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Contextual Cognitive-Behavioral Therapies Across the Psychosis Continuum

A Review of Evidence for Schizophrenia, Schizoaffective and Bipolar Disorders

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Abstract

Considering several etiologic, therapeutic, and comorbidity-related factors, a psychosis continuum model has been proposed for the understanding and treatment of psychotic disorders. Within the new emerging treatment approaches, Contextual Cognitive-Behavioral Therapies (CCBT) seem to hold promise for the psychosis continuum. However, considering their novelty for this specific population, the quality of efficacy evidence remains unclear. *Objective:* To examine, critically analyze, and summarize the results from studies based on therapeutic models within the CCBT approach (Mindfulness and Acceptance-based interventions, Compassion-Focused Therapy, Dialectical Behavior Therapy, and Metacognitive Therapy) for patients with a diagnosis within the psychosis continuum (schizophrenia, schizoaffective disorder, bipolar disorder). *Methods:* Three leading electronic databases (MEDLINE/PUBMED; PsycINFO; Cochrane Library), a grey literature database (OpenGrey), and registered clinical trials (ClinicalTrials.Gov) were searched using combinations of key terms regarding the CCBT models and the diagnosis considered. Reference lists of the relevant studies and reviews were searched. Only Randomized Controlled Trials (RCTs) were included. The “Cochrane Risk of Bias Assessment Tool” was used for quality assessment. *Results:* A total of 17 articles were included. This review was based on a majority of unclear or low risk of bias studies. Benefits regarding clinical variables such as psychotic symptoms, anxiety and depression,

functioning or quality of life were found. *Conclusion:* Overall the studies supported some benefits of CCBT approaches for the psychosis continuum. The conceptual perspective on treatment has changed, nevertheless the outcomes assessed are still symptom-focused and there is still need for improvement. Methodological considerations and future directions are presented.

Keywords: bipolar, contextual CBT, schizophrenia, schizoaffective disorder, review

The current diagnostic systems, such as the *DSM-5* (American Psychiatric Association, 2013), are mainly categorical (although some recent attempts have been made in order to consider some more dimensional variables – see Narrow & Kuhl, 2011). Regarding psychotic disorders and major affective disorders, three main diagnostic categories emerge in the literature and are corroborated by *DSM-5* as distinctive and independent entities: schizophrenia, schizoaffective disorder, and bipolar disorder.

Notwithstanding the potential utility of categorical diagnosis, some studies have highlighted the need for a new model of understanding psychotic disorders: a psychosis continuum model or a schizophrenia-bipolar axis (Craddock, O'Donovan, & Owen, 2009; Crow, 1990; Pearlson, 2015). There are two possible, valid, and empirically studied interpretations to the term “psychosis continuum.” The first one refers to the idea that psychotic symptoms (e.g., delusions, hallucinations) exist in a continuum ranging from normality to pathology (Carvalho, Pinto-Gouveia, Peixoto, & Motta, 2014; Johns & Van Os, 2001; Shevlin, McElroy, Bentall, Reininghaus, & Murphy, 2016; Van Os, Linscott, Myin-Germeys, Delespaul, & Krabbendam, 2009). The second perspective, the one used in this review and also referred to as the “schizophrenia-bipolar axis,” reflects the concerns about the dichotomous model of psychosis and tries to move toward an approach that represents more accurately the wide range of phenotypic variations and takes into account their biological foundations. This continuum would range between the “prototype bipolar disorder” and the “prototype schizophrenia” (Craddock et al., 2009). Results of several studies have shown: (a) a partial etiological overlap between schizophrenia and bipolar disorder with shared genes (Craddock, O'Donovan, & Owen, 2005; Craddock et al., 2009; Murray et al., 2004; Purcell et al., 2009); (b) neuropharmacological mechanisms in common, such as elevations in dopamine receptor (Pearlson et al., 1995) and good response to dopamine blockade in both disorders (for a review, see Murray et al., 2004); (c) frequent comorbidity of psychotic and mood symptoms (e.g., Buckley, Miller, Lehrer, & Castle, 2009). This continuum would include cases with both psychotic and affective features (schizoaffective or mixed disorders) that often are treated as diagnosis of exclusion and disregarded from research (Cheniaux et al., 2008; Craddock et al., 2009).

There has been a longstanding tradition of looking at diseases in the psychosis continuum as exclusively biological conditions requiring only symptomatic treatment based on the medical model. Given this traditional view, research on psychosocial treatments in this area has been neglected for many years compared to research on pharmacological interventions. Nevertheless, authors have stressed the benefits of psychological interventions in coping with psychotic symptoms or loss of functions, reducing the burden of the disease and enhancing patients' lives (Klosterkötter, 2014; Sim, 2006). Results show that better results are achieved when combination treatment (pharmacotherapy plus psychosocial interventions) is used, compared with routine care alone (Gaudio, 2006; Miklowitz, 2008).

Data suggests that psychosocial interventions appear beneficial for patients with a diagnosis within the

psychosis continuum in a wide range of areas, namely regarding positive symptoms, functioning, relapse rates, affective symptoms, anxiety symptoms, social and vocational functioning (e.g., Huxley, Rendall, & Sederer, 2000; Miziou et al., 2015; Richardson, 2010; Wykes, Steel, Everitt, & Tarrier, 2008). Therefore, international clinical guidelines recommend the offer of several psychosocial interventions such as Cognitive-Behavioral Therapy (CBT) both for people with persisting psychotic symptoms and people in remission, family interventions (Kreyenbuhl, Buchanan, Dickerson, & Dixon, 2009; NICE, 2014), and additionally arts therapies (NICE, 2014), assertive community treatment, supported employment, skills training, token economy interventions (Kreyenbuhl et al., 2009).

