

Unfolding the impact of trait emotional intelligence facets and co-worker trust on task performance

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Abstract

Purpose – Building upon the relevance of emotional intelligence (EI) in predicting individual performance at work, this research paper examines the links between trait EI facets, co-worker trust, and task performance in a software engineering job.

Theoretical framework – Specifically, it draws upon the Joseph and Newman cascading model to hypothesize that trait EI facets impact on task performance in a sequential way. It also empirically tests the mediating effect of co-worker trust on the link between emotion regulation and task performance.

Design/methodology/approach – This study follows a predictive design with two data collection phases. In the first phase EI facets and co-worker trust were self-rated by the participants. The second phase was implemented after six months to collect the employees' task performance ratings from direct supervisors. A final sample was obtained of 102 employees, all of whom were project software engineers.

Findings – The results from structural equation modelling provided support for the expected sequential effect between the EI facets under study (from appraisal of others' and one's own emotions to emotion regulation). They further showed that the effect of emotion regulation on task performance is fully indirect and occurs via co-worker trust.

Research Practical & Social implications – Managers should build and develop a workforce of individuals with high trait EI, since they are more able to achieve stronger levels of task performance by developing feelings of trust towards their co-workers.

Originality/value – To the best of our knowledge, this is the first study to focus on the interplay between trait EI facets and co-worker trust in determining task performance at work.

Keywords – emotional intelligence, trait EI, task performance, co-worker trust, mediation.

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I Introduction

The applied value of emotional intelligence (EI) for managing people and their effectiveness at work has been intensely debated over the last quarter-century (Miao, Humphrey, & Qian, 2020; Sackett, Lievens, Van Iddekinge, & Kuncel, 2017). Recent meta-analytic reviews of the increasing number of empirical studies on the relationships between EI and important workplace outcomes provide grounds for optimism, showing that EI measures are positively related with job performance and key attitudes at work (Miao et al., 2020; Miao, Humphrey, & Qian, 2017a; Miao, Humphrey, & Qian, 2017b; O'Boyle, Humphrey, Pollack, Hawver, & Story, 2010).

Particularly, evidence from meta-analyses has also revealed that self-report measures of EI, based on Mayer and Salovey's (1997) definition of EI and encompassing relatively similar facets, make a significant contribution to predicting overall job performance (O'Boyle et al., 2010) and its dimensions, such as citizenship performance and counterproductive behaviours (Miao et al., 2017a), even when well-established predictors, such as cognitive ability and the big five personality factors, are also taken into account.

In spite of these advances in the research, a number of relevant questions concerning the impact of EI on job performance remain open in the literature. As some authors have highlighted, previous research has predominantly focused on the criterion-related validity of global EI, leaving the way in which their specific facets interplay to influence distinct behavioural components of job performance largely unexplored (Greenidge, Devonish, & Alleyne, 2014; Pekaar, van der Linden, Bakker, & Born, 2017). Nonetheless, empirically mapping these inter-relations on a facet level represents a necessary step towards providing a more fine-grained clarification of their impact on performance behaviours at work for EI, as well as for other individual difference constructs. It is also a precondition for further incorporating them into integrated predictive models of job performance.

The present study aims to contribute to achieving this research goal by examining how specific EI facets influence the core dimension of individual task performance. To fulfil this aim, it adopts a trait EI perspective which conceives EI (or trait emotional self-efficacy) as a set of individual dispositions and perceptions regarding one's ability to recognize, regulate and channel emotions and emotional knowledge to adapt to the environment and

improve well-being (Petrides, Mikolajczak, Mavroveli, Sanchez-Ruiz, Furnham, & Pérez-González, 2016). Specifically, the current study focuses on the facets proposed by Davies, Stankov and Roberts (1998) within the scope of their comprehensive EI literature review; these facets were further studied by Wong, Law and colleagues (e.g., Law, Wong, & Song, 2004; Wong & Law, 2002). They include self-emotions appraisal (SEA), others' emotions appraisal (OEA), use of emotions (UOE) and regulation of emotion (ROE), which are consistent with Mayer and Salovey's (1997) EI definition and theoretical dimensions.

Furthermore, this study builds upon the cascading model of EI proposed by Joseph and Newman (2010) to conceive EI facets as building blocks of a sequential process, from emotion perception to emotion regulation, through which EI affects job performance. This theoretical view is also congruent with Gross' (1998) emotion regulation model and Mayer and Salovey's (1997) EI model, since it posits that effective emotion regulation is dependent upon a previous accurate perception and understanding of emotions. Whereas Joseph and Newman (2010) tested the fit of the cascading model of EI using solely ability measures of EI, we intend to examine whether trait EI facets could also affect task performance in such a progressive way.

In addition to proposing and testing the adequacy of this model to explain the influence of trait EI facets on task performance, the current study intends to shed some light on the intervening psychological mechanisms through which trait EI effectively enhances individual task performance behaviours. This matter represents a related, yet underdeveloped, research topic in the literature regarding the links between EI and job performance (Greenidge et al., 2014). Specifically, we address the recent calls from Miao et al. (2017a) for more empirical research to examine whether attitudinal variables such as interpersonal trust might be important mediators in this relationship. Indeed, interpersonal trust is a relevant variable for organizations as it is considered the basis of quality interpersonal relationships in the workplace, especially since work organization systems have become increasingly reliant upon interdependent work structures (De Jong, Dirks, & Gillespie, 2016; Tan & Lim, 2009).

