



CLINICAL PSYCHOLOGY IN EUROPE

The Official Academic Journal of the
European Association of Clinical Psychology
and Psychological Treatment

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Embracing Computational Approaches Can Stimulate Clinical Psychology Research

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Clinical psychology is predominantly a “verbal” science: we derive most clinically useful information from what people say and talking is a critical means in the preferred unit of intervention: person-to-person interaction. Psychologists often tend to believe that numbers are a poor means of capturing and representing what goes on in the individual’s mind and sometimes consider attempts to do so as naïve, if not offensive, to the essence of human nature and existence. One of the arguments advanced cites “complexity”: the human mind is simply too rich and complex to reduce it to numbers. Interestingly, complexity in other sciences and clinical specialties is often cited as one of the main reasons to use computing and to develop mathematical models and apply simulations. Should clinical psychology consider going down this path?

As a scientific endeavor, clinical psychology is (and should be) rooted in empirical data and validated theoretical models that allow prediction. Indeed, in a broad sense, both diagnostic and therapeutic steps (implicitly) involve a probabilistic prediction about future behavior. One way to validate models is to carry out experiments. However, reality in experiments is artificially reduced and controlled in order to test the effect of one or only a small set of independent (manipulated) variables on some variable of interest. The benefit is that they allow us to detect causal relationships and develop heuristics to understand behavior. This is why experiments should be simple: our human mind can hardly grasp a 2-way interaction, let alone a 3- or 4-way interaction¹. However, since multiple higher order interactions and recursive effects (effects feed back on causes) are the rule in life, experiments do not allow us to predict actual behavior in a real context.

1) Courtesy for this statement to my old professor of statistics, OVdB



This is no different to natural sciences: Just like experimentally investigating the relationship between pressure, temperature and volume of a gas is important to eventually understand weather systems, the equations generated in experiments will not enable us to predict the weather across the next few days. The latter implies more complicated computational models with deterministic and stochastic variables in which lab-based equations act as building blocks that are fed with initial data and that are continuously updated as new information unfolds. Eventually, our human mind may not be able to fully grasp all the higher-order interactions, but nevertheless we may become quite good at predicting the weather.

Computational science as an interdisciplinary field develops concepts, methods and tools to mathematically model and analyze complex problems and systems. It is, by itself, rather content-free. Computational approaches have been successfully used in neurosciences for a long time (Sejnowski, Koch, & Churchland, 1988; Huys, Maia, & Frank, 2016) and have been promoted in psychiatry (Friston, Stephan, Montague, & Dolan, 2014; Petzschner, 2017) and psychosomatics (Petzschner, Weber, Gard, & Stephan, 2017). Computational approaches are advocated, for example, to bridge the gap between neural pattern activity and behavioral data (Stephan & Mathys, 2014), to improve (data-driven) phenotyping of patients (Patzelt, Hartley, & Gershman, 2018), and to develop, test and improve theoretical explanatory models through simulation (Lehnen et al., submitted). A recent first attempt at the latter approach, combining mathematical formulation of an existing explanatory model with experiments, has proven useful to deepen our understanding of the complex mechanisms underlying persistent physical symptoms (Lehnen, Schröder, Henningsen, Glasauer, & Ramaioli, 2019).

How relevant is this for clinical psychology in practice? Several important new developments will probably force us to go in this direction. First, ecological momentary assessments will undoubtedly become increasingly standard to measure self-reported variables of cognitive and affective processes and social interactions while they are occurring. Second, it will increasingly become standard to concurrently collect psychophysiological and behavioral data through unobtrusive body sensors. Both sources of information in real life will generate large multilevel sets of data per person in multiple conditions. Since clinical psychology is primarily concerned with care for an individual patient in a particular context, this is exactly the kind of data that is relevant for personalized care. Individualized functions comprising deterministic and stochastic variables that model observations registered across multiple occasions in multiple relevant contexts actually represent a theory of an individual that may act as an empirically based tool to expect/predict (and understand) behavior. In addition, such functions can be used to assess step by step change over time in a therapeutic process. Aggregation of single-case data may enable us to generalize and develop data-driven models and theories and/or to test and refine existing theoretical models. Such an approach, which has already been successfully applied in other clinical specialties (for a recent example see Glasauer, Dieterich, & Brandt, 2018),