Regarding psychotherapy in particular, for the psychosis continuum, CBT was considered superior to other “talk therapies” in the long term regarding emotional regulation and depressive symptoms (Jones, Hacker, Cormac, Meaden, & Irving, 2012) and it is the one recommended in international guidelines (above). Nevertheless, despite the considerable body of evidence concerning CBT efficacy for the psychosis continuum (e.g., Wykes et al., 2008; Thase, Kingdon, & Turnington, 2014), CBT limitations have been identified, particularly regarding high dropout rates (Startup, Jackson, Evans, & Bendix, 2005), relapse prevention (Garety et al., 2008; Lam, Hayward, Watkins, Wright, & Sham, 2005), and difficulties in maintaining the focus of treatment on the positive symptoms after remission (Gumley, Braehler, Laithwaite, MacBeth, & Gilbert, 2010). Additionally the therapeutic effect of CBT in psychotic symptoms has been considered in the “small range” (Jauhar et al., 2014) and few differences were found showing the superiority of CBT when comparing to other types of psychotherapy (Jones et al., 2012). Specifically for bipolar disorder, CBT trial results have been characterized as “mixed” and suggest the need for potential schematic changes in therapeutic intervention (Perich, Manicavasagar, Mitchell, Ball, & Hadzi-Pavlovic, 2013).

It has been advocated, for the psychosis continuum, a recovery-oriented approach to psychotherapy which is focused on self-experience and promotes more flexible courses of action in order to pursue a meaningful and self-determined life (Lysaker, Glynn, Wilkniss, & Silverstein, 2010). Within this approach several integrative models have emerged (for a review, see Hamm, Hasson-Ohayon, Kukla, & Lysaker, 2013), including the contextual cognitive-behavioral therapies (CCBT).

Contextual Cognitive-Behavioral Therapies

The “third wave” (Hayes, 2004) or “contextual” cognitive-behavioral therapies (CCBT; Hayes, Villatte, Levin, & Hildebrandt, 2011) includes therapeutic approaches encompassing a series of methods and processes aiming at helping clients to be “open, aware, and active” and developing a wider repertoire of functional and adaptive behavioral responses. Since the term “contextual” CBT will be used throughout the text it is useful to conceptualize this construct. The term “contextual” derives from the functional contextualism approach which

emphasizes the focus on the event as a whole, with importance given to the context in which it occurs, with a pragmatic view of the truth – in other words, the “ongoing act in context” (Hayes, 2004, p. 646). In this perspective, the context refers to the relationship people establish with their private events, the awareness and willingness people have of their occurrence, and the function the events have when they arise. Authors state that an empirical evidence of a contextual effect is, for example, when as a result from therapeutic methods, the same emotional or cognitive content functions in a different way (Hayes et al., 2011). The contextual approach to CBT highlights the function or context of psychological events (e.g., thoughts, memories, emotions) over their frequency, content, or veracity, thus moving from a simple eliminative approach to one more interested in the psychological context where the internal experiences occur and the ways people deal with them. The goal is to increase awareness and the ability to face internal experience in an accepting, non-judgmental way with curiosity and without attempts to alter it; becoming mindfully aware of the present moment; and engage in actions congruent to valued-living directions.

As stated above, CCBT approaches aim to help people develop a wider repertoire of functional and adaptive behavioral responses to internal experiences. Although this is true for other psychotherapeutic approaches (e.g., CBT), CCBT’s didactic perspective places the emphasis on flexibility, acceptance, embracing all experiences (different from the symptom-reduction/distress alleviation focus valued in other psychotherapeutic approaches) fostering quality of life and valued living. An important emphasis is placed on the body in which the “here and now” is experienced through experiential exercises (e.g., mindfulness, acceptance, compassion) and language-based strategies (much used in other psychotherapeutic approaches) although still used are de-emphasized (Hayes, Strosahl, Bunting, Twohig, & Wilson, 2004). There are several therapeutic approaches that fall within the scope of “Contextual Cognitive-Behavioral Therapies.”

Mindfulness

Mindfulness has been defined as “paying attention in a particular way, on purpose, in the present moment, and non-judgmentally” (Kabat-Zinn, 1994, p. 2). Mindfulness-based interventions focus on several practical exercises (including sitting meditation among others) aiming at the development of a decentered relationship with inner experience as thoughts and feelings (Segal, Teasdale, Williams, & Gemar, 2002). The two more well-known therapeutic applications of Mindfulness are Mindfulness-based Stress Reduction (MBSR; Kabat-Zinn, 1990) and Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002). Chadwick, Newman-Taylor, and Abba (2005) suggest a specific rationale for applying mindfulness to psychotic symptoms, in which two loops are possible when reacting to an unpleasant psychotic sensation: (a) the distressing reaction leading to being “lost in reaction” through processes such as experiential avoidance, judgment, rumination, and confrontation; and (b) the mindful response that leads to a “clear awareness” circle promoted by acceptance,

non-judgment, and an attitude of letting go. Considering reported unintended effects of meditation on psychosis (for a review, see Shonin, Van Gordon, & Griffiths, 2014) several adaptations have been proposed in applying mindfulness-based interventions for people with psychosis: (a) shorter sitting meditations (10 min) with preference given to mindfulness of the breath and bringing awareness to the body (3-min body scan) as grounding practices; (b) mindfulness taught as “choiceless attention” rather than concentration meditation; (c) briefer moments of silence with comments, instructions, and reminders being frequently given; (d) homework with audio support was encouraged but not required; (e) shorter structure of therapy (6 one and a half hour sessions with a 15-min break); (f) smaller groups than usual (six participants); (g) opportunity to manage distressing experiences therapeutically and focus on the therapeutic process and relationship.

Acceptance and Commitment Therapy

Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) is based on a rationale that considers language the essential aspect of human suffering in general, and particularly of many psychological disorders (Hayes et al., 2004). From this point of view, psychopathology is the result of the limiting effects of language in two main areas: cognitive fusion (the process by which inner experiences are interpreted as an accurate description of reality) and experiential avoidance (efforts to avoid, suppress, or modify inner experience), both leading to psychological inflexibility (Hayes et al., 2004). ACT’s aim is to increase psychological flexibility levels, emphasizing the ability to promote or maintain behaviors that are congruent with the individual’s goals and values through processes such as acceptance; cognitive defusion; being present; self as context; focus on values and committed action (Hayes et al., 2004). In its application to psychosis, the ACT model conceptualizes psychotic symptoms as both possible targets of avoidance (e.g., hallucinations) and specific strategies of avoidance of negative and aversive private experiences, such as negative self-concept (e.g., delusions; Bach & Hayes, 2002). An important focus is placed on normalization of psychotic experiences, and willingness and defusion are practiced with the aim to change the relationship with symptoms. Working with patients with psychosis the authors have recommended to combine small parts of different ACT components in each section to make the link between them more clear (Pankey & Hayes, 2002).