According to Rousseau, Sitkin, Bur and Camerer's (1998, p. 395) cross-disciplinary definition, interpersonal trust encompasses "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another"

and it develops towards multiple referents, i.e. trust in the organization, trust in the leader, trust in co-workers. This study focuses on the latter, which can be defined as “the willingness of a person to be vulnerable to the actions of fellow co-workers whose behavior and actions that person cannot control” (Tan & Lim, 2009, p. 46). Although less explored in the research, co-worker trust is posited as an important antecedent of other positive work attitudes and superior levels of performance (De Jong et al., 2016; Dirks & Ferrin, 2001; Jones & George, 1998).

In light of previous research and theory, we propose that high trait EI employees will develop stronger levels of trust in their fellow co-workers and, as a result, achieve higher levels of individual task performance. To the best of our knowledge, no prior research has examined this psychological mechanism through which trait EI processes might translate into higher task performance. According to Jones and George’s (1998) model of interpersonal trust at work, the experience of trust is determined, in part, by moods and emotions experienced during interpersonal interactions. Due to the greater ability of individuals with high emotional intelligence to effectively perceive and understand others’ and their own emotions, as well as to their regulate own emotions (Mayer & Salovey, 1997; Mayer, Caruso, & Salovey, 2016), they tend to experience positive emotions and affective states more often, including when establishing social interactions. These positive emotional factors are posited to elicit, in turn, a more favourable perception of others, including co-workers, “resulting in a heightened experience of trust in another person” (Jones & George, 1998, p. 534).

Hence, according to this rationale that EI contributes to generating interpersonal trust, we argue that high trait EI employees will consequently benefit from it and achieve higher levels of individual task performance. In fact, interpersonal trust variables, including co-worker trust, are conceived as proximal antecedents of job performance behaviours, facilitating them by prompting higher levels of cooperation, information sharing and job involvement (Dirks & Ferrin, 2001; Jones & George, 1998). Such benefits are likely to positively impact on the individual accomplishment of tasks and technical duties of the job, since, as stated by LePine, Hanson, Borman and Motowidlo (2000, p. 67), “individual task performance requires cooperation among team members”, especially in modern organizations where work is often designed on the basis of autonomous or semi-autonomous teams (Morgeson, Reider, & Campion, 2005).

Taking all these aspects into consideration, we proceed to build up an integrated model, at the individual level of analysis, including hypothesized sequential relationships between trait EI facets and task performance, along with the proposed mediating effect of co-worker trust on the link between emotion regulation and task performance, as further explained in the sections below.

EI conceptualizations and measurement approaches

Although the roots of EI were established by the early contributions of Thorndike (1920) within the scope of the concept of social intelligence, the formal introduction of EI in the literature is commonly credited to Salovey and Mayer (1990, p. 189) as “the subset of social intelligence that involves the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions”. Later on, these authors focused this construct on the mental processes associated with individuals’ problem solving in areas associated with emotion, referring to EI as “the ability to perceived emotions, to access and generate emotions so as to assist thoughts, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth” (Mayer & Salovey, 1997, p. 5).

Since then, related research has evolved through multiple EI conceptualizations, which rely on non-equivalent measurement approaches to this construct. Recent meta-analytic research (e.g., Miao et al., 2017a; 2017b; O’Boyle et al., 2010) has been developed in three main EI research streams, formerly identified by Ashkanasy and Daus (2005). The first stream is usually known as “ability-EI” and draws upon the four-branch model of Mayer and Salovey (1997), which posits EI as a set of four specific and hierarchically organized mental abilities or “branches” implied in dealing effectively with emotions and emotional knowledge. Specifically, they include: a) perception of emotion in oneself and others; b) use of emotion to facilitate thinking, c) understanding of emotion, and d) management of one’s own and others’ emotions. Research pertaining to this stream relies on EI maximum performance tests developed by the aforementioned authors and their colleagues.

The other two streams (see Ashkanasy & Daus, 2005), i.e. “self-report ability-EI” (stream 2), or simply “self-report EI”, and “self-report mixed competency-EI”

(stream 3), commonly known as “mixed-EI”, follow a trait perspective of EI, according to which emotional intelligence is posited as “a constellation of behavioral dispositions and self-perceptions concerning one’s ability to recognize, process, and utilize emotion-laden information” (Petrides, Frederickson, & Furnham, 2004, p. 278). In spite of both relying on self-report measures of EI, i.e. questionnaires and rating scales, they have conceptual underpinnings that are different in terms of their breadth. Whereas the self-report EI stream draws upon quite similar theoretical dimensions to those encompassed in Mayer and Salovey’s (1997) four-branch model, mixed-EI consists of a broader conceptualization of EI, comprising a set of dimensions that covers emotion-related self-perceptions, competencies, motivational factors and personality aspects (Petrides & Furnham, 2000). Due to this multiplicity of EI conceptual and measurement approaches, it is important to highlight, as previously noted, that the current study adopts a trait EI perspective, pertaining more specifically to self-report EI (stream 2, Ashkanasy & Daus, 2005).

Hypothesized model of the relationships among trait EI facets, co-worker trust and task performance

Individual task performance constitutes a core and ubiquitous dimension of job performance, which is critically important in performance appraisals and management systems in organizations (Campbell & Wiernik, 2015). It encompasses the behaviours implied in the effective execution of technical duties of the job and in planning and coordinating task activities, impacting directly on organizational goal accomplishment.

A meta-analytic study conducted by O’Boyle et al. (2010), mostly based on primary research using measures focused on task performance, showed that EI is positively linked to this criterion. Moreover, the results have also indicated that, contrarily to ability-EI tests, self-report EI measures have incremental validity in predicting task performance, when cognitive ability and personality factors are also considered.

