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ORIGINAL ARTICLE

The Processes of Cognitive Behavioral Therapy: A Review of Meta-Analyses

Nikolaos Kazantzis[1] · Hoang Kim Luong[1] · Alexsandra S. Usatoff[1] · Tara Impala[1] · Rui Ying Yew[1] · Stefan G. Hofmann[2]

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Abstract
Cognitive Behavioral Therapy (CBT) refers to a treatment approach with strong empirical support for its efficacy for various disorders and populations. The goal of the present review was to provide a comprehensive survey of meta-analyses examining the processes of CBT, namely: treatment processes (cognitive reappraisal, behavioral strategies, emotional regulation, motivation strategies, and psychoeducation) and in-session processes (alliance, goal consensus and collaboration, feedback, group cohesion, and homework). We identified 558 meta-analyses of CBT, and 30 meta-analyses met our inclusion criteria as reviews of process-outcome relations. For treatment processes, the strongest support currently exists for cognitive ($n=8$ meta-analyses) and behavioral strategies ($n=3$ meta-analyses) as change processes in CBT for anxiety disorders and depression. For in-session processes, the strongest support currently exists for the role of the alliance ($n=8$ meta-analyses) and homework assignments ($n=6$ meta-analyses) as predictors of outcome. Overall, the evidence base for process-outcome relations in CBT is just emerging. Additional research is needed to examine the range of treatment processes in various clinical contexts. Moreover, except for a meta-analysis on collaboration, no meta-analytic studies have been reported on CBT-specific elements of the therapeutic relationship, such as collaborative empiricism and Socratic dialogue.

Keywords Cognitive behavioral therapy · Process · Review

Introduction

Cognitive-behavioral therapy (CBT) refers to a treatment approach that is founded on the premises that (a) cognitive processes are implicated in the development and maintenance of psychopathology, especially emotional distress and impaired functioning, while also (b) those cognitive processes are likely to be present during the session, and require the therapist to adapt the intervention in order to best assist the patient. The first application of these ideas to psychotherapy are credited to Beck (1963) and Ellis (1970), in order to explain emotional and behavioral disturbance involved in psychiatric disorders (Hofmann et al. 2012). A range of techniques were devised within Beck's cognitive therapy, including those focused on emotions and behaviors to target maladaptive cognitive structures, or schemas, which contain core beliefs about self, world/others, and the future, and determine automatic thoughts, images, and memories in specific situations (Beck et al. 1979). Historically, the role of in-session processes has been considered necessary, but not sufficient, to facilitate clinical change (Beck et al. 1979; Kazantzis et al. 2017).

The cognitive-behavioral model has been applied to many specific clinical populations, each emphasizing different features of the same core model. A range of treatments have also been developed within the broad classification of cognitive and behavior therapies (Kazantzis et al. 2010) that each place different emphasis on core dimensions in psychopathology and treatment processes, including but not limited to, attention and other processes of cognition (e.g., acceptance, tolerance), cognitive reappraisal (e.g., decentering, defusion), behavior change (e.g., activation, exposure), and emotional dysregulation (Aldao et al. 2010; Hayes and

✉ Nikolaos Kazantzis
Nikolaos.Kazantzis@monash.edu

[1] Cognitive Behavior Therapy Research Unit, School of Psychological Sciences and Monash Institute of Cognitive and Clinical Neurosciences, Monash University, Melbourne 3800, Australia

[2] Department of Psychological and Brain Sciences, Boston University, Boston, USA

Hofmann 2017, 2018, in press; Kazantzis 2018; Klepac et al. 2012). These core processes have led to the establishment of unified models of psychopathology (e.g., Beck and Bredemeier 2016), clarifications of the complex change mechanisms occurring within CBT (Lorenzo-Luaces et al. 2015), as well as unified treatments of anxiety and mood disorders, such as the protocol pioneered by Barlow (Barlow et al. 2017). Contemporary CBT is now an umbrella term for a set of empirically supported psychological interventions targeting specific processes (Hayes and Hofmann 2017, 2018).