turns the current situation upside down: rather than using heuristics that are based on experiments to intuitively predict/understand behavior of an individual patients in a particular context, the reverse sequence might result in quite different models that, for example, attribute much more weight to contextual variables. Obviously, this may require clinical psychologists to be trained in a completely different way, as well as may require much more interdisciplinary collaboration.

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A Hot-Cold Cognitive Model of Depression: Integrating the Neuropsychological Approach Into the Cognitive Theory Framework

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Abstract

Background: In the 50 years following Beck's cognitive theory, empirical research has consistently supported the role of dysfunctional, 'hot' cognition in the onset and maintenance of major depressive disorder. Compromised 'cold' cognition in attention, memory, and executive control abilities, independent of the affective state, has attracted much clinical interest for its role throughout the course of illness and into remission. We propose integrating cold cognition into Beck's cognitive theory framework to account for the complementary roles of both hot and cold cognition in depression onset and maintenance.

Method: A critical review of cognitive research was conducted to inform an integrated hot-cold cognitive model of depression.

Results: Cold cognitive deficits likely act as a gateway to facilitate the activation and expression of the hot cognitive biases through a weakened ability to attend, retrieve, and critically assess information. Cold deficits become exacerbated by the negative mood state, essentially 'becoming hot', lending to maladaptive emotion regulation through ruminative processes. Depleted cognitive resources contribute to the manifestation of further deficit in problem-solving ability in everyday life, which in itself, may act as a stressor for the onset of recurrent episodes, perpetuating the depressive cycle.

Conclusion: We discuss the interaction between hot and cold cognition within the cognitive theory framework and the potential of complementary hot-cold pathways to elucidate novel means of prevention and treatment for depression.



Keywords

cognition, cognitive behavioural therapy, cognitive control, cognitive dysfunction, cognitive training, depression, emotion regulation

Highlights

- Dysfunction in hot (emotion-dependent) and cold (emotion-independent) cognition has been demonstrated in depression, but psychological treatment has largely focused on hot cognition only.
- Hot and cold cognition are complementary processes throughout the activation and maintenance of depressive schemas and biases, necessitating the consideration of both hot and cold cognitive aspects to disrupt the depressive cycle.
- The proposed hot-cold cognitive model shows promise to stimulate new research avenues for the prevention and treatment of depression.

Major depressive disorder (MDD) is debilitating, usually chronic in nature, and widely prevalent, affecting approximately 300 million individuals at any given time (World Health Organization [WHO], 2018). As the likelihood of recurrence and relapse remain high (Boland & Keller, 2009), the need to consider novel treatment strategies and adapt current treatments for MDD is mounting. An examination of the potential mechanisms underlying the central features of MDD may help inform initiatives to optimise treatment outcomes.

Cognitive dysfunction is an important diagnostic feature of MDD. It is best conceptualised as two interacting systems of cold and hot cognition (Roiser & Sahakian, 2013). Cold cognition refers to information processing that occurs independent of any emotional influence. Such cold cognitive functions are typically assessed using neuropsychological test batteries and include measures of the ability to memorise and retain new information, divide/shift attention between tasks, and make/follow an organised plan in the context of non-affective, *neutral* stimuli (i.e. no intentional positively or negatively valenced material is provided during the test). Cold cognitive dysfunction has been demonstrated throughout the course of MDD, with broad deficits observed across attention, memory, and executive function measures (Rock, Roiser, Riedel, & Blackwell, 2014; Snyder, 2013). Meta-analytical evidence show such deficits to be present from the first episode (Ahern & Semkovska, 2017), while research also suggests a degree of persistence in some cognitive domains beyond the restoration of mood (Semkovska et al., 2019). On the other hand, hot cognition is reactionary to the presence of *emotional* stimuli (e.g. facial expression, affective words, music), or may be a response to feedback that produces an emotional state (e.g. disappointment). For example, individuals with MDD have demonstrated better memory recall for negative stimuli in comparison to healthy controls, sug-