Compassion-Focused Therapy

Compassion-Focused Therapy (CFT; Gilbert & Procter, 2006) derives from an evolutionary approach linked to neuroscience of emotion and the biopsychosocial model.

Specifically directed to chronic and complex mental health problems associated with shame and self-criticism, CFT aims at developing skills for activating the soothing system in order to regulate threat-based affect, bring a more helpful balance between the different emotion regulation systems, and promote a compassionate attitude toward the self and others. Gumley et al. (2010) proposed a compassion-focused formulation of the experience of psychosis and recovery, in which vulnerability and resilience are explained in a multidimensional way (e.g., early experiences, life events, and experiences – internal and external threats, safety strategies and their unintended consequences). The therapeutic focus is on reducing shame, activating positive affect, and promoting adaptive coping, which can be particularly important for people with psychosis (Gumley et al., 2010), which usually have problematic threat processing/regulation and difficulties regarding affiliative emotions/behaviors (Braehler et al., 2012). CFT for psychosis starts at reformulating blocks to recovery using the CFT model, building motivation to learn compassionate skills (mindfulness, appreciation, imagery, reframing, among others). These skills are then trained to be used in dealing with threats and difficulties, such as stigma, social anxiety, self-attacking, hostile voices, poor motivation, and so on (Braehler et al., 2012).

Dialectical Behavior Therapy

Dialectical Behavior Therapy (DBT; Linehan, 1993), originally developed for borderline personality disorder, was designed to help patients with chronic difficulties, including suicidal ideation, change noneffective patterns of behavior integrating the concepts of acceptance and change. DBT combines standard cognitive-behavioral techniques for emotion regulation and reality testing with concepts of distress tolerance, acceptance, and mindful awareness. Reduction in suicidal behaviors and behavioral deregulation (self-harm), hospitalization, anger; as well as improvement in social adjustment and treatment compliance have been found (Linehan, Tutek, Heard, & Armstrong, 1994).

Metacognitive Therapy

Although several types of Metacognitive Therapy (MCT) exist and have been applied to psychosis with promising results (for reviews, see Moritz et al., 2014; Moritz, Woodward, & Balzan, 2016; Schneider & Andreou, 2014), in the present review we will follow the conceptualization of Hayes et al. (2011) that specifically points out the Wells' Metacognitive approach as part of the "Third Wave" of cognitive-behavioral therapies. Metacognitive Therapy (MCT; Wells, 2000) was developed based on the metacognitive model for emotional disorders and consists of promoting a different relationship to thoughts, beliefs, and metacognitive beliefs with the final aim being countering the cognitive attentional syndrome (CAS) – a specific way of thinking that would be responsible for emotional suffering and ultimately the development and maintenance

of psychiatric disorders. Specific strategies of this approach include “Attention Training Technique” (Wells, 1990) and a specific form of mindfulness called “Detached Mindfulness.”

Within the psychosis continuum, CCBT may have the potential to be particularly suited for several reasons:

(a) promoting awareness and acceptance of experiences as separated from self and momentary can alleviate the distress associated with psychotic and mood symptoms and the self-stigma associated with chronic mental illness;

(b) reducing feelings of shame and self-criticism and therefore activating the positive affect system and promoting valued living instead of focusing on symptom reduction/ elimination through challenging thoughts can be more suited for this population; (c) focusing on values and valued-living directions can be effective in engaging patients in therapy; (d) helping people regulate their emotions is particularly needed in a population in which emotional experience plays a key role in the illness etiology, development, and course (relapse prevention). Furthermore, the absence of questioning regarding the specific content or rationality of thoughts might bring advantages in therapy adherence.

Prior Related Reviews

In 2013, a meta-analysis conducted by Khoury, Lecomte, Gaudiano, and Paquin, presented results emphasizing the moderate efficacy (pre-post analyses) of mindfulness-based interventions for psychosis, with therapeutic gains being maintained at follow-up. However, when compared with a control group, a smaller effect size was found. Results were found stronger for negative symptoms. Shonin et al. (2014) presented a systematic review specifically on mindfulness meditation for psychosis (excluding therapeutic approaches using mindfulness as adjunct as for instance, ACT) and concluded that mindfulness meditation appears to have a beneficial role in the treatment of psychosis when specific adaptations are made. Nevertheless, the review stated that the results from available studies are not yet sufficient to demonstrate efficacy of mindfulness-based interventions for psychosis. Limitations such as small sample sizes, passive control conditions, no control of confounding variables among others limit the generalizability of results. Davis and Kurzban (2012) concluded that there is preliminary evidence to support the notion that mindfulness-based treatment provides benefits for patients namely regarding symptom-associated distress, self-efficacy, and hospitalizations.

In an area of recent scientific interest with a growing body of evidence on efficacy, periodic reviews are in order, since advances are made rapidly and new findings are always emerging. To our knowledge there are no comprehensive reviews of CCBT considering the psychosis continuum. Therefore, the purpose of this systematic literature review is to summarize the empirical results found for CCBT for the psychosis continuum (Schizophrenia, Schizoaffective and Bipolar disorders) and to provide a comprehensive and critical overview of

results from high- quality clinical trials (Randomized Controlled Trials) developed in this area.

Method

The methods of the present review were based on the recommended by the Cochrane Collaboration (Higgins & Green, 2011) and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Liberati et al., 2009).

Search Strategy

In order to identify relevant studies, leading electronic data- bases were searched – MEDLINE/PUBMED, PsycINFO, and Cochrane Library (“Cochrane Central Register of Con- trolled Trials”). The Cochrane Collaboration states that efforts should be made to identify “literature that is not formally published in sources such as books or journal articles” – grey literature (Higgins & Green, 2011). Therefore OpenGrey database was additionally searched and during the identification and selection phases all types of records were considered (including dissertation abstracts, proceedings abstracts, and other). Registered clinical trials (ClinicalTrials.gov) with results were also considered.

We combined terms regarding the targeted population with terms concerning the CCBT interventions. The search strategy, which can be consulted in Appendix, was first developed for MEDLINE/PUBMED and then adapted for use in the other databases. In order to maximize the search benefits and due to organization of information, separate searches were made for the different types of CCBT. Exploded search was used when considered pertinent and there were no restrictions concerning language. References from relevant articles, prior reviews, and meta-analyses were also analyzed (snowball effect). In addition, experts in the field were consulted. All pertinent studies from the first available date until July 2015 were included.

