals' health and wellness found that participation in an MBI can have benefits for healthcare professionals in the domains of general and mental health, such as reduced stress, depression, anxiety, burnout, and improve self-compassion, mindfulness, physician empathy, sense of coherence and satisfaction with life (Burton et al., 2016).

Although research on the impact of MBIs with nurses separate from other healthcare professionals is scarce, some studies have found significant improvements in burnout and psychological distress among nurses participating in a MBI compared to control groups (Cohen-Katz et al., 2005; Mackenzie et al., 2006).

Traditional MBSR programs involve a serious time commitment: eight 2.5-h classes, one full-day retreat, and 45min of meditation practice per day. As a result, recent studies have started to analyse the effects of adapted mindfulness interventions. In the healthcare field, for example, Mackenzie et al. (2006) found significant effects for burnout, relaxation, and life satisfaction in nursing students after a 4-week mindfulness intervention. Similarly, Fortney et al. (2013) found that an abbreviated mindfulness training course adapted for primary care clinicians was associated with reductions in indicators of job burnout, depression, anxiety, and stress.

Despite these promising findings, there is still a paucity of evidence-based studies that focus specifically on MBIs as an effective intervention for burnout, especially in nurses. Also, only one study to our knowledge explored the effectiveness of a MBI in a sample oncology nurses (paediatric; Moody et al., 2013). In addition, no studies to our knowledge explored the impact of a mindfulness intervention in reducing compassion fatigue. There is evidence

to suggest that although related, burnout and compassion fatigue have different causes and symptoms (Bride et al., 2007). The term compassion fatigue has emerged in the literature in recent years and has been used interchangeably with secondary traumatic stress and vicarious trauma, because it is used to describe secondary stress reactions (e.g., re-experiencing the traumatic events, avoidance/numbing of reminders, and persistent arousal) related to the provision of care to people who experienced some form of trauma or severe stress (Figley, 1995; Stamm, 2010). Oncology nurses may be especially vulnerable to compassion fatigue given the constant exposure to the suffering and trauma of their patients (Najjar et al., 2009). It has been suggested that without emotion regulatory skills, the repeated exposure to trauma, pain and suffering of others could be associated with adverse consequences such as distress and compassion fatigue (Decety et al., 2010), and impact on the ability to treat. Several studies elucidating the mechanisms of change associated with mindfulness training have suggested that meditation has an effect on brain areas associated with emotion regulation (see Chiesa et al., 2013 for a review) and improves emotional adaptation through attention regulation (Desbordes et al., 2012). In addition, some studies have provided evidence that mindfulness interventions may be helpful in treating trauma-related symptoms (Bhatnagar et al., 2013; Nyklíček et al., 2013). Thus, we speculate that nurses undergoing mindfulness training develop better emotion regulation skills, which in turn may help them regulate their interpersonal sensitivity and negative arousal and protect against compassion fatigue.

This study aims to explore the effectiveness of an on-site mindfulness-based intervention on oncology nurses' psychological outcomes. It is hypothesised that, compared to a wait-list comparison group, participants receiving the MBI would experience decreases in symptoms of burnout, compassion fatigue, depression, anxiety and stress, and increases in satisfaction with life. Moreover, we hypothesized that the intervention would promote increases in

trait mindfulness and self-compassion, and decreases in rumination and experiential avoidance.

Method

Participants

Participants were recruited from two major oncology hospitals, located in the north and centre regions of Portugal, between 2013 and 2015. Individuals in this study were nurses who worked in direct contact with patients in their services. A total of 94 participants agreed to take part in the study. From these, one participant dropped-out before the intervention due to inconvenience. Participants who agreed to take part in the study were assigned to the experimental ($n = 45$) and waiting-list comparison conditions ($n = 48$). Full data were obtained from 48 of these initial 93, representing 52% of participants initially recruited (29 in the experimental group and 19 in the waiting-list comparison group). The reason for the high level of attrition was failure to complete and return the post-intervention questionnaires, with the exception of two participants who dropped-out of the study. Only six participants completed the 3-month follow-up questionnaires, and thus these data were not analysed. The initial sample was composed by 82 female nurses (90.1%) and 9 male nurses (9.9%), with a mean age of 41 ($SD = 8.43$), ranging from 25 to 56 years. The majority of the sample was married or cohabiting ($n = 61$, 67%), 19 were single (20.7%), and 12 were divorced (13%). The mean years in practice was 17.90 ($SD = 8.60$), and the mean of years in the current position was 10.67 ($SD = 6.48$). The majority of nurses worked 40 h per week (68.5%).

Recruitment for this study was successful given that all places available in the MBI classes were filled. In addition, only two participants did not complete the intervention (at least 50% of the sessions).

All procedures were in accordance with the Helsinki Declaration of 1975. All participants provided their written informed consent. Participants did not receive any monetary compensation for taking part in this study. Participants received a certificate of attendance at the end of the intervention if they attended at least 50% of the sessions. The study was approved by the ethics committees and administration boards of both hospitals.

Procedure

Initial contacts were made by one of the authors of this study with two major oncology hospitals. After approval of the institutions' boards and ethics committees, the researcher collaborated with the hospitals' training offices. The training office was responsible for advertising the study among the nurses by intranet, for managing the allocation of each participant to the experimental and wait-list comparison group, and for delivering and collecting the questionnaires. After the participants' consent to be part of the research was obtained, participants were allocated to the experimental and wait-list comparison conditions. As a result of rotating shifts constraints, participants could not be randomly assigned to the groups, but rather self-selected according to their convenience. The intervention took place on site, during nurses' working schedule. All participants in the comparison group were offered the opportunity to access the course subsequently. Of the 48 participants in the comparison group, only 9 did not attend the MBI after the intervention group. The baseline package of questionnaires was delivered one week before the intervention and completed before session one. All participants were asked to complete their post-intervention questionnaires and return them in a sealed package to the training office.

Intervention

The intervention is a 6-week mindfulness-based group intervention, based generally on the principles and exercises of Mindfulness-Based Stress Reduction (Kabat-Zinn, 1982; Kabat-Zinn, 1990). The length of the program was adapted to make it easier to incorporate into nurses' work schedule. Key themes and practices were selected so as to fit into six sessions. Each session introduced a new theme and a different practice. In the first four sessions participants were taught mindfulness of the breath, body, (difficult) emotions and thoughts. The last two sessions dealt with loving-kindness and interpersonal relationships and covered mindful communication, the loving kindness meditation practice, and a closing reflection.

The final intervention consisted of six, two-hour group sessions, each of which included a didactic section and experiential exercises. The mindfulness-based program is outlined in Fig. 1. Participants received a CD with guided meditation exercises with different lengths, which they were instructed to practice at home for at least 15min per day. They also received a manual that summarised key points from the sessions, clarified homework requirements, and included a daily recording of their practice for each week. In the current study, the program was implemented by one of the authors who is a clinical psychologist and who is training in MBSR. The author has been practicing mindfulness for six years and attended several MBSR courses, retreats, and other training activities related to mindfulness and meditation.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Theme	Introducing mindfulness	Mindfulness of the body	Dealing with (difficult) emotions	The content of the mind	Compassion and loving-kindness	Mindful communication Keeping the practice alive
Exercises	Raisin exercise Sitting meditation with focus on the breath	Body scan meditation	Sitting meditation with awareness of breath and emotions 3-minute breathing space	Sitting meditation with awareness of breath and thoughts	Loving-kindness mediation focused on the self and others	Mindful communication exercises How to take better care of myself Letter to future me
Homework	Sitting meditation with focus on the breath Routine activity Eat one meal mindfully	Body scan or walking meditation Sitting meditation with awareness of breath and sensations New routine activity Pleasure events diary	Body scan or sitting meditation 3-minute breathing space Negative events diary	Body scan or sitting meditation 3-minute breathing space	Loving-kindness mediation Body scan or sitting meditation 3-minute breathing space	Continuing formal and informal mindfulness practice

Figure 1. Overview of the Mindfulness-Based Intervention

Measures

Participants in the experimental group completed a battery of questionnaires before and immediately after the 6-week training program, and at 3-month follow-up. Participants in the comparison group completed the questionnaires during the same period, but not the 3-month follow-up measurement. All participants completed an after-intervention questionnaire designed for the purposes of this study to assess participants' at-home practice and acceptability of the program.

The Professional Quality of Life Scale, version 5 (ProQOL-5; Stamm, 2009). The ProQOL is a 30-item self-report measure composed by three subscales. The first subscale measures compassion satisfaction (CS), defined as the pleasure derived from being able to do one's work (helping others) well (e.g., "I get satisfaction from being able to help people"). Higher scores on this scale represent greater satisfaction related to one's ability to be an effective caregiver. The second subscale measures burnout (BO), or feelings of hopelessness and difficulties in dealing with work or in doing one's job effectively (e.g., "I feel worn out because of my work as a healthcare provider"). The third subscale measures secondary traumatic stress (STS),

defined as work-related, secondary exposure to people who have experienced extremely or traumatically stressful events (e.g., “I feel depressed because of the traumatic experiences of the people I help”). Higher scores on these subscales indicate greater levels of burnout and compassion fatigue. Given that the terms ‘compassion fatigue’ and ‘secondary traumatic stress’ have been used interchangeably in the literature, we will use the term ‘compassion fatigue’ to refer to this factor. Respondents are instructed to indicate how frequently each item was experienced in the previous 30 days, on a 5-item Likert scale (from 1 = ‘never’ to 5 = ‘very often’). Scoring requires summing the item responses for each 10-item subscale. The original and Portuguese versions of the scale showed good psychometric properties (Stamm, 2009; Carvalho, 2011). Cronbach’s alphas in the present study were 0.91 for compassion satisfaction, 0.78 for burnout, and 0.61 for compassion fatigue.

Depression, Anxiety, Stress Scale (DASS-21; Lovibond and Lovibond, 1995; Antony et al., 1998). The DASS-21 comprises 3 subscales, each with 14 items, measuring depression, anxiety and stress symptoms. Participants were asked to indicate the degree to which each statement applied to them in the last two weeks. The DASS-21 uses a 4-point rating scale (0 = Did not apply to me at all to 3 = Applied to me very much, or most of the time). Validity and reliability of this scale across different samples has been well established (e.g., Lovibond and Lovibon, 1995; Pais-Ribeiro et al., 2004). Subscale scores were computed by calculating the sum of subscale item responses, and higher scores indicate higher levels of psychological symptoms. Cronbach’s alpha in the present study were 0.88 for depression, 0.83 for anxiety, and 0.89 for stress.

Acceptance and Action Questionnaire – II (AAQ-II; Bond et al., 2011). The AAQ-II is a 7-item measure of psychological inflexibility/ experiential avoidance. Answers are given on a 7-point scale ranging from 1 = ‘never true’ to 7 = ‘always true’. The Portuguese version of the scale showed good internal consistency and good convergent and discriminant validity (Pinto-Gouveia et

al., 2012). Higher scores indicate greater experiential avoidance. Cronbach's alpha was 0.91 for the total scale in the present study.

Ruminative Responses Scale-Short (RRS; Treynor et al., 2003). This scale consists of 10 items from the original list of 22 that was developed by Nolen-Hoeksema and Morrow (1991), and is composed by two factors. The authors described the Reflection factor as engaging in contemplation to alleviate negative mood (e.g., 'Write down what you are thinking and analyse it'), whereas the Brooding factor was described as thinking anxiously or gloomily about problems or difficulties (e.g., 'Think "Why do I always react this way?"). This scale showed good psychometric properties in the original (Treynor et al., 2003) and Portuguese versions (Dinis et al., 2011). Higher scores indicate greater brooding and reflective thinking. Cronbach's alphas were 0.70 for brooding and 0.77 for reflective thinking in the present study.

The Five Facets of Mindfulness Questionnaire (FFMQ; Baer et al., 2006). This questionnaire consists of 39 items that assess five facets of mindfulness. Items are rated on a Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). The factors include: observing, defined as noticing or attending to internal and external experiences such as sensations, thoughts, or emotions (e.g., 'I pay attention to sensations, such as the wind in my hair or sun on my face'); describing, which refers to labelling internal experiences with words (e.g., 'It's hard for me to find the words to describe what I'm thinking', reversed); acting with awareness, which includes focusing on one's activities in the moment as opposed to behaving mechanically (e.g., 'I rush through activities without being really attentive to them', reversed); non-judging of inner experience, which refers to taking a non-evaluative stance toward thoughts and feelings (e.g., 'I tell myself that I shouldn't be thinking the way I'm thinking', reversed); and non-reactivity to inner experience, which refers to allowing thoughts and feelings to come and go, without getting caught up in or carried away by them (e.g., 'When I have distressing thoughts or images I am able just to notice them without reacting'). The original and

Portuguese versions (Gregório and Pinto-Gouveia, 2011) of the scale showed good psychometric properties. Higher scores indicate greater mindfulness. Cronbach's alphas were 0.83 for observe, 0.90 for describe, 0.90 for acting with awareness, 0.84 for non-judging, and 0.72 for non-reacting, in the present study.

Self-Compassion Scale (SCS; Neff, 2003). The SCS is a widely used self-report measure developed to assess six components of self-compassion: self-kindness ("I try to be understanding and patient toward those aspects of my personality I don't like"); self-judgment ("I'm disapproving and judgmental about my own flaws and inadequacies"); common humanity ("I try to see my failings as part of the human condition"); isolation ("When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world"); mindfulness ("When something painful happens I try to take a balanced view of the situation"); and over-identification ("When I'm feeling down I tend to obsess and fixate on everything that's wrong"). Scores on the six subscales were summed (after reverse-coding negative items) to create an overall self-compassion score. Items are rated on a 5-point scale (e.g., 1 = 'almost never' to 5 = 'almost always'). The SCS has adequate construct and convergent validity (Neff, 2003). The Portuguese version of the scale also showed good internal consistency and validity (Castilho et al., 2015). SCS scores are presented so that higher scores indicate greater self-compassion. Cronbach's alphas in the present study were 0.92 for the total scale, 0.87 for self-kindness, 0.69 for self-judgment, 0.79 for common humanity, 0.83 for isolation, 0.82 for mindfulness, and 0.75 for over-identification.

Satisfaction with Life Scale (SWL; Diener et al., 1985). This is a 5-item scale designed to measure global cognitive judgments of one's life satisfaction. Participants indicate how much they agree or disagree with each of the 5 items using a 7-point scale that ranges from 7 strongly agree to 1 strongly disagree. The original and the Portuguese versions of the scale showed good

psychometric properties (Laranjeira, 2009). Higher scores indicate greater satisfaction with life. Cronbach's alpha was 0.90 in the present study.

Statistical Analyses

A priori power analyses conducted using G*Power 3.1 (Faul et al., 2007) revealed that a sample of 24 participants in total would yield 80% power to detect significant interaction effects of condition and time, with a medium effect size ($f = 0.25$) and a two-tailed α of 0.05. Correcting for multiple outcomes, by choosing a smaller value of α (0.002 using Bonferroni correction) with the same power and effect size, would require 44 participants in total. Due to potential attrition a larger sample size was recruited.

Baseline differences were examined between the experimental and comparison groups on all measures and demographics. Gender differences were not tested due to the small number of males in the sample.

To directly test the prediction related to change in the outcomes (professional quality of life, depression, anxiety and stress, and satisfaction with life) and mechanisms (mindfulness, experiential avoidance, rumination and self-compassion), a series of 2 (condition) by 2 (time) repeated measures Analysis of Variance (ANOVA) were conducted. To interpret the meaning of these interactions, tests of simple main effects with Sidak correction were computed. These analyses were also computed to explore whether the amount of meditation practice would have an effect on change in the dependent measures. In addition, we conducted a series of sensitivity analyses to see if the results of the main analyses would hold. To this end, a series of Analyses of Covariance (ANCOVAs) were calculated to examine the differences between the experimental and comparison groups on post-intervention scores, while controlling for baseline scores of the same measure. Although some studies used the FFMQ total score in the past, there is not sufficient evidence for its validity, particularly due to how the Observing facet

operates in different samples (e.g., meditators and non-meditator; Baer et al., 2006). Also, using the facets of mindfulness is likely to improve our understanding of the specific skills that are cultivated through the practice of mindfulness and how these are related to psychological adjustment. Lastly, we examined descriptive statistics relating to nurses' feedback regarding the intervention to gauge its acceptability among those in the intervention group. There were no missing data, and the number of cases was similar in all analyses. An evaluation of skewness and kurtosis was conducted to assess the assumption of normality. According to Kline (2005), skewness values above 3 and kurtosis values above 10 indicate severe deviations to normal distribution.

Effect sizes for the ANOVAs were calculated using partial eta squares (η^2), with 0.01 indicating a small effect size, 0.06 a medium effect size and 0.14 a large effect size (Tabachnick and Fidell, 2013). The effect sizes for the paired samples *t*-tests were calculated using Cohen's *d*, with 0.2 indicating a small effect, 0.5 a medium effect and 0.8 a large effect (Cohen, 1988).

The alpha level was set at 0.05 for all analyses conducted in this study. The statistical procedures were computed with the software IBM SPSS (v. 20).

Results

Samples' Characteristics

The final sample in which the analyses were conducted was composed by 29 nurses in the experimental group and 19 nurses in the wait-list comparison group. The intervention group was composed by 26 female nurses and 3 male nurses, with a mean age of 38.90 ($SD = 8.34$), ranging from 25 to 54 years. The majority of the sample was married or cohabiting ($n = 24$, 75.9%), 5 were single (17.2%), and 2 were divorced (6.9%). The mean years in practice was 15.92 ($SD = 7.84$), and the mean of years in the current position was 10.29 ($SD = 7.00$). The majority of nurses worked 40 or 35 h per week (48.3%). The

comparison group was composed by 16 female nurses and 3 male nurses, with a mean age of 42.11 ($SD = 8.43$), ranging from 30 to 55 years. The majority of the sample was married or cohabiting ($n = 12$, 63.2%), 5 were single (26.3%), and 2 were divorced (10.5%). The mean years in practice was 19.74 ($SD = 9.28$), and the mean of years in the current position was 10.74 ($SD = 5.93$). The majority of nurses worked 40 h per week (78.9%). Participants were also asked regarding previous meditation experience. Of the total sample, 10 participants referred they experienced meditation in the past (3 in the comparison group and 7 in the experimental group). However, no participant reported having daily and frequent meditation practice at the time of study.

Baseline Differences between Experimental and Comparison Groups

Chi-squared analyses revealed that there were no significant differences between participants in the intervention and comparison conditions regarding gender and marital status. No significant differences regarding age, years of schooling, years of practice and years in the current position were found between groups. Independent samples' t -tests suggested that the comparison group presented significant higher levels of observing (FFMQ) at baseline when compared to the intervention group, $t(46) = 2.21$, $p = 0.03$, $d = 0.43$, 95% CI [0.34–7.44]. Also, no significant differences regarding previous meditation experience were found between the groups.

Effects of the Intervention: Between-Groups Differences

Several repeated measures ANOVA were conducted to examine changes across time between the intervention and comparison conditions on measures of compassion satisfaction, burnout, compassion fatigue, psychological symptoms and satisfaction with life (outcomes) and psychological mechanisms. Table 1 summarizes descriptive statistics of mean scores of pre-post measures and significance of time and time-group interaction.

Regarding the outcome measures, we found a significant interaction between time and condition only for compassion fatigue. Tests of simple main effects with Sidak correction suggested that there was a significant decreased of compassion fatigue from pre to posttest in the intervention groups ($F = 18.60$, $p < 0.001$, partial $\eta^2 = 0.29$), but not in the comparison group $F = 0.50$, $p = 0.483$, partial $\eta^2 = 0.01$).

Regarding psychological mechanisms, we found significant time and condition interaction effects for experiential avoidance, self-compassion (common-humanity, isolation and total score), and mindfulness (observing and non-judging). Tests of simple main effects with Sidak correction revealed significant decreases from pre to posttest in experiential avoidance ($F = 13.15$, $p = 0.001$, partial $\eta^2 = 0.22$), and increases in mindfulness ($F = 5.26$, $p = 0.026$, partial $\eta^2 = 0.10$), SCS total score ($F = 5.79$, $p = 0.020$, partial $\eta^2 = 0.11$), observing ($F = 7.53$, $p = 0.009$, partial $\eta^2 = 0.14$), and non-judging ($F = 5.45$, $p = 0.024$, partial $\eta^2 = 0.10$), in the intervention group. In contrast, no significant differences between pre and posttest scores were found in the comparison group. Figs. 2 and 3 provide a graphical representation of the results for one outcome and one psychological mechanism. Although no significant interactions were found for the remaining variables, we found that there were significant decreases on burnout, $F = 10.65$, $p = .002$, partial $\eta^2 = .19$, stress, $F = 7.73$, $p = .008$, partial $\eta^2 = .14$, and over-identification, $F = 4.79$, $p = .034$, partial $\eta^2 = .09$, and significant increases in mindfulness (SCS), $F = 5.26$, $p = .026$, partial $\eta^2 = .10$, non-reacting, $F = 4.40$, $p = .041$, partial $\eta^2 = .09$, and satisfaction with life, $F = 5.33$, $p = .026$, partial $\eta^2 = .11$, in the intervention group but no significant changes were found for the comparison group

Table 1

Means, SDs at Time 1 (Pretest) and Time 2 (Posttest), Time Main Effect, and Time Group Interaction Effect ($n = 48$).

Variable	Time	Experimental		Comparison		Time			Time X Group		
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>F</i>	<i>p</i>	Partial η^2
Compassion Satisfaction	1	36.96	6.19	39.68	4.73	1.42	.240	.03	.08	.777	.00
	2	37.82	6.04	40.20	5.50						
Burnout	1	26.57	6.09	24.74	4.64	8.06	.007	.15	1.72	.197	.04
	2	24.29	5.09	23.89	4.82						
Compassion Fatigue	1	25.71	3.47	26.53	3.60	10.81	.002	.19	4.82	.033	.10
	2	23.07	3.53	26.00	3.54						
Depression	1	2.83	2.29	3.37	4.45	.90	.349	.02	.49	.490	.01
	2	2.14	2.07	3.26	4.81						
Anxiety	1	1.86	1.71	3.21	4.26	.00	.988	.00	.43	.517	.00
	2	1.59	1.99	3.47	4.88						
Stress	1	7.03	4.08	8.05	4.74	4.48	.040	.09	1.91	.172	.04
	2	5.28	3.53	7.68	5.23						
Experiential Avoidance	1	22.31	7.37	21.45	9.47	6.59	.013	.12	4.23	.044	.08
	2	18.62	7.10	21.05	9.49						
Rumination_Reflective	1	8.38	2.81	9.90	2.65	.26	.611	.01	1.92	.173	.04
	2	8.72	2.28	9.15	2.50						
Rumination_Brooding	1	8.62	2.38	8.20	2.35	3.46	.069	.07	.62	.436	.01

	2	7.76	1.92	7.85	2.83						
Observing (FFMQ)	1	23.72	6.41	27.30	5.23						
	2	26.34	6.07	25.45	5.32	.27	.609	.01	8.94	.004	.16
Describing (FFMQ)	1	27.66	5.72	26.95	6.30						
	2	28.10	5.27	28.35	5.46	3.56	.065	.07	.94	.336	.02
Acting with Awareness (FFMQ)	1	28.21	6.79	30.00	5.08						
	2	28.55	5.51	27.65	6.77	1.46	.233	.03	2.64	.111	.05
Non-judging (FFMQ)	1	25.24	4.35	27.00	6.63						
	2	27.52	5.35	25.65	5.38	.37	.547	.01	5.65	.022	.11
Non-reacting (FFMQ)	1	19.52	4.95	20.15	3.95						
	2	20.97	4.08	19.95	4.69	1.33	.254	.03	2.32	.134	.05
Self-Kindness (SCS)	1	14.46	4.02	16.15	3.45						
	2	14.68	4.07	15.40	3.62	.47	.497	.01	1.52	.224	.03
Self-Judgment (SCS)	1	13.82	3.29	13.80	3.44						
	2	13.36	4.13	13.90	4.17	.12	.726	.00	.30	.588	.01
Common humanity (SCS)	1	12.76	3.48	13.95	2.89						
	2	13.55	3.00	13.25	3.11	.02	.889	.00	5.11	.029	.10
Isolation (SCS)	1	10.71	3.62	9.35	3.07						
	2	9.21	2.75	9.55	2.84	3.06	.087	.06	5.24	.027	.10
Mindfulness (SCS)	1	12.46	3.13	13.65	2.43						
	2	13.18	2.93	13.45	2.70	1.14	.292	.02	3.59	.064	.07

Over-identification (SCS)	1	11.29	3.05	10.50	3.22	1.80	.187	.04	2.21	.144	.05
	2	10.32	2.84	10.55	3.62						
Total SCS	1	81.89	16.35	88.10	14.31	.79	.378	.02	4.92	.032	.10
	2	86.57	16.05	86.10	16.59						
Satisfaction with life	1	23.36	6.27	25.11	5.77	3.18	.081	.07	1.33	.255	.03
	2	25.07	4.78	25.47	6.02						

Note. Time 1 = Pretest; Time 2 = Posttest; SCS = Self-Compassion Scale; FFMQ = Five Facets of Mindfulness Questionnaire; Partial $\eta^2 = .01$ small effect size, = .06 medium effect size, = .14 large effect size.

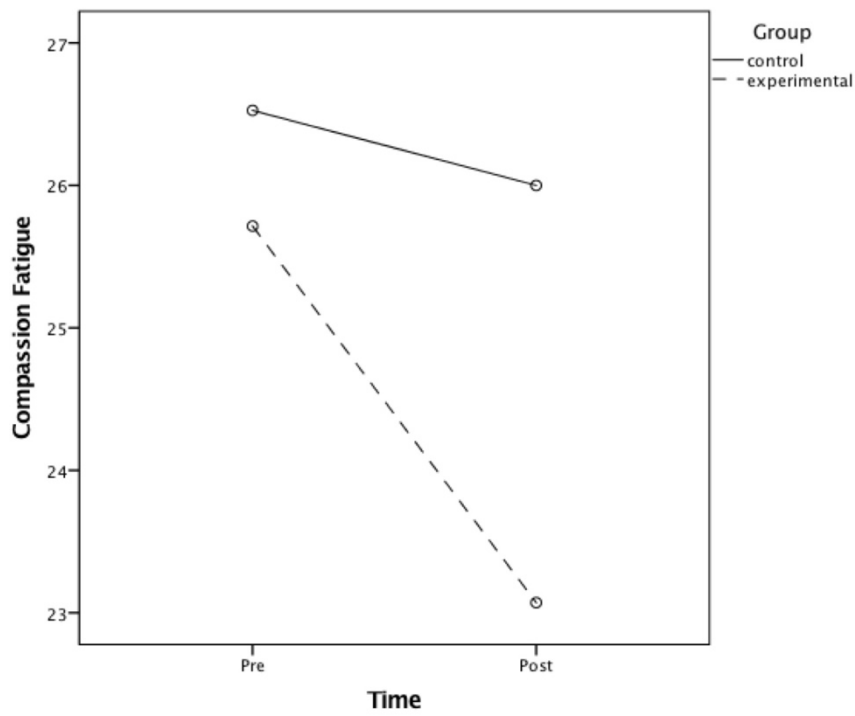


Figure 2. Pretest and Posttest Means in Compassion Fatigue for the Experimental and Control Group

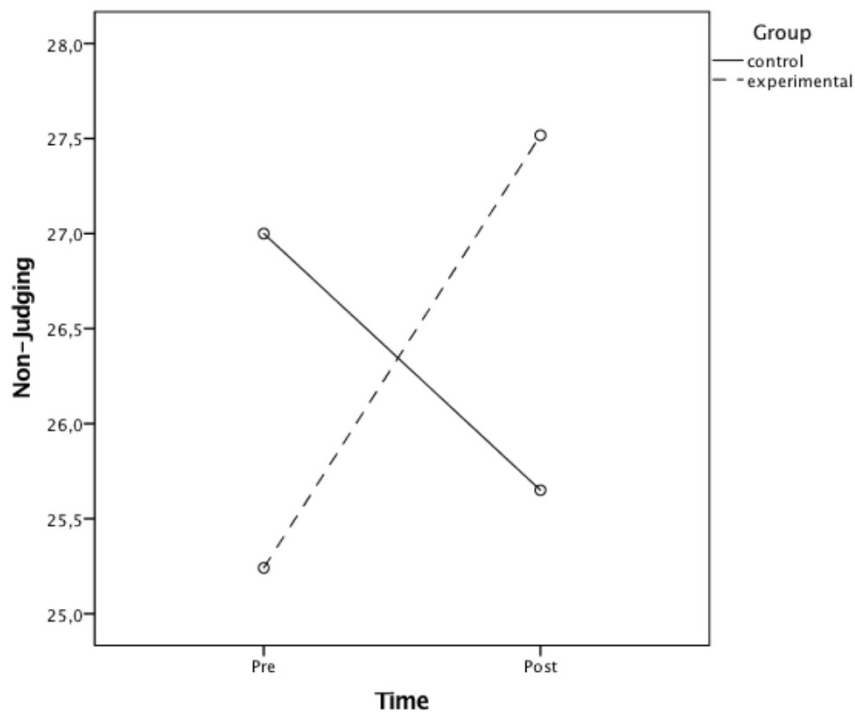


Figure 3. Pretest and Posttest Means in the Non-Judging Facet of Mindfulness for the Experimental and Control Group

Post-Intervention Differences Controlling for Pretest

As an additional test of the intervention effects, we conducted a series of follow-up ANCOVAs that examine whether the post-test means, adjusted for pretest scores, differed between the intervention and the comparison group. Even after controlling for baseline effects, the analyses revealed significant differences between the intervention and comparison groups in post-intervention scores of compassion fatigue, $F(1, 46) = 7.9, p = .01$, partial $\eta^2 = .15$, experiential avoidance, $F(1, 48) = 4.20, p = .04$, partial $\eta^2 = .08$, observing, $F(1, 46) = 4.72, p = .04$, partial $\eta^2 = .09$, and non-judging, $F(1, 46) = 4.19, p = .04$, partial $\eta^2 = .08$, with medium and large effect sizes. The analyses showed that individuals in the intervention condition scored significantly lower on compassion fatigue, experience avoidance, and significantly higher in observing and non-judging, than those in the comparison group at post-intervention.

Differences between Frequency of Practice

To explore the possible effect of frequency of practice, we conducted repeated measures ANOVAs, with time (pre and post) as the within-subjects factor and practice (low and high) as the between-subjects factor. The variable 'practice' was measured using a scale from 1 (once a week) to 7 (everyday, more than once a day). We created two groups based on the cut points for two equal groups in the present sample. These analyses revealed significant interactions between time and practice, namely in burnout, $F(1, 24) = 4.85, p = .038$, partial $\eta^2 = .17$, depression, $F(1, 25) = 8.51, p = .007$, partial $\eta^2 = .25$, isolation, $F(1, 24) = 15.24, p = .001$, partial $\eta^2 = .39$, over-identification, $F(1, 24) = 9.23, p = .006$, partial $\eta^2 = .28$, and SCS total score, $F(1, 24) = 7.34, p = .012$, partial $\eta^2 = .23$, with large effect sizes. Tests of simple main effects with Sidak correction revealed that the change in these variables from pretest to posttest

was significant for participants who practiced more, but not for participants who practiced less.

Descriptive Statistics of Feedback from the Nurses in the Intervention

We examined descriptive statistics of feedback from the nurses in the intervention condition. When nurses were asked whether they learned something important from the intervention for their lives, 98% reported 'yes'. Moreover, 72.5% reported they made some change in their lifestyle as a result of participating in the intervention. Additionally, 70.6% reported they changed the way they perceive and respond to stressful situations, and 80.4% think their relationship with thoughts and emotional states changed for the better. Finally, when asked to rate the importance of the intervention on a scale from 0 (not important) to 10 (very important), the majority of participants rated the intervention as 7 ($n = 17$; 33.3%), followed by 8 ($n = 9$; 17.6%), 5 ($n = 9$; 17.6%), and 6 ($n = 7$; 13.7%). Three participants rated the intervention as 9 (5.9%) and 10 (5.9%). Finally, two participants rated the intervention as 2 (3.9%) and one participant as 4 (2.0%).

Discussion

The present study explored the effectiveness and acceptability of a modified mindfulness-based program for oncology nurses. A sample of nurses recruited from two oncology hospitals self-selected into either a wait-list comparison condition (no intervention offered) or a mindfulness intervention condition. We predicted that individuals undergoing the mindfulness intervention would experience reductions in burnout, compassion fatigue, depressive, anxious and stress symptoms, experiential avoidance and rumination, and increases in compassion satisfaction, mindfulness, self-compassion and satisfaction with life.

Regarding the primary outcome variables, we found that nurses in the experimental condition reported a significant reduction in compassion fatigue after the intervention compared with individuals in the comparison condition. These effects held even when controlling for baseline imbalances between the two groups in the ANCOVA, with a large effect size. This is the first study to our knowledge to explore the impact of a mindfulness-based intervention on symptoms of compassion fatigue. Compassion fatigue is described as a secondary traumatic reaction that results from the close contact with other people's suffering or trauma, and yields an almost identical set of symptoms to those of PTSD. Nurses, and especially oncology nurses, are at a particular risk of developing compassion fatigue, because they constantly witness and contact intense suffering, pain and trauma of others (e.g., Najjar et al., 2009). It has been suggested that without emotion regulatory skills, the repeated exposure to trauma, pain and suffering of others could be associated with adverse consequences such as compassion fatigue (Decety et al., 2010). Several studies elucidating the mechanisms of change associated with mindfulness training have suggested that meditation has an effect on brain areas associated with emotion regulation (see Chiesa et al., 2013 for a review) and improves emotional adaptation through attention regulation (Desbordes et al., 2012). In addition, some studies have provided evidence that mindfulness interventions may be helpful in treating trauma-related symptoms (Bhatnagar et al., 2013; Nyklíček et al., 2013). Thus, we hypothesise that one way through which mindfulness training may reduce compassion fatigue in nurses is the development of emotion regulation skills.

Results also suggested that nurses receiving the mindfulness training reported significant decreases in burnout and stress, and greater satisfaction with life, while nurses in the comparison condition didn't present significant changes in these variables. These findings highlight the importance of mindfulness training in nurses' well-being, and are in line with previous research on mindfulness with healthcare professionals. For example, studies with mixed

samples of healthcare staff showed improvements in stress reduction and negative affect (Marx et al., 2014; Shapiro et al., 2007), and burnout (Fortney et al., 2013; Galantino et al., 2005; Krasner et al., 2009; Rosenzweig et al., 2003; Shapiro et al., 2005). Studies with nurses also found reductions in burnout, depression, anxiety and stress after a mindfulness intervention (Bazarko et al., 2013; Cohen-Katz et al., 2005; Mackenzie et al., 2006). Our results are also in line with a recent meta-analysis of MBSR studies with healthy individuals that found large effects on stress, moderate effects on anxiety, depression, distress, and quality of life, and small effects on burnout (Khoury et al., 2015).