The overall goals of treatment are distress reduction and improvement in functioning, and ultimately, enhancement of well-being and quality of life. In order for these treatment outcomes to be achieved, the patient engages with the therapist in a particular style of therapeutic relationship, comprised of generic elements (e.g., alliance, expressed empathy, feedback, expressed positive regard; Zilcha-Mano 2017) and CBT-specific elements (e.g., collaborative-empiricism, Socratic dialogue; Kazantzis et al. 2017), and a particular session structure (e.g., agenda, homework, summary, feedback). Thus, contemporary CBT refers to a family of interventions that include both (a) *in-session processes* that are generic and specific, as well as (b) *core treatment processes* that target core dimensions in psychopathology (Hayes and Hofmann 2017, 2018; Hofmann and Hayes in press). At the same time, in-session processes are also recognized for their role in facilitating meaningful changes in the disorders being treated. For example, empiricism is central to a patient's adoption of the scientific method for understanding their personal experiences (Tee and Kazantzis 2011), and can be embedded in Socratic dialogue for the purpose of cognitive reappraisal, while the adaptation of both empiricism and Socratic elements is ideally based on the conceptualization of the patient's belief system (Kazantzis et al. 2013, in press).

Reviews of meta-analyses of CBT have identified large numbers of quantitative reviews of clinical trials (e.g., 16 studies in Butler et al. 2006; 106 studies in; Hofmann et al. 2012). Examining trends across meta-analyses also overcomes problems that may be present within individual reviews (Baldwin and Del Re 2016). To our knowledge, these were the first reviews of meta-analytic studies examining the efficacy of CBTs for various disorders. Focused reviews of meta-analyses of the literature have continued, such as reviews of trials for anxiety (Olatunji et al. 2010). However, no prior review has specifically searched for meta-analyses involving the treatment processes or in-session processes of CBT.

The American Psychological Association established an Interdivisional Task Force on Evidence-Based Therapy Relationships (Divisions 12 and 29), and on the basis of several meta-analyses, concluded that expressed empathy (Elliott et al. 2011), alliance in individual therapy (Horvath et al. 2011), and collecting structured client feedback (Lambert and Shimokawa 2011) were demonstrably effective elements of the therapeutic relationship across all models of psychotherapy. The present review was designed to provide a comprehensive survey of all contemporary meta-analyses examining the evidence base for CBT processes to date.

Methods

Search Strategy and Study Selection

Studies were identified through an automatic text search of the Cochrane and PsycINFO (via Ovid) databases by combining terms indicative of meta-analytic procedures (*meta-analysis OR quantitative review*), and psychological therapy (*psychotherapy OR psychotherapist OR therapy OR therapist*). Because of the nature of the study, we limited the search to these databases, which primarily include psychological articles. However, we did not limit our search to studies using terms such as "cognitive therapy" or "cognitive-behavioral" because of the variability in terminology used to refer to the range of psychotherapies that are now part of the broad family of CBTs (e.g., acceptance and commitment therapy, emotion-focused/interpersonal cognitive therapy, problem-solving therapy in Kazantzis et al. 2010). In order to identify contemporary studies, we adopted the methodology of other major reviews of meta-analyses (i.e., Hofmann et al. 2012; Olatunji et al. 2010) and only included articles published after 2000 because of the marked advances in psychotherapy process research methodology over the past two decades (see reviews in Kazantzis 2018; Lorenzo-Luaces and DeRubeis 2018).

The search was conducted in September 2017 and identified 4938 studies, of which 15 were duplicates, and 178 were not available in English and were excluded (i.e., using the computer program EndNote, Thomson Reuters EndNote X7®, 2013). The remaining 4,745 articles were then examined to determine if they met the inclusion and exclusion criteria for the present review, namely: (a) the study was a meta-analysis of psychological therapy; (b) focused on process-outcome relations; and (c) involved CBT. (The full list of 558 CBT studies is available from our research unit's website or the corresponding author.) Therefore, studies that did not involve the direct effects of modifying cognitive processes were excluded, even if cognitive measures were included as part of the measurement of treatment outcome (e.g., Harvey and Taylor 2010). Finally, unpublished manuscripts and dissertations were excluded.

The primary investigator (N.K.) provided training in the use of the inclusion and exclusion criteria (a) through (c) and reviewed an equal share of the 4938 studies selected specifically for this study. All study selections were double rated

and any discrepancies were resolved by discussion. The final sample included in this review consisted of 30 meta-analyses as per the selection process in Fig. 1. The number of meta-analyses per year is shown in Fig. 2.