Eligibility Criteria

A PICOS approach was used for defining criteria for inclusion and exclusion of studies and can be consulted on Table 1. In terms of methodology, guidelines have recommended that trials should follow a Randomized Controlled Trial design and this methodology has been reported as the ideal study design to evaluate the effectiveness of health-care interventions (Navaneethan, Palmer, Smith, Johnson, & Strippoli, 2010). Considering Randomized Controlled Trials (RCTs) as the strongest evidence of clinical efficacy specifically developed to minimize bias (GRADE Working Group, 2004) we chose to only include studies with this design in our review. Our review included literature regarding either individual therapy or group-format interventions, on the CCBT in analysis (mindfulness and acceptance-based interventions, compassion-focused therapy, dialectical behavior therapy, and metacognitive therapy) with adult patients with a diagnosis within the psychosis continuum (Schizophrenia, Schizoaffective and Bipolar disorders).

Study Selection and Quality Assessment

The records were independently reviewed for eligibility by two authors (MJM and PC): the screening phase was based on title and abstract examination; and the eligibility phase was performed through full text review. In each phase, any studies not meeting the inclusion criteria previously stated in the PICOS were excluded. Disagreement between reviewers was resolved by team discussion and consensus. Quality assessment was performed by the two authors responsible for the identification, screening, and eligibility phases using the highly recommended “Cochrane Collaboration’s Risk of Bias Tool” (Higgins & Green, 2011). Quality was assessed based on published and/or available information on the selected studies. The Lassen (2011) study was not assessed for quality due to lack of information available about study design.

Results

A total of 519 potentially relevant articles were identified, retrieved, and screened for potential inclusion. Figure 1 can be consulted for a flow of information through the different phases. After reviewing 68 full text articles for eligibility, a total of 17 studies were included in the final stage of the review and a summary of the studies’ characteristics and main outcomes is presented in Table 2. Four studies used previous studies’ samples to analyze long-term effects of intervention ($N = 2$) and mechanisms of change ($N = 2$).

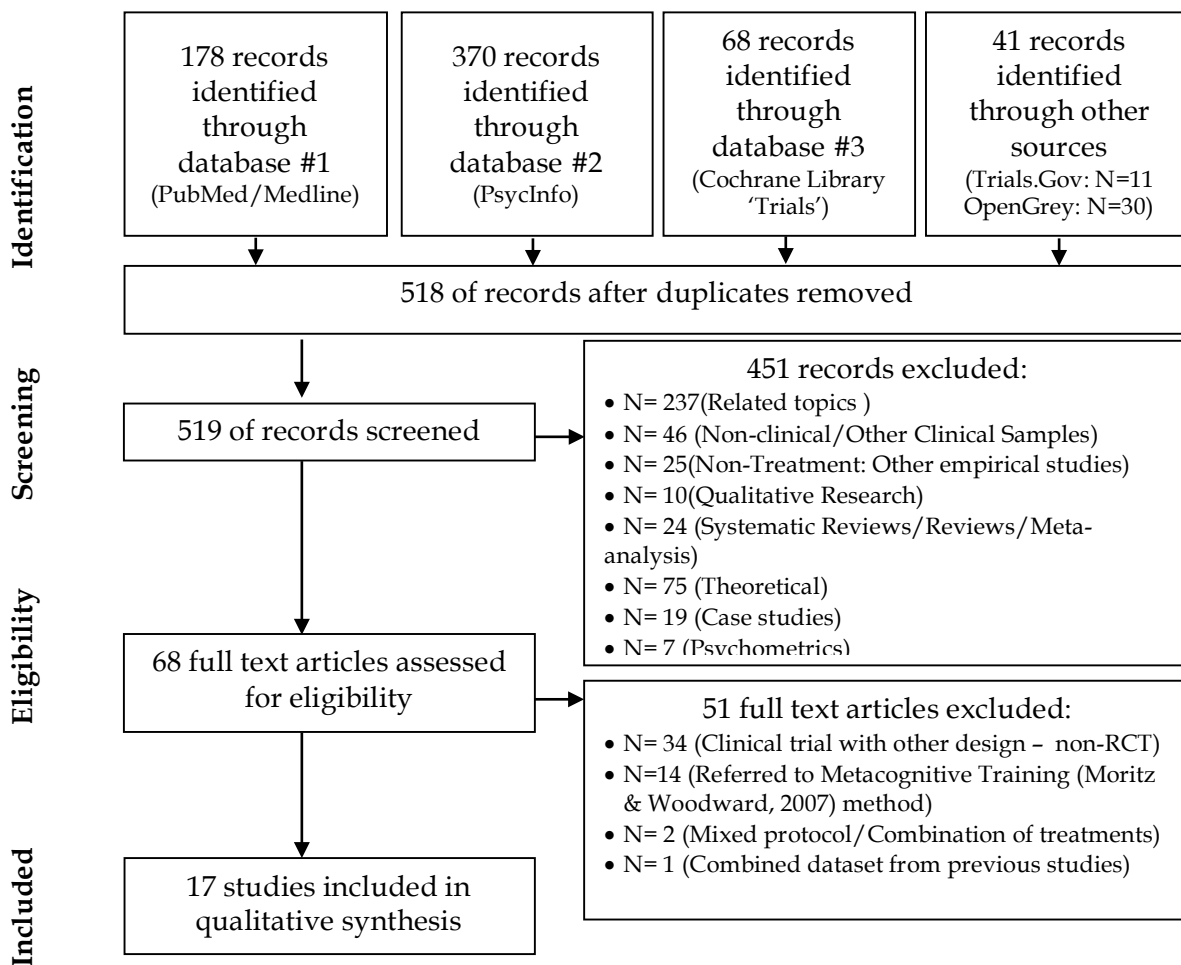


Figure 1. Adapted flow of information through the different phases of a systematic review according to PRISMA (2009).

Table 1.