Regarding psychological processes, and in line with the study predictions, we found a significant decrease in experiential avoidance and increases in self-compassion and mindfulness in the nurses who took part in the intervention group from pretest to posttest. The results for experiential avoidance and mindfulness (observing and non-judging) held in all analyses, with medium to large effects sizes.

These results are in line with previous studies that found that participating in a MBI leads to increases in trait mindfulness and self-compassion (e.g., Keng et al., 2012). Studies with healthcare staff (Krasner et al., 2009; Marx et al., 2014; Shapiro et al., 2007; Shapiro et al., 2005), and nurses (Bazarko et al., 2013; Cohen-Katz et al., 2005) also found similar results. No previous studies to our knowledge explored the effects of a MBI on experiential avoidance in healthcare staff, and only one controlled study examined whether MBI participation was associated with decreased experiential avoidance (Labelle et al., 2015).

We also examined whether the amount of practice over the intervention period was related to changes in the variables. Results suggested that the nurses who practiced more showed greater decreases in burnout and depression, and greater increases in self-compassion, when compared to the nurses' who practiced less. The relationship between meditation practice and

changes in outcomes has yielded mixed findings in previous studies. A review of the mindfulness intervention literature with a focus on the status of home practice research and the relationship of practice to mindfulness outcomes indicated equivocal support for the hypothesis that practice would relate positively to change over treatment (Vettese et al., 2009). It is interesting to note that, in this study, amount of practice was related to changes in self-compassion but not mindfulness. This finding may support some of the concerns raised regarding the FFMQ as a valid measure of mindfulness, such as lack of construct validity (e.g., Visted et al., 2015). However, the relationship of practice time and outcomes was a secondary aim of the present study, and thus these results should be interpreted with caution. Our analysis was post hoc and unsystematic, and we didn't use a reliable and valid method for evaluating homework reporting and compliance, or the quality of participants' meditation practice.

Finally, we assessed the acceptability of the mindfulness intervention by asking nurses several questions related to their experience of being a participant. Overall, results indicated that most participants learned something important from the program, made important changes in their lives as a result of being enrolled in the program, changed the way they perceive and respond to stressful situations, as well as the relationship with their thoughts and emotional states. Most participants also rated the program as very important. These results point to a high degree of acceptability of the intervention.

Overall, these results suggest that mindfulness training may improve oncology nurses' quality of life, adding to the large body of empirical research on the positive effects of MBIs.

This study has several strengths. First, there are only a handful of studies that assess the efficacy of MBI in nurses, and only one in oncology nurses, and thus this study addresses a major scarcity in the field. There are more studies with mixed populations of nursing, medical and other health professionals,

and students at various stages of training. However, research with more homogeneous samples is important in order to examine the specific demands and advantages of the program and to determine the benefits of introducing such programs.

Also, this study explored the effectiveness of a shorter MBI on site, which can be more easily fitted into the schedules of hospital nurses. Despite the scheduling issues in this population, the intervention had low attrition rates due to drop-outs. For example, in a previous study with healthcare professionals (Shapiro et al., 2005), forty-four percent of the MBSR group did not complete the intervention due to lack of time and increased responsibility. Several reasons may have contributed to the high attendance rates. First, there was a straight collaboration between the research team and the hospitals' training offices. These offices are responsible for providing continuous training to the healthcare staff in several areas. Including the present intervention as part of the training activities of the hospital allowed us to conduct the intervention on site, during nurses' working schedule. In addition, participants received a certificate of attendance from the training office if they completed at least 50% of the sessions. However, it should be noted that the lack of randomization may have also contributed to the high attendance rates. In addition, this study used a comparison condition, which provides more confidence on the effects observed in the experimental condition. The effects found, with moderate to large sizes, are promising and can inform further research.

This study is not without limitations. The sample size was relatively small and most participants were women. It is possible that men and women may respond differently to the mindfulness intervention, but the sample size of males in the present study didn't allow to test possible effects of gender. Also, this study used a non-randomized allocation of participants, and thus there may be non-random significant differences between the two groups that influenced the findings. However, given that all participants knew they would

receive the mindfulness training, and self-selected into the experimental and comparison conditions according to their services' schedules, we believe that the effect of motivational differences on their experience in the program would be small. The lack of a follow-up assessment does not allow to assess the maintenance of the positive effects over time. It is possible that the large number of questionnaires administered could have contributed to the low response rate at follow-up, and this should be taken into account in future studies. In addition, it should be noted that results from this study apply only to the present sample and not to all oncology nurses. Replication studies with other samples of oncology nurses, working in different settings, are needed to corroborate the present findings. Also, this study relied entirely on the use of self-report measures and suffers from the limitations associated with this type of methodology (e.g., response bias, introspective ability). Finally, this was a non-clinical sample, which may explain some of the non-significant results.

Future studies could explore whether the positive effects of the mindfulness intervention extend beyond the individual nurse participating in the intervention, and reflect in improved patient care and nurses' clinical environments. Also, it could be explored whether the intervention has impact on organizational variables, such as absenteeism and turnover. Including combined research methods, such as in-depth interviews and third-parties' records (e.g., patients) could also be an interesting direction for future studies. In addition, greater attention should be directed towards behavioural variables, such as adherence, in order to assess the frequency and quality of mindfulness practice. Finally, it is also of paramount importance to better understand which underlying mechanisms during MBIs are associated with its efficacy. For example, it was recently found that burnout symptoms were associated with impairments in several cortical areas associated with high-order cognitive function (e.g., dorsolateral prefrontal cortex, posterior cingulate cortex, frontal gyrus), which may explain how burnout impact on clinical reasoning and the quality of patient care (Durning et al., 2013).

Interestingly, recent findings from functional neuroimaging studies are suggesting that mindfulness may change brain function in these same areas (e.g., Marchand, 2014).

Conclusion

Oncology nursing is one area that has been particularly affected by the global nursing shortage (e.g., Buerhaus et al., 2001; Glaus, 2007). Moreover, projections from the World Cancer Report show that cancer rates may increase up to 50% to 15 million new cases by the year 2020. (World Health Organization, 2003). These statistics suggest that the number of oncology nurses is far from adequate to meet current and future needs. According to previous studies, nursing shortage significantly contributes to the job dissatisfaction, stress and burnout in oncology nurses, and increased intent to leave the profession (Toh et al., 2012).

The results of this study are timely and provide preliminary evidence that mindfulness-based interventions may be efficacious in reducing oncology nurses' burnout, compassion fatigue and stress levels and increase their overall well-being.

References

- Antony, M., Bieling, P. J., Cox, B. J., Enns, M. W., Swinson, R. P. (1998) Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and community a sample. *Psychological Assessment, 10*, 176–181.
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27- 45. doi: 10.1177/1073191105283504
- Barnard, D., Street, A., & Love, A. W. (2006). Relationships Between Stressors, Work Supports, and Burnout Among Cancer Nurses. *Cancer Nursing, 29*(4), 338-345.
- Barrett, L., Yates, P., 2002. Oncology/haematology nurses: A study of job satisfaction, burnout, and intention to leave the specialty. *Australian Health Review, 25*(3), 109-121.
- Bazarko, D., Cate, R. A., Azocar, F., & Kreitzer, M. J. (2013). The Impact of an Innovative Mindfulness-Based Stress Reduction Program on the Health and Well-Being of Nurses Employed in a Corporate Setting. *Journal of Workplace Behavioral Health, 28*(2), 107-133. doi:10.1080/15555240.2013.779518
- Bhatnagar, R., Phelps, L., Rietz, K., Juergens, T., Russell, D., Miller, N., & Ahearn, E. (2013). The effects of mindfulness training on post-traumatic stress disorder symptoms and heart rate variability in combat veterans. *Journal of Alternative and Complementary Medicine, 19*(11), 860–861. doi: 10.1089/acm.2012.0602
- Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., ... Devins, G. (2004). Mindfulness: A Proposed Operational Definition. *Clinical Psychology: Science and Practice, 11*(3), 230–241. doi:10.1093/clipsy.bph077
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., ... Zettle, R. D. (2011). Preliminary Psychometric Properties of the Acceptance and Action Questionnaire-II: A Revised Measure of Psychological Inflexibility and Experiential Avoidance. *Behavior Therapy, 42*(4), 676–688. doi:10.1016/j.beth.2011.03.007
- Bride, B. E., Radey, M., & Figley, C. R. (2007). Measuring Compassion Fatigue. *Clinical Social Work Journal, 35*(3), 155–163. doi:10.1007/s10615-007-0091-7

- Buerhaus, P., Donelan, K., DesRoches, C., Lamkin, L., & Mallory, G. (2001). State of the oncology nursing workforce: Problems and implications for strengthening the future. *Nursing Economics*, *19*(5), 198-208.
- Burton, A., Burgess, C., Dean, S., Koutsopoulou, G. Z., & Hugh-Jones, S. (2016). How effective are Mindfulness-Based Interventions for reducing stress among healthcare professionals? A Systematic Review and Meta-Analysis. *Stress and Health*. doi: 10.1002/smi.2673.
- Castilho, P., Pinto-Gouveia, J., & Duarte, J. (2015). Evaluating the Multifactor Structure of the Long and Short Versions of the Self-Compassion Scale in a Clinical Sample. *Journal of Clinical Psychology*, *71*(9), 856–870. doi:10.1002/jclp.22187
- Chiesa, A., Serretti, A., & Jakobsen, J. C. (2013). Mindfulness: top-down or bottom-up emotion regulation strategy? *Clinical Psychology Review*, *33*(1), 82–96. doi:10.1016/j.cpr.2012.10.006
- Cohen-Katz, J., Wiley, S. D., Capuano, T., Baker, D. M., Kimmel, S. & Shapiro, S. (2005). The effects of mindfulness-based stress reduction on nurse stress and burnout, part II: A quantitative and qualitative study. *Holistic nursing practice*, *19*, 26–35.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. New Jersey: Lawrence Erlbaum.
- Decety, J., Yang, C. Y., & Cheng, Y. (2010). Physicians down-regulate their pain empathy response: An event-related brain potential study. *NeuroImage*, *50*(4), 1676–1682. doi:10.1016/j.neuroimage.2010.01.025
- Desbordes, G., Negi, L. T., Pace, T. W. W., Wallace, B. A., Raison, C. L., & Schwartz, E. L. (2012). Effects of mindful-attention and compassion meditation training on amygdala response to emotional stimuli in an ordinary, non-meditative state. *Frontiers in Human Neuroscience*, *6*, 292. doi:10.3389/fnhum.2012.00292
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, *49*, 71-75. doi:10.1207/s15327752jpa4901_13
- Dinis, A., Pinto-Gouveia, J., Duarte, C., & Castro, T. (2011). Estudo de validação da versão portuguesa da Escala de Respostas Ruminativas – Versão Reduzida. *Psychologica*, *54*, 175-201.

- Dominguez-Gomez, E., & Rutledge, D. N. (2009). Prevalence of secondary traumatic stress among emergency nurses. *Journal of Emergency Nursing, 35*(3), 199-204. doi: 10.1016/j.jen.2008.05.003
- Durning, S. J., Costanzo, M., Artino Jr, A. R., Dyrbye, L. N., Beckman, T. J., Schuwirth, L., ... & van der Vleuten, C. (2013). Functional neuroimaging correlates of burnout among internal medicine residents and faculty members. *Frontiers in Psychiatry, 4*, 1-7. doi: 10.3389/fpsyt.2013.00131
- Figley, C. R. (1995). Compassion fatigue as secondary traumatic stress disorder: An overview. In C. R. Figley (Ed.), *Compassion fatigue: Coping with secondary traumatic stress disorder in those who treat the traumatized* (pp. 1–20). New York, NY: Routledge.
- Fortney, L., Luchterhand, C., Zakletskaia, L., Zgierska, A., & Rakel, D. (2013). Abbreviated Mindfulness Intervention for Job Satisfaction, Quality of Life, and Compassion in Primary Care Clinicians: A Pilot Study. *Annals of Family Medicine, 11*, 412-420; doi:10.1370/afm.1511
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175-191.
- Galantino, M. Lou, Baime, M., Maguire, M., Szapary, P. O., & Farrar, J. T. (2005). Association of psychological and physiological measures of stress in health-care professionals during an 8-week mindfulness meditation program: Mindfulness in practice. *Stress and Health, 21*(4), 255–261. doi:10.1002/smi.1062
- Glaus, A., (2007). The status of cancer nursing: A European perspective, European Oncology Nursing Society. European Oncology Nursing Society (EONS). Retrieved from www.cancernurse.eu/documents/EONSStatusOfCancerNursing.pdf
- Goetzel, R. Z., Anderson, D. R., Whitmer, R. W., Ozminkowski, R. J., Dunn, R. L., Wasserman, J., & Committee, T. H. E. R. O. (HERO) R. (1998). The Relationship Between Modifiable Health Risks and Health Care Expenditures: An Analysis of the Multi-Employer HERO Health Risk and Cost Database. *Journal of Occupational and Environmental Medicine, 40*(10).
- Greeson, J. M. (2009). Mindfulness Research Update: 2008. *Complementary Health Practice Review, 14*(1), 10–18. doi:10.1177/1533210108329862

- Gregório, S., & Pinto-Gouveia, J. (2011). Facetas de mindfulness: Características psicométricas de um instrumento de avaliação. *Psychologica*, *54*, 259-280.
- Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits. *Journal of Psychosomatic Research*, *57*(1), 35–43. doi:10.1016/S0022-3999(03)00573-7
- Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry*, *4*, 33–42. doi:10.1016/0163-8343(82)90026-3
- Kabat-Zinn, J. (1990). *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness*. New York: Dell
doi:10.1037/032287
- Keng, S.-L., Smoski, M. J., Robins, C. J., Ekblad, A. G., Brantley, J. G. (2012). Mechanisms of change in mindfulness-based stress reduction: Self-compassion and mindfulness as mediators of intervention outcomes. *Journal of Cognitive Psychotherapy*, *26*(3), 270-280. doi: 10.1891/0889-8391.26.3.270
- Khoury, B., Sharma, M., Rush, S. E., & Fournier, C. (2016). Mindfulness-based stress reduction for healthy individuals: A meta-analysis. *Journal of Psychosomatic Research*, *78*(6), 519–528. doi:10.1016/j.jpsychores.2015.03.009
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: Guilford.
- Krasner, M. S., Epstein, R. M., Beckman, H., Suchman, A. L., Chapman, B., Mooney, C. J., & Quill, T. E. (2009). Association of an educational program in mindful communication with burnout, empathy, and attitudes among primary care physicians. *JAMA*, *302*(12), 1284–1293. doi: 10.1001/jama.2009.1384
- Labelle, L. E., Campbell, T. S., Faris, P., & Carlson, L. E. (2015). Mediators of Mindfulness-Based Stress Reduction (MBSR): Assessing the Timing and Sequence of Change in Cancer Patients. *Journal of Clinical Psychology*, *71*(1), 21-40. doi: 10.1002/jclp.22117
- Laranjeira, C. A. (2009). Preliminary validation study of the Portuguese version of the satisfaction with life scale. *Psychology, Health & Medicine*, *14*(2), 220–226. doi:10.1080/13548500802459900

- Lovibond, S.H. & Lovibond, P.F. (1995). *Manual for the Depression Anxiety Stress Scales*. (2nd. Ed.) Sydney: Psychology Foundation.
- Mackenzie, C. S., Poulin, P. A., & Seidman-Carlson, R. (2006). A brief mindfulness-based stress reduction intervention for nurses and nurse aides. *Applied Nursing Research*, 19(2), 105–109. doi:10.1016/j.apnr.2005.08.002
- Marchand, W. R. (2014). Neural mechanisms of mindfulness and meditation: Evidence from neuroimaging studies. *World Journal of Radiology*, 6(7), 471. doi:10.4329/wjr.v6.i7.471
- Marx, R., Strauss, C., Williamson, C., Karunavira, & Taravajra (2014). The eye of the storm: A feasibility study of an adapted Mindfulness-based Cognitive Therapy (MBCT) group intervention to manage NHS staff stress. *The Cognitive Behaviour Therapist*, 7, 18-30. doi: 10.1017/S1754470X14000300
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2011). Job burnout. *Annual Review Psychology*, 52, 397–422.
- McCray, L. W., Cronholm, P. F., Bogner, H. R., Gallo, J. J., & Neill, R. A. (2008). Resident physician Burnout: Is there hope? *Family Medicine*, 40(9), 626–632.
- Moody, K., Kramer, D., Santizo, R. O., Magro, L., Wyshogrod, D., Ambrosio, J., ... & Stein, J. (2013). Helping the Helpers Mindfulness Training for Burnout in Pediatric Oncology—A Pilot Program. *Journal of Pediatric Oncology Nursing*, 30(5), 275-284. doi: 10.1177/1043454213504497
- Najjar, N., Davis, L. W., Beck-Coon, K., & Doebbeling, C. C. (2009). Compassion Fatigue: A Review of the Research to Date and Relevance to Cancer-care Providers. *Journal of Health Psychology*, 14 (2), 267–277. doi:10.1177/1359105308100211
- Neff, K. D. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity*, 2, 223–250. doi:10.1080/15298860390209035
- Nyklíček, I., Mommersteeg, P. M. C., Van Beugen, S., Ramakers, C., & Van Boxtel, G. J. (2013). Mindfulness-based stress reduction and physiological activity during acute stress: a randomized controlled trial. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association*, 32(10), 1110–3. doi:10.1037/a0032200

- Pais-Ribeiro, J. L., Honrado, A., & Leal, I. (2004). Contribuição para o estudo da adaptação portuguesa das escalas de ansiedade, depressão e stress (EADS) de 21 itens de Lovibond e Lovibond. *Psicologia, Saúde e Doenças*, 5(1), 229-239.
- Pinto-Gouveia, J., Gregório, S., Dinis, A., & Xavier, A. (2012). Experiential avoidance in clinical and non-clinical samples: AAQ-II Portuguese version. *International Journal of Psychology and Psychological Therapy*, 12(2), 139–156.
- Potter, P., Deshields, T., Divanbeigi, J., Berger, J., Cipriano, D., Norris, L., & Olsen, S. (2008). Compassion fatigue and burnout: Prevalence among oncology nurses. *Clinical Journal of Oncology Nursing*, 14(5), E56-62. doi:10.1188/10.CJON.E56-E62.
- Rosenzweig, S., Reibel, D. K., Greeson, J. M., & Brainard, G. C. (2003). Mindfulness-Based Stress Reduction lowers psychological distress in medical students. *Teaching and Learning in Medicine*, 15(2), 88–92. doi:10.1207/S15328015TLM1502_03
- Schulz, M., Damkröger, A., Voltmer, E., Löwe, B., Driessen, M., Ward, M., & Wingefeld K. (2011). Work-related behaviour and experience pattern in nurses: Impact on physical and mental health. *Journal of Psychiatric and Mental Health Nursing*, 18(5), 411–417. doi: 10.1111/j.1365-2850.2011.01691.x.
- Sermeus, W., Linda, H. A., Koen, V. H., Anne, M. R., Peter, G., & Moreno-Casbas, M. T. (2011). RN4CAST consortium. *BMC Nursing*, 10(6). doi:10.1186/1472-6955-10-6
- Shanafelt, T. D., Bradley, K. A., Wipf, J. E., & Back, A. L. (2002). Burnout and self-reported patient care in an internal medicine residency program. *Annals of Internal Medicine*, 136(5), 358-367. doi:10.7326/0003-4819-136-5-200203050-00008
- Shapiro, S. L., Brown, K. W., & Biegel, G. M. (2007). Teaching self-care to caregivers: Effects of mindfulness-based stress reduction on the mental health of therapists in training. *Training and Education in Professional Psychology*, 1(2), 105-115. doi. 10.1037/1931-3918.1.2.105
- Stamm, B. H. (2009). *Professional Quality of Life: Compassion Satisfaction and Fatigue Version 5 (ProQOL)*. Retrieved from: www.isu.edu/~bhstamm or www.proqol.org.
- Stamm, B. H. (2010). *The Concise ProQOL Manual, 2nd Ed.* Pocatello, ID: ProQOL.org

- Tabachnick, B. G., & Fidell, L. S. (2013). *Using Multivariate Statistics* (6th ed). Boston: Pearson.
- Toh, S. G., Ang, E., & Devi, M. K. (2012). Systematic review on the relationship between the nursing shortage and job satisfaction, stress and burnout levels among nurses in oncology/haematology settings. *International Journal of Evidence-Based Healthcare*, *10*(2), 126-41. doi: 10.1111/j.1744-1609.2012.00271.x.
- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*, *27*(3), 247–259. doi:10.1023/A:1023910315561
- Vahey, D. C., Aiken, L. H., Sloane, D. M., Clarke, S. P., & Vargas, D. (2004). Nurse burnout and patient satisfaction. *Medical Care*, *42*, 57–66. doi: 10.1097/01.mlr.0000109126.50398.5a
- Vettese, L. C., Toneatto, T., Stea, J. N., Nguyen, L., & Wang, J. J. (2009). Do mindfulness meditation participants do their homework? And does it make a difference? A review of the empirical evidence. *Journal of Cognitive Psychotherapy. Special Issue: New Developments in Research on Mindfulness-Based Treatments*, *23*(3), 198–225. doi: 10.1891/0889-8391.23.3.198
- Visted, E., Vøllestad, J., Nielsen, M. B., & Nielsen, G. H. (2015). The impact of group-based mindfulness training on self-reported mindfulness: A systematic review and Meta-analysis. *Mindfulness*, *6*(3), 501-522. doi:10.1007/s12671-014-0283-5
- West, C. P., Huschka, M. M., Novotny, P. J., Sloan, J. A., Kolars, J. C., Habermann, T. M., & Shanafelt, T. D. (2006). Association of perceived medical errors with resident distress and empathy: A prospective longitudinal study. *JAMA*, *296*(9), 1071-1078. doi:10.1001/jama.296.9.1071
- World Health Organization (2003). Global cancer rates could increase by 50% to 15 million by 2020. Geneva: World Health Organization, 2003. Accessed January 2016. Available from: <http://www.who.int/mediacentre/news/releases/2003/pr27/en>

Mindfulness, self-compassion and psychological inflexibility mediate the effects of a mindfulness-based intervention in a sample of oncology nurses¹³

Abstract

Objectives: Mindfulness-based interventions (MBIs) have received large empirical support for their efficacy. In comparison, few studies explored the underlying mechanisms and processes through which MBIs impact outcomes. This study aims to explore the potential role of trait mindfulness, self-compassion and psychological inflexibility as mediators of the effects of a MBI on burnout, compassion fatigue, psychological symptoms and satisfaction with life.

Method: This study uses data from a non-randomized controlled study with a sample of oncology nurses. Participants were recruited from two large oncology hospitals in Portugal's north and centre regions. A sample of 94 oncology nurses agreed to participate in the study and self-selected into an experimental ($n = 45$) and comparison condition ($n = 48$). Complete data was obtained for 48 of the initial 94 participants, mainly due to poor follow-up data rather than high drop-out rate. Participants completed self-report measures to assess several processes, such as mindfulness, psychological inflexibility, self-compassion, and several outcomes, such as burnout and compassion fatigue, depression, anxiety and stress symptoms, and satisfaction with life.

Results: Changes in mindfulness mediated changes in burnout, anxiety and stress, and satisfaction with life; changes in self-compassion mediated the impact of the intervention on burnout, depression, anxiety, stress and

¹³ Duarte, J., & Pinto-Gouveia, J. (2016). Mindfulness, self-compassion and psychological inflexibility mediate the effects of a mindfulness-based intervention in a sample of oncology nurses. *Manuscript submitted for publication.*

satisfaction with life; and psychological inflexibility mediated reductions in burnout, compassion fatigue, depression, and stress.

Conclusions: These findings contribute to the growing body of research examining the underlying mechanisms at work in MBIs, and highlight the importance of mindfulness, self-compassion and psychological inflexibility as key change processes.

Keywords: mindfulness-based intervention; self-compassion; psychological inflexibility; mechanisms of change; nursing; oncology

Introduction

A growing body of robust evidence has demonstrated that mindfulness-based interventions (MBIs) are effective in improving a range of psychological outcomes across a wide range of populations, including healthcare professionals. A theoretical premise of these interventions is that they promote the development of mindfulness, a form of awareness that arises from “paying attention in a particular way to the present moment, on purpose and non-judgmentally” (Kabat-Zinn, 1994, p. 4), which in turn leads to positive psychological outcomes. However, despite the extensive evidence of the efficacy of MBIs, relatively few studies explored the mechanisms through which such interventions promote its psychological effects. In addition, it is still presently unclear whether other constructs related to mindfulness may mediate the effects of MBIs, such as self-compassion and psychological flexibility. The goal of this research was to explore the mechanisms of change of a MBI in a sample of oncology nurses.

Oncology nursing involves the management of complex pathologies with poor prognosis, close and constant contact with patients who are in severe pain, distress and approaching death, and difficult patient and family situations, which poses an additional challenge to these professionals and further contributes to job dissatisfaction, stress and burnout (Barrett & Yates,

2002; Potter et al., 2010). In addition, oncology nursing is one area that has been particularly affected by the nursing shortage (e.g., Buerhaus, Donelan, DesRoches, Lamkin, & Mallory, 2001; Glaus, 2007). These significant challenges make oncology nursing one of the areas most affected by stress and burnout (Barnard, Street, & Love, 2006; Potter et al., 2010).

Burnout has been defined as a prolonged response to chronic job-related emotional and interpersonal stressors, characterized by emotional exhaustion, depersonalization, and lack of perceived social accomplishments (Maslach, Schaufeli, & Leiter, 2001). Compassion fatigue, in turn, is described as a secondary traumatic reaction that results from the close contact with other people's suffering or trauma, and yields an almost identical set of symptoms to those of PTSD. Nurses, and especially oncology nurses, are at a particular risk of developing compassion fatigue, because they constantly witness and contact intense suffering, pain and trauma of others (e.g., Najjar, Davis, Beck-Coon, & Doebbeling, 2009). Burnout can occur in any profession and is not specific to work with a traumatized population. Research indicates that burnout is a function of factors such as workload, job related stress, and interpersonal conflict with colleagues (Maslach & Leiter, 1997). In contrast, compassion fatigue refers exclusively to those individuals in the helping professions, and results from the exposure to traumatized patients (Figley, 1995).

In the absence of interventions to modulate the reactions to stress, these symptoms may lead to maladaptive coping mechanisms, psychological symptoms, and physical illness (e.g., Maslach et al., 2001; Schulz et al., 2011).

Mindfulness-Based Interventions

In recent years, a large amount of empirical data has demonstrated that MBIs are effective in improving a range of mental and physical health outcomes, in clinical (e.g., Gotink et al., 2015; Hoffmann, Sawyer, Witt, & Oh, 2010; Chiesa & Serretti, 2011; Piet, Würtzen, & Zachariae, 2012; Bawa et al., 2015;

Demarzo et al., 2015) and non-clinical populations (e.g., Khoury, Sharma, Rush, & Fournier, 2015; Eberth & Sedlmeier, 2012; Chiesa & Serretti, 2009).

Specific to the healthcare field, a review of 10 studies of the impact of Mindfulness-Based Stress Reduction (MBSR) on healthcare professionals' health and wellness found that participation in MBSR had benefits in the domains of physical and mental health, such as reduced stress, anxiety, burnout, and improved mood, positive affect and satisfaction with life (Irving, Dobkin, & Park, 2009). Although research of the impact of MBIs on nurses separate from other healthcare professionals is scarce, some studies have found significant improvements in burnout and psychological distress among nurses participating in a MBI compared to a control group (Cohen-Katz, Wiley, Capuano, Baker, & Shapiro, 2005; Mackenzie, Poulin, & Seidman-Carlson, 2006).

Mechanisms of Change in Mindfulness-Based Interventions

Although the efficacy of MBIs is now well established, relatively few studies have explored the mechanisms that underlie the positive effects of such interventions. Studies that have examined the mechanisms of change on MBIs have mainly focused on the development of non-judgmental and non-reactive present-focused awareness as a central mediator of the effects of the intervention on positive psychological outcomes. In a recent meta-analysis of twenty mediation studies, the authors found consistent evidence for mindfulness as a mechanism underlying MBIs effects (Gu, Strauss, Bond, & Cavanagh, 2015).

Less studied are other potential mechanisms that may mediate the effects of MBIs. One construct that has been identified as a potential process is self-compassion. Like mindfulness, self-compassion is a central concept in Buddhist psychology, and it involves adopting a kind and compassionate attitude toward oneself when suffering, recognizing one's experiences as part of the larger human condition, and bringing non-judgmental awareness to one's painful experiences rather than over-identifying with them (Neff,

2003a). There is some conceptual overlap between mindfulness and self-compassion in that both involve turning toward painful experiences with an accepting attitude so that maladaptive processes of reactivity are lessened.

Meta-analytic research on self-compassion suggested that this construct is strongly related to psychopathology (MacBeth & Gumbley, 2012), and well-being (Zessin, Dickhäuser, & Garbade, 2015). Intervention research also suggests that self-compassion commonly increases and accompanies improvements in positive and negative symptoms during MBIs (Birnie, Speca, & Carlson, 2010; Kuyken et al., 2010; Shapiro, Brown, & Biegel, 2007).

Preliminary evidence suggests that self-compassion may be a mechanism of change in MBIs. For example, in a randomized controlled trial (RCT) of Mindfulness-Based Cognitive Therapy (MBCT), the effects of the intervention on depressive symptoms were found to be mediated by changes in both mindfulness and self-compassion (Kuyken et al., 2010). In another RCT the authors also found that both mindfulness and self-compassion were mediators of the effects of the Mindfulness-Based Stress Reduction, even when controlling for the effects of one another (Keng, Smoski, Robins, Ekblad, & Brantley, 2012). Although promising, this modest body of evidence does not provide conclusive evidence of self-compassion as a mediator of the impact of MBIs on psychological outcomes, and more studies are needed (Gu et al., 2015).

Another possible mechanism connecting MBIs with its beneficial effects is psychological flexibility. Psychological flexibility broadly refers to an individual's ability to fully embrace and connect with the experiences in the present moment, without avoidance, and to change or persist in behaviours that are in line with identified values (Hayes, Strosahl, & Wilson, 1999; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). There is some conceptual overlap between mindfulness and psychological flexibility, in that both imply awareness of, and openness to, private experiences that are happening in the present moment (Hayes et al., 1999). Psychological flexibility has consistently

demonstrated associations with measures of psychological symptoms and quality of life (Hayes et al., 2006; Ruiz, 2010), and some studies showed that it mediates improvements in Acceptance and Commitment Therapy (ACT) interventions (e.g., Dalrymple, & Herbert, 2007; Gifford et al., 2004). Given the overlap between the constructs of psychological flexibility and mindfulness, it would not be surprising that MBIs also lead to increases in psychological flexibility, and that such increases would impact on positive outcomes. In this regard, only one controlled study to our knowledge explored such hypothesis in a sample of cancer patients, and results provided preliminary evidence that psychological flexibility can be a mediator of MBSR's effects (Labelle, Campbell, Faris, & Carlson, 2015).

Limitations of Previous Studies

Although the role of mindfulness as a mechanism of change in MBIs has received empirical support (Gu et al., 2015), it is still presently unclear whether self-compassion and psychological inflexibility are also mediators of the impact of MBIs on psychological outcomes. Also, there is no study to our knowledge that explored the mechanisms of change of a MBI in a sample of healthcare professionals. Conducting such studies in specific samples is crucial in order to explore the specific demands and advantages of the interventions.

The general aim of the present study is to explore the mechanisms underlying the effects of a MBI with oncology nurses, using data from a non-randomized, waitlisted controlled study. We hypothesise that several mechanisms previously reported in the literature would be mediators of the impact of the MBI on nurses' psychological well-being, namely trait mindfulness, self-compassion and psychological inflexibility.

Method

Participants

The sample, recruitment procedures, treatment conditions, and measures used in the current study have been described in detail in Duarte & Pinto-Gouveia (2016). Participants were recruited from two major oncology hospitals, located in the north and centre regions of Portugal. Individuals in this study were nurses who worked in direct contact with patients. A total of 94 participants were initially recruited from the two hospitals, during 2013 and 2014. From these, one participant dropped-out before the intervention due to inconvenience. Participants who agreed to take part in the study were assigned to the experimental ($n = 45$) and waiting-list control conditions ($n = 48$). Full data were obtained from 48 of these initial 93, representing 52 % of participants initially recruited (29 in the experimental group and 19 in the waiting-list control group). The main reason for the high level of attrition was failure to complete and return the post-intervention questionnaires, with the exception of two participants who dropped-out of the study.

The total sample analysed consisted of 48 nurses, 43 female nurses (89.6%) and 5 male nurses (10.4%), with a mean age of 41 ($SD = 8.73$), ranging from 25 to 56 years of age. The majority of the sample was married ($n = 33$, 68.8%), 8 were single (16.7%), 5 were divorced (10.4%), and 2 were unmarried couples (4.2%). The mean years in practice was 12.65 ($SD = 11.67$) and the majority of nurses worked 40 hours per week (43.8%).

All procedures were in accordance with the Helsinki Declaration of 1975, as revised in 2000. All participants provided their written informed consent. The study was approved by the ethics committees and administration boards of both hospitals.

Intervention

The intervention is a 6-week mindfulness-based group intervention, based on the principles of Mindfulness-Based Stress Reduction (Kabat-Zinn, 1982). A detailed description regarding the intervention can be found in Duarte & Pinto-Gouveia (2016). The length of the program was adapted to make it easier to incorporate into nurses' work schedule. The intervention consisted of six, two-hour group sessions, each of which included a didactic section and experiential exercises. Practices included mindfulness of breath, bodily sensations, thoughts, sounds, and everyday activities. Participants received a CD with guided meditation exercises with different lengths, which they were instructed to practice at home for at least 15 minutes per day. They also received a manual that summarized key points from the sessions, clarified homework requirements, and included a daily recording of their practice for each week. Sessions were delivered by one of the authors with experience in mindfulness practice.

Measures

All participants completed a battery of questionnaires before and immediately after the 6-week training program.

The Professional Quality of Life Scale, version 5 (ProQOL-5; Stamm, 2010). The ProQOL is a 30-item self-report questionnaire that measures burnout (BO), or feelings of hopelessness and difficulties in dealing with work or in doing one's job effectively (e.g., "I feel worn out because of my work as a health care provider); and secondary traumatic stress (STS), defined as work-related, secondary exposure to people who have experienced extremely or traumatically stressful events (e.g., "I feel depressed because of the traumatic experiences of the people I help"). Higher scores on these subscales indicate greater levels of burnout and compassion fatigue. Given that the terms 'compassion fatigue' and 'secondary traumatic stress' have been used

interchangeably in the literature, we will use the term 'compassion fatigue' to refer to this factor. Respondents are instructed to indicate how frequently each item was experienced in the previous 30 days, on a 5-item Likert scale (from 1 = 'never' to 5 = 'very often'). Scoring requires summing the item responses for each 10-item subscale. Internal consistency estimates for the sub-scales are reported as .75 for the burnout scale, and .81 for the compassion fatigue/secondary trauma scale. The Portuguese version also showed good internal consistency (.71 for the burnout scale, and .83 for the compassion fatigue/secondary trauma scale; Carvalho, 2011). Cronbach's alphas in the present study were .78 for burnout and .61 for compassion fatigue.