gesting that MDD has a distinct hot cognitive profile characterised by mood-congruent biases in information processing and memory (Gaddy & Ingram, 2014). A particular style of perseverative, negative thinking, referred to as rumination (Nolen-Hoeksema, 1991), also largely contributes to the hot cognitive profile characteristic of MDD. This is considered a maladaptive emotion regulation strategy that serves to maintain the negative mood state.

Cold cognitive dysfunction is an area of increased clinical research focus, not only because it can be considered a biomarker for vulnerability (Allott, Fisher, Amminger, Goodall, & Hetrick, 2016), but also because it has been shown to predict poor treatment response (Groves, Douglas, & Porter, 2018), and impede functional recovery from MDD (Bortolato et al., 2016). Accumulating literature suggests that the cold cognitive dysfunction associated with MDD drives the negative consequences for everyday life and economic costs, over and above the influence of mood symptoms (Buist-Bouwman et al., 2008). Cold cognitive abilities have also been identified as the single best longitudinal predictor of socio-occupational functioning among young psychiatric outpatients (Lee et al., 2013). Consequently, cold cognition has been increasingly recommended by clinical research as an essential therapeutic target to ensure functional recovery following a depressive episode (e.g. Bortolato et al., 2016). Antidepressant treatment for MDD has demonstrated efficacy on both the affective (mood state) as well as the cold cognitive aspects of depression, most notably among executive functions (e.g. Baune & Renger, 2014). While improvements have been observed in certain cold cognitive abilities, not all improve at a similar rate; persistent deficits have been noted across attention, verbal memory, response inhibition, decision speed, and information processing in up to 95% of individual cases (Shilyansky et al., 2016). Although the pro-cognitive effect of antidepressants may not be consistently demonstrated, cold cognition at the very least has been recognised as a potential therapeutic target within the biological approach to MDD treatment. The psychological approach has largely been informed by Beck's cognitive model, thus establishing a focus on hot cognition. Beck conceptualised cognition during MDD as rigid negative schemas and dysfunctional attitudes about the self, the world, and the future. Such problematic schemas and attitudes were theorised to contribute to negative automatic thoughts and biases in attention, information processing, and memory (Beck, 2008). These hot cognitive features interacted, steering the onset and maintenance of MDD. Beck's cognitive model has been central to our understanding and treatment of MDD for the past 50 years. Nevertheless, it has also contributed to an under-emphasis of the role of cold cognitive abilities (Knight, Aboustate, & Baune, 2018), some of which have been outlined in the DSM diagnostic criteria for MDD, e.g. diminished ability to think or concentrate, and indecisiveness (American Psychiatric Association, 2013). Cognitive behavioural therapy (CBT), which is informed by Beck's cognitive model, is considered the gold standard approach for the psychological treatment of MDD. Interestingly, the effect of psychotherapies such as CBT on cold cognition is not well explored (e.g.

Porter et al., 2016) as their recognised efficacy is based on the successful treatment of the hot dysfunctional cognitions. Considering patient preference for psychotherapy relative to pharmacological treatment is over threefold (McHugh, Whitton, Peckham, Welge, & Otto, 2013), novel treatment adjuncts should be explored so that they can guide and ultimately help integrate cognitive remediation strategies into existing psychological treatment.