PICOS criteria for inclusion and exclusion of studies

Parameter - PICOS	Inclusion Criteria	Exclusion Criteria
Patients/Problem	<ol style="list-style-type: none"> 1. Age > 18 years old 2. Diagnosis of a psychosis continuum disorder (schizophrenia, schizoaffective, bipolar disorder) 	<ol style="list-style-type: none"> 1. Age < 18 years old 2. Studies with mixed samples outside the psychosis continuum; studies referring to “severe mental illness”, “acute patients” without specifying the participants’ diagnoses.
Intervention	<p>One of the following CCBT:</p> <ol style="list-style-type: none"> 1. Mindfulness-based therapies 3. Acceptance-based therapies 4. Compassion Focused Therapy 5. Dialectical Behavior Therapy 6. Metacognitive Therapy 	<ol style="list-style-type: none"> 1. Studies with mixed protocols or protocols that do not identify the approach 2. Studies with other treatment approaches
Comparator	Any kind of control group (active or passive)	Studies without control group
Outcomes	<p>Any outcomes related to:</p> <ol style="list-style-type: none"> 1. Psychotic Symptoms 2. Mood symptoms 3. Related symptoms (e.g. anxiety) 4. Disease management (e.g. coping, functioning, hospitalizations) 5. Adherence 6. Quality of Life 	Qualitative outcomes
Study Design	Randomized Controlled Trials	<p>Non-randomized controlled trials</p> <p>Retrospective, prospective, or concurrent cohort studies</p> <p>Cross sectional studies</p> <p>Case reports</p>

Note: PICOS = Patients, Intervention, Comparator, Outcomes, Study design

Sample Characteristics

The combined sample of all studies included a total of 622 participants in randomization procedures: 297 were characterized as in the “psychosis spectrum” or “schizophrenia spectrum” in the psychosis spectrum; 189 with bipolar disorder diagnosis (one study included unipolar diagnosis); one study included 96 subjects with the specific diagnosis of schizophrenia; and one study covered all diagnosis in the “psychosis continuum” ($N = 40$). In studies with psychosis samples the majority of participants were male and the opposite was found in bipolar disorder samples.

Overview of the Included Studies

The studies included in this review were all treatment studies, randomized and controlled, assessing efficacy and/or feasibility of CCBT for disorders in the psychosis continuum (schizophrenia, schizoaffective disorder, and/or bipolar disorder). In terms of localization of studies, the majority was European (five studies), four were in the United States of America and four studies in other countries. Therapeutic Approach and Setting (Group Vs. Individual)

In terms of therapeutic approach, and excluding studies using previous studies' samples, six RCTs were found for Mindfulness-based interventions (MBCT, Mindfulness-based psychoeducation, and Mindfulness Intervention for Rehabilitation and Recovery in Schizophrenia), five studies with Acceptance-based therapies (ACT, Acceptance-based CBT), one study with compassion-focused therapy, one referring to DBT, and no RCT studies were found for MCT. The most common therapy format found was group format (10 studies). Individual interventions were only found for ACT. Session number varied between 4 (min) and 16 (max).

Group Comparison

In terms of group comparison, the most usual control group found was Treatment as Usual (TAU) and waitlist controls ($N = 10$). Three studies included active control groups: one study included an intensive support control group; other study included enhanced treatment as usual; and only one study reported two clinical control groups including an active control condition (Befriending) and waitlist controls. Concerning comparison with control group(s), three studies (mindfulness and acceptance-based) did not find differences after intervention with the control group(s). One study reported that these differences were only in process measures (mindfulness). Regarding the studies with active control groups the one using “Befriending” did not find significant differences between intervention groups (differences only with the waiting list control group). Six studies did not report effect size analysis for the between-group comparisons.

Assessment Moments

Regarding post-intervention assessment, the most common design was pre and post intervention assessments (seven studies). Only mindfulness and acceptance-based interventions studied the long-term effects of the intervention. Three studies reported one follow-up assessment (excluding posttreatment) and other three studies included two or more follow-up assessments: one with 4 month and 12 month moments (ACT); other with assessments at 3, 6, and 9 months (Mindfulness); and in the other patients were assessed at 3, 9, 12, and 24 months (Mindfulness). No studies reported follow-up assessments longer than two years. All studies reporting follow-up assessments emphasized that therapy results were maintained or enhanced at follow-up.

Outcome and Process Measures

In terms of outcome measures, a wide range of measures were found, the main outcomes with benefits from CCBT reported were related to psychotic symptoms (four studies), hospitalization rates (two studies), social interference, functioning, or work performance (four studies), distress and emotion regulation (two studies), depressive symptoms and/or anxiety (six studies), insight (one study). In terms of process measures, four studies reported improvement in mindfulness skills (one study associated mindfulness with improved depressive symptoms) and one study correlated increases in compassion with improvement in depression and social marginalization. One study reported mediational analysis highlighting symptom believability – the degree of conviction the participants have in the symptom (hallucination and/or delusion) to be true/reality – as an important process in the treatment effect.

Feasibility and Acceptability

In terms of feasibility and acceptability of therapy, attrition rates ranged from 8.3% to 20.83% in treatment completion. One study had no dropouts. One study (DBT) reported measures of acceptability/satisfaction other than attrition rates (e.g., interviews, self-report satisfaction ratings), with positive feedback.

Quality Assessment

Quality assessment results regarding the evaluation of risk of bias in the selected studies is presented in Table 3. Overall the evidence for efficacy of CCBT for the psychosis continuum seems to be drawn from a majority of “Low” and “Unclear” risk of bias studies.