On the level of EI facets, the available literature is far more limited. Nevertheless, we build upon Joseph and Newman’s (2010) cascading model to propose that all EI facets together impact on task performance, in a sequential way. By applying this logic to the trait EI facets under study, emotion perception and understanding processes (OEA and SEA, i.e. appraisals of others’

emotions and one’s own emotions, respectively) are posited to influence the efficacy of subsequent processes of emotion regulation. With regard to the facet of use of emotion (UOE), we followed the same procedure adopted by Joseph and Newman (2010) and excluded this facet from the hypothesized model. As reasoned by these authors, the EI facet of use of emotion (UOE) is theoretically undistinguishable from the regulation of emotion (ROE) facet, and consequently has poor construct validity. In their words, “using emotion must essentially involve the induction of an emotion, such as the induction of a positive (e.g., joy) or negative (e.g., anger) emotion, which is conceptually redundant with regulating positive or negative emotion” (p. 55).

With the exclusion of the use of emotion facet, our hypothesized model is aligned with the rationale adopted in previous studies focused on EI facets (e.g., Greenidge et al. 2014; Joseph & Newman 2010) according to which regulation of emotion (ROE) constitutes a core and proximal antecedent of task performance, and which is influenced by prior processes of others’ emotions appraisal (OEA) and self-emotions appraisal (SEA). Both these emotional appraisal processes enable individuals to build a base of emotional information, from verbal and non-verbal clues from the social environment, as well as from their own emotional states. The precision and breadth of such emotional information will determine the effectiveness of subsequent emotion regulation strategies (Gross & Thompson, 2007; Joseph & Newman, 2010).

In this vein, Wong and Law (2002) have specified that “as many of our emotional responses are stimulated by the emotions of other individuals, our understanding of our own emotions is related to our ability to understand the emotions of others” (p. 247). Taking these aspects into account, we reason that others’ emotions appraisal (OEA) will occupy the first step for the hypothesized model due to its potential, as part of the emotional environment of individuals, to elicit emotions in themselves and interfere with their appraisal (SEA). Thus, our hypothesized model contains a first direct path from others’ emotions appraisal (OEA) to self-emotions appraisal (SEA) (*hypothesis 1*). As reasoned by Wong and Law (2002), following Gross’ (1998) model of emotion regulation, an accurate perception and understanding of the individual’s own emotions acts as a prerequisite for successfully regulating them (ROE). Therefore, the proposed model includes a direct path from SEA to ROE (*hypothesis 2*).

Following this logic, ROE is modelled as a more proximal antecedent of task performance, with a corresponding hypothesized direct path (*hypothesis 3*) towards it. Indeed, regulation of emotion (ROE) is theorized by several authors, independently of the theoretical perspective adopted, as being a key EI facet in enabling the influence of EI processes on performance behaviours in the workplace (Greenidge et al., 2014; Joseph & Newman, 2010; Wong & Law, 2002). Following Joseph and Newman's (2010) reasoning, the critical impact of this facet on performance behaviours occurs through the induction and maintenance of positive affective states. High EI individuals are capable of using regulation strategies more effectively to modulate emotions and maintain positive affective states, which, according to Fredrickson's (2001) broaden-and-build theory, will increase their attentional scope, behavioural flexibility and cognitive resources, ultimately contributing to task performance enhancement. Likewise, this effective emotion regulation allows high EI individuals to deal more effectively with adverse and stressful work situations, reducing their negative emotional charge and allowing them to shift more quickly from negative to more positive moods, which contributes to mitigating detrimental effects on performance (Greenidge et al., 2014; Wong & Law, 2002). Due to their greater effectiveness in prompting and maintaining these positive affective states, high-EI individuals also tend to benefit from improved interpersonal and motivational processes at work, which in turn increases their willingness to cooperate and persist in the accomplishment of their task duties (Law et al., 2004; Tsai, Chen, & Liu, 2007). Recent meta-analytic evidence focusing on other key performance dimensions, i.e. citizenship performance and counterproductive work behaviour, is consistent with this rationale, by showing that affective states are significant mechanisms through which EI impacts on individual performance (Miao et al., 2020).

Taking all these aspects into account, we propose that regulation of emotion (ROE) occupies the last stage in the causal chain effect of trait EI on task performance. Moreover, the current study further hypothesizes that co-worker trust constitutes a route through which regulation of emotion (ROE) might result in improved individual task performance. As noted, prior evidence has ascertained the relevance of interpersonal trust in the workplace, by showing its positive effect on important

organizational variables, particularly job performance (Colquitt, Scott, & LePine, 2007; De Jong et al., 2016). Notwithstanding, these findings mostly relate to individual trust in direct leaders (e.g., supervisors, managers), given that the great majority of existent empirical research is focused on this trust referent (Colquitt et al., 2007). Yet, as several authors have pointed out, the level to which individuals trust their co-workers, also known as lateral trust, besides being independent from the level of trust in their leader, is crucial for the effectiveness of individual performance in the context of interdependent work processes (De Jong et al., 2016; Tan & Lim, 2009). Accordingly, when employees trust their co-workers, they will be more likely to take the risks involved in transparent communication and cooperation (Dirks & Ferrin, 2001).