Categorization of Meta-Analyses

Following the methodology of Hofmann et al. (2012), the meta-analyses were categorized into groups to provide the most meaningful examination of processes in CBT, as either (1) treatment process (i.e., modifying cognitive processes, behavioral strategies, emotion regulation, motivational strategies, and psychoeducation based on definitions of "treatment process", see Hayes and Hofmann 2018; Klepac et al. 2012), or (2) in-session process (i.e., alliance, goal consensus and collaboration, feedback, group consensus, and homework, based on commonly accepted definition of "process" as specific behaviors, and interactions of client and therapist that occur within sessions, see Lambert and Hill 1994; Orlinsky et al. 2004). (One meta-analysis [Sánchez-Meca et al. 2010] met criteria for both in-session process and treatment process classification.)

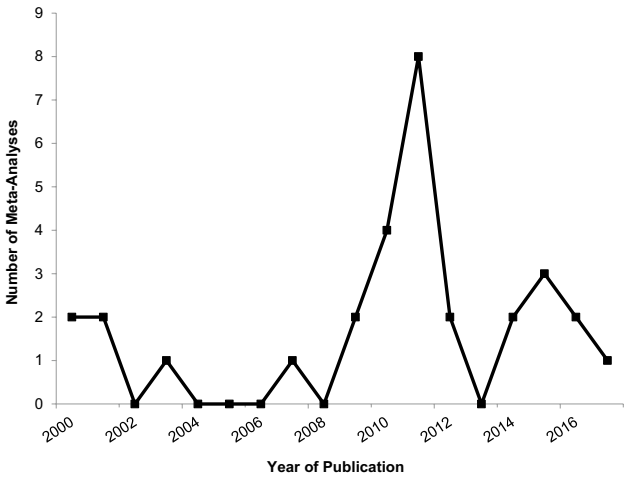

Fig. 2 Number of meta-analyses published by year since 2000 (*Note* that number of studies corresponding to 2017 only covered studies until September of that year)

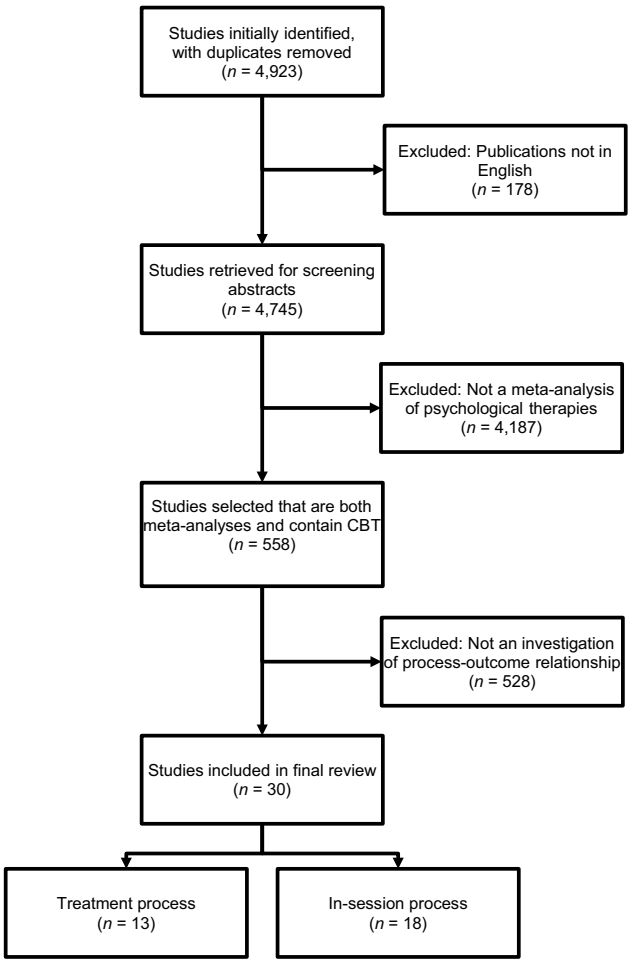

Fig. 1 Flow chart showing systematic search strategy and effect of applying inclusion and exclusion criteria on meta-analytic sample (*Note* One meta-analysis [Sánchez-Meca et al. 2010] met criteria for both in-session process and treatment process classification)

For each treatment and in-session process grouping, data were described qualitatively, considering the findings of all meta-analyses within that group. The 30 meta-analyses identified included a wide variety of studies that employed different design methodologies, and as a result different effect size statistics (Lakens 2013; Olejnik and Algina 2003). Therefore, we followed the procedures employed by Hofmann et al. (2012) and used the consistent summary guides of "small", "medium", and "large" to identify the magnitude of effect size to support our review of the 30 meta-analyses, and included 95% confidence intervals (CIs) where available (Cohen 1988). Summary guides of "small", "medium", and "large" were used to identify the magnitude of effect size as follows: Cohen's *d* (small = 0.2; medium = 0.5; large = 0.8); Hedges' *g* (small = 0.2; medium = 0.5; large = 0.8) and ES *r* (small = 0.1; medium = 0.3; large = 0.5). All data extractions were double-coded and any discrepancies resolved by discussion.