Depression, Anxiety, Stress Scale (DASS-21; Lovibond & Lovibond, 1995; Antony, Bieling, Cox, Enns, & Swinson, 1998). The DASS-21 comprises 3 subscales, measuring depression, anxiety and stress symptoms. Participants are asked to indicate the degree to which each statement applied to them in the last month months. The DASS-21 uses a 4-point rating scale (0 = Did not apply to me at all to 3 = Applied to me very much, or most of the time). Validity and reliability of this scale across different samples has been well established (e.g., Lovibond & Lovibon 1995; Pais-Ribeiro, Honrado, & Leal, 2004, Portuguese version). Subscale scores were computed by calculating the sum of subscale item responses, and higher scores indicate higher levels of symptoms. Cronbach's alpha in the present study were .88 for depression, .83 for anxiety, and .89 for stress.

Satisfaction with Life Scale (SWL; Diener, Emmons, Larsen, & Griffins, 1985). This is a 5-item scale designed to measure global cognitive judgments of one's life satisfaction. Participants indicate how much they agree or disagree with each of the 5 items using a 7-point scale that ranges from 7 strongly agree to 1 strongly disagree. The original and the Portuguese versions of the scale showed good psychometric properties (Laranjeira, 2009). Cronbach's alpha was .90 in the present study.

Self-Compassion Scale (SCS; Neff, 2003b). The SCS is a widely used self-report measure developed to assess six components of self-compassion: self-kindness (“I try to be understanding and patient toward those aspects of my personality I don’t like”); self-judgment (“I’m disapproving and judgmental about my own flaws and inadequacies”); common humanity (“I try to see my failings as part of the human condition”); isolation (“When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world”); mindfulness (“When something painful happens I try to take a balanced view of the situation”); and over-identification (“When I’m feeling down I tend to obsess and fixate on everything that’s wrong”). Scores on the six subscales were summed (after reverse-coding negative items) to create an overall self-compassion score. Items are rated on a 5-point scale (e.g., 1 = ‘almost never’ to 5 = ‘almost always’). The SCS has adequate construct and convergent validity (Neff, 2003b). The Portuguese version of the scale also showed good internal consistency and validity (Castilho, Pinto-Gouveia, & Duarte, 2015). SCS scores are presented so that higher scores indicate greater self-compassion. Cronbach’s alphas in the present study were .92 for the total scale, .87 for self-kindness, .69 for self-judgment, .79 for common humanity, .83 for isolation, .82 for mindfulness, and .75 for over-identification.

Acceptance and Action Questionnaire – II (AAQ-II; Bond et al., 2011). The AAQ-II is a 7-item measure of psychological inflexibility/experiential avoidance. Answers are given on a 7-point scale ranging from 1 = ‘never true’ to 7 = ‘always true’. The Portuguese version of the scale showed good internal consistency ($\alpha = .89$) and good convergent and discriminant validity (Pinto-Gouveia, Gregório, Dinis, & Xavier, 2012). Higher scores indicate greater psychological inflexibility. Cronbach’s alpha was .91 for the total scale in the present study.

The Five Facets of Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). This questionnaire consists of 39 items that assess five facets of mindfulness. Items are rated on a Likert scale ranging from

1 (never or very rarely true) to 5 (very often or always true). The factors include: observing, defined as noticing or attending to internal and external experiences such as sensations, thoughts, or emotions (e.g., 'I pay attention to sensations, such as the wind in my hair or sun on my face'); describing, which refers to labelling internal experiences with words (e.g., 'It's hard for me to find the words to describe what I'm thinking', reversed); acting with awareness, which includes focusing on one's activities in the moment as opposed to behaving mechanically (e.g., 'I rush through activities without being really attentive to them', reversed); non-judging of inner experience, which refers to taking a non-evaluative stance toward thoughts and feelings (e.g., 'I tell myself that I shouldn't be thinking the way I'm thinking', reversed); and non-reactivity to inner experience, which refers to allowing thoughts and feelings to come and go, without getting caught up in or carried away by them (e.g., 'When I have distressing thoughts or images I am able just to notice them without reacting'). The original and Portuguese versions (Gregório & Pinto-Gouveia, 2011) of the scale showed good psychometric properties. Cronbach's alphas were .83 for observe, .90 for describe, .90 for acting with awareness, .84 for non-judging, and .72 for non-reacting, in the present study.

Procedure

After approval of the ethics committees, the study was advertised among the nurses by the hospitals' intranet. After participants' consent to be part of the research was obtained, participants were allocated to the experimental and wait-list control conditions. The intervention took place on site, during nurses' working schedule. Groups were composed, on average, of 15 participants. As a result of rotating shifts constraints, participants could not be randomly assigned to the groups. Rather, participants self-selected to one of the two conditions according to their convenience. Participants assigned to the control condition received the intervention after the experimental group. The baseline package of questionnaires was delivered one week before the

intervention and completed before session one. All participants were asked to complete their post-intervention questionnaires and return them in a sealed package.

Data Analyses

Given that the purpose of this study was to explore mechanisms of change in a MBI, we combined the experimental and control groups' pre-treatment and post-treatment assessments, and data was explored using within-person analyses.

To test within-subjects' mediation effects, we used the macro MEMORE for SPSS (Montoya & Hayes, in press). MEMORE (MEdiation and MOderation analysis for REpeated measures designs) is a novel approach that allows to test mediation effects in two-condition within-participants' designs, i.e., when the data come from repeated measurement of the same people on variables in the mediation process. In these models, the mediators and outcomes are measured pre-and post-intervention, with all participants experiencing the same intervention. In this variant, the independent variable 'X' is the mere passage of time, with change in the mediator (M) and change outcome (Y) presumed to be resulting from the intervention that occurred between the two points in time. The significance of the indirect effects, based on bias-corrected confidence intervals (CI) derived from 5,000 bootstrap resamples, is indicated when the CI values do not cross zero. The Bootstrap procedure is helpful because total and indirect effects are often not multivariate normally distributed (Preacher & Hayes, 2004; Preacher & Hayes, 2008), and has been recommended over the Sobel test and the traditional causal steps approach (Baron & Kenny, 1986) by several researchers (e.g., Mackinnon, Lockwood, & Williams, 2004; Hayes, 2013). For a more detailed description of the MEMORE methodology see Montoya and Hayes (in press). MEMORE is freely available and can be downloaded from www.afhayes.com, where the documentation describing its use can also be found. In this study, the outcome

measures were burnout and compassion fatigue, depression, anxiety, and stress, and satisfaction with life, and mediator variables were trait mindfulness, self-compassion, and psychological inflexibility.

The mediators were tested one at a time, given the high correlation between the measures. As Preacher and Hayes (2008) argue, testing overlapping constructs in multiple mediator models may compromise the significance of indirect effects due to collinearity. This may be particularly relevant in intervention studies, where an intervention is designed to impact several variables to achieve a desirable outcome, as is the case in the present study.

We report the unstandardized coefficient (B) and standard error (SE) for each regression equation to indicate the predicted change in the dependent variable given a one-unit change in the independent variable, while controlling for the other variables in the equation. Statistical significance was set at .05 and IBM SPSS version 23 was used for all analyses.

Results

Duarte & Pinto-Gouveia (2016) reported that there were no significant differences between participants in the intervention and control conditions regarding any demographic variables. However, the control group presented significant higher levels of observing (FFMQ) at baseline when compared to the intervention group, $t(46) = 2.21$, $p = .03$, $d = .43$, 95% CI [0.34 – 7.44]. Also, it was found that the MBI participants showed significantly greater increases in mindfulness, self-compassion, and psychological inflexibility, and significantly greater decreases in compassion fatigue.

Two-Condition Within-Subjects' Mediation Analysis

Using the total sample of participants that underwent the MBI and provided complete surveys ($n = 48$), we conducted several mediation analyses using

the recent MEMORE macro. Change in mindfulness (FFMQ), self-compassion, and psychological inflexibility were the mediators, and change in burnout, compassion fatigue, depression, anxiety, stress, and satisfaction with life were the outcomes. Results for the indirect effects and confidence intervals for each outcome are displayed on Table 1.

Results can be interpreted as follows. There was a significant indirect effect of intervention (X) on burnout (Y) through psychological inflexibility (M), $B = -0.59$, $BootSE = 0.30$, 95% CI [-1.33 - -0.12]. This result indicates that participants had lower scores of burnout at post-intervention relative to before the intervention by 0.59 units, through the process of psychological inflexibility. In this model, we also found that intervention (X) had a direct negative effect on psychological inflexibility (M), $B = -2.62$, $SE = .82$, $t = -3.12$, $p = .002$, 95% CI [-4.259 - -.975], and this decrease in psychological inflexibility was directly related to a decrease in burnout (Y), $B = .22$, $SE = .10$, $t = 2.31$, $p = .026$, 95% CI [.028 - .419], which explains the negative sign of the indirect effect. Due to space constraints we did not report all the direct effects in the remaining models.

Overall, results indicated that increases in trait mindfulness (as measured by the FFMQ) mediated the effects of the intervention on burnout, anxiety and stress symptoms, and satisfaction with life. Psychological inflexibility significantly mediated the effects of the intervention on burnout, compassion fatigue, depression, and stress symptoms. Finally, self-compassion significantly mediated the effects of the intervention on burnout, depression, anxiety and stress symptoms, and satisfaction with life.

In contrast, mindfulness facets did not mediate the effects of the intervention on compassion fatigue and depressive symptoms. Regarding specific mindfulness facets, we found that describing, acting with awareness, and non-judging were not significant mediators of the intervention on any outcome variable. Psychological inflexibility did not significantly mediate the effects of the intervention on anxiety symptoms and satisfaction with life. Self-

compassion was not a significant mediator of the effects of the intervention on compassion fatigue. Regarding self-compassion dimensions separately, we found that self-kindness and self-judgment did not significantly mediate the effects of the intervention on any outcome variable.

Table 1.
Model Coefficients, Standard Errors and 95 % Confidence Intervals (CI) for the Individual Indirect Effects of the Mindfulness Intervention on each Outcome Variable

Outcome	Mediator	Coeff.	SE	Bootstrapping BC 95% CI	
				Lower	Upper
Burnout	Psychological inflexibly	-.59	.30	-1.33	-.01
	Isolation (SCS)	-.67	.38	-1.66	-.10
	Mindfulness (SCS)	-.48	.27	-1.15	-.04
	Non-reacting (FFMQ)	-.43	.34	-1.35	-.02
Compassion Fatigue	Psychological inflexibly	-.49	.23	-1.07	-.12
Depression	Psychological inflexibly	-.42	.19	-.89	-.12
	Common Humanity (SCS)	-.28	.15	-.66	-.03
	Isolation (SCS)	-.46	.22	-1.00	-.12
	Mindfulness (SCS)	-.25	.17	-.70	-.01
	Over-identification (SCS)	-.40	.24	-.99	-.06
Anxiety	Over-identification (SCS)	-.33	.16	-.70	-.08
	Self-compassion Total	-.33	.14	-.67	-.11
	Observing (FFMQ)	-.34	.20	-.81	-.02
Stress	Psychological inflexibly	-.54	.28	-1.21	-.08
	Isolation (SCS)	-.52	.25	-1.13	-.14
	Mindfulness (SCS)	-.46	.24	-1.06	-.09
	Over-identification (SCS)	-.69	.30	-1.40	-.26
	Self-compassion Total	-.68	.24	-1.21	-.25
	Observing (FFMQ)	-.63	.36	-1.52	-.06

	Non-reacting (FFMQ)	-.39	.25	-1.05	-.07
	Self-compassion Total	.62	.41	-.04	1.69
Satisfaction with Life	Observing (FFMQ)	.96	.53	.11	2.24
	Non-reacting (FFMQ)	.54	.46	.04	1.79

Note. SCS = Self-compassion Scale; FFMQ = Five Facets of Mindfulness; BC 95% CI = bias-corrected 95% confidence intervals; SE = standard error.

Discussion

Although during the last years many studies have been conducted on the effects of MBIs, few studies in comparison have explored the processes underlying such effects. In addition, there is scarcity of studies exploring the potential benefits of MBIs, and the mechanisms underlying those effects, in healthcare professionals. The aim of the present study was to explore several mechanisms of change in a MBI using a sample of oncology nurses. We hypothesized three processes that have been identified in the literature as potential mediators, namely mindfulness, self-compassion, and psychological inflexibility.

Results suggested that these processes mediated some of the effects of the MBI on nurses' psychological functioning. We found that changes in self-reported mindfulness significantly mediated the effects of the MBI on burnout, anxiety and stress symptoms, and satisfaction with life. The finding that a mindfulness intervention changes trait mindfulness is in line with the literature (Visted, Vøllestad, Nielsen, & Nielsen, 2015; Gu et al., 2015). The finding that mindfulness facets did not mediate the effects of the intervention on depressive symptoms is not in line with previous studies (e.g., Heeren et al., 2015; Haenen, Nyklíček, van Son, Pop, & Pouter, 2016). The finding that only observing and non-reacting facets of mindfulness were significant mediators of the effects of the intervention is consistent with theoretical accounts on the definition of the construct as non-judgmental and non-reactive present-moment awareness (Bishop et al., 2004), and with previous

studies (e.g., Heeren et al., 2015; Josefsson, Larsman, Broberg & Lundh, 2011). Given the high stress environments that characterize oncology nursing, being able to be present to one's ongoing experience, whether by listening empathically to a patient or performing a technical procedure, as well as being able to recognize bias and judgments in thinking, or difficult emotions and sensations, and non-reacting to them, may be crucial not only for nurses' well-being but also for effective care.

Self-compassion was also a significant mediator of the effects of the intervention on several outcomes, namely burnout, depression, anxiety, stress and satisfaction with life, and especially the mindfulness, isolation, and over-identification dimensions. This suggests that the mindfulness training may teach participants another way of relating to adversity, thus contributing to the alleviation of suffering through the development of a more accepting view of oneself and one's experiences. These findings are in line with a previous study which supported self-compassion as a mediator of MBCT's effects (Kuyken et al., 2010). However, in two additional studies, self-compassion increased as a result of the intervention but did not mediate MBRS's effects on anger expression or anxiety (Keng et al., 2012; Bergen-Cico & Cheon, 2013). In a previous study with mental-health professionals it was also found that a MBSR intervention significantly increased self-compassion (Shapiro, Astin, Bishop, & Cordova, 2005), and that increases in self-compassion were associated with decreases in perceived stress, but not satisfaction with life. Self-compassion may be a crucial skill for oncology caregivers. Bringing a self-compassionate attitude, for example, by forgiving oneself for inevitable mistakes, or for not having the resources necessary to provide what would be considered optimal patient care, or for grieving when a patient passes away, can promote a more balanced emotional and mental state.

Contrary to our hypotheses, self-compassion did not mediate the impact of the MBI on compassion fatigue. Maybe the cultivation of self-compassion requires a longer period of mindfulness practice to improve compassion

fatigue, or more explicit practices are required during the intervention, such as loving-kindness meditation. In fact, compassion and self-compassion are only approached explicitly in session five with the introduction of loving-kindness meditation, although they are implicitly embodied in all of the practices and teachings from session one.

Finally, psychological inflexibility was a significant mediator of the effects of the intervention on burnout, compassion fatigue, depression and stress. In the context of oncology healthcare, caregivers frequently have to cope with the experience of traumatic memories, negative thoughts, unpleasant emotions and physiological sensations associated with the constant exposure to suffering, trauma and losses. While trying to control or avoid them can provide some relief of discomfort in the short-term, it ultimately becomes maladaptive, increasing distress and getting in the way of other important and valued aspects of life (Hayes et al., 1999).

Psychological inflexibility was the only significant mediator of the effects of the intervention on compassion fatigue. Compassion fatigue is described as a secondary traumatic reaction that results from the close contact with the suffering or trauma of others, and yields symptoms similar to those of PTSD (Figley, 1995). There is ample evidence for experiential avoidance and psychological inflexibility as problematic processes linking trauma to diminished well-being (Polusny, Rosenthal, Aban, & Follette, 2004; Marx & Sloan, 2002; Orcutt, Pickett, & Pope, 2005; Reddy, Pickett, & Orcutt, 2006; Rosenthal, Hall, Palm, Batten, & Follette, 2005). Avoidance of internal experiences has also been shown to increase negative affect in PTSD (Monson, Price, Rodriguez, Ripley, & Warner, 2004). Thus, psychological inflexibility may be a maintenance factor for compassion fatigue, and interventions that effectively reduce this maladaptive process may help reduce compassion fatigue. Some studies have provided evidence that mindfulness interventions may be helpful in treating trauma-related symptoms

(Bhatnagar et al., 2013; Nyklíček, Mommersteeg, Van Beugen, Ramakers, & Van Boxtel, 2013).

Only one previous study was identified that found that psychological inflexibility was a significant mediator of the MBSR's effects, in a sample of cancer patients (Labelle et al., 2015). Thus, the present study is one of the firsts to explore psychological inflexibility as a mechanism of change in MBIs.

Overall, this study's findings highlight the importance of changes in mindfulness, self-compassion and psychological inflexibility as mediators of the effects of a MBI, and suggest that unique processes are responsible for different outcomes. Despite this specificity, we believe that these constructs do not operate independent of each other, but rather mutually enhance one another. Mindfulness is a core component of self-compassion, and provides the mental conditions for compassion to emerge, and compassion informs the gentle and accepting quality of the mindful attention. In addition, mindfulness is a central process in psychological flexibility, and recently ACT practitioners and researchers have been acknowledging the role of self-compassion in the psychological flexibility model (e.g., Yadavaia, Hayes, & Vilardaga, 2014).

These findings can have important implications as they can be translated into educational, training and intervention initiatives designed to prevent and treat burnout and compassion fatigue in oncology healthcare professionals. However, it is likely that changes only at the individual level may not be sufficient to tackle compassion fatigue and especially burnout, and organizations should also provide favourable contexts to nurses' well-being (e.g., Back, Steinhäuser, Kamal, & Jackson, 2016; Maslach et al., 2001).

This study has several strengths. This is the first study to our knowledge to explore the underlying mechanisms of a MBI in a healthcare context. Also, this is one of the first controlled studies to explore psychological inflexibility as a mechanism of change in MBIs. In addition, this is one of the first studies to apply a novel statistical procedure to explore within-subject mediation effects. Studies where data come from repeated measurements of the same

people on variables in the mediation process are common, such as intervention studies where all participants experience the same intervention. Free and easy-to-use statistical tools such macro MEMORE can assist researchers interested in studying mediation processes in such designs.

Limitations

Although the results of this study are very promising, several limitations should be taken into account. First, we did not measure change in the mediators before the outcomes or during the intervention, and temporal ordering of mediator and outcome variables is crucial to establish mediation (Kazdin, 2007). Thus, we cannot rule out the possibility that changes in the outcomes lead to changes in the mediators. However, this explanation seems less likely in light of some evidence showing that changes in mindfulness during a mindfulness intervention preceded changes in mood (Baer, Carmody, & Hunsinger, 2012; Snippe, Nyklíček, Schroevers, & Bos, 2015).

Restrictions related to shifts and management of human resources did not allow a randomization of participants to the conditions, and participants were assigned by choice rather than by chance, which may have introduced selection biases. However, given that all participants knew they would receive the mindfulness training, and were selected into the experimental and control conditions according to their schedules, we believe that these biases would be small. There was also a high attrition rate in this study that was mainly due to missing data at posttest, rather than drop-out. It is possible that the large number of questionnaires administered could have contributed to this low response rate, and this should be taken into account in future studies. We found that there was a higher attrition rate for the control group. Although we're not clearly sure about the reasons for this differential attrition rate, we can speculate that being in the control condition may have decreased participants' motivation to be part of the study and thus impaired adherence to study's posttest assessments. Another important limitation is the reliance on self-report measures, which is particularly relevant in mindfulness studies.

Numerous limitations have been identified for the mindfulness measures, including lack of external, objective criteria, potential confusion over semantic interpretation, and the introspection required to recollect mental states (Grossman, 2008). Also, the fact that some studies reported that participants in active control groups increased their self-reported mindfulness as much as participants cultivating mindfulness in MBIs (Visted et al., 2015) raises questions regarding its construct validity. The widely used AAQ-II has also been criticized, mainly for not having sufficient discriminant validity (Wolgast, 2014). In contrast, self-compassion seems to be more readily definable, and items may be more easily accessible to respondents (Van Dam, Sheppard, Forsyth, & Earleywine, 2011). Finally, another limitation is the use of multiple testing which can increase errors in inference, particularly Type 1 error.

Future studies should improve on these limitations to establish the mechanisms of MBIs. For example, including several assessment time points during the intervention would allow to make stronger conclusions regarding mediation and to explore the temporal ordering of the mediators. Also, given this is the first study to our knowledge to explore the mediator role of mindfulness, self-compassion and psychological inflexibility in healthcare professionals, and its relation to burnout and compassion fatigue, future studies are needed to corroborate such findings.

Conclusion

Research on the mechanisms of change underlying the effects of MBIs on psychological functioning is a complex yet a crucial task in order to improve the quality, delivery and effectiveness of the interventions, develop the theoretical underpinnings of mindfulness and MBIs and inform the direction of future research. Furthermore, conducting such studies in specific samples, such as oncology nurses, is crucial in order to examine the specific demands and advantages of the interventions, and to discern the specific mechanism of change.

References

- Antony, M., Bieling, P. J., Cox, B. J., Enns, M. W., Swinson, R. P. (1998) Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and community a sample. *Psychological Assessment, 10*, 176–181.
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27- 45. doi: 10.1177/1073191105283504
- Barnard, D., Street, A., & Love, A. W. (2006). Relationships between stressors, work supports, and burnout among cancer nurses. *Cancer Nursing, 29*(4), 338-345.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- Barrett, L., Yates, P., 2002. Oncology/haematology nurses: A study of job satisfaction, burnout, and intention to leave the specialty. *Australian Health Review, 25*(3), 109-121.
- Bawa, F. L. M., Mercer, S. W., Atherton, R. J., Clague, F., Keen, A., Scott, N. W., & Bond, C. M. (2015). Does mindfulness improve outcomes in patients with chronic pain? Systematic review and meta-analysis. *British Journal of General Practice, 65*(635), e387-e400. doi:10.3399/bjgp15X685297
- Bergen-Cico, D., Possemato, K., & Cheon, S. (2013). Examining the efficacy of a brief mindfulness-based stress reduction (brief MBSR) program on psychological health. *Journal of American College Health, 61*(6), 348-360. doi:10.1080/07448481.2013.813853.
- Birnie, K., Speca, M., Carlson, L. E. (2010). Exploring self-compassion and empathy in the context of Mindfulness-based Stress Reduction (MBSR). *Stress and Health, 26*, 359-371. doi:10.1002/smi.1305
- Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., ... & Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and practice, 11*(3), 230-241. doi:10.1093/clipsy/bph077
- Back, A. L., Steihauser, K. E., Kamal, A. H., & Jackson, V. A. (2016). Building resilience for palliative care clinicians: An approach to burnout

- prevention based on individual skills and workplace factors. *Journal of Pain and Symptom Management*, 52(2), 284-291. doi: 10.1016/j.jpainsymman.2016.02.002
- Baer, R. A., Carmody, J., & Hunsinger, M. (2012). Weekly change in mindfulness and perceived stress in a Mindfulness-Based Stress Reduction program. *Journal of Clinical Psychology*, 68, 755-765. doi: 10.1002/jclp.21865
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., ... Zettle, R. D. (2011). Preliminary Psychometric Properties of the Acceptance and Action Questionnaire-II: A Revised Measure of Psychological Inflexibility and Experiential Avoidance. *Behavior Therapy*, 42(4), 676–688. doi:10.1016/j.beth.2011.03.007
- Buerhaus, P., Donelan, K., DesRoches, C., Lamkin, L., & Mallory, G. (2001). State of the oncology nursing workforce: Problems and implications for strengthening the future. *Nursing Economics*, 19(5), 198-208.
- Carvalho, P. (2011). *Estudo da Fadiga por Compaixão nos Cuidados Paliativos em Portugal: Tradução e Adaptação Cultural da Escala Professional Quality of Life 5* (Unpublished master dissertation). Universidade Católica Portuguesa, Porto.
- Castilho, P., Pinto-Gouveia, J., & Duarte, J. (2015). Evaluating the multifactor structure of the long and short versions of the Self-Compassion Scale in a clinical sample. *Journal of Clinical Psychology*, 71(9), 856–870. doi:10.1002/jclp.22187
- Chiesa, A., & Serretti, A. (2009). Mindfulness-based stress reduction for stress management in healthy people: A review and meta-analysis. *Journal of Alternative and Complementary Medicine*, 15(5), 593-600. doi:10.1089/acm.2008.0495
- Chiesa, A., & Serretti, A. (2011). Mindfulness based cognitive therapy for psychiatric disorders: A systematic review and meta-analysis. *Psychiatry Research*, 187(3), 441-453. doi:10.1016/j.psychres.2010.08.011
- Cohen-Katz, J., Wiley, S. D., Capuano, T., Baker, D. M., Kimmel, S. & Shapiro, S. (2005). The effects of mindfulness-based stress reduction on nurse stress and burnout, part II: A quantitative and qualitative study. *Holistic nursing practice*, 19, 26–35.
- Dalrymple, K. L., & Herbert, J. D. (2007). Acceptance and commitment therapy for generalized social anxiety disorder a pilot study. *Behavior Modification*, 31(5), 543-568. doi:10.1177/0145445507302037

- Demarzo, M. M., Montero-Marin, J., Cuijpers, P., Zabaleta-del-Olmo, E., Mahtani, K. R., Vellinga, A., ... & García-Campayo, J. (2015). The efficacy of mindfulness-based interventions in primary care: A meta-analytic review. *The Annals of Family Medicine*, *13*(6), 573-582. doi: 10.1370/afm.1863.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, *49*, 71-75. doi:10.1207/s15327752jpa4901_13
- Eberth, J., & Sedlmeier, P. (2012). The effects of mindfulness meditation: A meta-analysis. *Mindfulness*, *3*(3), 174-189. doi: 10.1007/s12671-012-0101-x
- Figley, C. R. (1995). Compassion fatigue: Toward a new understanding of the costs of caring. In B. H. Stamm (Ed.), *Secondary traumatic stress: Self care issues for clinicians, researchers, and educators* (pp. 3–28). Baltimore, MD: The Sidran Press.
- Gifford, E. V., Kohlenberg, B. S., Hayes, S. C., Antonuccio, D. O., Piasecki, M. M., Rasmussen-Hall, M. L., & Palm, K. M. (2004). Acceptance theory-based treatment for smoking cessation: An initial trial of Acceptance and Commitment Therapy. *Behavior Therapy*, *35*(4), 689-706. doi:10.1016/S0005-7894(04)80015-7
- Glaus, A., (2007). The status of cancer nursing: A European perspective, European Oncology Nursing Society. European Oncology Nursing Society (EONS). Retrieved from <http://www.cancernurse.eu/documents/EONSStatusOfCancerNursing.pdf>
- Gotink, R. A., Chu, P., Busschbach, J. J., Benson, H., Fricchione, G. L., & Hunink, M. M. (2015). Standardised mindfulness-based interventions in healthcare: An overview of systematic reviews and meta-analyses of RCTs. *PloS one*, *10*(4), e0124344. doi: 10.1371/journal.pone.0124344
- Gregório, S., & Pinto-Gouveia, J. (2011). Facetas de mindfulness: Características psicométricas de um instrumento de avaliação. *Psychologica*, *54*, 259-280.
- Grossman, P. (2008). On measuring mindfulness in psychosomatic and psychological research. *Journal of Psychosomatic Research*, *64*, 405–408. doi:10.1016/j.jpsychores.2008.02.001
- Gu, J., Strauss, C., Bond, R., & Cavanagh, K. (2015). How do mindfulness-based cognitive therapy and mindfulness-based stress reduction

- improve mental health and wellbeing? A systematic review and meta-analysis of mediation studies. *Clinical Psychology Review*, 37, 1-12. doi:10.1016/j.cpr.2015.01.006
- Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. Retrieved from <http://www.afhayes.com/public/process2012.pdf>
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. New York: The Guilford Press.
- Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour research and therapy*, 44(1), 1-25. doi:10.1016/j.brat.2005.06.006
- Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy: An experiential approach to behavior change*. New York: Guilford Press.
- Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 78(2), 169-183. doi:10.1037/a0018555
- Haenen, S., Nyklíček, I., van Son, J., Pop, V., & Pouwer, F. (2016). Mindfulness facets as differential mediators of short and long-term effects of Mindfulness-Based Cognitive Therapy in diabetes outpatients: Findings from the DiaMind randomized trial. *Journal of Psychosomatic Research*, 85, 44-50. doi: 10.1016/j.jpsychores.2016.04.006
- Heeren, A., Deplus, S., Peschard, V., Nefllios, F., Christophe, K., Laurie, D., Robinaugh, D. J., Philippot, P. (2015). Does change in self-reported mindfulness mediate the clinical benefits of mindfulness training? A controlled study using the French translation of the Five Facet Mindfulness Questionnaire. *Mindfulness*, 6(3), 553-559. doi:10.1007/s12671-014-0287-1
- Irving, J. A., Dobkin, P. L., & Park, J. (2009). Cultivating mindfulness in health care professionals: A review of empirical studies of mindfulness-based stress reduction (MBSR). *Complementary Therapies in Clinical Practice*, 15(2), 61–66. doi:10.1016/j.ctcp.2009.01.002
- Josefsson, T., Larsman, P., Broberg, A. G., & Lundh, L. G. (2011). Self-reported mindfulness mediates the relation between meditation experience and

psychological well-being. *Mindfulness*, 2(1), 49-58.
doi:10.1007/s12671-011-0042-9

- Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry*, 4, 33–42. doi:10.1016/0163-8343(82)90026-3
- Kabat-Zinn, J. (1994). *Wherever you go there you are*. Hyperion: New York, NY.
- Kazdin, A. E. (2007). Mediators and mechanisms of change in psychotherapy research. *Annual Review of Clinical Psychology*, 3, 1-27. doi:10.1146/annurev.clinpsy.3.022806.091432
- Keng, S. L., Smoski, M. J., Robins, C. J., Ekblad, A. G., & Brantley, J. G. (2012). Mechanisms of change in mindfulness-based stress reduction: Self-compassion and mindfulness as mediators of intervention outcomes. *Journal of Cognitive Psychotherapy*, 26(3), 270-280. doi:10.1891/0889-8391.26.3.270
- Khoury, B., Sharma, M., Rush, S. E., & Fournier, C. (2016). Mindfulness-based stress reduction for healthy individuals: A meta-analysis. *Journal of Psychosomatic Research*, 78(6), 519–528. doi:10.1016/j.jpsychores.2015.03.009
- Kuyken, W., Watkins, E., Holden, E., White, K., Taylor, R. S., Byford, S., ... Dalgleish, T. (2010). How does mindfulness-based cognitive therapy work? *Behavior Research and Therapy*, 48(11), 1105-1112. doi:10.1016/j.brat.2010.08.003
- Labelle, L. E., Campbell, T. S., Faris, P., & Carlson, L. E. (2015). Mediators of Mindfulness-Based Stress Reduction (MBSR): Assessing the timing and sequence of change in cancer patients. *Journal of Clinical Psychology*, 71(1), 21-40. doi:10.1002/jclp.22117
- Laranjeira, C. A. (2009). Preliminary validation study of the Portuguese version of the satisfaction with life scale. *Psychology, Health & Medicine*, 14(2), 220–226. doi:10.1080/1354850080245990
- Lovibond, S.H. & Lovibond, P.F. (1995). *Manual for the Depression Anxiety Stress Scales*. (2nd. Ed.) Sydney: Psychology Foundation.
- MacBeth, A., & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review*, 32(6), 545-552. doi:10.1016/j.cpr.2012.06.003

- Mackenzie, C. S., Poulin, P. A., & Seidman-Carlson, R. (2006). A brief mindfulness-based stress reduction intervention for nurses and nurse aides. *Applied Nursing Research, 19*(2), 105–109. doi:10.1016/j.apnr.2005.08.002
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research, 39*(1), 99. doi:10.1207/s15327906mbr3901_4
- Marx, B. P., & Sloan, D. M. (2002). The role of emotion in the psychological functioning of adult survivors of childhood sexual abuse. *Behavior Therapy, 33*(4), 563–578. doi:10.1016/S0005-7894(02)80017-X
- Maslach, C., & Leiter, M. P. (1997). *The truth about burnout*. San Francisco: Jossey-Bass.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2011). Job burnout. *Annual Review Psychology, 52*, 397–422.
- Monson, C. M., Price, J. L., Rodriguez, B. F., Ripley, M. P., & Warner, R. A. (2004). Emotional deficits in military-related PTSD: An investigation of content and process disturbances. *Journal of Traumatic Stress, 17*(3), 275–279. doi:10.1023/B:JOTS.0000029271.58494.05
- Montoya, A. K., & Hayes, A. F. (in press). Two condition within-participant statistical mediation analysis: a path-analytic framework. *Psychological Methods*. doi: 10.1037/met0000086
- Najjar, N., Davis, L. W., Beck-Coon, K., & Doebbeling, C. C. (2009). Compassion Fatigue: A review of the research to date and relevance to cancer-care providers. *Journal of Health Psychology, 14*(2), 267–277. doi:10.1177/1359105308100211
- Neff, K. (2003a). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity, 2*(2), 85-101. doi:10.1080/15298860390129863
- Neff, K. D. (2003b). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*, 223–250. doi:10.1080/15298860390209035
- Orcutt, H. K., Pickett, S. M., & Pope, E. B. (2005). Experiential avoidance and forgiveness as mediators in the relation between traumatic interpersonal events and posttraumatic stress disorder symptoms. *Journal of Social and*

Clinical Psychology, 24(7), 1003-1029.
doi:10.1521/jscp.2005.24.7.1003

- Pais-Ribeiro, J. L., Honrado, A., & Leal, I. (2004). Contribuição para o estudo da adaptação portuguesa das escalas de ansiedade, depressão e stress (EADS) de 21 itens de Lovibond e Lovibond. *Psicologia, Saúde e Doenças*, 5(1), 229-239.
- Piet, J., Würtzen, H., & Zachariae, R. (2012). The effect of mindfulness-based therapy on symptoms of anxiety and depression in adult cancer patients and survivors: A systematic review and meta-analysis. *Journal of Consulting and Clinical Psychology*, 80(6), 1007–1020. doi: 10.1037/a0028329
- Pinto-Gouveia, J., Gregório, S., Dinis, A., & Xavier, A. (2012). Experiential avoidance in clinical and non-clinical samples: AAQ-II Portuguese version. *International Journal of Psychology and Psychological Therapy*, 12(2), 139–156.
- Potter, P., Deshields, T., Divanbeigi, J., Berger, J., Cipriano, D., Norris, L., & Olsen, S. (2010). Compassion fatigue and burnout: Prevalence among oncology nurses. *Clinical Journal of Oncology Nursing*, 14(5), E56-62. doi:10.1188/10.CJON.E56-E62.
- Polusny, M. A., Rosenthal, M. Z., Aban, I., & Follette, V. M. (2004). Experiential avoidance as a mediator of the effects of adolescent sexual victimization on negative adult outcomes. *Violence and Victims*, 19(1), 109-20. doi:10.1891/vivi.19.1.109.33238
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36(4), 717-731.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879-891. doi:10.3758/BRM.40.3.879
- Reddy, M. K., Pickett, S. M., & Orcutt, H. K. (2006). Experiential avoidance as a mediator in the relationship between childhood psychological abuse and current mental health symptoms in college students. *Journal of Emotional Abuse*, 6(1), 67–85. doi:10.1300/J135v06n01_04
- Rosenthal, M. Z., Rasmussen Hall, M. L., Palm, K. M., Batten, S. V., Follette, V. (2005). Chronic avoidance helps explain the relationship between

- severity of childhood sexual abuse and psychological distress in adulthood. *Journal of Child Sexual Abuse*, 14(4), 25-41.
- Ruiz, F. J. (2010). A review of Acceptance and Commitment Therapy (ACT) empirical evidence: Correlational, experimental psychopathology, component and outcome studies. *International Journal of Psychology and Psychological Therapy*, 10(1), 125-162.
- Shapiro, S. L., Astin, J. A., Bishop, S. R., & Cordova, M. (2005). Mindfulness-based stress reduction for health care professionals: Results from a randomized trial. *International Journal of Stress Management*, 12(2), 164-176. doi:10.1037/1072-5245.12.2.164
- Shapiro, S. L., Brown, K. W., & Biegel, G. M (2007). Teaching self-care to caregivers: Effects of mindfulness-based stress reduction on the mental health of therapists in training. *Training and Education in Professional Psychology*, 1(2), 105-115. doi:10.1037/1931-3918.1.2.105
- Snippe, E., Nyklíček, I., Schroevers, M. J., Bos, E. H. (2015). The temporal order of change in daily mindfulness and affect during Mindfulness-Based Stress Reduction. *Journal of Counseling Psychology*, 62(2), 106-114. doi: 10.1037/cou0000057
- Stamm, B. H. (2010). *The Concise ProQOL Manual, 2nd Ed.* Pocatello, ID: ProQOL.org
- Van Dam, N. T., Sheppard, S. C., Forsyth, J. P., & Earleywine, M. (2011). Self-compassion is a better predictor than mindfulness of symptom severity and quality of life in mixed anxiety and depression. *Journal of Anxiety Disorders*, 25(1), 123–30. doi: 10.1016/j.janxdis.2010.08.011
- Visted, E., Vøllestad, J., Nielsen, M. B., & Nielsen, G. H. (2015). The impact of group-based mindfulness training on self-reported mindfulness: A systematic review and Meta-analysis. *Mindfulness*, 6(3), 501-522. doi:10.1007/s12671-014-0283-5
- Wolgast, M. (2014). What does the Acceptance and Action Questionnaire (AAQ-II) really measure? *Behavior Therapy*, 45(6), 831–839. doi:10.1016/j.beth.2014.07.002
- Yadavaia, J. E., Hayes, S. C., & Vildardaga, R. (2014). Using Acceptance and Commitment Therapy to increase self-compassion: A Randomized Controlled Trial. *Journal of Contextual Behavioral Science*, 3(4), 248–257. doi:10.1016/j.jcbs.2014.09.002

Zessin, U., Dickhäuser, O., & Garbade, S. (2015). The relationship between self-compassion and well-being: A meta-analysis. *Applied Psychology: Health and Well-Being*, 7, 340–364. doi:10.1111/aphw.12051

Chapter 4

CONCLUDING REMARKS

CONTENTS

4.1. Discussion

4.2. Clinical Implications

4.3. Limitations

4.4. Future Studies

4.5. Conclusion

4.1. Discussion

Compassion has been at the centre of secular and religious interest for several centuries. However, psychological sciences only recently have begun to explore the concept of compassion. This increased interest may be explained by influential works in the area of positive psychology, social psychology of empathy and other-focused concern (e.g., Batson, 1981), and the straight relations and dialogue between western scientists and Buddhist scholars to whom compassion lies at the heart and centre of Buddha's teachings.