Given that trust is partially built upon affective states, emotions and bonds between individuals (Jones & George, 1998), we propose that high trait EI employees are more likely to trust their co-workers and further collect the inherent benefits of these trusting bonds, through the achievement of higher task performance levels. As highlighted above, high EI individuals tend to be more effective in regulating their own and others' emotions, which is instrumental for maintaining positive affective states in themselves and in their co-workers (Mayer & Salovey, 1997; Mayer et al., 2016). From a conceptual perspective, such favourable affective states are posited to elicit the affective foundations of interpersonal trust (Jones & George, 1998; McAllister, 1995). Indeed, by displaying more positive affective states and moods via regulation of emotion (ROE), high EI individuals are more likely to establish constructive relationships and stronger emotional bonds with others, including their co-workers, which contributes to perceiving them more favourably and as being trustworthy (Jones & George, 1998). Previous empirical research supports the direct effect of EI on positive affect (Kafetsios & Zampetakis, 2008; Miao et al., 2020), as well as its role in promoting successful social interactions (Lopes, Grewal, Kadis, & Salovey, 2006). Therefore, we hypothesize that regulation of emotion (ROE) will also impact indirectly on individual task performance via the generation of co-worker trust, as specified by both paths corresponding to *hypothesis 4*.

For illustration purposes, the corresponding hypothesized path model is displayed in Figure 1.

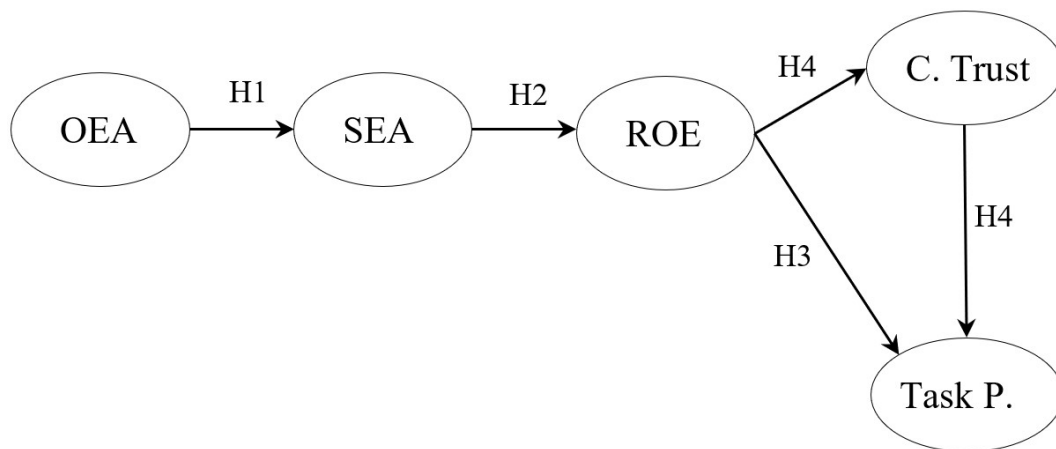


Figure 1. Hypothesized model for the effects of trait EI facets on co-worker trust and task performance.

Note. OEA = others’ emotions appraisal, SEA = self-emotions appraisal, ROE = regulation of emotion, C. Trust = co-worker trust, Task P. = task performance.

2 Method

2.1 Participants and data collection procedures

Our research hypotheses were tested using a sample of software engineers from a multinational information technology firm, specialized in delivering innovative and reliable software solutions for worldwide clients.

Data collection procedures were implemented in two different waves, separated by six months, following a predictive design. In the first wave, 138 project software engineers at the company were invited to participate in the study by completing an online survey during regular work hours. This survey contained the measures of trait EI and co-worker trust. It included information about the main study goals and asked for the participants’ informed consent, emphasizing that all answers would be kept confidential and used for research purposes only. In total, 102 valid online questionnaires were received, corresponding to a response rate of approximately 74%.

After six months, task performance ratings were provided by the respective supervisors for all 102 engineers who completed the first phase. These supervisors’ ratings were made available by the company through its formal performance appraisal system. All of the participants were project software engineers organized in a set of semi-autonomous teams responsible for implementing specific software projects. Their core duties and interdependent

team technical activities included software coding, testing, quality assurance and project management. The final sample ($N = 102$) was composed predominantly of male participants (93%), with an average age of 31.18 years ($SD = 4.42$) and an average organizational tenure of 3.38 years ($SD = 2.02$).

2.2 Measures

Trait emotional intelligence was assessed by Wong and Law’s (2002) 16-item Emotional Intelligence Scale (WLEIS). This instrument was selected to operationalize trait EI due to it being specifically developed for work settings and in light of the view of some authors that “a true measure of emotional intelligence must place respondents in a context where they can actually experience the emotions that they are asked to respond to” (Ashton-James, 2003, p. 448). In addition, O’Boyle et al. (2010) claimed that “researchers who use self-reports may better capture the emotions that employees are actually feeling in the workplace” (p. 793).

The WLEIS was originally designed to assess the corresponding four dimensions of EI identified in the literature review by Davies et al. (1998), i.e. self-emotion appraisal (SEA), other’s emotion appraisal (OEA), use of emotion (UOE) and regulation of emotion (ROE). Each dimension is assessed using four items, including “I have a good sense of why I have certain feelings most of the time” for SEA, “I have a good understanding of the emotions of people around me” for OEA, “I always set

goals for myself and then try my best to achieve them” for UOE, and “I am quite capable of controlling my own emotions” for ROE (see Appendix B). In the current study, the participants were asked to provide their answers using a five-point Likert response scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). As remarked above, the facet of use of emotion was not included in the hypothesized model given its ambiguity, on theoretical grounds, with the emotion regulation facet (Joseph & Newman, 2010).