Results

Treatment Processes

Modifying Cognitive Processes (e.g., Reappraisal, Reframing, Restructuring)

Eight meta-analyses examining CBT for anxiety revealed small to large effects in modifying cognitive processes.

Large effects were reported for self-efficacy in panic disorder ($r = 1.41$, 95% CI [1.21, 1.62] by Fentz et al. 2014), and large effects were also reported for cognitive techniques in CBT for social phobia ($d = 0.76$, 95% CI [0.38, 1.15] in Gil et al. 2001). Large effect sizes were reported in modifying trauma related cognitions in PTSD ($g = 1.21$, 95% CI [0.69, 1.72] in Diehle et al. 2014). In anxiety disorders among youth, medium effects were obtained in modifying cognitive processes ($d = 0.50$, 95% CI [0.01, 1.77] in Chu and Harrison 2007). In addition, Diehle et al. reported a small to medium effect size favoring CBT with cognitive restructuring, as compared to CBT with exposure but no cognitive restructuring ($g = 0.27$, 95% CI [0.03, 0.50]). The role of a specific imagery rehearsal intervention in modifying PTSD processes produced a large effect ($d = 0.59$, 95% CI [0.15, 1.02] on nightmare frequency in Casement and Swanson 2012), problem solving produced large effects in anxiety and depression ($g = 1.14$, 95% CI [0.92, 1.37] in Garcia-Escalera et al. 2016), but small to moderate rebound effects were reported for thought suppression ($d = 0.30$, 95% CI [0.13, 0.48] in Abramowitz et al. 2001).

In CBT for depression, small to medium effect sizes were obtained in modifying cognitive processes ($d = 0.35$, 95% CI [−0.64, 1.36] in Chu and Harrison 2007; g = 0.50; 95% CI [0.38, 0.62] in; Cristea et al. 2015). Cristea at al. also reported a small effect for CBT on dysfunctional thinking in comparisons with other therapies for depression ($g = 0.17$, 95% CI [−0.05 to 0.39]).

Behavioral Strategies (e.g., Activity Scheduling, Activation, Exposure, Contingency Management)

Three meta-analyses reported the effects of behavioral processes in CBT, including small to large effects for exposure and response prevention for anxiety disorders ($d = 0.34$, 95% CI [0.05, 0.64] for panic disorder in Sánchez-Meca et al. 2010; d = 1.93, 95% CI [1.53, 2.34] for OCD in Ale, McCarthy et al. 2015). In the meta-analysis reported by Chu and Harrison (2007), a large effect size for behavioral processes in CBT for anxiety ($d = 1.02$, 95% CI [0.002–3.59]) was not replicated in CBT for depression, where small effect sizes were reported for behavioral processes ($d = 0.01$, 95% CI [0.38–0.39]) and behavioral coping processes ($d = 0.05$, 95% CI [0.03–0.14]).

Emotion Regulation

One meta-analysis reported medium effect size for reducing emotional distress in organizational settings ($d = 0.72$, 95% CI [−1.2, −0.52] in David and Szamoskozi 2011).

Motivational Strategies

There was evidence for small specific effects for outcome expectations in CBT ($r = .12$, 95% CI [0.10, 0.15] in Constantino et al. 2011).

Psychoeducation

One meta-analysis examined the specific effects of CBT intervention focused on beliefs about treatment/disorders, or psychoeducation. Bond and Anderson (2015) found that compared to placebo or treatment as usual, psychoeducation was effective at preventing overall relapse in bipolar disorder (OR = 1.98, 95% CI [1.09, 3.58], $p = .024$).