This work emerged as part of this recent interest in the concept of compassion. As suggested in the Introduction, compassion is not easily defined. In the present work, we operationalized compassion in several ways. Initially, we explored the construct of *compassionate goals*, or the genuine focus on others' well-being, which reflects a psychological functioning characterized by other-centeredness or selflessness, and which is thought to be on the basis of the experience of compassion. We also explored *compassion* as an emotional disposition, along with other positive emotions. In addition, we conducted several studies around the concept of *self-compassion*. In Part 1, we explored the relationship between self-compassion and compassionate goals. Although some studies seem to suggest that self-compassion is related to benefits in interpersonal relations, studies on the interpersonal impact of self-compassion are still scarce. In Part 2, we explored the relationship between self-compassion and so-called positive affective states. This area of research has been largely understudied. In Part 3, we explored the role of self-compassion on professional quality of life, namely on compassion fatigue and burnout symptoms. Specifically, we explored self-compassion as a potential protective factor for compassion fatigue and burnout, and also as a mechanism of change in a mindfulness-based intervention.

Finally, we were also interested in the concept of *compassion fatigue*, which has been conceptualized as a negative outcome of the constant exposure to the experience of suffering. This definition suggests that suffering can give rise

to feelings of compassion, but at the same time, to psychological distress in the observer. In fact, whether it is compassion, or instead, lack of compassion, that is the key ingredient in compassion fatigue it is still unclear. We suggested that compassion, as it has been defined in the present work, could actually be protective of compassion fatigue, in contrast to empathy. We also hypothesized that mindfulness could be protective for the symptoms of compassion fatigue and burnout.

The *first set of studies* of the present work focused on the concept of compassionate goals. Specifically, using a longitudinal design, we aimed to explore the consequences of holding compassionate goals, in contrast to self-image goals, in close relationships. We were also interested in exploring potential factors that would promote compassionate goals, and decrease self-image goals, given the benefits for well-being.

The first step was to translate and adapt the Compassionate and Self-Image Goals Scale (Cocker & Canevello, 2008) to the Portuguese language and explore its validation in a Portuguese sample from the general population. Overall, the scale showed good psychometric properties. However, we identified some problematic items that should be revised in future versions of the scale. Specifically, one compassionate goals' item (item 1) loaded more strongly on the self-image goals' factor, and two compassion goals' items (items 4 and 10) loaded on both factors. Regarding item 1 ("Avoid things that aren't helpful to me or others"), participants may have responded to the first part of the sentence ('avoid doing things that aren't helpful to *me*'), which seems to reflect a more egoistic approach, than to the last part, which reflects a more altruistic approach, which would explain the loading of the self-image goals' factor. Regarding items 4 ('Avoid being selfish or self-centred') and 10 ('Avoid doing anything that would be harmful to others'), it is possible that people avoid being self-centered and cause harm to others both because they care about the welfare of others, but also to maintain a positive image of the

self, because being selfish and disrespectful of others is judged negatively by society. Given that this was the first study to explore the factorial structure of the CSIGS in a Portuguese sample, and thus in need for future replication, we decided to use the original scale in the subsequent studies.

In Studies II and III we aimed to explore the impact of compassionate and self-image goals on psychopathological symptoms, social anxiety/avoidance, and social connectedness, using a longitudinal design where participants provided repeated self-reported measurements of compassionate and self-image goals and affect during a semester, and pre and posttest assessments of the outcomes. In Study III we aimed to explore whether trait mindfulness and self-compassion would predict compassionate and self-image goals during the study period.

In general, results from these studies provide evidence regarding the psychological characteristics, consequences for well-being, and predictors of compassionate and self-image goals.

Specifically, we found that holding *compassionate goals* in relationships predicted improved psychological well-being (depression, anxiety, stress, social anxiety, and social avoidance), at the beginning and at the end of the study. At the same time, we found that compassionate goals predicted increased perceptions of social connectedness from the pretest to posttest, suggesting that having others' needs in mind and trying to be supportive out of a genuine concern for their well-being seems to satisfy the need to belong and feel connected. Although not explored in the present studies, we suspect that the more people feel they belong and are connected to others, recognizing their interconnectedness, the more motivated they will be to focus on others' well-being, leading to an upward spiral between feelings of social connectedness and compassionate goals.

The fact that compassionate goals were also associated with less psychological distress suggests that this focus on others does not come at the expense of the self. On the contrary, we found that compassionate goals

predicted more positive affective states, suggesting that they may be inherently rewarding. Thus, although the focus of compassionate goals is on other people's needs and welfare, the self is also benefited by genuinely providing support and care to others.

Accordingly, results indicated that compassionate goals were not only associated with feelings of contentment and warmth, as it would be expected, but also with activating feelings such as enthusiasm, eagerness, and energy. Thus, compassionate goals may initially motivate people to form social affiliation, recruiting an approach-oriented appetite state with feelings of activation, and when social affiliation is consumed feelings of warmth and contentment prevail due to the activation of a quiescence state (Depue & Morrone-Strupinsky, 2005; McCall & Singer, 2012).

Positive affective states, in turn, helped explain the benefits of compassionate goals by mediating its effects on the outcomes. By promoting positive feelings, compassionate goals contributed to less psychological distress, less social anxiety and avoidance, and to more social connectedness. These results are in line with the literature on the effects of positive emotions on psychopathology (e.g., Hechtman, Raila, Chiao, & Gruber, 2013), and with the literature on the importance of positive emotions for the formation and maintenance of interpersonal bonds (e.g., Dovidio, Gaertner, Isen, & Lowrance, 1995; Gable, Gonzaga, & Strachman, 2006; Shiota et al., 2014; Vittengl & Holt, 2000; Waugh & Fredrickson, 2006).

Compassionate goals also seem to be related to adaptive psychological characteristics. Specifically, results from Study I suggest that individuals with greater compassionate goals in relationships also showed more compassion towards themselves. In addition, they seem to hold less negative beliefs about giving and receiving compassion from others, and overall have fewer negative beliefs that other people look down on them, which may result from a greater sense of interconnectedness and from a less ego-focused view.

Finally, results suggested that trait mindfulness and self-compassion may be important predictors of compassionate goals. Specifically, we found that the facet non-reacting predicted increases in compassionate goals. Although the reason why only non-reacting was related to compassionate goals is not clear, we speculate that individuals with lower levels of reactivity may be more cognitively and emotionally available for focusing on others. Several studies show that cognitive and emotional load may prevent focusing on others (e.g., Hiraoka & Nomura, 2016; Sandi & Haller, 2015). At the same time, mindfulness has been related to decreased stress and faster recovery from stressful situations. Meditation activates regions of the brain associated with more adaptive responding to stressful or negative situations (Cahn & Polich, 2006; Davidson et al., 2003), and activation of this region of the brain corresponds with faster recovery to baseline (e.g., Davidson, Jackson, & Kalin, 2000).

Overall, these findings are in line with other studies pointing to the interpersonal benefits of mindfulness and self-compassion (Tan, Lo, & Macrae, 2014; Cameron & Fredrickson, 2015; Barnes, Brown, Krusemark, Campbell, & Rogge, 2007; Lindsay & Creswell, 2014; Welp & Brown, 2013; Yarnell & Neff, 2012), and suggest that although self-compassion and mindfulness are primarily focused on oneself and one's experiences, they can have a relevant impact on the motivational orientation towards others.

In contrast, results from this set of studies indicated that holding more *self-image goals* in relationships predicted greater psychological distress (depression, anxiety, stress, and social avoidance) at the beginning and at the end of the study. Furthermore, self-image goals predicted increases in social anxiety, and decreases in social connectedness during the study period. These results seem to indicate that the more individuals are focused on creating, maintaining or defending a positive image of themselves, to be seen as valuable to others and, ultimately, accepted and loved, the less they actually feel a sense of belonging and closeness to others, and the more they feel

distress and anxiety in social situations. Although not explored in this study, we suspect that social anxiety may in turn lead to the adoption of more inflexible and rigid self-image goals in an attempt to prevent social exclusion and be accepted, leading to a vicious cycle. In the same vein, we also suspect that there is a downward spiral between lack of social connectedness and self-image goals that is self-reinforcing, as attempting to gain approval or sense of worth by pursuing image-oriented goals may be a way to compensate the individual's thwarted need for belongingness.

This pursuit, however, comes at the expense of psychological well-being given that, when trying to prevent social rejection and creating a positive image to others is the main goal, positive emotions are blunted and feelings of fear and confusion prevail, as suggested by our findings.

In addition, we also found that people with self-image goals seem to hold more negative beliefs about giving and receiving compassion, probably because they may fear they will look dependable, vulnerable, and weak in the eyes of others which is not in line with the positive image they try to pass on. However, avoiding to receive and give compassion and support to others may ultimately lead to feelings of isolation and low social connectedness. Also, despite all efforts to create a positive and desirable image to others, people with more self-image goals believe that others have negative and shaming views of them. Such beliefs in turn may fuel their needs to create a positive image, leading to a vicious cycle.

Finally, our results indicated that trait mindfulness and self-compassion predicted fewer self-image goals. Specifically, only non-judging predicted self-image goals. In a previous study, it was found that self-criticism was also positively related to self-image goals but not significantly related to compassionate goals, suggesting that individuals presenting with self-criticism or self-judgment are highly motivated to maintain a positive self-image and to impress others (Zuroff et al., 2015). These results suggest that the acceptance component of mindfulness, which includes taking a non-evaluative stance

toward internal experiences, and allowing experiences to come and go without getting carried away by them, seems to be the most important in terms of interpersonal goals.

In general, our results are in line with previous studies (Wayment, Wiist, Sullivan, & Warren, 2010; Golubickis et al., 2016). Wayment and colleagues (2010) found that trait mindfulness was positively related to a quiet ego, that is, a self-identity that transcends egoism and identifies with a less defensive, balanced stance toward the self and others. Also, Golubickis and colleagues found that a brief mindfulness-based meditation diminished egocentrism, and it fostered the adoption of a third-person vantage point during mental imagery and diminished perspectives of personal salience (Golubickis, Tan, Falben, & Macrae, 2016). A mechanism through which mindfulness may diminish egocentrism is through the promotion of detachment from the contents of consciousness, a process termed 'reperceiving' or 'decentering' (Carmody, Baer, Lykins, & Olendzki, 2009; Fresco et al., 2007), that triggers the adoption of an observer-based perception of the self. From a Buddhist perspective, identification with a static sense of self is the cause of psychological distress (Olendzki, 2010). In the same vein, McIntosh (1997) argued that trait mindfulness could be beneficial because this trait reflects individuals' ability to lose their strong attachment to 'self'.

Mindfulness-based meditation is postulated to elicit just such a shift in self-construal; it allows one to be aware of the transitory nature of the self and one's momentary experience leading to a change in perspective where self-referential processing becomes diminished (Hölzel et al., 2011). As Shapiro et al. (2006, p. 377) report, "mindfulness... involves a fundamental shift in perspective. Rather than being immersed in the drama of our personal narrative or life story, we are able to stand back and simply witness it."

According to Buddhism, *anatta* is the term used to describe the concept of no-self, which is not the same as inexistence of self, but rather the inexistence of an entity with an intrinsic existence. According to Galin (2003), in the

Buddhist tradition “the self is seen, not as an entity, or as substance, or as essence, but as a dynamic process, a shifting web of relations among evanescent aspects of the person, such as perceptions, ideas, and desires (p. 108).” Clinging to a concept of self as a unitary, independent entity is a misrepresentation of reality and the major cause of suffering. Thus, contemplative practices aim at developing a clear understating of the reality in which the self is seen as merely a mental fabrication.

At the same time, self-compassion may reduce self-image goals, probably by allowing the recognition of relatedness between humans and a sense of shared experience, which avoids egocentrism and the sensation of isolation with others. These findings also give further support to the distinction between self-compassion and self-esteem, as an excessive emphasis on self-esteem may lead to narcissism, self-absorption, the absence of concern towards others, distorted self-perception and egocentrism (Neff, 2003a).

In general, these results seem to challenge the long-held belief that people are fundamentally self-interested, which rests on the idea that pursuing self-interest is beneficial, while focusing on others is costly. On the contrary, these studies suggest that a self-focused motivation on the relationships with others has several costs, while other-focused motivation yields several benefits. This is not to say, however, that compassionate goals are inherently ‘good’ and self-image goals are inherently ‘bad’, but instead that they have different consequences for emotions and behavior. In fact, across all studies we found a positive association between compassionate and self-image goals suggesting that self-centeredness and other-centeredness are not two exclusive styles of functioning but instead that they are present in each individual, and that the tendency to adopt one or another may be a question of degree and dependent on several personal and contextual variables (Crocker et al., 2009; Danbrum & Ricard, 2011).

The *second set of studies* explored the association between self-compassion and positive affective states. In contrast to a large number of studies linking self-compassion to psychological distress, the role of self-compassion in the experience of positive affective states remains less studied. We believe that this is an important gap in the self-compassion literature. A growing body of research has been revealing the benefits of positive emotions, and consistently suggests that positive emotions are worth cultivating, not just as end states in themselves but also as a means to achieve psychological growth and improved well-being over time (e.g., Fredrickson, 1998).

In Study V, using different samples and methodological procedures, we tested the hypothesis that self-compassion would be associated with more frequent experiences of positive emotions and positive affect. Particularly, we used two cross-sectional designs to explore the association between self-compassion and three types of positive affect (activating, relaxed, and safe), and between self-compassion and seven dispositional positive emotions (joy, contentment, pride, love, compassion, amusement, and awe). We then used data from two longitudinal studies to test the hypothesis that self-compassion would predict positive affect at one and three months.

In general, and according to our hypotheses, self-compassion was associated with, and predicted, several types of positive affect and several dispositional positive emotions, even when controlling for previous levels of positive affect and for the potential effect of negative affect.

In particular, self-compassion was associated with activating (e.g., excited, dynamic, active) and safe (e.g., safe, secure, warm) positive affect, indicating that self-compassion is related to approach-related affect, and at the same time with quiescent and affiliation-related affective states.

These results are in line with findings regarding the autonomic underpinnings of compassion. It has been suggested that compassion may initially involve an orientation to a target individual (in the case of self-compassion the self), with approach-related behaviors and feelings of energy and activation, and

then social engagement and soothing-related behaviors associated with feelings of calm, warmth, and safeness (Goetz et al., 2010). Physiologically, the experience of compassion is mediated by the activation of the parasympathetic nervous system which supports, on one hand, an orienting response and sustained outwards attention (Suess, Porges, & Plude, 1994), and on the other hand, attachment and caregiving behaviors particularly through the vagus nerve (Porges, 2001). Preliminary research has been suggesting that increased heart rate variability may be associated with compassion (e.g., Kogan et al., 2014) and self-compassion (Svendsen et al., 2016), which offers some support for our results, and suggests potential interrelations between these cognitive, affective, and physiological processes.

In this study, we also found that self-compassion was related to seven discrete positive emotions. Particularly, self-compassion was related to more experiences of joy, contentment, and pride, emotions that most centrally involve agentic, goal-oriented behavior (with contentment following reward acquisition and consumption; Shiota, Keltner, & John, 2006). These results are in line with previous studies relating self-compassion with high self-efficacy (Iskender, 2009; Manavipour & Saeedian, 2016) and motivation (e.g., Breines & Chen, 2012; Hope, Koestner, & Milyavskaya, 2014; Williams, Stark, & Foster, 2008). In fact, these positive emotions may be important mediators of these relationships. Self-compassion was also related to more experiences of love and compassion. This makes sense, as self-compassionate people report greater relationship quality (e.g., Neff & Beretvas, 2012), and are more compassionate to others (e.g., Neff & Pommier, 2013),

Contrary to our hypothesis, however, self-compassion total score was not associated with more experiences of compassion. When the positive dimensions of self-compassion (self-kindness, mindfulness, and common humanity) were analyzed separately, we found a positive association with compassion. These results may indicate that it is the presence of the positive qualities of self-compassion, and not so much the absence of the negative

ones, that is particularly relevant for experiencing feelings of compassion for others.

Finally, self-compassion was also associated with awe and amusement. Previous studies suggest that awe serves important social functions by diminishing the emphasis on the individual self, and by encouraging people to other-oriented, prosocial behavior (e.g, Piff, Dietze, Feinberg, Stancato, & Keltner, 2015). Because of its non-evaluative and interconnected nature, self-compassion is thought to counter self-centeredness and narcissism (Neff, 2003a), which in turn may make an individual more prone to experiences of awe. The positive association between self-compassion and amusement is in line with a previous study in which self-compassion was found to be associated with healthy humor styles (Khramtsova & Chuykova, 2016).

Why is self-compassion related to more experiences of positive affective states? It has been argued that self-compassion plays a role in self-regulation and coping with stress (Allen & Leary, 2010; Neff et al., 2005). A more self-compassionate individual is assumed to respond to adverse feelings by attending to them with an open and kind attitude, as well as by acknowledging that experiences of imperfection and difficulties are part of human life. Such attitude, in turn, may promote proactive and non-avoiding ways of dealing with adversities and stress, likely promoting positive affect (Arimitsu & Hofmann, 2015; Diedrich, Grant, Hofmann, Hiller, & Berking, 2014).

Building on these results, we were interested in exploring the relationship between self-compassion and positive emotions in the context of alexithymia. To this end, we conducted a cross-sectional study to test the relationships between alexithymic traits and positive emotions, and whether self-compassion and other processes related to psychological inflexibility, would be mediators of this relationship.

There is some evidence that the processing of positive emotions may be compromised in individuals with alexithymia (van der Velde et al., 2013).

This is supported by the few existent studies that point to an association between alexithymia and lower positive affect (e.g., De Gucht, Fischler, & Heiser, 2004; Yelsma, 2007; Ciarrochi, Heaven, & Supavadeepravit, 2014) or a lower tendency to experience positive emotions (Luminet, Bagby, Wagner, Taylor, & Parker, 1999).

Similarly, our findings indicated that alexithymia was associated with decreased experiences of positive emotions, and also with less emotional granularity, or the ability to distinguish between emotions, particularly for high arousal emotions. This finding is important because lack of emotional granularity has been associated with difficulties in emotions regulation (e.g., Barrett, Gross, Conner, & Benvenuto, 2001).

Also, and in accordance with our hypothesis, we found that the negative association between alexithymia and positive emotions was mediated by self-compassion. Given the cross-sectional nature of the study design, it is not possible to draw causal relations. Thus, it is plausible that individuals with impaired recognition of one's emotions will have difficulties accepting those emotions with kindness and non-judgmental awareness, given that emotions are not acknowledged in the first place, which then leads to decreased experiences of positive emotions. An alternative explanation would be that having a kind, open, and accepting attitude towards emotions can create a safe context for emotions to be acknowledged and processed, which, in turn, would lead to increased experiences of positive emotions.

In addition to self-compassion, other processes were important in mediating the link between alexithymia and positive emotions, namely experiential avoidance, decentering, and resistance to feelings of compassion (this was non-significant when all processes were entered simultaneously).

In general, these results suggest that individuals with higher levels of alexithymia seem to experience diminished positive emotions as a function of their 1) failure to take a step back and view one's thoughts and feelings as temporary, objective events in mind; 2) unwillingness to be in contact with

inner experiences without trying to alter their form or frequency; 3) inability to experience affiliative-related emotions; 4) failure to hold negative experiences with kindness, mindful awareness and with a sense of shared humanity.

Results from these two studies add to the growing literature on the benefits of self-compassion, and suggest that having a caring attitude towards one's suffering, where one's painful experiences are held with mindful awareness and recognized as part of the larger human condition, is not only related to less psychological distress but also to more frequent experiences of positive affective states, even in the context of alexithymia.

Given the prominent role of positive affect in the context of interpersonal goals and self-compassion, we designed a study to explore its underlying physiological correlates. We were interested in the autonomic activation associated with the experience of positive affect, and in particular resting parasympathetic activity. We hypothesized that positive affect associated with activation and excitement would not be associated with parasympathetic activation and that positive emotions related to low arousal and safeness would be associated with increased parasympathetic activity.

Results provided evidence for a quadratic relationship between heart rate variability, signaling parasympathetic activity, and positive affect associated with calmness, warmth, and contentment, but not with positive emotions associated with excitement or simply a lack of arousal. This finding is in line with recent findings from neurobiology (see Burgdorf & Panksepp, 2006 for a review) and social neuroscience (McCall & Singer, 2012) which suggest the existence of at least two distinct classes of positive affective states. One is associated with an approach-motivated appetitive state, that increases the capacity for action and reward-seeking; the other is associated with a quiescent state, associated with goal attainment, inaction, and affiliation. At the subjective level, approach and quiescence motivational states differ in terms of their affective qualities; while quiescence is associated with positive

feelings of warmth and calm, approach is associated with excitement and activation (when positively valenced). Quiescence and approach motivations are also distinguishable by their autonomic responses, with the quiescence state being associated with parasympathetic activity, and the appetitive state being associated with increased sympathetic activity.

The existence of a quadratic relationship between vagal activity and positive emotions is in line with previous studies (Kogan et al., 2014; Gruber, Mennin, Fields, Purcell, & Murray, 2015), and suggests that there may be an optimal level of vagal activity, and that very low or very high levels may be maladaptive. Although these findings need replication, it provides the first evidence that safe positive affect not only feels good but may have direct and important consequences for physical well-being.

Results from several studies of this work indicate that it is important to distinguish different types of positive affect, as this may have important implications for research and practice (e.g., Gilbert, 2015). For example, feelings of activation and safeness, but not relaxation, predicted social connectedness; feelings of relaxation and sadness, but not activation, predicted social anxiety and avoidance. In the same line, self-compassion is particularly related to increases of feelings of safeness and activation, but not so much to feelings of relaxation. While relaxation seems to reflect low activation, and probably follows goal attainment, safeness and contentment feelings are hypothesized to be particularly related to affiliation (Gilbert, 2009; Depue & Morrone-Strupinsky, 2005; McCall & Singer, 2012). As compassion and self-compassion probably evolved from behavioral and affective systems involved in attachment, caring, and affiliation (e.g., Goetz et al., 2010; Gilbert, 2009), it may explain the particularly strong link between self-compassion and safeness.

Based on the results from the studies so far a picture emerges. Compassionate goals and self-compassion lead to increased experiences of positive affective

states, particularly feelings of calmness, warmth, and contentment. When individuals feel safe they tend to have higher physiological flexibility (Thayer & Lane, 2000), which is indexed by higher heart rate variability. Higher heart rate variability, in turn, has been associated with several psychological (e.g., emotion regulation; Appelhans & Luecken, 2006; Thayer, Åhs, Fredrikson, Sollers III, & Wager, 2012), and physical health indicators (e.g., less risk for cardiovascular disease and all-cause mortality; Thayer & Lane 2007), some of which have also been associated with compassion and self-compassion (e.g., Diedrich et al., 2014; Engen & Singer, 2015; Cosley et al., 2010; Breines et al., 2015). Whether is (self)compassion that causes higher heart rate variability or vice versa is still a matter of debate. Previous findings that state-induced self-compassion predicts higher heart rate variability (Arch et al. 2014) support the former, but more experimental studies are needed to replicate such findings.

The last set of studies of the present work aimed to explore the psychological factors associated with compassion fatigue, and also burnout, on the one hand, and to test the efficacy of a mindfulness-based intervention to reduce compassion fatigue and burnout symptoms in oncology nurses.

As a first step, we explored the validity of the Portuguese version of the Professional Quality of Life Scale (version 5). Notwithstanding being one of the most commonly used measures of the positive and negative effects of working with people who have experienced stressful events, there are few studies exploring the factorial structure of this scale. To our knowledge, only one published study using a sample of Italian accident and emergency workers provided a contribution for the factor validity of the scale (Palestini, Prati, Pietrantonio, & Cicognani, 2009). Also, the cultural adaption and validation study of the Portuguese version of the ProQOL-5 was conducted in a small and heterogeneous sample of palliative healthcare professionals (Carvalho, 2011), and thus more studies were needed.

In general, our results supported the three factors proposed by the authors of the original scale, namely compassion satisfaction, compassion fatigue, and burnout. However, our analyses revealed that not all items proposed by the original authors show acceptable psychometric properties and clear theoretical content and thus a revision of such items is advised. For example, regarding the Burnout subscale, we found that the positively worded items loaded on the Compassion Satisfaction subscale. Although this can be explained by measurement errors associated with positively and negatively worded items, an analysis of the content of such items also suggests that they may not be specific to Burnout, but instead have a more general meaning and thus aggregate with the other positive items of the instrument. In fact, compared to other job burnout scales, the burnout items of the ProQOL are not focused on exhaustion symptoms, but, instead, refer to a lack of well-being, negative attitudes toward work, work overload, or a lack of self-acceptance.

Other items presented low factor loadings, and an analysis of their content suggests that they may be too general and not specific to burnout or compassion fatigue (items 2, 7 and 28).

Despite the psychometric problems identified, all scales presented good internal consistency. For this reason, and the fact that our results need to be replicated, we decided to use the scale as suggested in the original version in the subsequent studies. Further studies on the scale, using larger samples and other healthcare professionals are advised.

Results from this study also suggest that, although correlated, burnout and compassion fatigue are separated processes, sharing as little as 22% of variance. These results are lower than the ones found in a previous meta-analysis (48%; Cieslak et al., 2014). While burnout is defined as feelings of hopelessness associated with difficulties in dealing with work or in doing one's job effectively, compassion fatigue describes the emergence of PTSD-like

symptoms as a consequence of exposure to traumatized or suffering persons. Previous research provides some evidence that while job burnout may be a vulnerability factor for the development of STS symptoms, levels of STS symptoms are not predictive of job burnout, which helps to clarify the nature of the relationship between these two core job-related outcomes (Shoji et al., 2015).

Results from the intercorrelations between the three factors also indicated that compassion fatigue and burnout are unrelated to compassion satisfaction, suggesting that professionals with high levels of compassion fatigue and burnout can, at the same time, still derive a great satisfaction from their caregiving work.

Most of the literature on potential vulnerability factors for the development of burnout and compassion fatigue symptoms are focused particularly on demographic and organizational factors, but few studies explored psychological or dispositional factors at the individual level. This is important because many of the demographic and organizational factors are by their nature unchangeable (e.g., sex, age), some at least in the short term (e.g., work hours, the number of patients), while psychological factors may be more easily targeted in interventions for reducing burnout and compassion fatigue.

Thus, we designed a cross-sectional study with the aim of exploring the potential role of several psychological processes that we hypothesized to be related to compassion fatigue and burnout, in a sample of nurses from different nursing specialties, and from different Portuguese hospitals.

More specifically, and in line with the literature presented in the Introduction, we wanted to test the hypothesis that empathy would be positively related to compassion fatigue.

In these studies, we conceptualized empathy as a multidimensional construct, which is in line with current approaches informed by findings from social neuroscience (e.g., Decety and Svetlova, 2012). Particularly, having an idea

of the other person's thoughts, feelings and motives can be considered the cognitive component of empathy (perspective taking). There are two main types of affective empathic responses. Self-oriented responses are feelings of distress and anxiety when witnessing another's negative state (personal distress), whereas other-focused responses are feelings that focus on the well-being of the other person (empathic concern; Davis, 1983). This distinction is important because they have different consequences not only for the individuals' well-being but also for behavior. While self-oriented feelings motivate the observer to reduce his/her own distress, other-focused feelings motivate the observer to focus on the needs of the other and to provide care (Batson, 1987).

In line with our hypotheses, we found that empathy (empathic concern) was positively related to compassion fatigue, but not burnout. This result suggests that empathic feelings and sensibility to others' suffering may be a vulnerability factor for the development of compassion fatigue, but not burnout. While this has been suggested previously (Figley, 2002; 2012), this is the first study to our knowledge to provide empirical evidence. Also, the fact that empathic concern was at the same time negatively related to burnout also reinforces the idea that compassion fatigue and burnout have a distinct phenomenology and risk factors.

The term empathic concern, as measured in these studies, is defined as other-oriented feelings of sympathy and concern for unfortunate others (Davis, 1983), which seems closely related to the concept of compassion. However, an exploration of the content of the items that compose the empathic concern subscale highlights important differences that may explain our results. For example, several items of the empathic concern subscale use the term pity (e.g., "When I see someone being treated unfairly, I sometimes don't feel very much pity for them / Quando vejo uma pessoa a ser tratada injustamente, nem sempre sinto muita pena dela"). The term pity is sometimes used to describe a state close to what we conceptualize as compassion (Aristotle, as discussed

in Nussbaum, 1996; Weiner, Graham, & Chandler, 1982; Weiner, Perry, & Magnusson, 1988) because both constructs describe an emotional response to another where suffering is recognized. Pity, however, involves the additional appraisal of feeling concern for someone considered inferior to the self (Ben Ze'ev, 2000; Fiske, Cuddy, Glick, & Xu, 2002), which is in contrast to compassion. The individual who pities another sees the sufferer as separate and different (Kornfield, 1988). This view helps to drive a wedge further between the conceptualization of the self and the individual that is suffering. Kornfield (1988) reports that pity is called the near enemy of compassion in Buddhism because it can appear to be the same in some instances.

Other items (e.g., "I often have tender, concerned feelings for people less fortunate than me / Tenho muitas vezes sentimentos de ternura e preocupação pelas pessoas menos afortunadas do que eu"; "I am often quite touched by things that I see happen / Fico muitas vezes emocionado/a com coisas que vejo acontecer"), seem to tap into the emotions people may feel when in the presence of others' suffering, but does not seem to describe the warm positive state associated with a strong prosocial motivation that is typical of compassion.

It has been suggested that without emotion regulation skills these empathic emotional states may have a negative impact on the psychological well-being of the witness (Decety, Yang, & Cheng, 2010). Empathy for pain activates the same neural network that is activated in first-hand experience of pain (Singer, Seymour, O'Doherty, Kaube, Dolan, & Frith, 2004), and negative affective states (Klimecki, Leiberg, Lamm, & Singer, 2013; Klimecki, Leiberg, Ricard, & Singer, 2013). Compassion, in contrast, activates a different neural network related to positive affect, affiliation, maternal and romantic love, and subjective positive emotions (Klimecki, Leiberg, Lamm, & Singer, 2013; Klimecki, Leiberg, Ricard, & Singer, 2013). Thus, while empathy may be a vulnerability factor for compassion fatigue, compassion would probably be a protective factor.

As Matthieu Ricard, a Buddhist monk and one of the subjects of the above-mentioned studies puts it: “When Tania Singer asked me to go into a state of pure empathy without engaging in compassion or altruistic love, I decided to empathically resonate with the suffering of children in a Romanian orphanage. ... The empathic sharing of their pain very quickly became intolerable to me and I felt emotionally exhausted, very similar to being burned out. After nearly an hour of empathic resonance, I was given the choice to engage in compassion or to finish scanning. Without the slightest hesitation, I agreed to continue scanning with compassion meditation, because I felt so drained after the empathic resonance. Subsequently engaging in compassion meditation completely altered my mental landscape. Although the images of the suffering children were still as vivid as before, they no longer induced distress. Instead, I felt natural and boundless love for these children and the courage to approach and console them. In addition, the distance between the children and myself had completely disappeared. This was when we realized the immense potential of compassion as an antidote to empathic distress and burnout (Klimecki, Ricard, & Singer, 2013, p. 279).”