As such, for the three facets under study, the respective total scores were computed by summing up the respective items. The corresponding Cronbach's alphas were .85 for SEA, .83 for OEA and .85 for ROE.

Co-worker trust was measured using three items from Cook and Wall's (1980) scale of interpersonal trust, following the same procedure as that of Parker, Williams and Turner (2006). One sample item is “There is a great deal of trust among members of my team”. The participants reported the extent to which they agree with these items, using a five-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The participants' answers were summed up to form a global co-worker trust indicator. The corresponding coefficient alpha was .73.

Task performance was assessed using a 5-item version of Williams and Anderson's (1991) in-role behaviour scale, which has been commonly used in previous research to measure this performance dimension. One sample item is “This employee adequately completes assigned duties” (see Appendix C). Direct supervisors rated each employee's task performance over the last six months, using a five-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The employee's total task performance score was computed by summing up the supervisors' ratings. The scale's coefficient alpha was .92.

2.3 Results

In order to test the hypothesized model, Anderson and Gerbing's (1988) two-step approach was taken into account. Accordingly, the measurement model should be assessed previously and separately from the estimation of the structural model in order to strengthen theory testing and assessment of construct validity. However, the sample size ($N=102$) was insufficient to use confirmatory factor analysis to assess the respective measurement model, since it would require the estimation of 50 distinct parameters (Kline, 2005, 2016). Consequently, we followed the procedure adopted in similar circumstances in previous

related research (e.g., Parker et al., 2006), and relied on exploratory factor analysis to gather the required evidence of convergent and discriminant validity of all measures of the variables included in the respective measurement model (i.e., OEA, SEA and ROE trait EI facets, co-worker trust and task performance). Following Pituch and Stevens (2016) and specific research recommendations (i.e. MacCallum, Widaman, Zhang, & Hong, 1999), the sample size was considered acceptable to proceed with the factor analysis and identify reliable factors, given that consistently high communalities and several concomitant strong loadings were obtained in each extracted factor (see Appendix A).

Using principal-axis factoring and oblimin rotation (i.e. to account for expected inter-relations among the factors), a five-factor solution emerged, covering three dimensions of trait EI, plus two other factors related to co-worker trust and task performance. This solution accounted for 72.25% of the total variance and all the items appropriately loaded on the respective factor. The obtained loadings ranged from .58 to .85 for OEA, .60 to .89 for SEA, .65 to .87 for ROE, .58 to .82 for co-worker trust and from .79 to .87 for task performance. These results support the adequate construct validity and discriminability of all the constructs under analysis, allowing further testing of the hypothesized model.

Table 1 displays the descriptive statistics and zero-order Pearson correlation coefficients for the variables in this study.

With the exception of the weak and non-significant correlation between ROE and task performance, the correlations between the variables depicted in the hypothesized model occurred in the expected direction. Specifically, a pattern of positive and significant bivariate relationships was found, linking all the possible pairs of trait EI facets, from OEA to ROE. Furthermore, ROE was positively and significantly associated with co-worker trust and this attitudinal variable was also positively related to task performance. In view of these results, further assumptions implied in testing the hypothesized model were considered.

As the corresponding data structure was partially nested, since some supervisors provided task performance ratings for more than one subordinate (55 supervisors rated an average of 1.85 individuals, $SD = 0.99$), potential non-independence of observations was assessed. The calculation of the intraclass coefficient ($ICC_{(1)} = .22$) indicated that supervisors account for about 22% of the variability in the individuals' task performance ratings. However,

Table 1
Means, standard deviations and correlations between the variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Sex ^a	1.07	0.25	--							
2. Age	31.18	4.42	-.14	--						
3. Tenure	3.38	2.02	-.04	.18	--					
4. OEA	14.60	2.41	.13	.01	.03	--				
5. SEA	16.02	2.55	-.08	.01	.13	.36***	--			
6. ROE	14.83	2.63	-.04	-.08	-.10	.10	.22*	--		
7. Co-worker Trust	12.32	1.74	-.14	-.20*	.09	.07	.16	.26**	--	
8. Task Performance	20.28	3.53	-.11	.01	.19	.03	.21*	.05	.27**	--

Notes. *N* = 102. ^a Males were coded as 1 and females were coded as 2. OEA = others' emotions appraisal, SEA = self-emotions appraisal, ROE = regulation of emotion. **p* < .05. ***p* < .01. ****p* < .001.

the comparison of the unconditional means model (or null model), which does not contain any predictors, but includes a random intercept variance term for groups (in our case, for each supervisor's evaluations), with a model without a random intercept, showed no statistical difference between them. The -2 Log likelihood (-2LL) value of the model with a random intercept (537.54) is smaller than the -2LL value of the model without a random intercept (541.05), but its difference is not statistically significant in a chi-squared distribution with one degree of freedom (3.51, *p* = .06). Therefore, this result suggests that there is no significant intercept variation, so a model allowing for random variation does not fit the data any better than a model that does not allow for this variation (Bliese, 2016). In light of these results, there was no need to use multilevel analyses.

Thus, we proceeded to test the hypothesized model using AMOS 20. Specifically, a path analysis was conducted of latent constructs with single indicators, by fixing the values of latent-to-manifest paths at the square root of their internal consistency reliability estimates. Moreover, to account for measurement error, the effect of random error on each variable was indicated as 1 minus the reliability, multiplied by the variance of the observed measure (Podsakoff, Williams, & Todor, 1986). Due to the negative and significant correlation of age with co-worker trust, its effects were controlled by inserting it as a covariate in the model.