Contemporary theoretical approaches have brought focus to cognitive control dysfunction during the characteristic depressive biases to account for symptom onset and maintenance (De Raedt & Koster, 2010; Gotlib & Joormann, 2010; Joormann & Vanderlind, 2014). Such approaches propose that MDD is accounted for by an attenuated ability to inhibit the processing of negative material in working memory along with deficits in removing negative material and updating the contents of working memory. Nevertheless, the role of cognitive dysfunction, in both hot and cold forms, has not been formally integrated into the classical cognitive model of MDD proposed by Beck. Typically, hot and cold cognition have been investigated separately within the MDD literature, but we propose integrating hot and cold cognition considering their close alignment and potential complimentary processes as a cognitive mechanism by which negative schemas and cognitive biases contribute to depressive symptoms. The pivotal role that cold cognitive abilities may play in onset, throughout the depressive mood state, and into remission require attention in psychological, theoretical models to account for the dynamic interplay between cognition and emotion. This advancement is necessary to inform treatment strategies that can potentially optimise functional recovery from MDD. Hence, the aim of this paper is to propose a reframing of Beck's cognitive model to integrate a narrative on the role of cold cognition in the development, maintenance, and recovery from MDD. In subsequent sections, we will critically discuss the interaction between hot and cold cognition, followed by a review of the relevance of cold cognition for the cognitive model. Thereafter, we will address the dynamic, interactive processes of hot and cold cognition with reference to each of the cognitive biases in attention, information processing, and memory recall, as outlined by Beck. Finally, we will present our integrated hot-cold cognitive model of depression.

Hot and Cold Cognition

MDD is often conceptualised within an emotion dysregulation framework; the individual regulates emotion less effectively as a result of a compromised interaction between emotional and cognitive processes, outlining an emotion-cognition link in MDD (Gotlib & Joormann, 2010). Specifically, cognition has been proposed as the means by which emotion is regulated (Joormann & Vanderlind, 2014). Cognitive biases affect emotion regulation by drawing attention to emotion-eliciting details or appraisals that are congruent with the negative mood. In turn, deficits in executive functions increase the likelihood of

using maladaptive regulatory strategies such as rumination, which only serve to intensify and prolong the experience of negative mood (Joormann, 2010; Koster, De Lissnyder, Derakshan, & De Raedt, 2011). Executive functions, also referred to as cognitive control within the cognitive neurosciences, regulate information processing and behaviour to align with current goals when faced with interference from task-irrelevant stimuli or automatic responses (Friedman & Miyake, 2017). The processes involved in cognitive control are typically operationalised into shifting (switching between tasks, i.e. cognitive flexibility), inhibition (overriding a prepotent response), and updating (monitoring the contents of working memory; Miyake et al., 2000). An accumulating body of research over the past decade has supported the role of cognitive control dysfunction in MDD for symptom onset and maintenance, but this has largely been investigated in relation to the emotional state. As hot cognition accounts for information processing and reasoning that is influenced by emotional state, weakened cognitive control during MDD is probably best conceptualised as a dysfunctional hot cognition within current theoretical accounts (De Raedt & Koster, 2010; Joormann, 2010; Joormann & Vanderlind, 2014). Consistent with this, Gotlib and Joormann (2010) have acknowledged that cognitive control deficits appear to manifest following affective interference and are particularly salient during the processing of negative material, rather than representing a more generalised deficit in cognitive functioning. The complexities of the emotion-cognition link could, nevertheless, benefit from consideration outside of the emotional context by incorporating cold cognition into the explanatory framework. In accordance with this, recent empirical research has suggested that non-affective cognitive control training (Paced Auditory Serial Addition Task, PASAT; Gronwall, 1977) can successfully alleviate residual depressive symptoms among a remitted MDD sample, demonstrating that *cold* cognitive control abilities may have preventative potential for recurrent MDD episodes (Hoorelbeke & Koster, 2017). This could result from a disruption to the dynamic interaction between hot and cold cognition following the cognitive training, an interaction which may be necessary for episode onset. Importantly, *cold* cognitive control deficits are observed during the acute depressive state, with meta-analytical findings from 113 studies providing robust support for deficits in shifting, inhibition, and updating of a moderate effect size among individuals with MDD, relative to healthy controls (Snyder, 2013). Consideration of cold cognition, and particularly the interaction between hot and cold cognitive processes, may be integral to elucidating the mechanisms by which cognition helps regulate emotion. In a critical review of cognitive control theory and research, Grahek, Everaert, Krebs, and Koster (2018) reinforced the importance of considering interactive processes in dysfunctional cognition during depression, with particular acknowledgement of the potential role that hot components (via motivation) may play in cognitive control abilities.