This distinction led to the suggestion that the term compassion fatigue may be misleading and that instead it should be replaced by the term empathic distress fatigue (Klimecki & Singer, 2012).

Our results provide some support for these claims. Specifically, we found that more self-compassion (particularly self-kindness and common humanity) moderated the association between empathy and compassion fatigue, suggesting that for nurses who are able to be caring, supportive, and understanding towards themselves, particularly when faced with suffering or failure, and who feel interconnected with other people, there is no link between their empathic feelings and compassion fatigue. We speculate that several mechanisms may explain these findings. On the one hand, self-compassionate individuals may be more able to regulate their empathic feelings in a way that reduces its negative impact. This hypothesis is supported

by several studies indicating the role of self-compassion in emotion regulation (e.g., Raes, 2010; Johnson, & O'Brien, 2013; Odou, & Brinker, 2014; Krieger, Altenstein, Baettig, Doerig, N., & Holtforth, 2013; Leary, Tate, Adams, Allen, & Hancock, 2007; Neff, Hseih, Dejitterat, 2005). On the other hand, self-compassionate individuals may also be more compassionate towards others, and as suggested above, compassion may be a protective factor for the development of compassion fatigue. This hypothesis is supported by previous studies on the relation between self-compassion and compassion for others (e.g., Lindsay & Creswell, 2014; Welp & Brown, 2014; Neff & Pommier, 2013; Kraus & Sears, 2009).

Empathic concern and perspective taking were also positively related to compassion satisfaction, therefore suggesting that a certain level of empathy may be necessary to help others and to make the helping experience a positive one for nurses' professional life.

Finally, and in line with our predictions, personal distress was related to greater compassion fatigue and burnout and lower compassion satisfaction. Personal distress is fairly consistently used to describe the anxious, self-focused, aversive response experienced by someone when witnessing others who are in pain or suffering (e.g., Baton, 1981; Davis, 1983). It makes sense that helping professionals who experience higher personal distress might be more vulnerable to work-related stress reactions, such as compassion fatigue and burnout. Nurses and other helping professionals are regularly in situations where they are witnesses to the suffering of others. Their ability to stay empathically engaged is critical to effective practice, yet when the empathy process results in personal distress, practitioners are more likely to disengage or turn away (in one form or another) in order to protect themselves.

Eisenberg and Eggum (2009) suggest that the strongest predictor of personal distress is high affective arousal and weak emotional regulation. Without adequate regulation of empathic emotional responses when witnessing another's pain or suffering, observers are likely to become over-aroused and

experience personal distress, with the consequent urge to turn away or escape the situation. In contrast, people who do have effective strategies for modulating their vicarious experience of another's distress may be able to stay empathically engaged without experiencing personal distress (Decety & Lamm, 2009; Eisenberg & Eggum, 2009). Results from our study are in line with this idea and add to the importance of self-compassion as a protective factor of personal distress. We found that the negative dimensions of self-compassion mediated the association between personal distress and compassion fatigue. This suggests that when nurses are self-judging of, and over identify with strong and aversive feelings in consequence of witnessing patients' suffering they may be more vulnerable to compassion fatigue. In contrast, for those nurses who are able to recognize that suffering is part of the human condition, personal distress may not develop to compassion fatigue. This is probably because the experience of common humanity may counteract the self-focused tendency of personal distress, and lead to the recognition of the universality of suffering.

Importantly, personal distress has also been associated with frequency of clinical errors and speed of recognizing errors in practicing professionals (Larson, Fair, Good, & Baldwin, 2010; West et al., 2006), suggesting that it does not only impact nurses' well-being but can also interfere with their work.

While empathy has been a prominent concept in the nursing literature, there is a scarcity of empirical studies directly testing its role on professional well-being. Also, components of empathy are rarely examined in applied research. In addition, despite the proven benefits of compassion for self and others, there were no studies to our knowledge exploring self-compassion in healthcare professionals, and particularly in nurses. This study sheds light on the nature of the relationship between empathy and professional well-being and suggests that different components of the empathic response have different consequences. Also, while empathic feelings contribute to the satisfaction derived from the caregiving work and to decreased burnout, they

can at the same time contribute to compassion fatigue. Self-compassion abilities, in turn, may be an important protective factor for the negative effects of empathy on compassion fatigue. These findings may inform interventions designed to prevent and/or reduce compassion fatigue and burnout. In this line, mindfulness-based interventions may be useful. Mindfulness-based interventions have been shown to increase empathy (increase perspective taking and decrease personal distress; Birnie, Speca, & Carlson, 2010), self-compassion (e.g., Birnie, Speca, & Carlson, 2010; Boellinghaus et al., 2012), compassion for others (Wallmark, Safarzadeh, Daukantaitė & Maddux, 2013; Boellinghaus et al., 2012), and to decrease burnout (e.g., Mackenzie, Poulin, & Seidman-Carlson, 2006; Cohen-Katz et al., 2005). The rationale for a mindfulness-based intervention in this context will be further discussed below.

With the intent to further explore potential intrapersonal factors related to the experience of compassion fatigue and burnout, and to better understand the role of empathy in these symptoms, we conducted a separate study exploring the concept of empathy-based guilt. Previous theoretical and empirical work (e.g., Hoffman, 2000; Leith & Baumeister, 1998) suggests that empathy is closely related to guilt so that more empathic people are more likely to experience guilt than less empathic people. While empathy-based guilt is necessary for many social situations, it may become pathogenic when it leads to cognitive errors in understanding causality, which in turn may result in maladaptive outcomes, such as psychopathology and pathological acts of altruism (O'Connor et al., 2012), defined as prosocial or altruistic behaviors that have negative consequences to the other or to the self. In certain jobs where one is responsible for others' lives and well-being, and where empathic abilities are constantly being recruited, such as nursing, guilt can be especially acute when things go wrong. Based on this rationale, we hypothesised that the constant contact with suffering, and the responsibility to alleviate that suffering that characterises the nursing profession could create the conditions

for psychological distress in individuals with greater empathy-based guilt. Furthermore, we hypothesised that pathogenic empathy-based guilt would mediate the association between empathy and compassion fatigue/burnout symptoms.

In line with our predictions, empathy-based guilt, namely survivor and omnipotent guilt, was positively related to all empathy components, particularly with empathic concern, supporting the interpersonal perspective that describes feelings of guilt as deriving from empathy (e.g., Baumeister et al. 1994, Hoffman, 2000; Zahn-Waxler & Kochanska 1990). Results also indicated that survivor and omnipotent responsibility guilt were associated with higher levels of burnout and especially compassion fatigue. These results provided the first empirical evidence of the relationships between empathy-based guilt and professional quality of life, and are in line with other studies linking empathy-based guilt and psychological difficulties (e.g., O'Connor, Berry, & Weiss, 1999). Results of this study suggest that pathogenic empathy-based guilt may help explain some of the links between empathy and symptoms of burnout and compassion fatigue.

Given the close association between empathy and guilt, it is likely that nurses more prone to experience pathogenic empathy-based guilt may experience excessive and misplaced responsibility for their patients. In turn, this unbalanced empathy and unrealistic beliefs about responsibility can lead to caregiving that may not only be depleting and damaging to the caregiver but also may lead to unprofessional and intrusive caring.

In this line, the Dalai Lama suggests that ... "to help others, it is not sufficient merely to wish to do so (that is to free others from sorrow and bring about happiness). Indeed, altruistic thoughts can become an obsession and increase our anxiety ... When such good and positive thoughts are combined with wisdom, we know how to help beings effectively and can actually do so" (Dalai Lama, 2009; p. 26). Thus, pathogenic empathy-based guilt can be seen as distortions in causal thinking or attributions in which case, bringing wisdom

would allow recognizing, and ultimately let go of the fixation on such distortions, in order to see more clearly what is really helpful. In this line, O'Connor and colleagues (2015) found that people engaged in contemplative practices (e.g., mindfulness, Tibetan, Theravada) appear to be less vulnerable to empathic distress and maladaptive or pathological guilt when compared to a sample from the general population.

In the *final studies*, we aimed to explore the efficacy of a mindfulness-based intervention in reducing symptoms of compassion fatigue and burnout, in a sample of oncology nurses. Oncology nursing is one of the areas most affected by occupational stress and burnout (e.g., Barnard et al., 2006; Potter et al., 2010). Along with the common stressors that are experienced by nurses in most specialties, oncology nurses face additional challenges that may contribute to their ill-being. Our results confirmed these findings, as oncology nurses were found to experience more compassion fatigue than nurses from general hospitals in Study VIII. Thus, the rationale for this set of studies was to select a population working in a high-stress context that we thought would particularly benefit from participating in a mindfulness-based program.

However, we first wanted to investigate which psychological factors would be associated with burnout and compassion fatigue in a sample of oncology and palliative nurses, using a cross-sectional design. Particularly, we investigated the role of empathy, self-compassion, and psychological inflexibility in oncology nurses' professional quality of life.

Results from this study confirmed previous findings that empathy and self-compassion are important psychological factors for professional quality of life. This study further showed that psychological inflexibility, or experiential avoidance, significantly predicted higher levels of burnout, and especially compassion fatigue.

In the context of healthcare, caregivers frequently have to cope with the experience of traumatic memories, negative thoughts, unpleasant emotions and physiological sensations associated with the constant exposure to suffering, trauma, and losses. This is especially true in oncology nursing. As a result, nurses may develop distancing and avoidance strategies to protect themselves from these experiences, with potential negative consequences for patients and nurses themselves (Blomberg & Sahlberg-Blom 2007, Michaelsen, 2012). This is because, while experiential avoidance can provide some relief of discomfort in the short-term, it ultimately becomes maladaptive, increasing distress and getting in the way of other important and valued aspects of life.

The finding that experiential avoidance was more strongly related to compassion fatigue than to burnout may be explained by their distinct phenomenological nature. Compassion fatigue differs from burnout in that it primarily represents the experience of secondary trauma, including intrusive thoughts or images, numbing or distancing reactions, and persistent arousal. Several studies point to the role of experiential avoidance in the development and maintenance of post-traumatic stress disorder (e.g., Plumb, Orsillo, Luterek, 2004). Thus, individuals with compassion fatigue may develop coping behaviors similar to those common in post-trauma reactions, including experiential avoidance.

Thus, findings from this study confirm results from previous studies with nurses from different specialties, adding the importance of psychological inflexibility as a vulnerability factor for the development of burnout and especially compassion fatigue.

Given these findings, the question is that are there ways to increase the odds that nurses can remain empathically engaged with patients, but with increased resilience to the potential negative effects of witnessing their patients' pain and suffering, and with reduced vulnerability to the patterns of emotional numbing and experiential avoidance that accompany secondary trauma

responses? At the same time, it is possible to promote self-compassion, and other emotion regulation abilities, as these have been shown to be potentially protective of the negative effects of empathy on compassion fatigue?

The last two studies of this work were designed to try to provide an answer to these questions. Specifically, we aimed to test the hypothesis that a mindfulness-based intervention would be effective in reducing compassion fatigue and burnout, and that trait mindfulness, self-compassion, and psychological (in)flexibility would be mechanisms of change of the intervention.

Mindfulness-based interventions have been applied to several contexts and populations and, in general, results support its psychological and physical benefits (e.g., Grossman, Niemann, Schmidt, & Walach, 2004; Khoury, Sharma, Rusch, & Fournier, 2016). Mindfulness-based interventions applied to the nursing field are still scarce, but the few studies available show promising results (e.g., Cohen-Kratz et al., 2005; MacKenzie et al., 2006).

To explore the effectiveness of the intervention, we designed a non-randomized controlled study, where participants self-selected to the intervention and to a wait-list condition. Results showed that after the mindfulness-based intervention oncology nurses reported significant decreases not only in compassion fatigue and burnout, but also in stress symptoms, and significant increases in satisfaction with life. Regarding psychological processes, we found significant increases in self-compassion and mindfulness, and a decrease in psychological inflexibility in the nurses who took part in the intervention. These findings highlight the importance of mindfulness training in nurses' well-being and are in line with previous research on mindfulness with healthcare professionals. For example, studies with mixed samples of healthcare staff showed improvements in stress reduction and negative affect (Marx, Strauss, Williamson, Karunavira, & Taravajra, 2014; Shapiro, Brown, & Biegel, 2007), and burnout (Fortney,

Luchterhand, Zakletskaia, Zgierska, & Rakel, 2013; Galantino et al., 2005; Krasner et al., 2009; Rosenzweig, Reibel, Greeson, & Brainard, 2003; Shapiro et al., 2005). Studies with nurses also found reductions in burnout, depression, anxiety and stress after a mindfulness intervention (Bazarko, Cate, Azocar, & Kreitzer, 2013; Cohen-Katz et al., 2005; McKenzie et al. 2006).

Given that compassion fatigue and burnout are not defined diagnostic categories, and given that the use of the ProQOL-V as a diagnostic tool is not recommended (Stamm, 2010), it may be difficult to critically assess the clinical significance of our findings. To improve the interpretation of clinical significance, researchers commonly include more clinically-relevant information such as effect sizes. In this study, most of the effect sizes found were moderate or large. Results for the decreases in compassion fatigue and burnout in particular, in all analyses, showed large effect sizes, indicating that these changes were not only significant but also probably practically and clinically relevant.

The finding that the mindfulness intervention changed trait mindfulness is in line with the literature (Visted, Vøllestad, Nielsen, & Nielsen, 2015; Gu, Strauss, Bond, & Cavanagh, 2015), and suggests that the program was effective in developing mindful abilities.

The finding that the intervention increased self-compassion is also in line with previous studies (e.g., Chiesa & Serretti 2009). This result may be due to the fact that increasing awareness of inner and outer experiences can help one become gentler with oneself, recognizing one's humanity and becoming less overidentified with one's internal experiences. While the cultivation of self-compassion is not a direct or explicit focus of mindfulness-based interventions, these interventions have been associated with significantly increased self-compassion (Dunn, Hanieh, Roberts, & Powrie, 2012; Hollis-Walker and Colosimo 2011; Rimes & Wingrove 2011; Shapiro et al. 2005; Shapiro et al. 2007). Ingredients of mindfulness-based interventions which have been suggested to facilitate the development of self-compassion include

the continual emphasis on curiosity, kindness and befriending of experience (Feldman & Kuyken 2011), the group process (Allen et al. 2009), and the facilitator's embodiment of the practice (Segal, Williams, & Teasdale, 2013).

Findings that mindfulness-based interventions reduce experiential avoidance or psychological inflexibility are more scarce. In fact, this is one of the first studies to explore change in psychological inflexibility in the context of a mindfulness-based intervention. Our results suggest that, because mindfulness practices involve sustaining attention on the present moment experience, even if it may be threatening and difficult, with an open, non-judging, and non-reactive stance, it may help participants begin to let go of previously learned strategies of avoidance and resistance to difficult internal experiences, and their replacement by more adaptive, acceptance-based attitudes.

Finally, and contrary to what was expected, rumination did not significantly change as a result of the mindfulness training. In fact, as mindfulness is centered on the experience of the present moment, it is thought to counteract rumination which typically is focused on the past and often more abstract in nature (e.g., Bishop et al., 2004). Several studies (e.g., Jain et al., 2007; Coffey & Hartman, 2008; Labelle, Campbell, & Carlson, 2010; Heeren & Philippot, 2011) found rumination to be a mediator of the relationship between mindfulness and depression. However, one recent study (Kerns et al., 2016) found contradictory results, reporting that rumination did not mediate the relation between MBCT and depression. Although our study was adequately powered, it is possible that the null result may have been a type II error arising from smaller than expected effects. Also, given that this was a non-clinical sample, potential floor effects in the measure of rumination can also help explain these findings.

Overall, our results suggest that a 6-week group mindfulness-based intervention may improve oncology nurses' quality of life and well-being,

adding to the large body of empirical research on the positive effects of mindfulness interventions.

Although the efficacy of mindfulness-based interventions is now well established, relatively few studies have explored the mechanisms that underlie the positive effects of such interventions. Evaluating mediators and mechanisms of therapeutic change is important to understand the processes that account for therapeutic change and to ultimately optimize therapeutic change (Kazdin, 2007).

Results from Study XIII suggest that changes in trait mindfulness mediated the effects of the intervention on burnout, anxiety and stress symptoms, and satisfaction with life. The finding that only observing and non-reacting facets of mindfulness were significant mediators of the effects of the intervention on these variables is consistent with theoretical accounts on the definition of the construct. For example, in the two-component model of mindfulness proposed by Bishop et al. (2004), the first component involves the self-regulation of attention so that it is maintained on immediate experience, and the second component involves adopting a particular orientation toward these experiences, characterized by curiosity, openness, and acceptance. It has been suggested that non-reactivity, or the tendency to notice one's difficult thoughts without excessively reacting to them, is a way of operationalizing acceptance (Baer et al., 2006) and that it is particularly linked to mental health (e.g., Woodruff, 2013). These results are also in line with previous studies (e.g., Heeren et al., 2015; Josefsson, Larsman, Broberg & Lundh, 2011).

One way through which developing observing and non-reactivity may help healthcare professionals is by helping to develop emotional competencies. As previously noted, abilities to regulate one's emotions are central to empathy, allowing the person that experiences an emotional response to the feelings of another person to be able to make a distinction between self and other and to adequately regulate one's emotions (Cheng et al., 2007; Decety, 2009). If

healthcare professionals have difficulties regulating their emotions they may become emotionally drained over time (Cheng et al., 2007). Some emotional competencies central to empathy are identifying one's own emotions and accepting emotions. Identification of emotions refers to the ability to recognize and name emotions. Emotional acceptance is a form of emotion regulation that involves experiencing emotions with a nonjudgmental attitude and without the tendency to avoid them (Chambers, Gullone, & Allen, 2009).

The FFMQ Observing facet is related to the identification of one's emotions (e.g., "I pay attention to how my emotions affect my thoughts and behaviors"; "I notice how foods and drinks affect my thoughts, bodily sensations, and emotions"). Mindfulness may facilitate the awareness of emotions as they arise, which may lead to a more accurate identification of one's own emotions.

The FFMQ Non-Reactivity facet, in turn, is related to emotional acceptance (e.g., "I perceive my feelings and emotions without having to react to them"; "In difficult situations, I can pause without immediately reacting"). Healthcare professionals in distress are likely to have difficulty accepting their emotions if they lack specific skills, such as detecting and naming their emotions. Mindfulness instructs one to approach emotions with curiosity and acceptance, without judgment or attempts to change the experience (Bishop et al., 2004).

Given the high stress environments that characterises oncology nursing, being able to be present to one's ongoing experience, whether by listening empathically to a patient or performing a technical procedure, as well as being able to recognise bias and judgments in thinking, or difficult emotions and sensations, and non-reacting to them, may be crucial not only for nurses' well-being but also for effective care.

Self-compassion was also a significant mediator of the effects of the intervention on several outcomes, namely burnout, depression, anxiety, stress, and satisfaction with life. This suggests that the mindfulness training

may teach participants another way of relating to adversity, thus contributing to the alleviation of suffering through the development of a more accepting view of oneself and one's experiences. These findings are in line with a previous study which supported self-compassion as a mediator of MBCT's effects (Kuyken et al., 2010). In a previous study with mental-health professionals it was also found that an MBSR intervention significantly increased self-compassion (Shapiro, Astin, Bishop, & Cordova, 2005) and that increases in self-compassion were associated with decreases in perceived stress, but not satisfaction with life.

These results suggest that self-compassion may be a crucial skill for oncology caregivers. Bringing a self-compassionate attitude, for example, by forgiving oneself for inevitable mistakes, or for not having the resources necessary to provide what would be considered optimal patient care, or for grieving when a patient passes away, can promote a more balanced emotional and mental state.

However, contrary to our hypotheses and findings from the previous cross-sectional studies, changes in self-compassion did not mediate the impact of the intervention on compassion fatigue. In fact, we hypothesised that one way through which mindfulness training could reduce compassion fatigue would be through increased self-compassion. We speculate that one of the reasons that may help explain this finding is related to the fact that self-compassion is only explicitly addressed in the last sessions of the intervention, with the introduction of compassion and loving-kindness practices. Thus, although self-compassion may be implicitly cultivated during all the mindfulness training, whether by the continual emphasis on curiosity, kindness and befriending of experience, the group process, or the facilitator's embodiment of the practice, which can explain why self-compassion increased from pretest to posttest in the intervention group, maybe more training is needed so that self-compassion can increase to levels at which it could have an effect on compassion fatigue symptoms.

Finally, psychological inflexibility was a significant mediator of the effects of the intervention on burnout, compassion fatigue, depression, and stress. In the context of oncology healthcare, caregivers frequently have to cope with the experience of traumatic memories, negative thoughts, unpleasant emotions and physiological sensations associated with the constant exposure to suffering, trauma, and losses. While trying to control or avoid them can provide some relief of discomfort in the short-term, it ultimately becomes maladaptive, increasing distress and getting in the way of other important and valued aspects of life (Hayes, Strosahl, & Wilson, 1999).

Psychological inflexibility was the only significant mediator of the effects of the intervention on compassion fatigue, which is in line with the findings from Study XI with oncology nurses in which, when all variables were entered into the regression model, only psychological inflexibility remained a significant predictor.

Compassion fatigue is described as a secondary traumatic reaction that results from the close contact with the suffering or trauma of others, and yields symptoms similar to those of PTSD (Figley, 1995), such as reexperience, arousal, and avoidance of reminders of the event (Stamm, 2010). There is ample evidence for experiential avoidance and psychological inflexibility as problematic processes linking trauma to diminished well-being (Polusny, Rosenthal, Aban, & Follette, 2004; Marx & Sloan, 2002; Orcutt, Pickett, & Pope, 2005; Reddy, Pickett, & Orcutt, 2006; Rosenthal, Hall, Palm, Batten, & Follette, 2005). Avoidance of internal experiences has also been shown to increase negative affect in PTSD (Monson, Price, Rodriguez, Ripley, & Warner, 2004). In fact, avoidance of trauma-related stimuli, trauma-related thoughts and feelings and reminders, is one of the core cluster symptoms of a PTSD diagnosis (DSM-V; APA; 2013).

To be present with another in the midst of life challenges and suffering is considered fundamental to nursing practice (Ferrell & Coyle 2008). Despite this, multiple studies describe nurses using distancing and avoidance

strategies to protect themselves from these experiences, with potentially negative consequences for patients and nurses themselves (Chang et al. 2006, Blomberg & Sahlberg-Blom 2007, Michaelsen, 2012). Mindfulness-based approaches may be important in this case, as a way of promoting a shift from avoidance-based to more acceptance-based strategies, which would allow nurses to be more present and balanced in challenging moments.

When considered along with the previously described findings for the FFMQ facet non-reactivity, this results provides support that acceptance-related aspects of mindfulness-based interventions may be particularly linked to mental health.

In sum, these results contribute to the empirical investigation of the mechanisms of change underlying the effects of mindfulness-based interventions on psychological functioning, a complex yet crucial task to improve the quality, delivery, and effectiveness of the interventions, develop the theoretical underpinnings of mindfulness and mindfulness-based interventions and inform future research.

4.2. Clinical Implications

We believe that several important implications for practice can be derived from the present work.

Results from the first set of studies generally suggest that, contrary to popular belief, being driven by self-focused motivations in relationships, in an attempt to create or maintain a positive image of the self to others and ultimately be accepted and included, may at times have the opposite effect. We found that individuals holding self-image goals in their relationships showed more psychopathological symptoms, more social anxiety, and perceptions of being disconnected from others. In contrast, other-focused motivations were not only associated with perceptions of social connectedness with others, as it

would be expected, but were also associated with benefits for the self, such as greater well-being and positive emotions.

What these results seem to suggest is that an exaggerated importance given to the self, in which the self takes central point of reference with regard to many psychological activities (i.e., motivation, attention, cognition, affect/emotion, and behavior), may be an important factor in the development and / or maintenance of psychological distress.

For example, our results showed that self-image goals predicted social anxiety in college students. Social anxiety disorder (SAD) is a common and frequently debilitating condition characterized by intense fear of evaluation in social or performance situations (Jefferys, 1997; Kessler et al., 1994). Cognitive models of social anxiety (Clark & McManus, 2002; Clark & Wells, 1995; Rapee & Heimberg, 1997) suggest that during social situations several psychological processes, such as fear of negative evaluation, maladaptive cognitions regarding the self (e.g., as socially incompetent) and others (e.g., as critical judges), and an exaggerated self-focus are characteristic of patients with SAD. In fact, it has been shown that self-referential processing is heightened during social and performance situations in patients with SAD (Spurr & Stopa, 2002), and leads to distortions in interpretations of social cues maintaining social fears (Bogels & Mansell, 2004). Thus, the excessive focus on avoiding social threats and failure, and on creating a positive image to others, are central features of both self-image goals and social anxiety disorder. Persistent pondering over negative self-related thoughts is also a central feature of depressive psychopathology (Wagner, Schachtzabel, Peikert, & Bär, 2009).

Thus, we suggest that interventions that influence self-referential processing may modulate a core mechanism related to SAD, and other psychopathological conditions. Mindfulness-based interventions, and meditation more generally, seem to be effective in reducing self-referential thought (e.g., Goldin, Ramel, & Gross, 2009; Farb et al., 2007; Hölzel et al., 2011). In the case of SAD, mindfulness training may reduce habitual

tendencies to engage in hypercritical social self-view (self-evaluation) and to react in an exaggerated manner to beliefs about how others might view oneself (other evaluation), shifting from cognitive distortions of the social self toward a more adaptive and less distorted sense of self.

At the same time, meditation may also promote compassionate goals, for example, through loving-kindness meditation (Salzberg, 1997), which has been shown to increase self-other integration (Colzato et al., 2012), prosocial behavior (Leiberg, Klimecki, & Singer, 2011; Condon, Desbordes, Miller, & DeSteno, 2013), and positive emotions toward people who are suffering (Klimecki, Leiberg, Lamm, & Singer, 2012).

The findings that trait mindfulness and self-compassion may be facilitators of a shift from self-image goals to compassionate goals in Study VII give further support for interventions that can change these processes. Mindfulness-based interventions have been shown to increase both trait mindfulness and self-compassion (e.g., Gu et al., 2015).

In a time when societies are becoming increasingly self-centered (Twenge, & Campbell, 2009), exploring these and other ways to promote a shift from self-interest to a more compassionate motivational approach is timely, and may contribute not only to individuals' well-being but also to a more sustainable and supporting society.

Another important finding from this set of studies was the importance of positive affect in explaining some of our findings.

In comparison to negative emotions, cognitions, and psychopathological conditions, positive mental states were largely neglected from psychological literature until recently. Recent research, however, is starting to shed light on the prominent role that positive emotions play in coping, thriving and flourishing (e.g., Fredrickson, 1998; Isen, 2000; Shiota et al., 2014; Lyubomirsky, King, & Diener, 2005). Experiencing low positive affect is associated with negative mental health outcomes, and the dysregulation of

positive affect can result in psychopathology (e.g., Carl, Soskin, Kerns, & Barlow, 2013; Watson & Naragon-Gainey, 2010). For example, studies show that depressed participants, compared to never-depressed controls, experience less positive affect in the course of daily life (Barge-Schaapveld, Nicolson, Berkhof, & deVries, 1999; Bylsma, Taylor-Clift, & Rottenberg, 2011; Peeters, Berkhof, Delespaul, Rottenberg, & Nicolson, 2006). Also, they generate less positive affect from pleasant stimuli during experimental tasks (Bylsma, Morris, & Rottenberg, 2008), though in daily life this phenomenon is debatable (Bylsma, et al., 2011; Peeters, Nicolson, Berkhof, Delespaul, & De Vries, 2003). In other words, positive affect may represent a resilience phenotype against depression. Individuals vulnerable to depression may therefore benefit from learning to experience more positive affect. Our results suggest that both self-compassion and compassionate goals promote positive affective states. In this line, a recent study provided evidence that MBCT is effective in promoting positive affect (more frequent experience of daily-life positive affect, as well as enhanced positive affect responsiveness to pleasant daily-life activities), which was associated with reduction of residual depressive symptoms (Geschwind, Peeters, Drukker, van Os, & Wichers, 2011).

Results from studies II and V also suggest that positive emotions may also be important in promoting social connection. This finding may have important implications, given that evidence suggests that compromised social connectedness can play a role in the aetiology, maintenance, and treatment of several disorders (e.g., Hawkley & Cacioppo, 2010), such as depression (e.g., Cruwys, Haslam, Dingle, Haslam & Jetten, 2014).

Depression is typically characterized by social isolation and reduced social connectedness (Wade & Kendler, 2000). Although it is likely that lack of social connectedness and depression reinforce each other, some evidence suggests that differences in social connectedness emerge prior to the development of

depression symptoms. For example, in one study, Cacioppo, Hawkley, and Thisted (2010) found that perceived social isolation was a longitudinal predictor of depression symptoms even after controlling for other important variables (demographic characteristics, personality, physical health, stress, and a number of objective indicators of social-relationship quality; Cacioppo et al., 2010). Perceived social isolation has therefore been considered an important risk factor for the development and recurrence of depression (Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006; Glass, De Leon, Bassuk, & Berkman, 2006).

There is some evidence that social interventions for depression are both effective and boost long-term resilience (Hawkley & Cacioppo, 2010; McWhirter, 1990; Perese & Wolf, 2005). Even minimal reminders of social connectedness can increase a person's resilience in stressful situations (Jones & Jetten, 2011) and enhance their immunological resistance to infection (Cohen, Doyle, Turner, Alper, & Skoner, 2003). Given the role of self-compassion, compassionate goals, and positive affect in the development of social connectedness, such interventions could also consider directly targeting these processes to enhance the therapeutic benefits.

Findings from Study V suggest that promoting more self-compassionate attitudes may be one way to increase experiences of positive mental states. Importantly, because self-compassion is not associated with suppression and avoidance, the positive mental states that arise with self-compassion are not the result of trying to avoid or exclude negative states, but rather of embracing and holding them in a kind, mindful, and equanimous awareness.

These findings indicate that it is important to uncover ways in which self-compassion and positive emotions can be enhanced. For example, loving-kindness meditation was found to promote positive emotions (Fredrickson et al., 2008; Zeng, Chiu, Wang, Oie, & Leung, 2015), and self-compassion

(Galante, Galante, Bekkers, & Gallacher, 2014), and thus could be a valuable intervention to increase well-being.

Self-compassion was also an important process in positive emotions in the context of alexithymia. Results from Study VI provided evidence that individuals with alexithymia experience lower positive emotions. This may have important implications for practice. For example, there is evidence for an association between alexithymia and depression (e.g., Marchesi, Brusamonti, & Maggini, 2000). At the same time, anhedonia, the loss of pleasure or interest in previously rewarding stimuli, is considered a hallmark of clinical depression (APA, 2013). Thus, decreased experiences of positive emotions may be one way through which alexithymia is related to depressive symptoms. In this line, it may be clinically important to make positive mental health, in which positive emotions are included, a significant end-point of intervention.

Our findings also suggest that the therapeutic targeting of alexithymia alone may not be sufficient without also targeting the mediating processes in an explicit way (i.e., experiential avoidance, decentering, fear of compassion, and self-compassion). Besides mindfulness-based interventions, another intervention that may be important in this context is Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999). One of the main goals of ACT is to increase psychological flexibility, which involves helping clients to disentangle themselves from the cycle of experiential avoidance and cognitive fusion.

In addition, our study provides preliminary evidence that alexithymia may be related to low positive emotional granularity, or emotional differentiation, of positive emotions. This finding is important because lack of emotional granularity has been associated with difficulties in emotion regulation (e.g.,

Barrett, Gross, Conner, & Benvenuto, 2001). Thus, it may also be relevant to provide these clients with opportunities to learn richer and functional repertoires of verbal behaviors about emotional contexts.

Research also suggests that positive affect is associated with health-protective biological responses, such as reduced inflammation, lower cortisol values, and higher heart rate variability (e.g., Cohen & Pressman, 2006; Steptoe, Dockray, & Wardle, 2009).

In the Study VII we found evidence for an association between positive affect related to feelings of safeness, warmth, and contentment and a higher level of resting-state heart rate variability (HRV). HRV indexes parasympathetic regulation of heart rate via the inhibitory influence of the myelinated vagus nerve over the sinoatrial node (Porges, 2011; Thayer & Lane, 2000). Under conditions of safety, heart rate is slowed, and social engagement is facilitated (Porges, 2011; Geisler, Kubiak, Siewert, Weber, 2013). In response to a salient external cue – such as a threat signal – the vagal brake is released, allowing the sympathetic nervous system to dominate and mobilize defense responses. A higher level of resting-state HRV has been postulated to reflect a central indicator of healthy emotion regulation (Appelhans & Luecken, 2006; Quintana, Guastella, Outhred, & Hickie, Kemp, 2012), indicating a system that is flexible in responding to environmental challenges (Thayer & Lane, 2000). Conversely, low resting state HRV is an indicator of psychophysiological rigidity characterised by a diminished capacity for regulating emotional responses to distressing events (Thayer & Lane, 2000). Reduced resting HRV has also been associated with greater trauma exposure (Shaikh et al., 2012), mental disorder and symptoms, including depression and anxiety (Kemp et al., 2010; Chalmers, Quintana, Abbott, & Kemp, 2014), and physical health status (Kemp & Quintana, 2013).

This body of evidence suggests that autonomic imbalance may be the common pathway linking psychosomatics and psychopathology (Thayer &

Brosschot, 2005). This can have important implications for clinical practice. For example, some evidence suggests that pharmacological treatments may have an impact on autonomic function. Accordingly, a 2-year longitudinal study (Licht, Penninx, & de Geus, 2010) reported that all classes of antidepressants including the tricyclic (TCA) antidepressants, the selective serotonin and noradrenaline reuptake inhibitors, were associated with adverse cardiovascular effects as indicated by reductions in heart rate variability (HRV).

Another study of 54 patients with panic disorder (Garakani et al., 2009) found that only those administered CBT displayed decreases in heart rate and increases in HRV, while those receiving CBT with sertraline (a selective serotonin reuptake inhibitor (SSRI) did not display any change despite significant clinical improvement.

Other non-pharmacological interventions also appear to increase HRV. For example, some studies provide evidence that mindfulness-based interventions increase HRV (Krygier et al., 2013; Libby, Worhunsky, Pilver, & Brewer, 2012). Other interventions that increase self-compassion may also be effective in increasing HRV. Accordingly, recent evidence suggests that trait self-compassion is associated with increased heart rate variability (Svendsen et al., 2016) The results from our Study VII suggest that one possible link between self-compassion and increased HRV is positive affect.

Together, these studies provide evidence of the capacity to increase HRV through non-pharmacological means, which may have important implications for clinicians treating patients with already compromised parasympathetic function.

Results from the last set of studies suggest that self-compassion and mindfulness are also important processes for nurses' professional quality of life.

Specifically, we found that self-compassion may play an important role in regulating empathic feelings in a way that may prevent the development of compassion fatigue.