The requirements in terms of sample size were assessed. Due to the size of the sample, we had to keep the model parsimonious. In our model, the correspondent sample size/free parameters ratio is 102/12 = 8.5. Therefore,

the ratio achieved is close to 10/1, which is less ideal than 20/1, but acceptable nonetheless, and much higher than 5/1, a ratio where the statistical precision of the results may be doubtful (Kline, 2005).

The fit statistics revealed that the hypothesized model fits the data adequately (χ^2 [9, *N* = 102] = 6.454, *p* = .602; GFI = .979; CFI = 1.00; RMSEA = .000; SRMR = .055), as we can primarily observe in the non-significant chi-squared test and, consequently, in the very good values of the indexes (Kline, 2005, 2016). This allows for further focus on analysing the path coefficients corresponding to both the direct and indirect effects postulated by the research hypotheses. The corresponding parameter estimates obtained are presented in Figure 2.

Bootstrapping procedures were used to test the statistical significance of all effects (resampled 5000 times, using the percentile method to estimate 95% bias-corrected confidence intervals). Previous research on mediation methods has shown that bootstrapping is especially robust in terms of controlling Type I and II errors, and in mitigating power problems resulting from possible non-normal sampling distributions of indirect effects (Hayes, 2013; Williams & MacKinnon, 2008). The main results are summarized in Table 2.

As shown, all of the hypothesized paths linking trait EI facets (from OEA to ROE) were statistically significant (H1, H2), which is consistent with the modelled sequential effect of emotional processes, i.e. from emotion appraisal to emotion regulation. Yet, contrary to our expectations, regulation of emotion (ROE) does not directly affect task performance (H3). However, in accordance with H4, there is a positive and

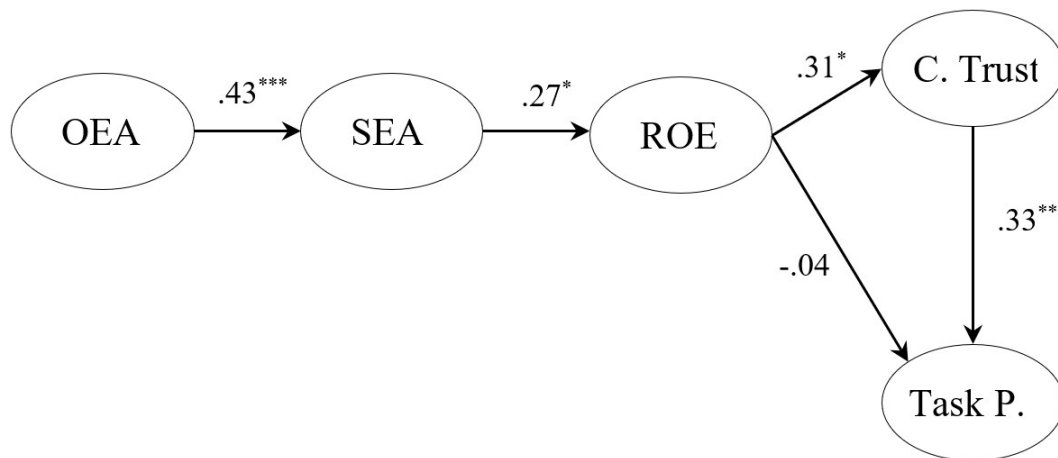


Figure 2. Path model standardized parameter estimates

Note. OEA = others' emotions appraisal, SEA = self-emotions appraisal, ROE = regulation of emotion, C. Trust = co-worker trust, Task P. = task performance. $N = 102$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2

Hypothesized direct and indirect effects and 95% confidence intervals (CI)

Model pathways	Estimated effect	95% CI	
		Lower bonds	Upper bonds
Direct effects			
H1: OEA → SEA	.428*	.212	.602
H2: SEA → ROE	.268*	.037	.470
H3: ROE → TASK	-.041	-.285	.202
Indirect effect			
H4: ROE → TRUST → TASK	.104*	.016	.265

Notes. *95% CI does not include zero. OEA = others' emotions appraisal, SEA = self-emotions appraisal, ROE = regulation of emotion, Trust = co-worker trust, Task = task performance.

significant indirect effect of ROE on task performance through co-worker trust, given that the respective 95% CI does not contain zero.

3 Discussion

This study aimed to improve the current understanding about the influence of trait EI facets, co-worker trust and individual task performance. Consistently with the EI cascading model proposed and tested by Joseph and Newman (2010) for ability EI facets, our results suggest the occurrence of a similar sequential effect for trait EI facets from initial emotion appraisal to subsequent emotion regulation. However, the obtained findings do not provide support for a direct effect of regulation of emotion (ROE) as the final building block of the emotional chain and more proximal antecedent

of employee task performance. One reason that might explain this result is related to specific characteristics and demands of the software engineering job under study, especially regarding its level of emotional labour. As reported by Joseph and Newman (2010), when testing the cascading model, the direct link between this facet and overall performance is strongly moderated by the level of emotional labour, in such a way that emotion regulation seems to only become directly beneficial for performance in jobs with high emotional labour.

Therefore, job emotional labour level, i.e. the extent to which employees must regulate their emotions and "alter their emotional expressions in order to meet the display rules of the organization" (O'Boyle et al., 2010, p. 793), seems to act as a boundary condition to enable further direct benefits of emotion regulation on task performance. Although the specific software engineering job sampled

in this study requires interactions to be established with co-workers to carry out teamwork activities, it does not qualify as a typically high emotional labour job due to its infrequent customer interaction, which may explain the absence of a direct impact of regulation of emotion (ROE) on task performance.