Although hot and cold cognition have been presented as somewhat separate processes, their interaction is central to the maintenance of the depressive cycle. Indeed, per-

performances on cold cognitive tasks are thought to be partially explained in terms of an altered hot cognition generated by task feedback. As such, [Beats, Sahakian, and Levy \(1996\)](#) demonstrated that negative feedback on a non-affective, neutral task can stimulate a ruminative thinking style on performance or a ‘catastrophic response to perceived failure’ that, in turn, impairs subsequent performance; intrusion effects generated by negative feedback can slow performance or lead to attention/distraction errors. Furthermore, such feedback can lessen motivation to proceed. In this way, cold cognition can ‘become hot’, a hypothesis that has been supported by several studies ([Murphy, Michael, Robbins, & Sahakian, 2003](#); [Pizzagalli, Peccoralo, Davidson, & Cohen, 2006](#)), although such results are not always consistently replicated. As a notable exception to the above hypothesis, [Douglas and Porter \(2009\)](#) showed that individuals with MDD can also improve their performance after perceived failure, albeit to a lesser extent relative to healthy controls. Additionally, [Aker, Bø, Harmer, Stiles, and Landrø \(2016\)](#) demonstrated that remitted MDD individuals did not differ from healthy controls in post-error speed of adjustment on two cold cognition tasks assessing inhibition abilities, despite a slower performance by MDD individuals on one of these tasks. This suggests that the error-feedback provided during task performance did not exacerbate cold deficits by means of hot interference via ruminative processes or depleted motivation. Throughout the literature, deficits in cold cognition are demonstrated even when *no feedback* on performance is available, suggesting that a negative, hot feedback loop is not necessarily generated during cold cognitive tasks that can explain subsequent performance ([Roiser & Sahakian, 2013](#)).

The distinction between hot and cold cognition is somewhat arbitrary as both mutually influence each other, but it does direct attention to the fact that MDD is associated with compromised function in emotion-dependent (hot) and emotion-independent (cold) cognitive processes. The association between mood and cognitive deficits during MDD has stimulated much critical debate in an attempt to determine whether cognitive deficits (a) are a vulnerability *trait* that precede and contribute to the onset of a depressive episode, remaining stable throughout into periods of symptomatic remission (b) represent a *state* by-product of depressive mood, alleviating with mood restoration or (c) develop during the depressive episode and persist as a residual *scar* (for further detail on trait, state, and scar patterns of cognitive deficit, see [Ahern & Semkovska, 2017](#)). It is likely that each of the above is relevant during the course of MDD from acute phases through to remission and relapse. Although research interest on the role of cold cognition in the course of MDD is relatively recent, it represents an area ripe for further inquiry considering the complimentary processes of cold cognition with the well-recognised hot cognitive processes. A better understanding of the role of these cold cognitive abilities within the cognitive theory framework may elucidate novel means of preventative and treatment strategies.