Table 2.
Studies included in review

Reference	Country	Study population (N)	Type of CCBT intervention	Type of Comparison Group (N)	N° of Sessions (format)	Reported Effect Size (for between groups comparisons)	Follow-up (additional to post-treatment)	Main Outcomes
Bach & Hayes (2002)*	USA	Psychosis Spectrum: inpatients with positive psychotic symptoms (80)	Acceptance and Commitment Therapy (ACT) + Treatment as Usual (TAU)	TAU (35)	4 (one-to-one)	No	4 months	Experimental group with higher symptom reporting; lower symptom believability; lower rehospitalization rates over a 4-month follow-up period
Bach, Hayes, & Gallop (2012)*						No	12 months	ACT was associated with reduced rehospitalization at 1 year post discharge after controlling for confounding variables.
Gaudiano & Herbert (2006)*	USA	Psychosis Spectrum: inpatients (40)	Acceptance and Commitment Therapy (ACT) + Enhanced Treatment as Usual (ETAU)	ETAU (21)	4 (one-to-one)	Yes - BPRS total ($d=0.60$)	4 months	Experimental group with significantly lower distress related to hallucinations; less social interference; improved affect. Medium effect size gains on the BPRS and absolute risk reduction by post-treatment of 43.3% (experimental group).
Gaudiano, Herbert & Hayes (2010)*								Believability of hallucinations at posttreatment mediated the effect of treatment condition on hallucination-related distress
Williams, et al. (2008)	UK	Unipolar and Bipolar Disorder with suicidal ideation or behavior (68)	Mindfulness based Cognitive Therapy (MBCT) + TAU	Waitlist (35)	8 (group)	No	None	Improved outcomes in terms of anxiety and depressive symptoms (significant two-way time × condition interaction).
Chadwick et al. (2009)	UK	Psychosis spectrum with	Mindfulness + metacognitive	Waitlist (11)	10 (group)	No	None	No significant differences between intervention and

		distressing voices (21)	insight + TAU					control group; improvement in clinical functioning and mindfulness of distressing thoughts and images
Lassen (2011)	USA	Schizophrenia Spectrum (28)	ACT + TAU	TAU (14)	4 (group)	No	None	No statistically significant differences in anxiety between groups
White, et al. (2011)	UK	Psychosis Spectrum (27)	ACT + TAU	TAU (13)	10 (one-to-one)	Yes - Measures of psychotic symptoms, anxiety, depression and mindfulness and acceptance skills ($d=0.03-0.50$)	None	Improvement in depressive symptoms (associated with mindfulness); significantly greater increase in mindfulness skills and reduction in negative symptoms; fewer crisis contacts (experimental group)
Langer, Cangas, Salcedo, & Fuentes (2012)	Spain	Psychosis spectrum (23)	MBCT + TAU	Waitlist (11)	8 (group)	Yes - Measures of mindfulness, acceptance and clinical impression ($d=0.01-1.31$)	None	Experimental group with significantly higher results - large effect size - in responding mindfully (no other significant differences).
Shawyer et al. (2012)	Australia	SZ spectrum with Command Hallucinations (44)	Acceptance-based CBT + TAU	Befriending (14) // Waitlist (17)	15 (group)	Yes - Measures of psychotic symptoms, quality of life and functioning ($d=0.01-0.64$)	6 months	None of the between groups differences reached significance. Acceptance group with significant effects on a broader range of outcomes (illness severity, global functioning and quality of life, acceptance of auditory hallucinations and insight - maintained or emerging at follow-up).
Braehler, et al. (2013)	UK	Sz spectrum + bipolar disorder with psychotic features (40)	Group Compassion Focused Therapy + TAU	TAU (18)	16 (group)	Yes - Measures of compassion and avoidance ($r=0.29-0.59$)	None	Experimental group with greater observed clinical improvement; significant increases in compassion of large magnitude. Increases in compassion significantly associated with reductions in

								depression and in perceived social marginalization.
Perich, Manicavasagar, Mitchell, Ball, & Hadzi-Pavlovic (2013)*	Australia	Bipolar Disorder (95)	MBCT + TAU	TAU (47)	8 (group)	No	3, 6, 9 and 12 months	Significant differences in state anxiety between groups.
Perich, Manicavasagar, Mitchell, & Ball (2013)*							12 months	Significant correlation between greater number of days meditating and depression and anxiety scores. Differences found regarding number of meditation days.
Van Dijk, Jeffrey, & Katz (2013)	Canada	Bipolar Disorder (26)	Dialectical Behavior Therapy-based psychoeducational group + TAU	Waitlist (12)	12 (group)	No	None	Reduced depressive symptoms at post treatment, less fear of emotional states; greater mindfulness awareness, greater control over emotional states.
Chien & Lee (2013)*	China	Schizophrenia (96)	Mindfulness-based Psychoeducation+ TAU	TAU (48)	12 (group)	Yes - Measures of insight, symptom severity, functioning and hospitalizations ($\eta^2_{\text{partial}} = .28$ - overall differences)	3 and 18 months	Improvement at 18 months maintained at 2-year follow up: insight, symptom severity, functioning, and hospitalizations.
Chien, & Thompson (2014)*							24 months	
Davis, Lysaker, Kristeller, Salyers, Kovach, & Woller (2015)	USA	Schizophrenia and Schizoaffective disorder (34)	Mindfulness (Mindfulness Intervention for Rehabilitation and Recovery in Schizophrenia - MIRRORS)	Intensive Support (16)	8 (group)	Yes - Measures of work (weeks/hours), work performance, client satisfaction ($d=0.04-0.88$)	None	MIRRORS group worked a significantly greater number of hours and performed significantly better at the end of the 4-month intervention.

Note: Studies marked with * had overlapping samples; BPRS=Brief Psychiatric Rating Scale

Table 3.
Risk of Bias assessment using the 'Cochrane Risk of Bias Tool'

Study Reference/ Risk of Bias	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (Attrition bias)	Selective reporting (Reporting bias)	Other bias
Bach & Hayes (2002) Bach, Hayes, & Gallop (2012)	Unclear	Unclear	Unclear	Low	Low	Unclear	Low
Gaudiano & Herbert (2006) Gaudiano, Herbert & Hayes (2010)	Low	High	High	High	Low	Unclear	Low
Williams, et al. (2008)	Unclear	Unclear	Low	Low	Unclear	Unclear	Low
Chadwick et al. (2009)	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear
White, et al. (2011)	Low	Unclear	Low	Low	Unclear	Unclear	Low
Langer, Cangas, Salcedo, & Fuentes (2012)	Unclear	Unclear	Low	Low	Unclear	Unclear	Low
Shawyer et al. (2012)	Low	Unclear	Low	Low	Unclear	Unclear	Low
Braehler, et al. (2013)	Low	Unclear	Low	Low	Unclear	Unclear	Low
Perich, Manicavasagar, Mitchell, Ball, & Hadzi-Pavlovic (2013) Perich, Manicavasagar, Mitchell, & Ball (2013)	Low	Low	Low	Low	Low	Unclear	Low
Van Dijk, Jeffrey, & Katz (2013)	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear
Chien & Lee (2013) Chien, & Thompson (2014)	Unclear	Unclear	Unclear	Unclear	Low	Unclear	Low
Davis, Lysaker, Kristeller, Salyers, Kovach, & Woller (2015)	Unclear	Unclear	Low	Low	Unclear	Unclear	Low

Discussion

This review aimed at summarizing and critically analyzing the existing research on the efficacy of CCBT for the psychosis continuum. Following an attempt to provide evidence for CCBT approaches in psychosis through case studies and small-scale clinical trials (for a brief nonsystematic review, see Martins, Castilho, Santos, & Gumley, 2016), recently we have witnessed a growing effort, in CCBT for psychosis continuum, in using rigorous methods of trial design, namely RCT. Nevertheless, more studies with this kind of rigorous methodology are in need to assess the benefits of CCBT in this population.