Nonetheless, our findings further extend the current knowledge regarding the role of regulation of emotion (ROE) on performance at work, particularly on the accomplishment of job tasks. By showing that this facet indirectly impacts individual task performance through co-worker trust, the findings support the proposition that trait EI might play an important role in individuals building trust towards their co-workers. This in turn improves employees' task performance, as they will be more likely to cooperate, openly communicate with organizational members and show stronger job involvement, especially when working in interdependent team settings (De Jong et al., 2016; Dirks & Ferrin, 2001; Tan & Lim, 2009). Due to a higher capability to create and maintain such positive affective states in themselves and in others, high trait EI employees will tend to hold more favourable perceptions of their counterparts, as well as benefitting from higher quality social interactions with them, ultimately contributing to generating trust in their co-workers (Jones & George, 1998). As such, our results are in line with these aspects and ascribe a relevant role to regulation of emotion (ROE) in generating trust. Notwithstanding, by supporting the sequential effect of EI facets, our results further imply that the effectiveness of perceived emotion regulation is by itself dependent upon the self-assessed efficacy of preceding emotional appraisal processes.

3.1 Main contributions, limitations and suggestions for future research

From a theoretical perspective, our findings assign empirical credit to Joseph and Newman's (2010) EI cascading model, which was initially built to explain the relationships between ability EI facets and overall performance, as an equally relevant framework to assist the study of the links between trait EI facets and individual task performance. Thus, by focusing on a facet-level analysis, our findings are consistent with this view purporting that trait EI unfolds in a sequential set of perceptions regarding key emotional processes, beginning with the individual appraisal of emotions from the social and interpersonal

environment (i.e., those expressed by others), eliciting and influencing the breadth of one's own emotions appraisal and lastly determining the self-rated efficacy of emotion regulation strategies (Gross & Thompson, 2007; Wong & Law 2002). Emotion regulation occupies the last stage of this chain and should act as a prime factor in enhancing individual performance (Greenidge et al., 2014; Mayer et al., 2016). While revealing the absence of a direct impact of emotion regulation on task performance, our findings extend the knowledge about this link by showing that the effect of this facet is fully indirect via co-worker trust. Therefore, the results obtained are congruent with previous research suggesting that emotion regulation might not impact directly on performance in jobs with relatively low emotional labour demands (Joseph & Newman, 2010; Wong & Law, 2002). As such, the extent to which emotional labour might suppress or improve the positive impact of emotion regulation on performance at different job levels constitutes an interesting matter for future research, with important implications to firmly establish the relevance of EI for different jobs.

Our findings contribute to extend the knowledge about the impact of emotion regulation on individual performance by suggesting that it might indirectly facilitate task performance behaviours through the development of positive work attitudes. Taking a conceptual perspective, these aspects imply that trait EI, through this sequential effect ending with emotion regulation, could play a crucial role in positively shaping individuals' attitudinal responses at work, which in turn will enhance related performance behaviours. This is an interesting clue for future research given the recent meta-analytic evidence supporting a meaningful positive effect of EI on key job attitudes across tenure and job levels (Miao et al., 2017b). In particular, given the theoretical assumptions and empirical evidence supporting that interpersonal trust is especially important for performance in interdependent work situations (De Jong et al., 2016; Dirks & Ferrin, 2001), further research should continue to examine whether the level of work interdependency might act as a moderating condition in enabling the positive effects of interpersonal trust on performance. Future research might also relate these aspects by examining multiple trust referents, such as trust in the leader and in the organization, to enable a more comprehensive understanding about the mediating role of different trust referents in the relationships between EI and performance outcomes.

Moreover, since interpersonal trust is an indicator of the extent to which individuals accept vulnerability and risk, it could be particularly important in translating the effect of EI on other performance dimensions that are arguably more challenging and riskier for employees, such as innovative performance. In fact, despite being underdeveloped, previous research has provided initial evidence supporting the positive impact of trust and variables related to image risk on innovative behaviours at work (Anderson, Potočnik, & Zhou, 2014; Yuan & Woodman, 2010). Considering that trait EI seems to play a role in building individual trust in co-workers, it can potentially affect innovative performance through this mechanism as well.

In addition to these theoretical contributions and related clues for future research, our findings also have some practical implications. Specifically, they suggest that building and developing a workforce with higher levels of trait EI can bring benefits to organizations that rely on interdependent work systems, in terms of enhanced levels of co-worker trust, which in turn translate into improved individual task performance. The results also support the appropriateness of the WLEIS to assess trait EI for that purpose, along with its advantages of providing the employees with the possibility of conducting a brief self-assessment of their trait EI facets. Due to its brief administration, this scale can also constitute a useful assessment tool through which employees might receive feedback about their trait EI from key organizational observer sources (e.g. peers and managers), for performance management and related competency development purposes. Yet, caution is advised when using the WLEIS and other EI self-report measures in high stakes assessment situations, such as for personnel selection, given their vulnerability to motivated self-distortion.