Relevance of Cold Cognition for the Cognitive Model

Beck's cognitive model has outlined the central role of hot cognitive biases to the onset, maintenance, and remission of MDD. Such biases are proposed to result from negative schemas that remain latent until activated by a stressful life event resulting in a change in information processing in a schema-congruent manner (Beck, 2008). However, not all cases of MDD onset are preceded by a stressful life event (Hammen, 2005), suggesting that hot cognitive biases may indeed be a correlate of depressive symptoms rather than an initiating event for onset. Ample cross-sectional research confirms the interaction between seemingly cold cognitive deficits and mood throughout the course of MDD (e.g. Rock et al., 2014; Snyder, 2013), albeit not explicitly measuring the potential explanatory role of hot cognition such as cognitive biases. Nevertheless, it has been suggested that cold deficits precede, and therefore may facilitate, the cascade of hot cognitive biases that occur with MDD onset by compromising the ability to attend, remember, and critically assess information (Knight et al., 2018). Consequently, the individual becomes susceptible to negative information processing. De Raedt and Koster (2010) proposed that weakened cognitive processes, particularly in attention, act as a gateway for negative thoughts and biases. As such, deficits in inhibition contribute to a repetitive cycle of negative thoughts, while deficits in shifting exacerbate the ability to move away from or disengage attention from these thoughts, resulting in a maintenance of depressive mood. Deficient cognitive control of negative information is considered central to the maintenance of hot cognitions and depressive mood, but this does not explain why individuals with MDD often continue to demonstrate compromised functioning when mood has alleviated. Cold cognitive deficits may be an important consideration to explain the continued compromised functioning during remission, but also may help elucidate a better understanding of how the cognitive and affective components of MDD interact to initiate and sustain depressive symptoms. The conceptual framework proposed by De Raedt and Koster (2010) integrated biological and cognitive factors to outline the potential working mechanisms involved in vulnerability for recurrent MDD episodes. Hot attentional deficit, where attention is diverted to and maintained on negative material, was a central component of the framework to account for sustained negative affect through interaction with the activated schemas. Although De Raedt and Koster (2010) acknowledged cold deficits in attention, the hot attentional component was considered of particular interest due to its depression-specificity and that it could be explained from a biological perspective (i.e. as a consequence of reduced cognitive control exerted by the dorsolateral prefrontal cortex [due to deficient signals from the anterior cingulate cortex] on the emotional processing conducted by the amygdala). Thus, the framework proposed by De Raedt and Koster (2010) mainly accounted for the role of hot attentional deficits in the vulnerability for recurrence.

It is plausible that cold deficits represent the vulnerability that interacts with the schema to generate the characteristic hot cognitive bias during MDD. Weak inhibitory and shifting processes have been shown to be associated with the development of depressive symptoms up to 7.5 years later among youth, while controlling for other key predictors such as gender and IQ (Kertz, Belden, Tillman, & Luby, 2016). These findings suggest that cold cognitive control deficits likely precede and represent a vulnerability factor for onset. Further corroborating this, deficits in cognitive control measures such as working memory, shifting, and inhibition have been noted at initial MDD onset, with broader deficits demonstrated across processing speed, attention (visual and auditory), learning and memory (visual and verbal), reasoning, verbal fluency, motor skills, and intelligence, with the magnitude of deficit varying from small to large across these cognitive domains (Ahern & Semkovska, 2017). As these deficits cannot be accounted for by the additive effect of scarring from recurrent episodes, it is reasonable to assume that cold cognitive dysfunction can precede onset. Furthermore, executive function deficits have even shown stable, trait-like qualities from the first depressive episode (Ahern & Semkovska, 2017). Snyder and Hankin (2016) suggested that cold executive control deficits are linked to internalising psychopathologies through stress generation and subsequent rumination. Cold deficits contribute to self-generated stressors (e.g. difficulties at work due to poor planning of time/approach to workload), and while stressors are widely acknowledged as risk factors for the development of psychopathology (e.g. Grant et al., 2014), this initiating mechanism represents a novel means to better understand the MDD cycle. Perhaps it could even be postulated that the cold cognitive deficits themselves represent a self-generated stressor when the individual is made self-aware of deficient functioning in day-to-day tasks.