Overall this approach revealed to be feasible and highly acceptable for this population. Efficacy data regarding clinical outcomes, although preliminary and in need of further replication, show promising results both in terms of symptom reduction and regarding increased quality of life and relationship with symptoms. Specifically, mindfulness interventions found improvement regarding anxiety, depressive symptoms, insight, psychotic symptoms, and functioning; acceptance-based interventions found improvement in distress related to symptoms, social interference, depressive symptoms, psychotic symptoms, global functioning, quality of life, insight. Although with only one study each, CFT found improvement regarding depressive symptoms, social marginalization, and observed clinical improvement; and DBT reduced depressive symptoms, fear of emotional states, and improved control over emotional states. It is important to note that the majority of studies analyzed used a group format and these results may be influenced by this setting's characteristics. Studies comparing the two settings are needed.

In a more socioeconomic perspective, it is important to notice that one mindfulness-based intervention was tested in relation to objective work-rated outcomes (vocational rehabilitation) with promising results; two studies (mindfulness and ACT) included hospitalization as an outcome; and one ACT study found fewer crisis contacts in the experimental group.

Long-term therapy effects' studies reported maintained or enhanced effects at follow-up (up to 24 months for Mindfulness, and 12 months for ACT). The other approaches did not report follow-up assessments other than posttreatment.

Limitations of Previous Studies and Future Studies' Recommendations

Methodological Issues

In terms of quality of evidence, overall this review was based on a majority of low and unclear risk of bias studies. We can observe that several studies had an "unclear risk of bias" assessment in more than one of the parameters analyzed. This quality assessment was dependent on the information reported in the articles retrieved; therefore, our evaluation may have suffered from a positive bias (unclear assessment instead of a

high risk of bias assessment). The parameters concerning “allocation concealment” and “reporting bias” seem to be the more problematic in this regard.

Although it is understandable to consider the characteristics of the population, a major limitation of third-generation studies for the psychosis continuum is the sample sizes found. In this review, we found that the largest sample size (for randomization) was 96 patients and the smallest study included 23 participants. Small sample sizes, although comprehensible in preliminary data, limit the generalization of findings and larger trials are in order. Additionally, the lack of randomization prior to participants’ selection for inclusion (keeping updated lists of all pertinent patients for extraction of a representative sample) is another central limitation that should be taken into consideration.

Regarding attrition rates, we found higher values than expected but this result can be influenced by sample size (small samples may be causing small dropout numbers appear as high percentages). Nevertheless, dropouts in psychological therapy are very common in severe mental illness (Hamilton, Moore, Crane, & Payne, 2011). Dropouts before first session and after last session were not analyzed in this review. However, high variability in conceptualization of dropout rates was found (e.g., “attended at least 1 session/4 sessions” vs. “completed the program”). This lack of standardization, very common in psychological treatment studies (e.g., Wierzbicki & Pekarik, 1993), makes the evaluation of the true acceptability of CCBT treatments difficult and future studies should be aware of this limitation.

Several measures (self-report and clinician-rated) were found to assess the efficacy and there were found different measures to assess the same construct (e.g., a construct measured by different questionnaires). Heterogeneity of outcome and process measures makes it difficult to compare studies within the same therapy and between therapeutic approaches.

A small number of studies performed mediational analysis, correlational analysis (changes in outcome associated with changes in process measures) or used an active control condition. No studies performing component analysis were found. The most common comparison group used was TAU and only three studies included active control groups. This area is in need of studies corroborating the role of third-generation variables in the therapeutic changes in order to differentiate the approach efficacy from nonspecific factors and placebo effects usually associated with psychological therapies. Active control conditions (especially with classical CBT groups) are in need to shed light on the added benefits of third-generation therapies.

A growing number of studies are including more than one follow-up assessment in their research protocols. Nevertheless, there are still RCTs with only pretreatment and posttreatment assessments. Follow-up data is essential for evaluating the long-term effects of any intervention as well as unwanted side effects.

Some studies found are still lacking effect size analysis for the comparison between groups, which is an important limitation in psychotherapeutic efficacy studies. Effect sizes should always be reported in all

differences found to enlighten the real contribution of psychotherapeutic strategies in a given clinical group.

No studies with rigorous methodology (RCT) were found for metacognitive therapy in the psychosis continuum. Nevertheless, to our knowledge recent efforts are being made to test the efficacy of MCT in this population (e.g., Morrison et al., 2014). Protocols aiming to counter the cognitive attentional syndrome through techniques such as “Detached Mindfulness” are needed both in affective and non-affective psychosis as well as in bipolar disorder to test the efficacy, feasibility, and clinical utility of this approach. Studies including compassion-focused therapy and dialectical behavior therapy protocols for the psychosis continuum are also particularly in need since only preliminary data (without replication in rigorous trials) has been presented. Specifically, the trial regarding DBT was not necessarily intended to address bipolar disorder with psychotic features; therefore, studies should also address the efficacy of this approach in affective and non-affective psychosis.

Clinical and Outcome-Related Issues

Considering the recent advances in conceptualizing treatment in the psychosis continuum and the recommendation of recovery-informed interventions to promote richer and more positive self-experience across several dimensions (Leamy, Bird, Boutillier, Williams, & Slade, 2011), it was expected that studies would select outcomes beyond symptom reduction (objective recovery).