In-Session Processes

Alliance

Eight meta-analyses examined the evidence for alliance-outcome relations and revealed small to medium effect sizes for these correlational relationships ($r = .29$, SE = 0.01 in Fluckiger et al. 2012; d = 0.55, 95% CI [0.16, 0.28] in; Sharf et al. 2010; r = .22 in; Martin et al. 2000), for children and adolescents ($r = .14$, 95% CI [0.10, 0.18] in McLeod 2011; r = .29, 95% CI [0.21, 0.37] in; Murphy and Hutton 2017; r = .22, 95% CI [0.16, 0.28] in; Shirk et al. 2011), and couples and family therapy ($r = .26$, 95% CI [0.33, 0.20] in Friedlander et al. 2011). Other studies indicated that effect size estimates were moderated by the specific alliance measure used (i.e., Martin et al.), and if the researchers had a specific interest in alliance (i.e., Fluckiger et al.). Another meta-analysis found small effects in the relationship between alliance rupture repair episodes and treatment outcome ($r = .24$, 95% CI [0.09, 0.39] in Safran et al. 2011).

Goal Consensus and Collaboration

There was one meta-analysis that examined correlational relations of the goal consensus and collaboration portion of the alliance. Notwithstanding the published critique of studies classified within this meta-analysis (Kazantzis et al. 2015), goal consensus-outcome ($r = .34$, 95% CI [0.23, 0.45]) and collaboration-outcome ($r = .33$, 95% CI [0.25, 0.42]) relations were in the medium effects size range (Tryon and Winograd 2011).

Feedback

There were two meta-analyses examining the effect of providing therapists and/or patients with feedback about patient symptom outcomes. In both studies, small effect sizes were found indicating that CBT outcomes could be

enhanced by therapist and/or patients receiving feedback in specialist mental health settings ($d = 0.10$, 95% CI [0.01, 0.19] in Knaup et al. 2009), and by therapists receiving feedback ($r = .23$, 95% CI [0.15, 0.31]; $r = .25$, 95% CI [0.15, 0.34]; $r = .25$, 95% CI [0.15, 0.34]; $r = .33$, 95% CI [0.25, 0.40] depending on the system in Lambert and Shimokawa 2011).

Group Cohesion

There was one meta-analysis that examined the relationship between cohesion and outcome in group therapy, with a small effect size ($r = .25$, 95% CI [0.17, 0.32] in Burlingame et al. 2011) reported to be significantly moderated by patient age ($Q = 214.92$, $df = 1$, $p < .05$), therapist theoretical orientation ($Q = 23.56$, $df = 9$, $p < .05$), treatment length ($Q = 6.87$, $df = 2$, $p < .05$), group size ($Q = 4.88$, $df = 2$, $p < .05$), and inclusion of cohesion-specific interventions ($Q = 12.03$, $df = 4$, $p < .05$).

Homework

Evidence from six meta-analyses existed for both causal and correlational homework effects in depression, anxiety and a range of other client problems, with medium effect sizes demonstrated between CBT conditions with and without homework ($r = .36$, 95% CI [0.23, 0.48] in Kazantzis et al. 2000, 2010; and d = 0.48, 95% CI [0.25, 0.71] for studies with adequate control conditions in), and small effects in aggregations of correlational homework compliance-outcome relations ($r = .22$, 95% CI [0.22, 0.22] in Kazantzis et al. 2000, 2016; g = 0.79, 95% CI [0.57, 1.02] at post-treatment in; and r = .26, 95% CI [0.19, 0.33] in; Mausbach et al. 2010). (Meta-analyses by Kazantzis et al. [2010] and Mausbach et al. presented updates to the Kazantzis et al. [2000] meta-analysis.) These data favor the inclusion of homework in CBT and higher quantities of homework compliance as enhancing outcomes, but there has been inconsistency in determining whether data source and patient symptom severity serve as meta-analytic moderators (i.e., Kazantzis et al. 2000, 2016; Mausbach et al. 2010). In addition, the meta-analysis by Kazantzis et al. (2016) found comparable homework quality-outcome relations ($g = 1.07$, 95% CI [0.06, 2.08] at post-treatment). Furthermore, homework has been examined as a meta-analytic moderator of CBT effects in two meta-analyses, where the inclusion of homework in interventions produced larger effect sizes than those that did not ($d = 1.18$, 95% CI [1.00, 1.36]; $d = 0.57$, 95% CI [0.23, 0.91], respectively in Sánchez-Meca et al. 2010; and g = 1.17, 95% CI [0.94, 1.40]; $g = 0.67$, 95% CI [0.44, 0.90], respectively in; Taylor and Harvey 2009).