In spite of its contributions, the present study has some limitations. One such shortcoming stems from the characteristics of our sample, including its small size and its predominantly male composition, along with the fact that all of the participants belong to a specific job of project software engineering and work for a single multinational information technology company. In spite of reducing the likelihood of our results being affected by contextual variables of job complexity and industry type, these aspects inevitably constrain the generalization of our findings and require replication in future studies before more definitive conclusions can be drawn. Moreover, whereas task performance data were

collected by a different data source (i.e. direct supervisor) following the recommendations of Joseph and Newman (2010) to avoid self-ratings and other performance proxies, all trait EI facets were measured using employee self-ratings. Despite the plausibility of our findings, it is not clear whether and to what extent the relationships between the trait EI facets under analysis are inflated by common source bias. In future research, the collection of observer ratings (e.g., peer ratings) regarding employees' trait EI is recommendable. Furthermore, the adoption of a longitudinal design to collect measures of trait EI facets in distinct jobs and mostly at separate points in time (i.e., throughout the stages of work assignments or projects) would allow for a more rigorous test of their sequential interplay and contextual enactment conditions (see related research, i.e. Pekaar, van der Linden, Bakker, & Born, 2017; Tett & Guterman, 2000). This approach would be particularly important to shed light upon the potentially different impacts of specific EI facets along the progress of work missions and inherent contextual demands; the regulation of emotion facet might be especially useful during more complex, fatiguing and stress-prone or interdependent stages, such as those time-linked with final deadlines.

4 Conclusion

In conclusion, this study supports that trait EI, as a sequential interplay of specific perceptions from emotion appraisal to emotion regulation, impacts on the effectiveness with which individuals perform core tasks and technical activities at work by building their trust in their co-workers. Therefore, organizations should build and develop a workforce with higher levels of trait EI in order to promote stronger levels of co-worker trust, which translates into enhanced levels of individual task performance.

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Appendix A

Factor Loadings from Exploratory Factor Analysis of Variables under Study, using Oblimin Rotation

Scale and items	F1	F2	F3	F4	F5
Self-emotion appraisal (SEA)					
2. I have a good understanding of my own emotions.	.894	.003	.040	-.044	.000
1. I have a good sense of why I have certain feelings most of the time.	.765	-.080	.125	-.023	-.057
3. I really understand what I feel.	.730	-.029	-.060	.187	-.016
4. I always know whether or not I am happy.	.597	.004	.018	.088	.122
Task performance					
1. Adequately completes assigned duties.	-.070	-.869	.055	-.018	.061
5. Completes obligatory aspects of the job.	.090	-.860	-.069	-.036	-.098
4. Meets formal performance requirements of the job.	.125	-.831	.043	.026	-.070
3. Performs tasks that are expected.	-.022	-.816	.029	.010	.035
2. Fulfils responsibilities specified in the job description.	-.054	-.790	-.039	.012	.180
Regulation of emotion (ROE)					
16. I have good control of my own emotions.	.082	.021	.872	-.035	.050
14. I am quite capable of controlling my own emotions.	.056	.056	.832	.009	.023
13. I am able to control my temper so that I can handle difficulties rationally.	.176	.073	.726	-.057	.072
15. I can always calm down quickly when I am very angry.	-.110	-.120	.654	.057	-.051
Others' Emotions Appraisal (OEA)					
6. I am a good observer of others' emotions.	-.047	-.047	-.025	.850	.014
8. I have a good understanding of the emotions of people around me.	-.014	-.024	.056	.809	-.046
5. I always know my friends' emotions from their behaviour. rationally.	.104	-.007	-.109	.728	.044
7. I am sensitive to the feelings and emotions of others.	.052	.077	.055	.580	-.008
Co-worker trust					
2. If I got into difficulties at work, I know the other members of my team would try to help out.	-.010	-.093	-.019	.017	.820
3. I have full confidence in the technical skills of other people on my team.	-.140	.041	.215	.074	.669
1. There is a great deal of trust among the members of my team.	.145	-.039	-.079	-.061	.581
Eigen value	4.93	3.45	2.77	1.76	1.53
Explained variance	24.68	17.24	13.84	8.82	7.67

Note. Pattern Matrix values are displayed.

Appendix B - (Employee Scales)

Wong and Law Emotional Intelligence Scale (WLEIS)

Self-Emotions Appraisal (SEA)

1. I have a good sense of why I have certain feelings most of the time.
2. I have a good understanding of my own emotions.
3. I really understand what I feel.
4. I always know whether or not I am happy.

Others' Emotions Appraisal (OEA)

5. I always know my friends' emotions from their behaviour.
6. I am a good observer of others' emotions.
7. I am sensitive to the feelings and emotions of others.
8. I have a good understanding of the emotions of people around me.

Use of Emotion (UOE)

9. I always set goals for myself and then try my best to achieve them.
10. I always tell myself I am a competent person.
11. I am a self-motivating person.
12. I would always encourage myself to try my best.

Regulation of Emotion (ROE)

13. I am able to control my temper so that I can handle difficulties rationally.
14. I am quite capable of controlling my own emotions.
15. I can always calm down quickly when I am very angry.
16. I have good control of my own emotions.

Cook and Wall's (1980) Co-Worker Trust Sub-Scale

1. There is a great deal of trust among members of my team.
2. If I got into difficulties at work, I know the other members of my team would try to help out.
3. I have full confidence in the technical skills of other people on my team.

Appendix C - (Supervisor Scales)

Williams and Anderson's Task Performance Scale

1. Adequately completes assigned duties.
2. Fulfills responsibilities specified in the job description.
3. Performs tasks that are expected.
4. Meets formal performance requirements of the job.
5. Completes obligatory aspects of the job.

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2nd author: development of hypotheses or research questions (empirical studies); development of theoretical propositions (theoretical work); definition of methodological procedures; literature review; statistical analysis; analysis and interpretation of data; critical revision of the manuscript; manuscript writing.