Although we have witnessed a change in the intervention paradigm (with different techniques being used with different objectives) and some different outcomes have emerged in efficacy studies (such as symptom believability, quality of life), nevertheless the majority of studies are still focused on objective aspects of recovery such as symptom reduction (e.g., Perich, Manicavasagar, Mitchell, Ball, & Hadzi-Pavlovic, 2013; White et al., 2011), diminishing symptom impact (e.g., Bach & Hayes, 2002; Williams et al., 2008), and functioning (e.g., social, work – which can be conceptualized as a reflection of psychosocial deficits or goals, also an objective aspect of recovery according to Silverstein & Bellack, 2008; e.g., Chien & Lee, 2013; Davis et al., 2015). Although understandable in the historical context of psychosis research, this seems to be a major limitation of CCBT studies on the psychosis continuum, since the main goal of such approaches is not symptom reduction or distress elimination (Hayes et al., 2011).

From a different perspective on outcome research for the psychosis continuum, the subjective aspects of recovery would be potentially interesting outcomes for CCBT interventions. Variables, such as empowerment, self-directedness, hope, feelings of connectedness (with others/community), sense of meaning in life, optimism about the future, among others (Leamy et al., 2011), would be more suited to assess recovery from this perspective than symptom/distress reduction (for a review of instruments, see Cavelti, Kvrjic, Beck, Kossowsky, & Vauth, 2012). Positive emotions associated with affiliative processes and soothing abilities could also be a

useful outcome for this population, since it has been hypothesized to be an underdeveloped soothing system and overdeveloped threat system as the basis for difficulties (Gumley et al., 2010).

Also, variables such as acceptance, mindfulness, and compassion have been reported as outcome measures, nevertheless few studies have associated changes in these variables with changes in other outcomes (e.g., depression, social interference) or used these variables to perform mediational analysis. Since these variables are more likely to be considered as process variables than outcomes (and as outcomes were, in most studies, not associated to other significant variables), it is therefore still unclear to describe the processes behind therapeutic change in CCBT for the psychosis continuum. It is hypothesized that the ability to be “open, aware, and active” (Hayes et al., 2011), in other words mindfulness and psychological flexibility processes as different and alternative ways to understand and deal with suffering, would be the underlying processes behind therapeutic change. Nevertheless, further research is needed to test these hypotheses.

Review's Limitations and Future Directions

Despite the effort to identify and screen non-published results (grey literature), in its final results this review only included published results (as a result of the rigorous eligibility criteria) which can introduce a bias in the results. Several authors alert for the problem of a positive bias in reviews toward or in favor of the testing hypothesis (e.g., Fanelli, 2010). Therefore the results of this review must be interpreted with caution while considering this potential positive bias.

In spite of the RCT being the most recommendable design to draw conclusions about efficacy, other intervention study designs (practical studies) can bring valuable contributions in terms of effectiveness assessment, adaptability to the real settings where the intervention will be applied, and generalizability for the majority of the target population (Prince, Stewart, Tamsin, & Hotopf, 2003). Systematic reviews comparing both designs' results can be important to combine both types of results when deciding the usefulness of CCBT in the psychosis continuum. Other types of study designs (cross-sectional, longitudinal) aiming at exploring mechanisms linked to the maintenance of difficulties in this population highlight possible intervention targets. Considering the future RCT may be informed by such studies, reviews with systematized and rigorous methods are also necessary for these study designs in order to evaluate the quality of evidence in this regard.

This review aimed at a comprehensive review of a broad scope of interventions comprised within the CCBT category; moreover, we intended to understand the benefits for a dimensional continuum of disorders, therefore including more than one diagnosis. Such a broad scope of terms being analyzed can introduce bias in the generalization of the results. To the present moment only a few RCTs have been published and therefore separate reviews are of diminished utility, nevertheless we encourage this effort in the future.

In spite of the fact that this was not an objective of the present review, the other limitation that can be

pointed out is the absence of quantitative analysis of data. Future reviews should include meta-analysis of data in order to provide a deeper knowledge on total effect sizes of each therapy.

Clinical Implications and Conclusion

The present review intended to shed light on and summarize the existing evidence regarding the contributions of CCBT for the psychosis continuum. The overall evidence on efficacy was promising and although preliminary (and in need of replication) the results obtained with RCTs highlighted the benefits of mindfulness on psychosis and bipolar disorder; acceptance and compassion-based approaches on psychosis; compassion-focused therapy for the psychosis continuum and dialectical behavior therapy on bipolar disorder. Compassion-based and dialectical behavior therapy protocols are the two approaches with less empirical data and therefore the ones more in need of replication and verification.

Although being conceptualized as different therapeutic models the included interventions encompass several common characteristics if analyzed in the light of CCBT framework. The present review highlights the fact that the different CCBT approaches brought similar advantages to patients within the psychosis continuum regarding clinical and social outcomes. These results suggest the usefulness of the different process mechanisms (e.g., mindfulness, acceptance, compassion) postulated by CCBT in this population and, although not included in the present review, mixed protocols (including different mechanisms) may be of interest in future clinical studies (e.g., “Compassion Acceptance and Mindfulness” [CAM] approach by Khoury, Lecomte, Comtois, & Nicole, 2013; “Compassionate, Mindful and Accepting Approach to Psychosis” [CMAP] by Martins et al., 2016).

Given several specific characteristics of diagnosis as complex as Schizophrenia, Schizoaffective disorder, and Bipolar disorder (e.g., rates of diagnosis stability, added difficulties when affective symptoms are present) the fact that this review included all diagnosis in the psychosis continuum may be an advantage to inform clinical practice. This review stresses the need for more research on this matter and points out methodological and clinical design issues future studies should consider. Nevertheless, CCBT approaches seem clinically useful to the psychosis continuum population.

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Appendix A. PUBMED/MEDLINE search strategy

SET	PUBMED/MEDLINE
1	Mindfulness
2	“Acceptance and Commitment Therapy”
3	Acceptance-based
4	Compassion*
5	Metacognitive
6	Dialectic*
7	Sets 1-6 were individually combined with the terms bellow
8	Schizophrenia
9	Schizoaffective
10	Bipolar
11	Psychosis
12	Sets 7-11 were combined with “OR”
13	Sets 7 and 12 were combined with “AND”
14	Set 13 was limited to Clinical Trials, Humans, Adult: 19+ years

Note: All words were used as free text. Individual searches were made for each specific intervention.