Research on compassionate care is building momentum, but to date few studies have focused on nurses' self-compassion. Given that nurses' well-being and quality of care have been shown to be interdependent (Maben, Adams, Peccei, Murrells, & Robert, 2012), it is not surprising that compassionate care for patients has become a pressing issue.

Many nurses cope with difficult emotions by distancing themselves from patients (Mackintosh, 2007), which can have detrimental consequences not only for nurses' well-being but for the quality of care provided (Michselsen, 2012). Thus, trying to keep an emotional distance from patients to avoid compassion fatigue and burnout may not be effective. Instead, nurses would benefit from ways that allow them to down-regulate some aspects of empathy while ensuring that they are still capable of eliciting empathic responses strong enough to be motivated to assist patients in need. The development of self-compassionate abilities may be an important emotion regulation strategy to this end.

Supporting healthcare professionals by improving their emotional competencies has thus become increasingly important. Better emotional competencies have been reported to contribute positively to caregiver-patient's relationships, empathy, communication skill and prevention of burnout (Mikolajczak, Menil, & Luminet, 2007; Shapiro & Lie, 2004). Research in neuroscience has shown that emotions are central to judgment and decision making, further emphasizing the importance of emotional competencies and self-awareness in clinical care (Lerner Li, Valdesolo, & Kassam, 2015).

Finally, Studies XII and XIII provided evidence for the effectiveness of a mindfulness-based intervention in reducing compassion fatigue and burnout. As the demands placed upon healthcare providers continue to mount, the interest in the applications of mindfulness training for this population is timely. Our research suggests that mindfulness training can serve as a viable tool for the promotion of healthcare professionals' well-being. This is important given the straight association between nurses' well-being and quality of patient care. In a large meta-analysis of 82 studies including 210,669 healthcare providers, provider burnout showed consistent negative relationships with perceived quality of care (including patient satisfaction), quality indicators, and perceptions of safety (Salyers et al., 2016). In a recent systematic review of 46 studies, in which the most commonly studied profession was nurses, the authors found that poor well-being and moderate to high levels of burnout are associated, in the majority of studies reviewed, with poor patient safety outcomes such as medical errors (Hall, Johnson, Watt, Tsipa, & O'Connor, 2016).

In fact, stress, burnout, and compassion fatigue may have implications beyond the individual nurse. Severe stress makes one less capable of making the best choices. Also, a stressed healthcare workforce leads to increased costs associated with practitioner burnout, high staff turnover, clinical errors, and lower quality care for patients (McCabe & Mackenzie, 2009).

Thus, the routine training of health professionals in mindfulness programs may be an effective way to disseminate its benefits widely throughout the healthcare system. More research is needed in this area, but some studies offer promising results and suggestions for future avenues of research.

For example, in an observational study (Beach et al., 2014), physicians rating themselves as more mindful engaged in more patient-centered communication and had more satisfied patients. Several processes may help explain such findings. The mindfulness qualities of curiosity, presence, and the ability to adopt multiple perspectives simultaneously may promote greater

awareness of self and others (Tang, Hölzel, Posner, & 2014). Mindfulness training also includes skills to lower reactivity and to enhance responsiveness to stressful situations (Tang et al., 2014), which may free health professionals' attention so that they are better able to attend to others' experience, less likely to distance themselves from distressing situations, and more likely to consider a variety of explanations in complex situations (Reng et al., 2010). As mindful professionals maintain greater attention to their own, as well as their patients' experiences, they may be more able to appreciate the impact of an illness on the patient's life or the nuances of the patient's emotions. This deeper appreciation of the patient's experience perhaps enables them to respond to such opportunities with understanding, empathy, and compassion.

As suggested by Epstein (1999), "mindlessness accounts for many deviations from professionalism, which seem to occur more often in emotionally charged situations, during situations of uncertainty, and under pressure to resolve problems. The goal of mindfulness is compassionate informed action in the world, to use a wide array of data, make correct decisions, understand the patient, and relieve suffering".

If our results are replicated they can be translated into educational, training and intervention initiatives designed to prevent and treat burnout and compassion fatigue in oncology healthcare professionals. Health professionals can receive training in mindfulness through a number of avenues. Mindfulness training can be integrated into existing curricula in schools of medicine, nursing, and social work. Health professionals already in the workplace can be encouraged to seek mindfulness training through programs and workshops that offer continuing education credits (CEUs), as was done in the present study.

4.3. Limitations

In general, results from the present work are promising, and may have important implications for research and practice. However, several important limitations should be taken into account. Regarding studies from Part 1, the main limitations include the use of a sample of college students, which limits the generalizability of the findings to other groups. However, it should be noted that, for example, in Study I, results were similar to those found in the Niiya et al.'s study (2013) in a sample of 320 adults, which may suggest that compassionate and self-image goals may not vary much with age. Also, given the small number of male students in the study these were eliminated from analysis. Thus these results need to be replicated in more gender homogenous samples to test for possible gender differences. In fact, it has been suggested that females may differ in their biobehavioral responses to stress, which are thought to be less mediated by the fight-or-flight response and more by the attachment-caregiving system (Taylor et al., 2000), which may have implications for studies on interpersonal goals and psychological distress. Although studies from Part 1 used a longitudinal design, because we did not manipulate any of the variables, definite conclusions about causal relationships cannot be drawn from these results.

The main limitations of Studies VI and VII are the fact that the majority of the samples were college students, which may limit the generalizability of the findings to different populations, and the cross-sectional nature of some of the studies, which does not allow to establish causal relationships between the variables. Regarding Study VIII, limitations are related to the fact that only female participants were recruited which, although controls for gender differences in HRV, at the same time limits the generalizability of the findings. One other limitation is the fact that we did not control for respiratory rate, which may be a confounding variable given its effect of HRV. Also, the cross-sectional nature of the design of this study does not allow to establish causality between positive affect and HRV.

One of the main limitation of Studies VIII, IX, X, and XI, which was also found in the previous studies, is the predominance of women in the samples. However, the proportion of female and male nurses in our sample matches other international and national samples (e.g., Budden et al., 2013; Marôco et al., 2016). Another important limitation is related to the data collection, given that we used a convenience sample of hospitals and nurses which, by being a nonprobability sampling method, may not adequately represent the population. Finally, and similar to some of the previous studies, causal relationships between psychological processes and professional quality of life cannot be established but only theoretically speculated.

The main limitations of Study XII and XIII are related to the study design. In particular, restrictions related to shifts and management of human resources did not allow a randomization of participants to the conditions, and participants were assigned by choice rather than by chance, which may have introduced selection biases. However, given that all participants knew they would receive the mindfulness training, and self-selected into the experimental and comparison conditions according to their services' schedules, we believe that the effect of motivational differences on their experience in the program would be small. The lack of a follow-up assessment is another important limitation that does not allow to assess the maintenance of the positive effects over time. The inclusion of a control condition, albeit wait-listed, is a major strength of this study. Also, because we did not measure change in the mediators before the outcomes or during the intervention, and temporal ordering of mediator and outcome variables is crucial to establish mediation (Kazdin, 2007), we cannot rule out the possibility that changes in the outcomes lead to changes in the mediators. However, this explanation seems less likely in light of some evidence showing that changes in mindfulness during a mindfulness intervention preceded changes in mood (Baer, Carmody, & Hunsinger, 2012; Snippe, Nyklíček, Schroevers, & Bos,

2015). Finally, there may be other important mechanisms that explain the benefits of the intervention, which were not measured in the present study.

The use of self-report measures is an important limitation common to all studies, and thus the effects of shared method variance and of bias associated with this type of methodology (e.g., response bias, social desirability) cannot be ruled out. The sole reliance on self-report measures is particularly relevant for several constructs, such as empathy and mindfulness. There is some controversy, for example, over how well self-report measures of empathy predict empathic action and behavior (e.g., Melchers, Montag, Markett, & Reuter, 2015). Also, several limitations have been identified for the mindfulness measures, including lack of external, objective criteria, potential confusion over semantic interpretation, and the introspection required to recollect mental states (Grossman, 2008). Self-compassion, in turn, seems to be more readily definable, and items may be more easily accessible to respondents (Van Dam, Sheppard, Forsyth, & Earleywine, 2011).

4.4. Future studies

One of the main limitations in the study of compassion is the lack of consensus on its definition and a paucity of psychometrically robust measurement tools. This implies that we cannot be confident that existing measures of compassion are measuring this construct accurately and this raises significant barriers to scientific progress in the field. Thus, one important first step for future research in this area should be the development of a psychometrically robust questionnaire-based measure of compassion, while keeping in mind the complexities around measuring this construct. Future studies should also focus on ways of assessing compassion that do not rely on self-reports, such as physiological markers (e.g., autonomic activity, displays of compassion), and brain activity. Combining different methods for measuring compassion

may be the best way to measure an overall compassionate response in individuals.

Regarding the field of interpersonal goals, we suggest that still little is known about why people become selfish or selfless and what triggers shifts in the states of selfishness and selflessness. Although our findings provide some indication that trait mindfulness and self-compassion may be important in this context, other variables should be explored. Understanding the triggers of self-image and compassionate goals could help improve physical and psychological health and the quality of relationships. In addition, given the problems identified in the Compassionate and Self-Image Goals Scale, we suggest that more attention should be devoted to measurement of these constructs. Also, given that a shift from a self-centered to a more other-centered framework has benefits, future studies could also test interventions designed to this end, using longitudinal and experimental paradigms. Finally, based on studies in the field of elevation and helping, which suggest that compassion may be contagious (e.g., Fowler & Christakis, 2010; Haidt, 2003), future studies could explore the impact of individuals' compassionate goals on others' well-being, and whether this would increase others' compassionate goals. Such study could provide an important base for change at an organizational and societal level.

Given the problems associated with the sole use of self-report measures to assess constructs such as empathy, mindfulness, and affect, future studies should replicate our findings using other measures. For example, studies measuring positive affect could use more ecologically valid methods of exploring daily emotions and the ways people react to day-to-day situations may also offer a richer understanding of such processes (i.e., experiencing sampling method). Also, the measurement of dispositions to experience different positive emotions could be improved by including third-parties' reports and alternative measures of positive emotions, such as facial expressions and positive emotional language usage. Future studies could also

explore the physiological underpinnings of positive affect other than heart rate variability (e.g., inflammation, cortisol, telomerase). In addition, given the effects of positive emotions on broadening peoples' scope of attention, cognition, and action, and building a range of personal resources, it would be an interesting avenue of research to explore whether the benefits that have been associated with self-compassion could be at least in part explained by the effects of positive emotions.

Research on compassion fatigue has suffered from both conceptual and methodological limitations. This lack of clarity has hindered the measurement and empirical study of this concept. Although there are several scales to measure compassion fatigue, there are few validation studies and little information on their psychometric properties. Thus, one important area for future research is to develop a robust measurement tool for compassion fatigue, based on an empirically supported definition. Longitudinal research is also needed to provide more information on the aetiology and course of compassion fatigue. Also, more work is needed to understand the complex links between empathy, compassion, and compassion fatigue. To our knowledge, our study was the first to empirically establish an association between empathic feelings and compassion fatigue. These findings need to be replicated in other, and larger, samples. A psychometrically and conceptually rigorous tool applied in the measurement of empathy in nursing research could also be an important future endeavor. Also, methods other than self-report questionnaires should be used to measure empathy, such as neuroimaging, facial expressions, or cardiovascular activity. Importantly, it is not clear if it is compassion, or instead, lack of compassion, that is the key ingredient that defines the disorder. While based on the definition of compassion provided, and studies showing the benefits of compassion versus empathy, it is possible that compassion, but not empathy, may be a protective factor for the development of compassion fatigue. Although our findings partially support this hypothesis, future longitudinal and experimental designs

should elucidate the complex relations between empathy, compassion, and compassion fatigue. It would also be interesting to gather more “ecological” measures in healthcare settings, such as degree of patients experiences and variables tapping on the nurse-patient interactions. These kinds of measures will be essential in clarifying how results translate to real-life settings.

While our results provide promising findings regarding the effectiveness of mindfulness-based interventions for reducing compassion fatigue and burnout in oncology nurses, these results need to be replicated. Research on the impact of mindfulness-based interventions in the healthcare field has several methodological limitations, and thus future studies could conduct randomized controlled trials, with active control groups, to increase the robustness of the findings. Also, as most of the studies on the impact of mindfulness-based interventions on healthcare professions have only evaluated self-reported outcomes, future studies could also examine patients’ perception of healthcare professionals’ empathy and compassion, and patients’ clinical outcomes. Also, it could be explored whether the intervention has an impact on organizational variables, such absenteeism and turnover. Including combined research methods, such as in-depth interviews and third-parties’ records (e.g., patients) could also be an interesting direction for future studies. In addition, greater attention should be directed towards behavioral variables, such as adherence, in order to assess the frequency and quality of mindfulness practice. Finally, it is also of paramount importance to better understand which underlying mechanisms during MBIs are associated with its efficacy. For example, it was recently found that burnout symptoms were associated with impairments in several cortical areas associated with high-order cognitive functions (e.g., dorsolateral prefrontal cortex, posterior cingulate cortex, frontal gyrus), which may explain how burnout impact on clinical reasoning and the quality of patient care (Durning, 2013). Interestingly, recent findings from functional neuroimaging studies are

suggesting that mindfulness may change brain function in these same areas (e.g., Marchand, 2014).

To explore mechanisms of change in mindfulness-based interventions is a challenge but yet a crucial area in need for further research. While our study provides some evidence for possible mechanisms of change of our mindfulness-based intervention, there were important limitations that may limit the robustness of our findings, such as the simultaneous measurement of mediators and outcomes. Thus, future studies could include several assessment time points during the intervention which would allow to make stronger conclusions regarding mediation and to explore the temporal ordering of the mediators.

Also, because mindfulness-based interventions contain many different components and practices, as well as unspecific effects (e.g., group support), it is still unclear what are the active ingredients at play in these interventions. Some interventions also include other practices such as loving-kindness and compassion meditation. Thus, one interesting area for future research is to conduct dismantling studies to partial out the therapeutic effects of mindfulness meditation from other intervention components.

Additionally, research investigating whether certain individual differences or clinical characteristics determine individual variation in the primary changes after mindfulness training would also be valuable. For example, some participants may benefit from mindfulness training mainly through reduction of worrying, while others may benefit mainly through changes in the experience of positive emotions. Analyses of individual trajectories could also be valuable to this end.

Finally, the cost associated with work-related stress (e.g. health care costs, productivity loss, absenteeism, etc.) is considerable, and operates at multiple levels affecting the individual, the organization, and ultimately the society (European Agency for Safety and Health at Work [EU-OSHA], 2014). For example, it was estimated that the total cost of burnout for all physicians

practicing in Canada was \$213.1 million (Dewa, Jacobs, Thanh, & Loong, 2014) Thus, it is important to explore the extent to which this burden could be potentially decreased through strategies to address not only burnout, but also compassion fatigue, and stress more generally, among healthcare professionals. Conducting cost-effectiveness studies of the application of mindfulness training in this context is thus a timely endeavor.

4.5. Conclusion

The present work aimed to explore several constructs related to the experience of compassion. First, we conducted several studies designed to investigate the extent to which holding compassionate goals in close relationships would contribute to greater psychological well-being for the giver. We also explored whether the traits of mindfulness and self-compassion would promote more compassionate goals and less self-focused goals during the study period. Second, and based on several gaps identified in the literature, we explored the relationship between self-compassion and different positive affective states, and whether these positive affective states would be related to a measure of physical health. Third, based on the idea that the recognition and alleviation of suffering (two major components of compassion) are central to nursing, and based on important distinctions between empathy and compassion, we explored how several psychological factors, such as empathy and self-compassion, would be related to compassion fatigue and burnout. Finally, we tested the efficacy of mindfulness training in reducing psychological distress in nurses working in oncology, a high-stress environment.

In general, the evidence from this work showed that i) having compassionate goals, as opposed to self-image goals, in interpersonal relations is associated with benefits to the individual experiencing compassion; ii) traits such as mindfulness and self-compassion help promote compassionate goals and

decrease self-image goals; iii) self-compassion promotes more frequent experiences of positive affective states, and may be protective of the negative effects of alexithymia; iv) positive emotions promoted by compassionate goals and self-compassion, in turn, are associated with physical health; v) empathic feelings are important for deriving satisfaction from the nursing work, but at the same time may be a risk factor for compassion fatigue, especially if the individual lacks self-compassionate abilities; exacerbated feelings of guilt related to empathy increase nurses' compassion fatigue and burnout symptoms; nurses benefited from six weeks of mindfulness training in several indicators of psychological well-being; mindfulness, self-compassion, and psychological flexibility processes are promoted by the mindfulness training and contribute to nurses' well-being.

In global, this work aimed to contribute to the growing body of empirical work that has been supporting the importance of positive human attributes, such as compassion, mindfulness, and positive emotions, essential to human, and social, flourishing.

A human being is a part of the whole called by us universe, a part limited in time and space. He experiences himself, his thoughts and feeling as something separated from the rest, a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us. Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty

-Einstein

REFERENCES

- Adams, R. E., Boscarino, J. A., & Figley, C. R. (2006). Compassion fatigue and psychological distress among social workers: A validation study. *The American Journal of Orthopsychiatry*, 76(1), 103–108. doi: 10.1037/0002-9432.76.1.103
- Alarcon, G. M. (2011). A meta-analysis of burnout with job demands, resources, and attitudes. *Journal of Vocational Behavior*, 79(2), 549–562. doi: 10.1016/j.jvb.2011.03.007
- Allen, A. B., & Leary, M. R. (2010). Self-compassion, stress, and coping. *Social and Personality Psychology Compass* 4(2), 107–118. doi: 10.1111/j.1751-9004.2009.00246.x
- Allen, M., Bromley, A., Kuyken, W., & Sonnenberg, S. J. (2009). Participants' experiences of mindfulness-based cognitive therapy: "It changed me in just about every way possible." *Behavioural and Cognitive Psychotherapy*, 37(4), 413–430. doi: 10.1017/S135246580999004X
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. Washington, D.C: American Psychiatric Association.
- Appelhans, B. M., & Luecken, L. J. (2006). Heart rate variability as an index of regulated emotional responding. *Review of General Psychology*, 10(3), 229-240. doi: 10.1037/1089-2680.10.3.229
- Arch, J. J., Brown, K. W., Dean, D. J., Landy, L. N., Brown, K. D., Laudenslager, M. L. (2014). Self-compassion training modulates alpha-amylase, heart rate variability, and subjective responses to social evaluative threat in women. *Psychoneuroendocrinology* 42, 49-58. doi: 10.1016/j.psyneuen.2013.12.018
- Ardelt, M. (2008). Self-development through selflessness: The paradoxical process of growing wiser. In H. A. Wayment, & J. J. Bauer, (Eds.), *Transcending self-interest: Psychological explorations of the quiet ego* (pp. 221–233). Washington DC: American Psychological Association.
- Arimitsu, K. & Hofmann, S. G. (2015). Effects of compassionate thinking on negative emotions. *Cognition and Emotion*, 31(1), 160-167. doi: 10.1080/02699931.2015.1078292
- Aristotle. (1984). *The Rhetoric and the poetics of Aristotle* (R. Roberts, Trans.). New York: Modern Library. (Original work published 1385)

- Baer, R. A., Carmody, J., & Hunsinger, M. (2012). Weekly change in mindfulness and perceived stress in a Mindfulness-Based Stress Reduction program. *Journal of Clinical Psychology, 68*, 755-765. doi: 10.1002/jclp.21865
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27- 45. doi: 10.1177/1073191105283504
- Bagby, M., & Taylor, G. (1997). Affect dysregulation and alexithymia. In Taylor, G., Bagby, M., & Parker, J. (Eds.), *Disorders of Affect Regulation* (pp. 26-45). Cambridge: Cambridge University Press.
- Barnes, S., Brown, K. W., Krusemark, E., Campbell, W. K., & Rogge, R. D. (2007). The role of mindfulness in romantic relationship satisfaction and responses to relationship stress. *Journal of Marital and Family Therapy, 33*(4), 482-500. doi: 10.1111/j.1752-0606.2007.00033.x
- Barrett, L. F., & Russell, J. A. (1999). Structure of current affect. *Current Directions in Psychological Science, 8*, 10–14.
- Barrett, L. F., Gross, J., Christensen, T. C., & Benvenuto, M. (2011). Knowing what you're feeling and knowing what to do about it: Mapping the relation between emotion differentiation and emotion regulation. *Cognition and Emotion, 15*(6), 713–724. doi:10.1080/02699930143000239
- Bartels, A., & Zeki, S. (2004). The neural correlates of maternal and romantic love. *Neuroimage, 21*(3), 1155-66. doi: 10.1016/j.neuroimage.2003.11.003
- Batson, C. D. (1995). Prosocial motivation: Why do we help others? In A. Tesser (Ed.), *Advanced Social Psychology* (pp. 333-381). Boston: McGraw-Hill.
- Batson, C. D., Duncan, B. D., Ackerman, P., Buckley, T., & Birch, K. (1981). Is empathic emotion a source of altruistic motivation? *Journal of Personality and Social Psychology, 40*(2), 290-302.
- Batson, C. D., Fultz, J., & Schoenrade, P. A. (1987). Distress and empathy: two qualitatively distinct vicarious emotions with different motivational consequences. *Journal of Personality, 55*(1), 19-39.
- Batson, C. D., Lishner, D. A., Cook, J., & Sawyer, S. (2005). Similarity and nurturance: Two possible sources of empathy for strangers. *Basic and*

Applied Social Psychology, 27, 15–25. doi: 10.1207/s15324834basp2701_2

- Bauer, J. J., & Wayment, H. A. (2008). The psychology of the quiet ego. In H. Wayment & J. Brauer (Eds.), *Transcending self-interest: Psychological explorations of the quiet ego* (pp. 7–19). Washington, DC: American Psychological Association.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 111, 497-529. doi: 10.1037/0033-2909.117.3.497
- Baumeister, R. F., & Tice, D. M. (1990). Anxiety and social exclusion. *Journal of Social and Clinical Psychology*, 9, 165–195.
- Bazarko, D., Cate, R. A., Azocar, F., & Kreitzer, M. J. (2013). The Impact of an Innovative Mindfulness-Based Stress Reduction Program on the Health and Well-Being of Nurses Employed in a Corporate Setting. *Journal of Workplace Behavioral Health*, 28(2), 107-133. doi:10.1080/15555240.2013.779518
- Beach, M. C., Keruly, J., & Moore, R. D. (2006). Is the quality of the patient-provider relationship associated with better adherence and health outcomes for patients with HIV? *Journal of General Internal Medicine*, 21(6), 661–665. doi: 10.1111/j.1525-1497.2006.00399.x
- Beach, M. C., Roter, D., Korthuis, P. T., Epstein, R. M., Sharp, V., Ratanawongsa, N., ... Saha, S. (2013). A multicenter study of physician mindfulness and health care quality. *Annals of Family Medicine*, 11(5), 421–428. doi:10.1370/afm.1507
- Beauregard, M., Courtemanche, J., Paquette, V., & St-Pierre, E. L. (2009). The neural basis of unconditional love. *Psychiatry Research*, 172(2), 93-98. doi: 10.1016/j.psychresns.2008.11.003.
- Ben-Ze'ev, A. (2000). *The Subtlety of Emotions*. Cambridge, MA, US: The MIT Press
- Birnie, K., Speca, M., & Carlson, L. E. (2010). Exploring self-compassion and empathy in the context of mindfulness-based stress reduction (MBSR). *Stress and Health*, 26(5), 359–371. doi: 10.1002/smi.1305
- Blomberg, K., & Sahlberg-Blom, E. (2007). Closeness and distance: a way of handling difficult situations in daily care. *Journal of Clinical Nursing*, 16(2), 244-254. doi: 10.1111/j.1365-2702.2005.01503.x

- Bodhi, B. (2007). *A comprehensive manual of abhidamma*. Onalaska, WA: Paryati Publishing
- Boellinghaus, I., Jones, F. W. & Hutton, J. (2012). The role of mindfulness and loving-kindness meditation in cultivating self-compassion and other-focused concern in health care professionals. *Mindfulness*, 5(2), 129–138. doi: 10.1007/s12671-012-0158-6
- Bögels, S. M., & Mansell, W. (2004). Attention processes in the maintenance and treatment of social phobia: hypervigilance, avoidance and self-focused attention. *Clinical Psychology Review*, 24(7), 827-856. doi: 10.1016/j.cpr.2004.06.005
- Bornemann, B., & Singer, T. (2013). A Cognitive Neuroscience Perspective – The ReSource Model. In T. Singer & M. Boltz (Eds.), *Compassion: Bridging Practice and Science* (pp. 179-191). Germany: Max Planck Society
- Breines, J. G., & Chen, S. (2012). Self-compassion increases self-improvement motivation. *Personality and Social Psychology Bulletin*, 38(9), 1133-1143. doi: 10.1177/0146167212445599
- Breines, J. G., McInnis, C. M., Kuras, Y. I., Thoma, M. V., Gianferante, D., Hanlin, L., ... Rohleder, N. (2015). Self-compassionate young adults show lower salivary alpha-amylase responses to repeated psychosocial stress. *Self and Identity*, 14(4), 390–402. doi: 10.1080/15298868.2015.1005659
- Bride, B. E. (2007). Prevalence of secondary traumatic stress among social workers. *Social Work*, 52(1), 63-70.
- Bride, B. E., Robinson, M. M., Yegidis, B., & Figley, C. R. (2004). Development and validation of the Secondary Traumatic Stress Scale. *Research on Social Work Practice* 14(1), 27-35. doi: 10.1177/1049731503254106
- Brown, S. L., Brown, R. M., & Penner, L. A. (2011). *Moving beyond self-interest: Perspectives from evolutionary biology, neuroscience, and the social sciences*. New York: Oxford University Press
- Budden, J. S., Zhong, E. H., Moulton, P., & Cimiotti, J. (2013). Highlights of the National Workforce Survey of Registered Nurses. *Journal of Nursing Regulation*, 4(2), 10. doi: 10.1016/S2155-8256(15)30151-4
- Burgdorf, J., & Panksepp, J. (2006). The neurobiology of positive emotions. *Neuroscience & Biobehavioral Reviews*, 30(2), 173-187. doi: 10.1016/j.neubiorev.2005.06.001

- Burpee, L. C., & Langer, E. J. (2005). Mindfulness and marital satisfaction. *Journal of Adult Development, 12*(1), 43-51. doi: 10.1007/s10804-005-1281-6
- Cacioppo, J. T., Hawkley, L. C., & Thisted, R. A. (2010). Perceived social isolation makes me sad: 5-year cross-lagged analyses of loneliness and depressive symptomatology in the Chicago Health, Aging, and Social Relations Study. *Psychology and Aging, 25*, 453-463. doi:10.1037/a0017216
- Cacioppo, J. T., Hughes, M. E., Waite, L. J., Hawkley, L. C., & Thisted, R. A. (2006). Loneliness as a specific risk factor for depressive symptoms: Cross-sectional and longitudinal analyses. *Psychology and Aging, 21*, 140-151. doi:10.1037/0882-7974.21.1.140
- Cameron, C.D. & Fredrickson, B.L. (2015). Mindfulness facets predict helping behavior and distinct helping-related emotions. *Mindfulness, 6*(5), 1211–1218. doi: 10.1007/s12671-014-0383-2
- Canevello A, & Crocker J. (2011). Interpersonal goals, others' regard for the self, and self-esteem: the paradoxical consequences of self-image and compassionate goals. *European Journal of Social Psychology, 41*, 422–34. doi: 10.1002/ejsp.808
- Canevello A, & Crocker J. (2015). How self-image and compassionate goals shape intrapsychic experiences. *Personality and Social Psychology Compass, 9*, 620–629. doi: 10.1111/spc3.12206
- Canevello, A., & Crocker, J. (2010). Creating good relationships: responsiveness, relationship quality, and interpersonal goals. *Journal of Personality and Social Psychology, 99*(1), 78–106. doi: 10.1037/a0018186.
- Canevello, A., Granillo, M. T., & Crocker, J. (2013). Predicting change in relationship insecurity: the roles of compassionate and self-image goals. *Personal Relationships, 20*, 587–618. doi: 10.1111/pere.12002
- Carl, J. R., Soskin, D. P., Kerns, C., & Barlow, D. H. (2013). Positive emotion regulation in emotional disorders: A theoretical review. *Clinical Psychology Review, 33*(3), 343-360. doi: 10.1016/j.cpr.2013.01.003.
- Carmody, J., Baer, R. A., Lykins, E., & Olendzki, N. (2009). An empirical study of the mechanisms of mindfulness in a mindfulness-based stress reduction program. *Journal of Clinical Psychology, 65*(6), 613-626. doi: 10.1002/jclp.20579.

- Carson, J. W., Carson, K. M., Gil, K. M., & Baucom, D. H. (2004). Mindfulness-based relationship enhancement. *Behavior Therapy, 35*(3), 471-494. doi: 10.1016/S0005-7894(04)80028-5
- Carvalho, P. (2011). Estudo da fadiga por compaixão nos cuidados paliativos em Portugal: Tradução e adaptação cultural da escala "Professional Quality of Life 5". Unpublished Master Thesis. Universidade Católica Portuguesa, Porto
- Chalmers, J. A., Quintana, D. S., Abbott, M. J.-A., & Kemp, A. H. (2014). Anxiety disorders are associated with reduced heart rate variability: A meta-analysis. *Frontiers in Psychiatry, 5*, 80. doi: 10.3389/fpsy.2014.00080
- Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. *Clinical Psychology Review, 29*(6), 560–572. doi: 10.1016/j.cpr.2009.06.005
- Chang, E. M., Daly, J., Hancock, K. M., Bidewell, J. W., Johnson, A., Lambert, V. A., & Lambert, C. E. (2006). The relationships among workplace stressors, coping methods, demographic characteristics, and health in Australian nurses. *Journal of Professional Nursing, 22*(1), 30-38. doi.org/10.1016/j.profnurs.2005.12.002
- Chen, D., Lew, R., Hershman, W., & Orlander, J. (2007). A cross-sectional measurement of medical student empathy. *Journal of General Internal Medicine, 22*(10), 1434–1438. doi: 10.1007/s11606-007-0298-x
- Cheng, Y., Lin, C. P., Liu, H. L., Hsu, Y. Y., Lim, K. E., Hung, D., & Decety, J. (2007). Expertise modulates the perception of pain in others. *Current Biology 17*, 1708–1713. doi: 10.1016/j.cub.2007.09.020
- Chiesa, A., & Serretti, A. (2009). Mindfulness-based stress reduction for stress management in healthy people: A review and meta-analysis. *Journal of Alternative and Complementary Medicine, 15*(5), 593-600. doi:10.1089/acm.2008.0495
- Ciarrochi, J., Heaven, P. C. L., & Supavadeeprasit, S. (2014). The link between emotion identification skills and socio-emotional functioning in early adolescence: A 1-year longitudinal study. *Journal of Adolescence, 31*(5), 565-582. doi: 10.1016/j.adolescence.2007.10.004
- Cieslak, R., Shoji, K., Douglas, A., Melville, E., Luszczynska, A., & Benight, C. C. (2014). A meta-analysis of the relationship between job burnout and secondary traumatic stress among workers with indirect exposure to trauma. *Psychological Services, 11*(1), 75-86. doi: 10.1037/a0033798.

- Clark, D. M., & McManus, F. (2002). Information processing in social phobia. *Biological Psychiatry, 51*(1), 92-100. doi: 10.1016/S0006-3223(01)01296-3
- Clark, D. M., & Wells, A. (1995). *A cognitive model of social phobia*. Guilford Press; New York: 1995
- Clark, M. S., & Lemay, E. P. (2010). Close relationships. In, S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology* (pp. 898–940). Hoboken, N. J.: Wiley.
- Coetzee, S. K., & Klopper, H. C. (2010). Compassion fatigue within nursing practice: A concept analysis. *Nursing and Health Science, 12*(2):235-243. doi: 10.1111/j.1442-2018.2010.00526.x.
- Coffey, K. A., & Hartman, M. (2008). Mechanisms of action in the inverse relationship between mindfulness and psychological distress. *Journal of Evidence-based Complementary & Alternative Medicine, 13*, 79–91. doi: 10.1177/1533210108316307.
- Cohen, S., & Pressman, S. D. (2006). Positive affect and health. *Current Directions in Psychological Science, 15*(3), 122-125.
- Cohen, S., Doyle, W. J., Turner, R., Alper, C. M., & Skoner, D. P. (2003). Sociability and susceptibility to the common cold. *Psychological Science, 14*, 389-395. doi:10.1111/1467-9280.01452
- Colzato, L. S., Ozturk, A., & Hommel, B. (2012). Meditate to create: the impact of focused-attention and open-monitoring training on convergent and divergent thinking. *Frontiers in Psychology, 3*, 116. doi: 10.3389/fpsyg.2012.00116
- Condon, P., & Feldman, B. L. (2013). Conceptualizing and experiencing compassion. *Emotion, 13*(5), 817-21. doi: 10.1037/a0033747.
- Condon, P., Desbordes, G., Miller, W. B., & DeSteno, D. (2013). Meditation increases compassionate responses to suffering. *Psychological Sciences, 24*(10), 2125-2127. doi: 10.1177/0956797613485603.
- Conrad, D., & Kellar-Guenther, Y. (2006). Compassion fatigue, burnout, and compassion satisfaction among Colorado child protection workers. *Child Abuse and Neglect, 30*(10), 1071-1080. doi: 10.1016/j.chiabu.2006.03.009
- Cosley, B. J., McCoy, S. K., Saslow, L. R., & Epel, E. S. (2010). Is compassion for others stress buffering? Consequences of compassion and social

- support for physiological reactivity to stress. *Journal of Experimental Social Psychology*, 46(5), 816–823. doi: 10.1016/j.jesp.2010.04.008
- Crocker, J. (2011). The paradoxical consequences of interpersonal goals: relationships, distress, and the self. *Psychological Studies*, 56(1), 142–150. doi: 10.1007/s12646-011-0064-3
- Crocker, J., Olivier, M., & Nuer, N. (2009). Self-image goals and compassionate goals: Costs and benefits. *Self and Identity*, 8(2-3), 251–269. doi:10.1080/15298860802505160.
- Crocker, J., & Canevello, A. (2008). Creating and undermining social support in communal relationships: The role of compassionate and self-image goals. *Journal of Personality and Social Psychology*, 95(3), 555–575. doi: 10.1037/0022-3514.95.3.555.
- Crocker, J., Canevello, A., Breines, J. G., & Flynn, H. (2010). Interpersonal goals and change in anxiety and dysphoria in first-semester college students. *Journal of Personality and Social Psychology*, 98(6), 1009–1024. doi: 10.1037/a0019400
- Cruwys, T., Haslam, S. A., Dingle, G. A., Haslam, C., & Jetten, J. (2014). Depression and Social Identity: An integrative review. *Personality and Social Psychology Review*, 18(3), 215 - 238. doi: 10.1177/1088868314523839
- Dalai Lama, H. H. (1999). *Ancient Wisdom, Modern World: Ethics for a New Millennium*. London: Hachette Digital
- Dalai Lama, H. H. (2002). Understanding our fundamental nature. In R. J. Davidson, A. & Harrington (Eds.), *Visions of Compassion: Western Scientists and Tibetan Buddhists Examine Human Nature* (pp. 66-80). New York: Oxford University Press
- Dalai Lama, H. H. (2009). *For the benefit of all beings: A commentary on the way of the bodhisattva*. Boulder, CO: Shambala Press
- Dalai Lama, H. H. (2011). *How to be compassionate: A handbook for creating inner peace and a happier world*. London: Random House.
- Dambrun, M., & Ricard, M. (2011). Self-Centeredness and Selflessness: A theory of self-based psychological functioning and its consequences for happiness. *Review of General Psychology*, 15(2), 138–157. doi: 10.1037/a0023059
- Darwin, C. (2004). *The descent of man, and selection in relation to sex*. London, England: Penguin Books. (Original work published 1871).

- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44*, 113-126.
- De Gucht, V., Fischler, B., & Heiser, W. (2004). Neuroticism, alexithymia, negative affect, and positive affect as determinants of medically unexplained symptoms. *Personality and Individual Differences, 36*(7), 1655-1667.
- de Waal, F. (2009). *The age of empathy*. New York: Harmony.
- Decety, J. (2009). Empathy, sympathy and the perception of pain. *Pain, 145*, 365–366. doi: 10.1016/j.pain.2009.08.006
- Decety, J., & Lamm, C. (2009). Empathy versus personal distress: Recent evidence from social neuroscience. In J. Decety & W. Ickes (Eds.), *The social neuroscience of empathy* (pp. 199-213). Cambridge, MA: MIT Press.
- Decety, J., & Svetlova, M. (2012). Putting together phylogenetic and ontogenetic perspectives on empathy. *Developmental Cognitive Neuroscience 2*(1), 1–24. doi: 10.1016/j.dcn.2011.05.003
- Decety, J., Yang, C-Y, & Cheng, Y. (2010). Physicians down-regulate their pain empathy response: An event-related brain potential study. *NeuroImage, 50*(4), 1676–1682. doi: 10.1016/j.neuroimage.2010.01.025
- Dekeyser, M., Raes, F., Leijssen, M., Leysen, S., & Dewulf, D. (2008). Mindfulness skills and interpersonal behaviour. *Personality and Individual Differences, 44*(5), 1235-1245. doi: 10.1016/j.paid.2007.11.018
- Del Canale, S., Louis, D. Z., Maio, V., Wang, X., Rossi, G., Hojat, M., Gonnella, J. S. (2012). The relationship between physician empathy and disease complications: an empirical study of primary care physicians and their diabetic patients in Parma, Italy. *Academic Medicine, 87*(9), 1243-1249.
- Demerouti, E., Bakker, A. B., Vardakou, I., & Kantas, A. (2003). The convergent validity of two burnout instruments. *European Journal of Psychological Assessment, 19*, 12–23. doi:10.1027//1015-5759.19.1.12
- Depue, R. A., & Morrone-Strupinsky, J. V. (2005). A neurobehavioral model of affiliative bonding: Implications for conceptualizing a human trait of

affiliation. *Behavioral and Brain Sciences*, 28(3), 313-349. doi: 10.1017/S0140525X05000063

- Dewa, C. S., Jacobs, P., Thanh, N. X., & Loong, D. (2014). An estimate of the cost of burnout on early retirement and reduction in clinical hours of practicing physicians in Canada. *BMC Health Services Research*, 14, 254. doi: 10.1186/1472-6963-14-254
- Diedrich, A., Grant, M., Hofmann, S. G., Hiller, W., & Berking, M. (2014). Self-compassion as an emotion regulation strategy in major depressive disorder. *Behavior Research Therapy*, 58, 43-51. doi: 10.1016/j.brat.2014.05.006.
- DiMatteo, M. R., Sherbourne, C. D., Hays, R. D., Ordway, L., Kravitz, R. L., McGlynn, E. A., Kaplan, S., & Rogers, W. H. (1993). Physicians' characteristics influence patients' adherence to medical treatment: results from the Medical Outcomes Study. *Health Psychology*, 12(2), 93-102. doi: 10.1037/0278-6133.12.2.93
- Dittmar, H., Bond, R., Hurst, M., & Kasser, T. (2014). The relationship between materialism and personal well-being: A meta-analysis. *Journal of Personality and Social Psychology*, 107(5), 879–924. doi: 10.1037/a0037409.
- Dovidio, J. F., & Penner, L. A. (2001). Helping and altruism. In G. Fletcher & M. Clark (Eds.), *International Handbook of Social Psychology: Interpersonal Processes* (pp. 162–95). Oxford: Blackwell Sci.
- Dovidio, J. F., Gaertner, S. L., Isen, A. M., & Lowrance, R. (1995). Group representations and intergroup bias: Positive affect, similarity, and group size. *Personality and Social Psychology Bulletin*, 21, 856–865.
- Dovidio, J. F., Piliavin, J. A., Schroeder, D. A., & Penner, L. A. (2006). *The social psychology of prosocial behavior*. Mahwah, NJ: Erlbaum.
- Dreyfus, G. (2002). Is Compassion an Emotion? A Cross-Cultural Exploration of Mental Typologies. In R. J. Davidson, A. & Harrington (Eds.), *Visions of Compassion: Western Scientists and Tibetan Buddhists Examine Human Nature* (pp. 31-45). New York: Oxford University Press
- Dunn, C., Hanieh, E., & Roberts, R., & Powrie, R. (2012). Mindful pregnancy and childbirth: effects of a mindfulness-based intervention on women's psychological distress and well-being in the perinatal period. *Archives Womens Mental Health*, 15(2), 139-143. doi: 10.1007/s00737-012-0264-4.

- Durning, S. J., Costanzo, M., Artino Jr, A. R., Dyrbye, L. N., Beckman, T. J., Schuwirth, L., ... & van der Vleuten, C. (2013). Functional neuroimaging correlates of burnout among internal medicine residents and faculty members. *Frontiers in Psychiatry, 4*, 1-7. doi: 10.3389/fpsy.2013.00131
- Eisenberg, N., & Eggum, N. D. (2009). Empathic responding: Sympathy and personal distress. In J. Decety & W. Ickes (Eds.), *The Social Neuroscience of Empathy* (pp. 71–83). Cambridge: MIT Press.
- Ekman, P. (1999). Basic emotions. In T. Dalgleish & M. J. Power (Eds.), *Handbook of cognition and emotion* (pp. 45–60). Cambridge, England: Wiley.
- Ekman, P. (2008). *Emotional Awareness: Overcoming the Obstacles to Psychological Balance and Compassion*. New York: Holt Paperbacks
- Emavardhana, T., & Tori, C. D. (1997). Changes in self-concept, ego defense mechanisms, and religiosity following seven-day Vipassana meditation retreats. *Journal for the Scientific Study of Religion, 36*(2), 194–206. doi: 10.2307/1387552
- Engen, H. G., & Singer, T. (2015). Compassion-based emotion regulation up-regulates experienced positive affect and associated neural networks. *Social Cognitive and Affective Neuroscience, 10*(9), 1291-1301. doi: 10.1093/scan/nsv008
- Epstein, R. M. (1999). Mindful Practice. *JAMA, 282*(9), 833-839. doi:10.1001/jama.282.9.833
- Epstein, R. M., Franks, P., Shields, C. G., Meldrum, S. C., Miller, K. N., Campbell, T. L., & Fiscella, K. (2005). Patient-centered communication and diagnostic testing. *Annals of Family Medicine, 3*(5), 415–421. doi: 10.1370/afm.348
- European Agency for Safety and Health at Work (EU-OSHA). (2014). *Calculating the cost of work-related stress and psychosocial risks: European risk observatory literature review*. Luxembourg: Publications Office of the European Union. doi:10.2802/20493
- Farb, N. A. S., Segal, Z. V., Mayberg, H., Bean, J., McKeon, D., Fatima, Z., & Anderson, A. K. (2007). Attending to the present: Mindfulness meditation reveals distinct neural modes of self-reference. *Social Cognitive and Affective Neurosciences, 2*(4), 313-322. doi: 10.1093/scan/nsm030

- Feeney, B. C., & Collins, N. L. (2003). Motivations for caregiving in adult intimate relationships: Influences on caregiving behavior and relationship functioning. *Personality and Social Psychology Bulletin*, 29(8), 950–968. doi: 10.1177/0146167203252807
- Fehr, B., Harasymchuk, C., & Sprecher, S. (2014). Compassionate love in romantic relationships: A review and some new findings. *Journal of Social and Personal Relationships*, 31(5) 575–600. doi: 10.1177/0265407514533768
- Feldman, C. & Kuyken, W. (2011). Compassion in the landscape of suffering. *Contemporary Buddhism: An Interdisciplinary Journal*, 12(1), 143-155. doi: 10.1080/14639947.2011.564831
- Ferrell, B. R., & Coyle, N. (2008). The nature of suffering and the goals of nursing. *Oncology Nursing Forum*, 35(2), 241-247. doi: 10.1188/08.ONF.241-247.
- Figley, C. R. (1995). Compassion fatigue as secondary traumatic stress disorder: An overview. In C. R. Figley (Ed.), *Compassion fatigue: Coping with secondary traumatic stress disorder in those who treat the traumatized* (pp. 1–20). New York, NY: Routledge.
- Figley, C. R. (2002). Compassion fatigue: Psychotherapists' chronic lack of self care. *Journal of Clinical Psychology*, 58(11), 1433–1441. doi: 10.1002/jclp.10090
- Figley, C. R. (2012). The empathic response in clinical practice: Antecedents and consequences. In J. Decety (Ed.), *Empathy: From Bench to Bedside* (pp. 263-273). Cambridge: MIT Press.
- Fiske, S. T., Cuddy, A. J. C., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, 82(6), 878-902. doi: 10.1037/0022
- Fogarty, L. A., Curbow, B. A., Wingard, J. R., McDonnell, K., & Somerfield, M. R. (1999). Can 40 seconds of compassion reduce patient anxiety? *Journal of Clinical Oncology*, 17(1), 371–379.
- Fortney, L., Luchterhand, C., Zakletskaia, L., Zgierska, A., & Rakel, D. (2013). Abbreviated Mindfulness Intervention for Job Satisfaction, Quality of Life, and Compassion in Primary Care Clinicians: A Pilot Study. *Annals of Family Medicine*, 11, 412-420; doi:10.1370/afm.1511

- Fowler, H., & Christakis, N. A. (2010). cooperative behavior cascades in human social networks. *Proceedings of the National Academy of Science, 107*(12), 5334-5338. doi: 10.1073/pnas.0913149107
- Frank, R. H. (1988). *Passions within reason: The strategic role of the emotions*. New York, NY: Norton.
- Fredrickson, B. (2002). Positive Emotions. In S. R. Snyder, & S. J. Lopez, *Handbook of Positive Emotions* (pp 120-134). New York: Oxford University Press.
- Fredrickson, B. L. (1998). What Good Are Positive Emotions? *Review of General Psychology, 2*(3), 300–319. doi: 10.1037/1089-2680.2.3.300
- Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology, 95*(5), 1045–1062. doi: 10.1037/a0013262
- Fresco, D. M., Moore, M. T., van Dulmen, M. H., Segal, Z. V., Ma, S. H., Teasdale, J. D., & Williams, J. M. G. (2007). Initial psychometric properties of the experiences questionnaire: validation of a self-report measure of decentering. *Behavior Therapy, 38*(3), 234-246.
- Fritz, H. L., & Helgeson, V. S. (1998). Distinctions of unmitigated communion from communion: Self-neglect and overinvolvement with others. *Journal of Personality and Social Psychology, 75*, 121–140.
- Gable, S. L., Gonzaga, G. C., & Strachman, A. (2006). Will you be there for me when things go right? Supportive responses to positive event disclosures. *Journal of Personality and Social Psychology, 91*(5), 904-917.
- Galante, J., Galante, I., Bekkers, M., Gallacher, J. (2014). Effect of kindness-based meditation on health and well-being: A systematic review and meta-analysis. *Journal of Consulting and Clinical Psychology, 82*(6), 1101-1114. doi: 10.1037/a0037249
- Galantino, M. Lou, Baime, M., Maguire, M., Szapary, P. O., & Farrar, J. T. (2005). Association of psychological and physiological measures of stress in health-care professionals during an 8-week mindfulness meditation program: Mindfulness in practice. *Stress and Health, 21*(4), 255–261. doi:10.1002/smi.1062

- Galini, D. (2003). The Concepts of "Self", "Person", and "I" in Western Psychology and in Buddhism. In, A. B. Wallace, (Ed.), *Buddhism and Science: Breaking New Ground*, (pp. 107-142). New York: Columbia University Press.
- Garakani, A., Martinez, J. M., Aaronson, C. J., Voustianiouk, A., Kaufmann, H., & Gorman, J. M. (2009). Effect of medication and psychotherapy on heart rate variability in panic disorder. *Depression and Anxiety*, 26(3), 251-258. doi: 10.1002/da.20533
- Geisler, F. C. M., Kubiak, T., Siewert, K., & Weber, H. (2013). Cardiac vagal tone is associated with social engagement and self-regulation. *Biological Psychology*, 93, 279–86. doi: 10.1016/j.biopsycho.2013.02.013
- Geschwind, N., Peeters, F., Drukker, M., van Os, J., & Wichers, M. (2011). Mindfulness training increases momentary positive emotions and reward experience in adults vulnerable to depression: a randomized controlled trial. *Journal of Consulting Clinical Psychology*, 79(5), 618-628. doi: 10.1037/a0024595.
- Gilbert, P. (2009). *The compassionate mind*. London: Constable.
- Gilbert, P. (2010). *Compassion Focused Therapy: Distinctive Features*. New York: Routledge
- Gilbert, P. (2015). Affiliative and prosocial motives and emotions in mental health. *Dialogues in Clinical Neuroscience*, 17(4), 381-389.
- Glaser, A. (2005). *A call to compassion: Bringing Buddhist practices of the heart into the soul of psychology*. Berwick, Maine: Nicolas-Hays, Inc.
- Glass, T. A., De Leon, C. F. M., Bassuk, S. S., & Berkman, L. F. (2006). Social engagement and depressive symptoms in late life: Longitudinal findings. *Journal of Aging and Health*, 18, 604-628. doi:10.1177/0898264306291017
- Goetz, J. L., Keltner, D., & Simon-Thomas, E. (2010). Compassion: An evolutionary analysis and empirical review. *Psychological bulletin*, 136(3), 351-374. doi: 10.1037/a0018807.
- Goldin, P., Ramel, W., & Gross, J. (2009). Mindfulness meditation training and self-referential processing in social anxiety disorder: Behavioral and neural effects. *Journal of Cognitive Psychotherapy*, 23(3), 242–257. doi: 10.1891/0889-8391.23.3.242
- Golubickis, M., Tan, L. B., Falben, J. K., & Macrae, C. N. (2016). The observing self: Diminishing egocentrism through brief mindfulness

- meditation. *European Journal of Social Psychology*, 46, 521-527. doi: 10.1002/ejsp.2186
- Graber, D. R., & Mitcham, M. D. (2004). Compassionate clinicians: take patient care beyond the ordinary. *Holist Nursing Practice*, 18(2), 87-94.
- Greenfield, S., Kaplan, S. H., Ware, J. E. Jr, Yano, E. M., & Frank, H. J. (1988). Patients' participation in medical care: effects on blood sugar control and quality of life in diabetes. *Journal of General Internal Medicine*, 3(5), 448-457.
- Grossman, P. (2008). On measuring mindfulness in psychosomatic and psychological research. *Journal of Psychosomatic Research*, 64, 405–408. doi:10.1016/j.jpsychores.2008.02.001
- Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-Based stress reduction and health benefits. *Journal of Psychosomatic Research*, 57(1), 35–43. doi:10.1016/S0022-3999(03)00573-7
- Gruber, J., Mennin, D. S., Fields, A., Purcell, A., Murray, G. (2015). Heart Rate Variability as a potential indicator of positive valence system disturbance: A proof of concept investigation. *International Journal of Psychophysiology*. doi: 10.1016/j.ijpsycho.2015.08.005
- Gu, J., Strauss, C., Bond, R., & Cavanagh, K. (2015). How do mindfulness-based cognitive therapy and mindfulness-based stress reduction improve mental health and wellbeing? A systematic review and meta-analysis of mediation studies. *Clinical Psychology Review*, 37, 1-12. doi:10.1016/j.cpr.2015.01.006
- Hadden, B. W., Smith, C. V. & Knee, C. R. (2014). The way I make you feel: How relatedness and compassionate goals promote partner's relationship satisfaction. *The Journal of Positive Psychology*, 9(2), 155-162. doi: 10.1080/17439760.2013.858272
- Haidt, J. (2003). Elevation and the positive psychology of morality. In C. L. M. Keyes & J. Haidt (Eds.), *Flourishing: Positive psychology and the life well-lived* (pp. 275-289). Washington DC: American Psychological Association.
- Halifax, J. (2011). The precious necessity of compassion. *Journal of Pain and Symptom Management*, 41, 146-153. doi: 10.1016/j.jpainsymman.2010.08.010
- Hall, L. H., Johnson, J., Watt, I., Tsipa, A., & O'Connor, D. B. (2016). Healthcare staff wellbeing, burnout, and patient safety: A systematic

review. *PLoS ONE*, 11(7), e0159015. doi: 10.1371/journal.pone.0159015

- Hangartner, D. (2013). Human Suffering and the Four Immeasurables – A Buddhist Perspective on Compassion. In T. Singer & M. Boltz (Eds.), *Compassion: Bridging Practice and Science* (pp. 179-191). Germany: Max Planck Society
- Harrington, A. (2002). A science of compassion or a compassionate science? What do we expect from a cross-cultural dialogue with Buddhism. In R. J. Davidson, A. & Harrington (Eds.), *Visions of Compassion: Western Scientists and Tibetan Buddhists Examine Human Nature* (pp. 18-30). New York: Oxford University Press
- Hawkley, L. C., & Cacioppo, J. T. (2010). Loneliness Matters: A theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine*, 40(2). doi: 10.1007/s12160-010-9210-8.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
- Hayes, S. C., Luoma, J., Bond, F., Masuda, A., & Lillis, J. (2006). Acceptance and Commitment Therapy: Model, processes, and outcomes. *Behaviour Research and Therapy*, 44(1), 1-25.
- Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy: An experiential approach to behavior change*. New York: Guilford Press.
- Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy: An experiential approach to behavior change*. New York: Guilford Press.
- Hechtman, L. A., Raila, H., Chiao, J. Y., & Gruber, J. (2013). Positive emotion regulation and psychopathology: A transdiagnostic cultural neuroscience approach. *Journal of Experimental Psychopathology*, 4(5), 502–528. doi: 10.5127/jep.030412
- Heeren, A., & Philippot, P. (2011). Changes in ruminative thinking mediate the clinical benefits of mindfulness: Preliminary findings. *Mindfulness*, 8–13. doi: 10.1007/s12671-010-0037-y.
- Heeren, A., Deplus, S., Peschard, V., Nefllios, F., Christophe, K., Laurie, D., Robinaugh, D. J., Philippot, P. (2015). Does change in self-reported mindfulness mediate the clinical benefits of mindfulness training? A

- controlled study using the French translation of the Five Facet Mindfulness Questionnaire. *Mindfulness*, 6(3), 553-559. doi:10.1007/s12671-014-0287-1
- Hesse, A. R. (2002). Secondary trauma: How working with trauma survivors affects therapists. *Clinical Social Work Journal*, 30(3), 293–309. doi: 10.1023/A:1016049632545
- Hoffman M. L. (2000) *Empathy and moral development – implications for caring and justice*. New York: Cambridge University Press.
- Hoffman, M. L. (1981). Is altruism part of human nature? *Journal of Personality and Social Psychology*, 40, 121–137.
- Hofmann, S. G., Grossman, P., & Hinton, D. E. (2011). Loving-Kindness and Compassion Meditation: Potential for Psychological Interventions. *Clinical Psychology Review*, 31(7), 1126–1132. doi: 10.1016/j.cpr.2011.07.003
- Hojat, M., Louis, D. Z., Markham, F. W., Wender, R., Rabinowitz, C., & Gonnella, J. S. (2011). Physicians' empathy and clinical outcomes for diabetic patients *Academic Medicine*, 86(3), 359-364. doi: 10.1097/ACM.0b013e3182086fe1
- Hollis-Walker, L., & Colosimo, K. (2011). Mindfulness, self-compassion, and happiness in non-meditators: A theoretical and empirical examination. *Personality and Individual Differences*, 50(2), 222-227. doi: 10.1016/j.paid.2010.09.033
- Hope, N., Koestner, R., & Milyavskaya, M. (2014). The role of self-compassion in goal pursuit and well-being among university freshmen. *Self and Identity*, 13(5), 579-593. doi: 10.1080/15298868.2014.889032
- Huppert, F. A. & Whittington, J. E. (2003). Evidence for the independence of positive and negative well-being: Implications for quality of life assessment. *British Journal of Health Psychology*, 8(1), 107–122. doi: 10.1348/135910703762879246
- Impett, E. A., Javam, L., Le, B. M., Asyabi-Eshghi, B., & Kogan, A. (2013). The joys of genuine giving: Approach and avoidance sacrifice motivation and authenticity. *Personal Relationships*, 20, 740–754.
- Isen, A. M. (2000). Positive affect and decision making. In M. Lewis, J. M. & Haviland-Jones (Eds.), *Handbook of emotions*. 2nd ed. (pp. 417–435.) New York: Guilford Press.

- Iskender, M. (2009). The relationship between self-compassion, self-efficacy, and control belief about learning in Turkish university students. *Social Behavior and Personality: An international journal*, 37(5), 711-720.
- Jain, S., Shapiro, S. L., Swanick, S., Roesch, S. C., Mills, P. J., Bell, I., & Schwartz, G. E. R. (2007). A randomized controlled trial of mindfulness meditation versus relaxation training: Effects on distress, positive states of mind, rumination, and distraction. *Annals of Behavioral Medicine*, 33, 11–21. doi: 10.1207/s15324796abm3301_2.
- Jefferys, D. (1997). Social phobia. The most common anxiety disorder. *Australian Family Physician*, 26(9), 1061, 1064-7.
- Jenkins, S. R. & Baird, S. (2002). Secondary traumatic stress and vicarious trauma: A validation study. *Journal of Traumatic Stress*, 15(5), 423–432. doi: 10.1023/A:1020193526843
- Joinson, C. (1992). Coping with compassion fatigue. *Nursing*, 22(4), 116-121.
- Jones, J. M., & Jetten, J. (2011). Recovering From strain and enduring pain: Multiple group memberships promote resilience in the face of physical challenges. *Social Psychological & Personality Science*, 2, 239-244. doi:10.1177/1948550610386806
- Josefsson, T., Larsman, P., Broberg, A. G., & Lundh, L. G. (2011). Self-reported mindfulness mediates the relation between meditation experience and psychological well-being. *Mindfulness*, 2(1), 49-58. doi: 10.1007/s12671-011-0042-9
- Kazdin, A. E. (2007). Mediators and mechanisms of change in psychotherapy research. *Annual Review of Clinical Psychology*, 3, 1-27. doi:10.1146/annurev.clinpsy.3.022806.091432
- Keltner, D. (2009). *Born to be good: The science of a meaningful life*. New York: W.W. Norton & Co.
- Keltner, D., & Haidt, J. (2001). Social functions of emotions. In T. Mayne & G. Bonanno (Eds.), *Emotions: Current issues and future directions* (pp. 192–213). New York, NY: Guilford Press.
- Keltner, D., Marsh, J., & Smith, J. A. (2010). *The compassionate instinct: The science of human goodness*. New York: W.W. Norton & Co.
- Kemp, A. H., & Quintana, D. S. (2013). The relationship between mental and physical health: insights from the study of heart rate variability. *International Journal of Psychophysiology*, 89(3), 288-296.

- Kemp, A. H., Quintana, D. S., Gray, M. A., Felmingham, K. L., Brown, K., Gatt, J. M. (2010). Impact of depression and antidepressant treatment on heart rate variability: A review and meta-analysis. *Biological Psychiatry*, 67(11), 1067-1074. doi: 10.1016/j.biopsych.2009.12.012.
- Kerns, N. P., Shawyer, F., Brooker, J. E., Graham, A. L., Enticott, J. C., Martin, P. R., & Meadows, G. N. (2016). Does rumination mediate the relationship between mindfulness and depressive relapse? *Psychology and Psychotherapy; Theory, Research and Practice*, 89, 33–49. doi: 10.1111/papt.12064.
- Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., Wittchen, H. U., & Kendler, K. S. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. Results from the National Comorbidity Survey. *Archives of General Psychiatry*, 51(1), 8-19.
- Khoury, B., Sharma, M., Rush, S. E., & Fournier, C. (2016). Mindfulness-based stress reduction for healthy individuals: A meta-analysis. *Journal of Psychosomatic Research*, 78(6), 519–528. doi:10.1016/j.jpsychores.2015.03.009
- Khramtsova, I. I., & Chuykova, T.S. (2016). Mindfulness and self-compassion as predictors of humor styles in US and Russia. *Social Psychology and Society*, 7(2), 93-108. doi: 10.17759/sps.2016070207
- Kim, J. W., Kim, S. E., Kim, J. J., Jeong, B., Park, C. H., Son, A. R., Song, J. E., & Ki, S. W. (2009). Compassionate attitude towards others' suffering activates the mesolimbic neural system. *Neuropsychologia*, 47(10), 2073-2081. doi: 10.1016/j.neuropsychologia.2009.03.017.
- Kim, S. S., Kaplowitz, S., & Johnston, M. V. (2004). The effects of physician empathy on patient satisfaction and compliance. *Evaluation & the Health Professions*, 27(3), 237-251. doi: 10.1177/0163278704267037
- Klimecki, O. M., Leiberg, S., Lamm, C., & Singer, T. (2013). Functional neural plasticity and associated changes in positive affect after compassion training. *Cerebral Cortex*, 23(7), 1552-1561. doi:10.1093/cercor/bhs142
- Klimecki, O. M., Leiberg, S., Ricard, M., & Singer, T. (2014). Differential pattern of functional brain plasticity after compassion and empathy training. *Social Cognitive and Affective Neuroscience*, 9(6), 873-879. doi: 10.1093/scan/nst060
- Klimecki, O., & Singer, T. (2012). Empathic distress fatigue rather than compassion fatigue? Integrating findings from empathy research in

psychology and social neuroscience. In B. Oakley, A. Knafo, G. Madhavan, & D. S. Wilson (Eds.), *Pathological altruism* (pp. 368–383). New York: Oxford University Press.

- Klimecki, O., Ricard, M., & Singer, T. (2013). Empathy versus compassion: Lessons from 1st and 3rd person methods. In T. Singer & M. Boltz (Eds.), *Compassion: Bridging Practice and Science* (pp. 273-288). Germany: Max Planck Society
- Kogan, A., Oveis, C., Carr, E. W., Gruber, J., Mauss, I. B., Shallcross, A., ... & Keltner, D. (2014). Vagal activity is quadratically related to prosocial traits, prosocial emotions, and observer perceptions of prosociality. *Journal of Personality and Social Psychology*, *107*(6), 1051.
- Konrath, S., Fuhrel-Forbis, A., Lou, A., & Brown, S. (2012). Motives for volunteering are associated with mortality risk in older adults. *Health Psychology*, *31*(1), 87-96. doi: 10.1037/a0025226
- Kornfield, J. (1988). The Path of Compassion: Spiritual Practice and Social Action. In F. Eppsteiner (Ed.), *The Path of Compassion: Writings on Socially Engaged Buddhism* (pp. 24–30). Berkeley: Parallax Press.
- Krasner, M. S., Epstein, R. M., Beckman, H., Suchman, A. L., Chapman, B., Mooney, C. J., & Quill, T. E. (2009). Association of an educational program in mindful communication with burnout, empathy, and attitudes among primary care physicians. *JAMA*, *302*(12), 1284–1293. doi: 10.1001/jama.2009.1384
- Kraus, S. & Sears, S. (2009). Measuring the Immeasurables: Development and initial validation of the Self-Other Four Immeasurables (SOFI) Scale Based on Buddhist Teachings on Loving Kindness, Compassion, Joy, and Equanimity. *Social Indicators Research*, *92*(1), 169-181. doi: 10.1007/s11205-008-9300-1
- Kret, D. D. (2011). The qualities of a compassionate nurse according to the perceptions of medical-surgical patients. *MEDSURG Nursing*, *20*(1), 29–36.
- Krieger, T., Altenstein, D., Baettig, I., Doerig, N., & Holtforth, M. G. (2013). Self-compassion in depression: Associations with depressive symptoms, rumination, and avoidance in depressed outpatients. *Behavior Therapy*, *44*, 501–513.
- Kringelbach, M. L., & Berridge, K. C. (2009). Towards a functional neuroanatomy of pleasure and happiness. *Trends in Cognitive Sciences*, *13*(11), 479–487. doi: 10.1016/j.tics.2009.08.006

- Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work & Stress, 19*, 192–207. doi:10.1080/02678370500297720
- Krygier, J. R., Heathers, J. A., Shahrestani, S., Abbott, M., Gross, J. J., & Kemp, A. H. (2013). Mindfulness meditation, well-being, and heart rate variability: A preliminary investigation into the impact of intensive Vipassana meditation. *International Journal of Psychophysiology, 89*(3), 305–313. doi: 10.1016/j.ijpsycho.2013.06.017.
- Kuyken, W., Watkins, E., Holden, E., White, K., Taylor, R. S., Byford, S., ... Dalgleish, T. (2010). How does mindfulness-based cognitive therapy work? *Behavior Research and Therapy, 48*(11), 1105–1112. doi:10.1016/j.brat.2010.08.003
- Labelle, L. E., Campbell, T. S., & Carlson, L. E. (2010). Mindfulness-based stress reduction in oncology: Evaluating mindfulness and rumination as mediators of change in depressive symptoms. *Mindfulness, 1*, 28–40. doi: 10.1007/s12671-010-0005-6.
- Lamm, C., Batson, C. D., & Decety, J. (2007). The neural substrate of human empathy: Effects of perspective-taking and cognitive appraisal. *Journal of Cognitive Neuroscience, 19*(1), 42–58. doi: 10.1162/jocn.2007.19.1.42
- Lamm, C., Decety, J., & Singer, T. (2011). Meta-analytic evidence for common and distinct neural networks associated with directly experienced pain and empathy for pain. *Neuroimage, 54*(3), 2492–2502. doi: 10.1016/j.neuroimage.2010.10.014
- Lampert, K., (2005). *Traditions of Compassion: From Religious Duty to Social Activism*. New York: Palgrave-Macmillan.
- Larson, M. J., Fair, J. E., Good, D. A., & Baldwin, S. A. (2009). Empathy and error processing. *Psychophysiology, 47*(3), 415–24. doi: 10.1111/j.1469-8986.2009.00949.x.
- Lazarus, R. S. (1991). *Emotion and adaptation*. Oxford: Oxford University Press.
- Leary, M. R. (2004). *The curse of the self: Self-awareness, egotism, and the quality of human life*. New York: Oxford University Press.