Discussion

CBT is a form of psychotherapy with established efficacy from a substantial number of meta-analyses of clinical trials. In the present review of meta-analyses, we sought to examine the evidence for its treatment and in-session processes. We identified 13 meta-analyses that evaluated treatment process relations with outcome, including modifying cognitive processes, behavioral strategies, emotion regulation, motivation strategies, and psychoeducation; and a further 18 meta-analyses that evaluated the role of in-session process relations with outcome, including the alliance, goal consensus and collaboration, feedback, group cohesion, and homework. There was a relative paucity of research on the treatment and in-session processes of CBT, since by comparison, 269 meta-analyses were identified examining the overall efficacy of CBT in Hofmann et al. (2012). However, the present review covered treatment and in-session processes and focused on studies published after 2010, which was the last year of coverage in the APA Interdivisional Task Force on Evidence-Based Therapy Relationships reviews (Elliott et al. 2011; Horvath et al. 2011; Lambert and Shimokawa 2011), making the present review the most comprehensive and contemporary of processes in CBT to date.

For *modifying cognitive processes*, the effect sizes ranged from small to large, depending on the type of cognitive process being targeted and the specific intervention being used. Large effect sizes were reported for modifying cognitive processes in panic and social phobia, but medium to large effects were obtained when internalizing, self-concept, and disorder specific cognitions were targeted in PTSD. In addition, a small to medium effect size favoring the inclusion of cognitive restructuring was obtained in PTSD. Otherwise, the evidence was mixed for specific cognitive interventions, with some studies suggesting large effect sizes for specific interventions of imagery rehearsal, problem solving, but rebound effects for thought stopping. In depression, the effect sizes ranged from small to large for modifying cognitive processes and reductions in dysfunctional thinking. However, more research on the modification of cognitive processes is needed. For example, there are limited data to form the basis of meta-analyses on the effects of modification of core cognitive beliefs/tacit knowledge structures and values clarification across the emotional disorders (see review in Klepac et al. 2012; Hayes and Hofmann 2018).

For *behavioral strategies*, the effect sizes ranged from small to large for exposure and response prevention in CBT for anxiety disorders, and in panic and OCD treatment, respectively. Small effect sizes were reported for behavioral processes and behavioral coping in depression

treatment. However, more research is needed due to a scarcity of studies that differentiate the range of behavioral processes in CBT for anxiety, depression, and other disorders. This appeared to be a promising area for CBT given that similar approach-avoidance patterns have been implicated as risk factors to the occurrence of these disorders (Hofmann 2011), and increased context engagement (i.e., through activation in depression and graded exposure in anxiety) form the basis for intervention in unified treatment protocols (Barlow et al. 2017).

The meta-analytic literature on the efficacy of CBT in supporting *emotion regulation* was limited to the application of CBT in an organizational context (i.e., intervention programs conducted in occupational settings, David and Szamoskozi 2011).While these data were encouraging, they have limited generalizability. More research on the specific roles of distress tolerance and emotion regulation within CBT across the emotional disorders is needed. Furthermore, there is a need to differentiate the effects of specific techniques focused on emotion regulation processes from other CBT techniques, such as cognitive re-appraisal that also represent emotion regulation strategies. The effects of managing *outcome expectations* and providing information about disorders and treatment as *psychoeducation* produced consistently small effect sizes.

For *alliance*, small to medium effect sizes were reported, depending on the clinical population in which relations with outcome were examined. Based on the available evidence, the contribution of the alliance appears to depend on the age group of the clinical population or the modality of CBT. There was evidence to suggest that the specific alliance measure could influence relations with outcome, and that there is a research allegiance effect (Fluckiger et al. 2012). Similar medium sized relations with outcome were reported for *goal consensus and collaboration* across patient population. However, the studies showed considerable variation in the collaboration measure used, and these effects may not be solely due to collaboration (Kazantzis et al. 2015). Similarly, several concerns reoccurred across meta-analytic aggregations of alliance, goal consensus, and collaboration, namely: (1) a paucity of studies covering both generic elements of the therapeutic relationship (such as the patient's relationship history, beliefs and assumptions, and interpersonal strategies, see Zilcha-Mano 2017); (2) a paucity of studies examining those relational elements that are specific to CBT (such as collaborative-empiricism and Socratic dialogue, see Kazantzis et al. 2017); and (3) clustering of CBT with other therapy models to the extent that the specific process effects in CBT, whether inferior or superior to process-outcome relations in other modalities, were unable to be determined.