- Leary, M. R. (2007). Motivational and emotional aspects of the self. *Annual Review of Psychology*, *58*, 317-344. doi: 10.1146/annurev.psych.58.110405.085658
- Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 32, pp. 1-62). San Diego, CA: Academic Press.
- Leary, M. R., & Kowalski, R. M. (1990). Impression management: A literature review and two-component model. *Psychological Bulletin*, *107*, 34-47.
- Leary, M. R., & Terry, M. L. (2012). Hypo-egoic mindsets: Antecedents and implications of quieting the self. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (2nd ed.). New York: Guilford.
- Lee, R. T. & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, *81*(2), 123-133. doi: 10.1037/0021-9010.81.2.123
- Leiberg, S., Klimecki, O., & Singer, T. (2011). Short-term compassion training increases prosocial behavior in a newly developed prosocial game. *PLoS ONE* *6*(3), e17798. doi: 10.1371/journal.pone.0017798
- Leith K. P. & Baumeister R. F. (1998) Empathy, shame, guilt, and narratives of interpersonal conflicts: Guilt-prone people are better at perspective taking. *Journal of Personality*, *66*(1), 1-37.
- Lerner, J. S., Li, Y., Valdesolo, P., & Kassam, K. S. (2015). Emotion and decision making. *Annual Review of Psychology*, *66*, 1-33.
- Levenson, M. R., Jennings, P. A., Aldwin, C. M., & Shiraishi, R. W. (2005). Self-transcendence: Conceptualization and measurement. *International Journal of Aging and Human Development*, *60*, 127-143. doi: 10.2190/XRXM-FYRA-7U0X-GRC0
- Libby, D. J., Worhunsky, P. D., Pilver, C. E., & Brewer, J. A. (2012). Meditation-induced changes in high-frequency heart rate variability predict smoking outcomes. *Frontiers in Human Neuroscience*, *6*, 54. doi: 10.3389/fnhum.2012.00054
- Licht, C. M. M., Penninx, B. W. J. H., & de Geus, E. J. C. (2012). Effects of antidepressants, but not psychopathology, on cardiac sympathetic control: A longitudinal study. *Neuropsychopharmacology*, *37*(11), 2487-2495. doi: 10.1038/npp.2012.107

- Lindsay, E. K., & Creswell, J. D. (2014). Helping the self help others: Self-affirmation increases self-compassion and pro-social behaviors. *Frontiers in Psychology, 5*, 421. doi: 10.3389/fpsyg.2014.00421
- Lloyd, M., & Carson, A. (2011). Making compassion count: Equal recognition and authentic involvement in mental health care. *International Journal of Consumer Studies, 35*(6), 616–621. doi: 10.1111/j.1470-6431.2011.01018.x
- López, A., Sanderman, R. & Schroevers, M. J. (2016). Mindfulness and self-compassion as unique and common predictors of affect in the general population. *Mindfulness, 7*(6), 1289–1296. doi:10.1007/s12671-016-0568-y
- Luminet, O., Bagby, R. M., Wagner, H., Taylor, G. J., & Parker, J. D. (1999). Relation between alexithymia and the five-factor model of personality: A facet-level analysis. *Journal of Personality Assessment, 73*(3), 345-358.
- Lutz, A., Brefczynski-Lewis, J., Johnstone, T., & Davidson, R. J. (2008). Regulation of the neural circuitry of emotion by compassion meditation: Effects of meditative expertise. *PLoS ONE, 3*(3), e1897. doi: 10.1371/journal.pone.0001897
- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin, 131*(6), 803-855. doi: 10.1037/0033-2909.131.6.803
- Maben, J., Adams, M., Peccei, R., Murrells, T., & Robert, G. (2012). 'Poppets and parcels': The links between staff experience of work and acutely ill older peoples' experience of hospital care. *International Journal of Older People Nursing, 7*(2), 83-94. doi: 10.1111/j.1748-3743.2012.00326.x.
- MacBeth, A., & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review, 32*(6), 545-552. doi:10.1016/j.cpr.2012.06.003
- Mackintosh, C. (2007). Protecting the self: a descriptive qualitative exploration of how registered nurses cope with working in surgical areas. *International Journal of Nursing Studies, 44*(6), 982-990.
- Malach-Pines, A. (2005). The Burnout Measure, Short Version. *International Journal of Stress Management, 12*, 78–88. doi:10.1037/1072-5245.12.1.78
- Manavipour, D., & Saeedian, Y. (2016). The role of self-compassion and control belief about learning in university students' self-efficacy. *Journal*

of Contextual Behavioral Science. Advance online publication. doi: 10.1016/j.jcbs.2016.02.003

- Marchand, W. R. (2014). Neural mechanisms of mindfulness and meditation: Evidence from neuroimaging studies. *World Journal of Radiology, 6*(7), 471. doi:10.4329/wjr.v6.i7.471
- Marchesi, C., Brusamonti, E., & Maggini, C. (2000). Are alexithymia, depression, and anxiety distinct constructs in affective disorders? *Journal of Psychosomatic Research, 49*, 43-49. doi:10.1016/S0022-3999(00)00084-2
- Marôco, J., Marôco, A., Leite, E., Bastos, C., Vazão, M. J., & Campos, J. (2016). Burnout em profissionais da saúde portuguesas: Uma análise a nível nacional. *Acta Médica Portuguesa, 29*(1), 24-30.
- Marsha, A. A., Stoycosa, S. A., Brethel-Haurwitz, K. M., Robinson, P., VanMeter, J. W., & Cardinale, E. M. (2014). Neural and cognitive characteristics of extraordinary altruists. *PNAS, 111*(42), 15036–15041, doi: 10.1073/pnas.1408440111
- Marx, B. P., & Sloan, D. M. (2002). The role of emotion in the psychological functioning of adult survivors of childhood sexual abuse. *Behavior Therapy, 33*(4), 563–578. doi:10.1016/S0005-7894(02)80017-X
- Marx, R., Strauss, C., Williamson, C., Karunavira, & Taravajra (2014). The eye of the storm: A feasibility study of an adapted Mindfulness-based Cognitive Therapy (MBCT) group intervention to manage NHS staff stress. *The Cognitive Behaviour Therapist, 7*, 18-30. doi: 10.1017/S1754470X14000300
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2011). Job burnout. *Annual Review Psychology, 52*, 397–422.
- McCabe, R. K., & Mackenzie, E. R. The role of mindfulness in healthcare reform: A policy paper. *Explore (NY)5*(6), 313-323. doi: 10.1016/j.explore.2009.10.002.
- McCall, C., & Singer, T. (2012). The animal and human neuroendocrinology of social cognition, motivation and behavior. *Nature Neuroscience, 15*(5), 681–688. doi: 10.1038/nn.3084
- McCann, I. L. & Pearlman, L.A. (1990). Vicarious traumatization: A framework for understanding the psychological effects of working with victims. *Journal of Traumatic Stress, 3*(1), 131–149. doi: 10.1007/BF00975140

- Mccullough, M. E., Emmons, R.A., & Tsang, J. A. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology, 82*(1), 112-127.
- McWhirter, B. T. (1990). Loneliness: A review of current Literature, with implications for counseling and research. *Journal of Counseling & Development, 68*, 417-422. doi:10.1002/j.1556-6676.1990.tb02521.x
- Melchers, M., Montag, C., Markett, S., & Reuter, M. (2015). Assessment of empathy via self-report and behavioural paradigms: data on convergent and discriminant validity. *Cognitive Neuropsychiatry, 20*(2), 157-171. doi: 10.1080/13546805.2014.991781.
- Meterko, M., Wright, S., Lin, H., Lowy, E., & Cleary, P. D. (2010). Mortality among patients with acute myocardial infarction: The influences of patient-centered care and evidence-based medicine. *Health Services Research, 45*(5), 1188–1204. doi: 10.1111/j.1475-6773.2010.01138.x
- Michaelsen, J. J. (2012). Emotional distance to so-called difficult patients. *Scandinavian Journal of Caring Science, 26*(1), 90-97. doi: 10.1111/j.1471-6712.2011.00908.x.
- Mikolajczak, M., Menil, C., & Luminet, O. (2007). Explaining the protective effect of trait emotional intelligence regarding occupational stress: exploration of emotional labour processes. *Journal of Research in Personality, 41*, 1107-1117.
- Monson, C. M., Price, J. L., Rodriguez, B. F., Ripley, M. P., & Warner, R. A. (2004). Emotional deficits in military-related PTSD: An investigation of content and process disturbances. *Journal of Traumatic Stress, 17*(3), 275–279. doi:10.1023/B:JOTS.0000029271.58494.05
- Najjar, N., Davis, L. W., Beck-Coon, K., & Carney Doebbeling, C. (2009). Compassion fatigue: A review of the research to date and relevance to cancer-care providers. *Journal of Health Psychology, 14*, 267–277. doi: 10.1177/1359105308100211
- Neff, K. (2003a). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity, 2*(2), 85-101. doi:10.1080/15298860390129863
- Neff, K. D. (2003b). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*, 223–250. doi:10.1080/15298860390209035

- Neff, K. D., & Beretvas, S. N. (2012). The role of self-compassion in romantic relationships. *Self and Identity*, 12(1), 78-98. doi: 10.1080/15298868.2011.639548
- Neff, K. D., & Germer, C. K. (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Clinical Psychology*, 69(1), 28-44. doi: 10.1002/jclp.21923
- Neff, K. D., & Pommier, E. (2013). The relationship between self-compassion and other focused concern among college undergraduates, community adults, and practicing meditators. *Self and Identity*, 12(2), 160–176. doi: 10.1080/15298868.2011.649546
- Neff, K. D., Hseih, Y., & Dejithirat, K. (2005). Self-compassion, achievement goals, and coping with academic failure. *Self and Identity*, 4, 263-287. doi: 10.1080/13576500444000317
- Niiya, Y., Crocker, J., & Mischkowski, D. (2013). Compassionate and self-image goals in the US and Japan. *Journal of Cross-Cultural Psychology*, 44, 389-405.
- Nussbaum, M. (1996). Compassion: The basic social emotion. *Social Philosophy and Policy*, 13(1), 27-58.
- O'Connor L. E., Berry J. W. & Weiss J. (1999) Interpersonal guilt, shame, and psychological problems. *Journal of Social and Clinical Psychology*, 18(2), 181-203.
- O'Connor L. E., Berry J. W., Lewis T. B. & Stiver D. J. (2012) Empathy-based pathogenic guilt, pathological altruism, and psychopathology. In: Oakley B, Knafo A., Madhavan G. & Wilson D. S. (Eds.) *Pathological altruism*. New York: Oxford University Press., 368–383
- O'Connor L. E., Rangan R., Berry J., Stiver D., Hanson R., Ark W. & Li T. (2015) Empathy, compassionate altruism and psychological well-being in contemplative practitioners across five traditions. *Psychology*, 6, 989-1000. doi: 10.4236/psych.2015.68096.
- Oudou, N., & Brinker, J. (2015). Self-compassion, a better alternative to rumination than distraction as a response to negative mood. *The Journal of Positive Psychology*, 10(5), 447-457. doi: 10.1080/17439760.2014.967800
- Olendzki, A. (2010). *Unlimiting mind: The radically experiential psychology of Buddhism*. Somerville, MA: Wisdom Publications.

- Orcutt, H. K., Pickett, S. M., & Pope, E. B. (2005). Experiential avoidance and forgiveness as mediators in the relation between traumatic interpersonal events and posttraumatic stress disorder symptoms. *Journal of Social and Clinical Psychology, 24*(7), 1003-1029. doi:10.1521/jscp.2005.24.7.1003
- Oveis, C., Horberg, E. J., & Keltner, D. (2010). Compassion, pride, and social intuitions of self– other similarity. *Journal of Personality and Social Psychology, 98*(4), 618–630. doi: 10.1037/a0017628
- Ozawa-de Silva, B., Dodson-Lavelle, B., Negi, L.T., & Raison, C. (2012). Compassion and ethics: Scientific and practical approaches to the cultivation of compassion as a foundation for ethical subjectivity and well-being. *Journal of Healthcare, Science and the Humanities 2*(1), 145-161.
- Pace, T. W. W., Negi, L. T., Adame, D. D., Cole, S. P., Sivilli, T. I., Brown, T. D., ... Raison, C. L. (2009). Effect of compassion meditation on neuroendocrine, innate immune and behavioral responses to psychosocial stress. *Psychoneuroendocrinology, 34*(1), 87–98. doi: 10.1016/j.psyneuen.2008.08.011
- Pace, T. W. W., Negi, L. T., Sivilli, T. I., Issa, M. J., Cole, S. P., Adame, D. D., & Raison, C. L. (2010). Innate immune, neuroendocrine and behavioral responses to psychosocial stress do not predict subsequent compassion meditation practice time. *Psychoneuroendocrinology, 35*(2), 310–315. doi: org/10.1016/j.psyneuen.2009.06.008
- Palestini, L., Prati, G., Pietrantoni, L., & Cicognani, E. (2009). La qualità della vita professionale nel lavoro di soccorso: Un contributo alla validazione italiana della Professional Quality of Life Scale (ProQOL). *Psicoterapia Cognitiva E Comportamentale, 15*(2), 205–227.
- Perese, E. F., & Wolf, M. (2005). Combating loneliness among persons with severe mental illness: Social network interventions' characteristics, effectiveness, and applicability. *Issues in Mental Health Nursing, 26*, 591-609. doi:10.1080/01612840590959425
- Piedmont, R. L. (1999). Does spirituality represent the sixth factor of personality? Spiritual transcendence and the five-factor model. *Journal of Personality, 67*, 985–1013. doi: 10.1111/1467-6494.00080
- Piff, P. K., Dietze, P., Feinberg, M., Stancato, D. M., & Keltner, D. (2015). Awe, the small self, and prosocial behavior. *Journal of Personality and Social Psychology, 108*(6), 883-899. doi: 10.1037/pspi0000018.

- Plumb, J. C., Orsillo, S. M., Luterek, J. A. (2004). A preliminary test of the role of experiential avoidance in post-event functioning. *Journal of Behavior Therapy and Experimental Psychiatry* 35, 245–257. doi:10.1016/j.jbtep.2004.04.011
- Polusny, M. A., Rosenthal, M. Z., Aban, I., & Follette, V. M. (2004). Experiential avoidance as a mediator of the effects of adolescent sexual victimization on negative adult outcomes. *Violence and Victims*, 19(1), 109-20. doi:10.1891/vivi.19.1.109.33238
- Porges, S. W. (2001). The polyvagal theory: Phylogenetic substrates of a social nervous system. *International Journal of Psychophysiology*, 42(2), 123–46.
- Porges, S. W. (2011). *The Polyvagal Theory: Neurophysiological foundations of emotions, attachment, communication and self-regulation*. New York: W. W. Norton & Company.
- Post, S. G. (2002). The tradition of agape. In S. G. Post, L. G. Underwood, J. P. Schloss, & W. B. Hurlbut (Eds.), *Altruism and altruistic love: Science, philosophy, and religion in dialogue* (pp. 51–64). New York, NY: Oxford University Press.
- Post, S. G. (2005). Altruism, happiness, and health: It's good to be good. *International Journal of Behavioral Medicine*, 12(2), 66–77.
- Poulin, M. J., Brown, S. L., Dillard, A. J., & Smith, D. M. (2013). Giving to others and the association between stress and mortality. *American Journal of Public Health*, 103(9), 1649–1655. doi: 10.2105/AJPH.2012.300876
- Preston, S. D. (2013). The origins of altruism in offspring care. *Psychological Bulletin*, 139(6), 1305-1341. doi: 10.1037/a0031755.
- Quintana, D. S., Guastella, A. J., Outhred, T., Hickie, I. B., & Kemp, A. H. (2012). Heart rate variability is associated with emotion recognition: direct evidence for a relationship between the autonomic nervous system and social cognition. *International Journal of Psychophysiology*, 86(2), 168-172. doi: 10.1016/j.ijpsycho.2012.08.012.
- Rakel, D. P., Hoeft, T. J., Barrett, B. P., Chewning, B. A., Craig, B. M., & Niu, M. (2009). Practitioner empathy and the duration of the common cold. *Family Medicine*, 41(7), 494–501.

- Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behavior Research and Therapy*, *35*(8), 741-756. doi: 10.1016/S0005-7967(97)00022-3
- Rauer, A. J., Sabey, A., Jensen, J. F. (2014). Growing old together: compassionate love and health in older adulthood. *Journal of Social and Personal Relationships* *31*(5), 677-696. doi: 10.1177/0265407513503596
- Reddy, M. K., Pickett, S. M., & Orcutt, H. K. (2006). Experiential avoidance as a mediator in the relationship between childhood psychological abuse and current mental health symptoms in college students. *Journal of Emotional Abuse*, *6*(1), 67–85. doi:10.1300/J135v06n01_04
- Redelmeier, D. A., Molin, J. P., & Tibshirani, R. J. (1995). A randomised trial of compassionate care for the homeless in an emergency department. *Lancet*, *345*(8958), 1131-1134.
- Ren, J., Huang, Z., Luo, J., Wei, G., Ying, X., Ding, Z., Wu, Y., & Luo F. (2011). Meditation promotes insightful problem-solving by keeping people in a mindful and alert conscious state. *Science China Life Sciences*, *54*(10), 961-965. doi: 10.1007/s11427-011-4233-3.
- Ricard, M. (2015). *Altruism: The power of compassion to change the world and yourself*. London: Atlantic Books.
- Rimes, K. A., & Wingrove, J. (2011). Pilot study of Mindfulness-Based Cognitive Therapy for trainee clinical psychologists. *Behavioural and Cognitive Psychotherapy*, *39*(2), 235-241. doi: 10.1017/S1352465810000731
- Rosenthal, M. Z., Rasmussen Hall, M. L., Palm, K. M., Batten, S. V., & Follette, V. (2005). Chronic avoidance helps explain the relationship between severity of childhood sexual abuse and psychological distress in adulthood. *Journal of Child Sexual Abuse*, *14*(4), 25-41.
- Rosenzweig, S., Reibel, D. K., Greeson, J. M., & Brainard, G. C. (2003). Mindfulness-Based Stress Reduction lowers psychological distress in medical students. *Teaching and Learning in Medicine*, *15*(2), 88–92. doi:10.1207/S15328015TLM1502_03
- Ryan, R. M. & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68-78. doi: 10.1037/0003-066X.55.1.68

- Sabo, B. M. (2006). Compassion fatigue and nursing work: can we accurately capture the consequences of caring work. *International Journal of Nursing Practice*, 12(3), 136–142. doi: 10.1111/j.1440-172X.2006.00562.x
- Salyers, M. P. Bonfils, K. A. Luther, L. Firmin, R. L. White, D. A. & Adams, E. L. Rollins, A. L. (2016). The relationship between professional burnout and quality and safety in healthcare: A meta-analysis. *Journal of General Internal Medicine*. Advanced online publication. doi: 10.1007/s11606-016-3886-9
- Salzberg, S. (1997). *Lovingkindness: The revolutionary art of happiness*. Boston: Shambala.
- Sarinopoulos, I., Hesson, A. M., Gordon, C., Lee, S. A., Wang, L., Dwamena, F., & Smith, R. C. (2013). Patient-centered interviewing is associated with decreased responses to painful stimuli: an initial fMRI study. *Patient Education and Counseling*, 90(2), 220-225. doi: 10.1016/j.pec.2012.10.021.
- Schopenhauer, A. (1995). *On the basis of morality*. E. F. J. Payne (translation). Providence: Berghahn Books. (Original work published 1840)
- Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2013). *Mindfulness-based cognitive therapy for depression* (2nd ed). New York: Guilford Publications.
- Seligman, M. (2002). Positive psychology, positive prevention, and positive therapy. In S. R. Snyder, & S. J. Lopez, *Handbook of Positive Emotions* (pp 3-9). New York: Oxford University Press.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5-14. doi: 10.1037/0003-066X.55.1.5
- Seligman, M.E.P. (1998). *Learned optimism*. New York: Pocket Books.
- Sequist, T. D., Schneider, E. C., Anastario, M., Odigie, E. G., Marshall, R., Rogers, W. H., & Safran, D. G. (2008). Quality monitoring of physicians: Linking patients' experiences of care to clinical quality and outcomes. *Journal of General Internal Medicine*, 23(11), 1784–1790. doi: 10.1007/s11606-008-0760-4
- Shaikh, A., Guédon-Moreau, L., Ducrocq, F., Molenda, S., Duhem, S., Salleron, J., Chaudieu, I., Bert, D., Libersa, C., & Vaiva, G. (2012). Temporal analysis of heart rate variability as a predictor of post traumatic

- stress disorder in road traffic accidents survivors. *Journal of Psychiatry Research*, 46(6), 790-796. doi: 10.1016/j.jpsychires.2012.02.006.
- Shapiro, J. & Lie, D. (2004). A comparison of medical students' written expressions of emotion and coping and standardized patients' ratings of student professionalism and communication skills. *Medical Teacher*, 26, 733–735.
- Shapiro, S. L., Astin, J. A., Bishop, S. R., & Cordova, M. (2005). Mindfulness-based stress reduction for health care professionals: Results from a randomized trial. *International Journal of Stress Management*, 12(2), 164-176. doi:10.1037/1072-5245.12.2.164
- Shapiro, S. L., Brown, K. W., & Biegel, G. M. (2007). Teaching self-care to caregivers: Effects of mindfulness-based stress reduction on the mental health of therapists in training. *Training and Education in Professional Psychology*, 1(2), 105-115. doi. 10.1037/1931-3918.1.2.105
- Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology*, 62(3):373-386. doi: 10.1002/jclp.20237
- Shaver, P. R., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: Further exploration of a prototype approach. *Journal of Personality and Social Psychology*, 52, 1061–1086.
- Shiota, M. N., Keltner, D., & John, O. P. (2006). Positive emotion dispositions differentially associated with Big Five personality and attachment style. *Journal of Positive Psychology*, 1, 61–71. doi: 10.1080/17439760500510833
- Shiota, M. N., Neufeld, S. L., Danvers, A. F., Osborne, E. A., Sng, O., & Yee, C. I. (2014). Positive Emotion Differentiation: A Functional Approach. *Social and Personality Psychology Compass*, 8(3), 104–117. doi: 10.1111/spc3.12092
- Shiota, M. N., Neufeld, S. L., Yeung, W. H., Moser, S. E., & Perea, E. F. (2011). Feeling good: autonomic nervous system responding in five positive emotions. *Emotion*, 11(6), 1368-1378. doi: 10.1037/a0024278.
- Shirom, A., & Melamed, S. (2006). A comparison of the construct validity of two burnout measures in two groups of professionals. *International Journal of Stress Management*, 13, 176–200. doi:10.1037/1072-5245.13.2.176

- Shoji, K., Lesniewska, M., Smoktunowicz, E., Bock, J., Luszczynska, A., Benight, C. C., & Cieslak, R. (2015). What comes first, job burnout or secondary traumatic stress? Findings from two longitudinal studies from the U.S. and Poland. *PLoS ONE*, *10*(8), e0136730. doi: 10.1371/journal.pone.0136730
- Shonin, E., Van Gordon, W., Compare, A., Zangeneh, M., & Griffiths, M. D. (2015). *Mindfulness*, *6*(5), 1161–1180. doi: 10.1007/s12671-014-0368-1
- Simon-Thomas, E. R., Godzik, J., Castle, E., Antonenko, O., Ponz, A., Kogan, A., & Keltner, D. J. (2012). An fMRI study of caring vs self-focus during induced compassion and pride. *Social Cognitive and Affective Neuroscience*, *7*(6), 635–648. doi: 10.1093/scan/nsr045
- Sinclair, S., Norris, J. M., McConnell, S. J., Chochinov, H. M., Hack, T. F., Hagen, N. A., McClement, S., & Bouchal, S. R. (2016). Compassion: A scoping review of the healthcare literature, *BMC Palliative Care*, *51*(2), 193-203. doi: 10.1186/s12904-016-0080-0
- Singer, T., & Steinbeis, N. (2009). Differential roles of fairness- and compassion-based motivations for cooperation, defection, and punishment. *Annals of the New York Academy of Sciences*, *1167*, 41-50. doi: 10.1111/j.1749-6632.2009.04733.x.
- Singer, T., Seymour, B., O'Doherty, J., Kaube, H., Dolan, R. J., & Frith, C. D. (2004). Empathy for pain involves the affective but not sensory components of pain. *Science*, *303*(5661), 1157-1162. doi: 10.1126/science.1093535
- Sirois, F. M., Kitner, R., & Hirsch, J. K. (2015). Self-compassion, affect, and health-promoting behaviors. *Health Psychology*, *34*(6), 661-669. doi: 10.1037/hea0000158
- Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology*, *48*, 813–838. doi: 10.1037/0022-3514.48.4.813
- Snippe, E., Nyklíček, I., Schroevers, M. J., & Bos, E. H. (2015). The temporal order of change in daily mindfulness and affect during Mindfulness-Based Stress Reduction. *Journal of Counseling Psychology*, *62*(2), 106-114. doi: 10.1037/cou0000057
- Sober, E., & Wilson, D. S. (1998). *Unto others: The evolution and psychology of unselfish behavior*. Cambridge, MA: Harvard University Press.

- Sprang, G., Clark, J. J., & Whitt-Woosley, A. (2007). Compassion fatigue, compassion satisfaction, and burnout: Factors impacting a professional's quality of life. *Journal of Loss and Trauma, 12*(3), 259-280. doi: 10.1080/15325020701238093
- Sprecher S., & Fehr, B. (2006). Enhancement of mood and self-esteem as a result of giving and receiving compassionate love. *Current Research in Social Psychology, 11*, 227–242.
- Sprecher, S., & Fehr, B. (2005). Compassionate love for close others and humanity. *Journal of Social and Personal Relationships, 22*(5), 629–651. doi: 0.1177/0265407505056439
- Spurr, J. M., & Stopa, L. (2002). Self-focused attention in social phobia and social anxiety. *Clinical Psychology Review, 22*(7), 947-975.
- Stamm, B. H. (2009). *Professional Quality of Life: Compassion Satisfaction and Fatigue Version 5 (ProQOL)*. Retrieved from: [www. isu. edu/~bhstamm](http://www.isu.edu/~bhstamm) or [www. proqol. org](http://www.proqol.org).
- Stamm, B. H. (2010). *The Concise ProQOL Manual, 2nd Ed.* Pocatello, ID: ProQOL.org.
- Stellar, J. E., & Keltner, D. (2014). Compassion. In M. Tugade, L. Shiota, & L. Kirby (Eds). *Handbook of Positive Emotion* (pp. 329-341), New York: Guilford Press.
- Steptoe, A., Dockray, S., & Wardle, J. (2009). Positive Affect and Psychobiological Processes Relevant to Health. *Journal of Personality, 77*(6), 1747–1776. doi: 10.1111/j.1467-6494.2009.00599.x
- Stewart, M. A. (1995). Effective physician-patient communication and health outcomes: A review. *CMAJ: Canadian Medical Association Journal, 152*(9), 1423–1433.
- Strathearn, L., Fonagy, P., Amico, J., & Montague, P. R. (2009). Adult attachment predicts maternal brain and oxytocin response to infant cues. *Neuropsychopharmacology, 34*(13), 2655–2666. doi: 10.1038/npp.2009.103
- Strauss, C., Taylor, B. L., Gu, J. Kuyken, W., Baer, R., Jones, F., & Cavanagh, K. (2016). What is compassion and how can we measure it? A review of definitions and measures. *Clinical Psychology Review, 47*, 15–27. doi: 10.1016/j.cpr.2016.05.004

- Suess, P. E., Porges, S. W., & Plude, D. J. (1994). Cardiac vagal tone and sustained attention in school-age children. *Psychophysiology*, *31*(1), 17–22. doi: 10.1111/j.1469-8986.1994.tb01020.x
- Svendsen, J. L., Osnes, B., Binder, P.-E., Dundas, I., Visted, E., Nordby, H., ... Sørensen, L. (2016). Trait self-compassion reflects emotional flexibility through an association with high vagally mediated heart rate variability. *Mindfulness*, *7*(5), 1103–1113. doi:10.1007/s12671-016-0549-1
- Tan, L. B. G., Lo, B. C. Y., & Macrae, C. N. (2014). Brief mindfulness meditation improves mental state attribution and empathizing. *PLoS ONE* *9*(10), e110510. doi:10.1371/journal.pone.0110510
- Tang, Y.-Y., Hölzel, B. K., & Posner, M. I. (2014). The neuroscience of mindfulness meditation. *Nature Reviews Neuroscience* *16*, 213–225. doi:10.1038/nrn3916
- Task Force of the European Society of Cardiology and the North American Society of Pacing and Electrophysiology (1996). Heart rate variability: Standards of measurement, physiological interpretation, and clinical use. *European Heart Journal*, *17*, 354–381.
- Taylor, G. (2000). Recent developments in alexithymia theory and research. *The Canadian Journal of Psychiatry*, *45*, 134–142.
- Taylor, G. J., & Bagby, R. M. (2004). New trends in alexithymia research. *Psychotherapy and Psychosomatics*, *73*(2), 68-77.
- Taylor, S. E., Klein, L. C., Lewis, B. P., Gruenewald, T. L., Gurung, R. A. R., & Updegraff, J. A. (2000). Biobehavioral responses to stress in females: Tend-and-befriend, not fight-or-flight. *Psychological Review*, *107*(3), 411–429. doi: 10.1037/0033-295X.107.3.411
- Thayer, J. F., & Brosschot, J. F. (2005). Psychosomatics and psychopathology: Looking up and down from the brain. *Psychoneuroendocrinology*, *30*(10):1050-1058. doi: 10.1016/j.psyneuen.2005.04.014
- Thayer, J. F., & Lane, R. D. (2007). The role of vagal function in the risk for cardiovascular disease and mortality. *Biological Psychology*, *74*(2), 224-242. doi: 10.1016/j.biopsycho.2005.11.013
- Thayer, J. F., & Lane, R. D. (2000). A model of neurovisceral integration in emotion regulation and dysregulation. *Journal of Affective Disorders*, *61*(3), 201–216. doi: 10.1016/S0165-0327(00)00338-4
- Thayer, J. F., & Lane, R. D. (2009). Claude Bernard and the heart-brain connection: further elaboration of a model of neurovisceral integration.

- Neuroscience and Biobehavioral Reviews*, 33(2), 81–8. doi: 10.1016/j.neubiorev.2008.08.004
- Thayer, J. F., Åhs, F., Fredrikson, M., Sollers III, J. J., & Wager, T. D. (2012). A meta-analysis of heart rate variability and neuroimaging studies: Implications for heart rate variability as a marker of stress and health. *Neuroscience and Biobehavioral Reviews*, 36(2), 747–756. doi: 10.1016/j.neubiorev.2011.11.009
- Thomas, R. B., & Wilson, J. P. (2004). Issues and controversies in the understanding and diagnosis of compassion fatigue, vicarious traumatization, and secondary traumatic stress disorder. *International Journal of Emergency Mental Health*, 6, 81–92.
- Trivers, R. L. (1971). The evolution of reciprocal altruism. *Quarterly Review of Biology*, 46, 35–57.
- Twenge, J. M., & Campbell, W. K. (2009). *The narcissism epidemic: Living in the age of entitlement*. New York: Free Press.
- Underwood, L. G. (2002). The human experience of compassionate love: Conceptual mapping and data from selected studies. In S. G. Post, L. G. Underwood, J. P. Schloss, & W. B. Hurlbut (Eds.), *Altruism and altruistic love: Science, philosophy, and religion in dialogue* (pp. 72–88). New York, NY: Oxford University Press.
- Van Dam, N. T., Sheppard, S. C., Forsyth, J. P., & Earleywine, M. (2011). Self-compassion is a better predictor than mindfulness of symptom severity and quality of life in mixed anxiety and depression. *Journal of Anxiety Disorders*, 25(1), 123–30. doi: 10.1016/j.janxdis.2010.08.011
- van der Cingel, M. (2011). Compassion in care: a qualitative study of older people with a chronic disease and nurses. *Nursing Ethics*, 18(5), 672–85. doi: 10.1177/0969733011403556.
- van der Velde, J., Servaas, M. N., Goerlich, K. S., Bruggeman, R., Horton, P., Costafreda, S. G., & Aleman, A. (2013). Neural correlates of alexithymia: A meta-analysis of emotion processing studies. *Neuroscience & Biobehavioral Reviews*, 37(8), 1774–1785.
- Visted, E., Vøllestad, J., Nielsen, M. B., & Nielsen, G. H. (2015). The impact of group-based mindfulness training on self-reported mindfulness: A systematic review and Meta-analysis. *Mindfulness*, 6(3), 501–522. doi:10.1007/s12671-014-0283-5

- Vittengl, J. R., & Holt, C. S. (2000). Getting acquainted: The relationship of self-disclosure and social attraction to positive affect. *Journal of Social & Personal Relationships, 17*(1), 53–66. doi: 10.1177/0265407500171003
- Wachs, K., & Cordova, J. V. (2007). Mindful relating: Exploring mindfulness and emotion repertoires in intimate relationships. *Journal of Marital and Family Therapy, 33*(4), 464-481.
- Wade, T., & Kendler, K. S. (2000). The relationship between social support and major depression: Cross-sectional, longitudinal, and genetic perspectives. *The Journal of Nervous and Mental Disease, 188*, 251-258.
- Wagner, G., Schachtzabel, C., Peikert, G., & Bär, K. J. (2015). The neural basis of the abnormal self-referential processing and its impact on cognitive control in depressed patients. *Human Brain Mapping, 36*(7), 2781-2794. doi: 10.1002/hbm.22807.
- Wallace, B.A. (2005). *Genuine happiness: Meditation as the path to fulfillment*. Hoboken, NJ: John Wiley and Sons.
- Wallmark, E., Safarzadeh, K., Daukantaitė, D., & Maddux, R. E. (2013). Promoting altruism through meditation: An 8-week randomized controlled pilot study. *Mindfulness, 4*(3), 223-234. doi: 10.1007/s12671-012-0115-4
- Watson, D., & Naragon-Gainey, K. (2010). On the specificity of positive emotional dysfunction in psychopathology: Evidence from the mood and anxiety disorders and schizophrenia/schizotypy. *Clinical Psychology Review, 30*(7), 839–848. doi: 10.1016/j.cpr.2009.11.002
- Waugh, C. E., & Fredrickson, B. L. (2006). Nice to know you: Positive emotions, self–other overlap, and complex understanding in the formation of a new relationship. *The Journal of Positive Psychology, 1*(2), 93–106. doi: 10.1080/17439760500510569
- Way, D. & Tracey, S. J. (2012). Conceptualizing compassion as recognizing, relating and (re)acting: A qualitative study of compassionate communication at hospice. *Communication Monographs, 79*(3). doi: 10.1080/03637751.2012.697630
- Wayment, H. A., Wiist, B., Sullivan, B. M., & Warren, M. A. (2011). Doing and being: Mindfulness, health, and quiet ego characteristics among Buddhist practitioners. *Journal of Happiness Studies, 12*(4), 575-589. doi: 10.1007/s10902-010-9218-6

- Weich, S., Brugha, T., King, M., McManus, S., Bebbington, P., Jenkins, R., et al. (2011). Mental well-being and mental illness: Findings from the adult psychiatric morbidity survey for England 2007. *British Journal of Psychiatry*, *199*(1), 23–28. doi:10.1192/bjp.bp.111.091496.
- Weiner, B., Graham, S., & Chandler, C. (1982). Causal antecedents of pity, anger and guilt. *Personality and Social Psychology Bulletin*, *8*, 226-232
- Weiner, B., Perry, R. P. & Magnusson, J. (1988). An attributional analysis of reactions to stigmas. *Journal of Personality and Social Psychology*, *55*(5), 738-748.
- Weinstein, N. & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology*, *98*(2), 222-244. doi: 10.1037/a0016984
- Welp, L. R., & Brown, C. M. (2013). Self-compassion, empathy, and helping intentions. *The Journal of Positive Psychology*, *9*(1), 54-65. doi: 10.1080/17439760.2013.831465
- West, C. P., Huschka, M. M., Novotny, P. J., Sloan, J. A., Kolars, J. C., Habermann, T. M., & Shanafelt, T. D. (2006). Association of perceived medical errors with resident distress and empathy: A prospective longitudinal study. *JAMA*, *296*(9), 1071-1078. doi:10.1001/jama.296.9.1071
- Westerhof, G. J., & Keyes, C. L. M. (2010). Mental Illness and Mental Health: The Two Continua Model Across the Lifespan. *Journal of Adult Development*, *17*(2), 110–119. doi: 10.1007/s10804-009-9082-y
- Williams, J. G., & Stark, S. K., & Foster, E. E. (2008). Start today or the very last day? The relationships among self-compassion, motivation, and procrastination. *Journal of Psychological Research*, *4*, 37-44.
- Woodruff, S. C., Glass, C. R., Arnkoff, D. B., Crowley, K. J., Hindman, R. K., & Hirschhorn, E. W. (2014). Comparing self-compassion, mindfulness, and psychological inflexibility as predictors of psychological health. *Mindfulness*, *5*(4), 410-421. doi: 10.1007/s12671-013-0195-9
- Wren, A. A., Somers, T. J., Wright, M. A., Goetz, M. C., Leary, M. R., Fras, A. M., ... Keefe, F. J. (2012). Self-compassion in patients with persistent musculoskeletal pain: Relationship of self-compassion to adjustment to persistent pain. *Journal of Pain and Symptom Management*, *43*(4), 759-770. doi: 10.1016/j.jpainsymman.2011.04.014

- Yadavaia, J. E., Hayes, S. C., & Vilardaga, R. (2014). Using acceptance and commitment therapy to increase self-compassion: A randomized controlled trial. *Journal of Contextual Behavioral Science*, 3(4), 248-257.
- Yarnell, L. M., & Neff, K. D. (2013). Self-compassion, interpersonal conflict resolutions, and well-being. *Self and Identity*, 12(2), 146-159. doi: 10.1080/15298868.2011.649545
- Yelsma, P. (2007). Associations among alexithymia, positive and negative emotions, and self-defeating personality. *Psychological Reports*, 100(2), 575-584.
- Yoder, E. A. (2010). Compassion fatigue in nurses. *Applied Nursing Research*, 23(4), 191-197. doi: 10.1016/j.apnr.2008.09.003.
- Zahn-Waxier C. & Kochanska G. (1990) The origins of guilt. In R. A. Thompson (Ed.), *The Nebraska symposium on motivation 1988: Socioemotional development (Vol. 36)*. Lincoln: University of Nebraska Press, 182-258.
- Zeng, X., Chiu, C. P. K., Wang, R., Oei, T. P. S., & Leung, F. Y. K. (2015). The effect of loving-kindness meditation on positive emotions: A meta-analytic review. *Frontiers in Psychology*, 6, 1693. doi: 10.3389/fpsyg.2015.01693
- Zessin, U., Dickhäuser, O., & Garbade, S. (2015). The relationship between self-compassion and well-being: A meta-analysis. *Applied Psychology: Health and Well-Being*, 7, 340–364. doi:10.1111/aphw.12051