For *feedback* to clinicians on patient symptom status, small effect sizes were reported. However, although a greater number of well-controlled studies are needed to more adequately determine the specific efficacy of seeking symptom assessments in comparison to other forms of structured patient feedback during therapy (e.g., developing trust and other bond elements). Similarly, *group cohesion* demonstrated small effects in relation with outcome.

The efficacy for *homework assignments* was consistently strong, despite differences in the focus of the research question, namely: (1) whether there were casual effects of including homework in sessions; or (2) whether the focus was correlational adherence-outcome relations. Medium effect sizes were reported for causal relations, and small effect sizes for correlational relations. However, there was variation in findings depending on the patient population, setting, and homework measure being employed. More research is needed to examine the specific therapist behaviors that contribute to different levels of quantity and quality of adherence.

Limitations

This review was focused on treatment processes and in-session processes and did not specifically aim to cover meta-analyses of the efficacy of CBT. Other meta-analyses examined core dimensions in psychopathology, such as emotion regulation, or did not examine relations with outcomes (e.g., Aldao et al. 2010). Reviews concentrating on effects of specific techniques without considering processes (e.g., Aderka 2009 on video feedback), processes outside of CBT (Ho and Lee 2012 on homework), other therapy factors such as attrition (e.g., Hetzel-Riggin et al. 2007), or the involvement (Podina et al. 2016), allegiance (Falkenstrom et al. 2013), experience (Hetzel-Riggin et al. 2007; Johnsen and Friborg 2015; Sawyer et al. 2015), or competence of the therapist (Webb et al. 2010) were similarly excluded according to our criteria as they did not examine relations involving CBT processes. However, in the Webb et al. meta-analysis, it was noted that in studies where the alliance was controlled, the competence-outcome effect size decreased significantly, highlighting the potential for mediation. Similarly, the effect of outcome expectations was influenced by the alliance (Constantino et al. 2011).

A further issue that should be considered is that a range of research methodologies were included in meta-analyses. Some controlled the relationship between various treatment strategies and outcomes where the strategy was the key independent variable. For example, studies that varied the use of homework assignments were aggregated, and then in a separate analysis, relations between the use of these assignments and outcomes were also examined (see Kazantzis et al. 2000, 2010). In contrast, other studies allowed process variables to vary naturally (e.g., goal consensus and collaboration) and then average process-outcome relations were estimated. In their review, Webb et al. (2010) called

for greater use of experimental methodology in the examination of in-session processes (i.e., systematically varying treatment conditions) rather than a reliance on correlational designs. At the same time, important advances are being made in the study of multiple in-session processes that converge in predicting symptom changes (Lorenzo-Luaces and DeRubeis 2018; Sauer-Zavala et al. 2018; Zilcha-Mano et al. 2018), including investigations of the temporal order of change, and interactions between in-session processes in moderating alliance-outcome relations. The number of studies in the present review preclude formal assessment, but future reviews require an examination of differences in research design. Ideally, future reviews would also employ coding of study quality.

While significant evidence has been gained for some treatment and in-session processes in CBT, it is clear that there is a compelling need for further research. Meta-analyses of flexible case-formulation driven unified protocols (e.g., Barlow et al. 2017) also hold promise for more detailed examinations of treatment process (Hayes and Hofmann 2017, 2018; Newby et al. 2015). Indeed, it has been argued that focusing on the processes of CBT will guide the future of intervention science (Hofmann and Hayes in press; Kazantzis 2018).

Compliance with Ethical Standards

Conflict of Interest Nikolaos Kazantzis, Hoang Kim Luong, Alexsandra S. Usatoff, Tara Impala, Rui Ying Yew, and Stefan G. Hofmann declare that they have no conflicts of interests to disclose in this submitted work to *Cognitive Therapy and Research*.

Ethical Approval The attribution of authorship on this manuscript has also been carefully considered and is being made in a manner that is consistent with ethical research practice. An authorship agreement outlining each author's scientific contributions, prepared by Monash University's legal office, was signed in determining the author listing.

Human and Animal Rights and Informed Consent This article is a systematic review of previously published research and therefore does not contain any research with human participants performed by any of the authors. Sourcing informed consent from participants was not required as there were no research participants.

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*Denotes inclusion in the review of meta-analyses

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