Beck's cognitive model proposed that dysfunctional schemas remained dormant until activated by a stressor (Beck, 2008). Along these lines, cold cognitive deficits across a broad range of cognitive domains may serve as internal, self-generated stressors that offset the cascade of hot dysfunctional cognitions and biases during MDD. This assumes the affective interference hypothesis in that affective information becomes salient and impedes on the subsequent processing of information (Siegle, Ingram, & Matt, 2002). In this way, seemingly cold cognitive deficits 'become hot' (e.g. in response to feedback) as the MDD cycle is initiated. It has been suggested that cognitive deficits are superimposed as a result of a 'catastrophic response to perceived failure' when the activated negative schema biases processing of the feedback which, in turn, impedes on subsequent performance (Elliott et al., 1996). Beats et al. (1996) demonstrated using the Tower of London task that MDD individuals solved as many problems in the minimum specified moves as did controls, but once a mistake was made, subsequent performance deteriorated rapidly. Further to this, Elliott, Sahakian, Herrod, Robbins, and Paykel (1997) showed that MDD individuals underwent more errors on a series of CANTAB tasks (Delayed Matching to Sample and 1-touch Tower of London) in response to feedback, relative to controls and

other clinical groups (e.g. schizophrenia). Findings by [Beats et al. \(1996\)](#) and [Elliott et al. \(1997\)](#) suggest that cognitive deficit on neutral, non-affective tasks are largely just a manifestation of hot cognition, likely due to a ruminative response style centred around the negative feedback.

Once initiated, the hot dysfunctional schemas and cognitive biases place demands on cognitive resources as they commence a sequence of automatic, mood-congruent processing, relying on executive function, memory, and attention abilities to maintain the depressive mood state. The resource allocation hypothesis postulates that the depletion of available cognitive resources has a detrimental effect on day-to-day cognitive functioning as limited resources are available to direct to other non-affective, cold cognitive functions ([Ellis & Ashbrook, 1988](#)), overall exacerbating the cognitive profile of MDD. Similarly, as limited cognitive resources are available to engage in effortful, controlled processing to override the automatic biases, maladaptive regulation strategies such as rumination ensue as subsequent hot cognition. Consequently, hot and cold dysfunction initiate a mutually reinforcing cycle. We propose that the dynamic interaction between hot and cold cognitive processes is central to MDD and necessitates consideration of both to stimulate theoretical advances and integrated research efforts.

In the above section, we have outlined the basic tenet of our integrated hot-cold cognitive model of MDD. In the following sections, we discuss the interaction between hot and cold in the context of the cognitive model with particular reference to the characteristic biases in attention, information processing, and memory recall during MDD ([Gotlib & Joormann, 2010](#)). These hot-cold interactions are illustrated through [Figure 1](#), [2](#), and [3](#), respectively. Although it is acknowledged that the cognitive biases likely influence each other and interact to exert influence on other factors ([Sanchez, Duque, Romero, & Vazquez, 2017](#)), we will discuss each of the cognitive biases separately. This is consistent with the approach of [Disner, Beevers, Haigh, and Beck \(2011\)](#) in their work on the neural mechanisms underpinning Beck's cognitive model. The authors demonstrated that although cognitive biases are characterised by increased bottom-up emotional processing and attenuated top-down cognitive control, the underlying mechanisms of each cognitive bias somewhat differ. Thus, modelling each cognitive bias separately will allow us to best account for the interactive role of hot and cold cognitions and essentially advance our understanding of the maintenance and treatment of MDD.

Biased Attention for Negative Material

A compromised ability to direct attention to relevant information is central to the cognitive model of MDD. This is driven by an apparent attention bias towards negative stimuli, although its existence is not robustly supported throughout the literature ([Mathews & MacLeod, 2005](#)). [Williams, Watts, MacLeod, and Mathews \(1988\)](#) even suggested that MDD is characterised by biases in elaboration and recall but not an attention bias, which is more so characteristic of anxiety disorders. Attention biases in MDD have been exam-

ined in the early and later stages of attentional processing in an attempt to better determine whether, and under what conditions, attentional dysfunction is observed. The initial orienting of attention has been investigated using subliminal or rapid presentation of affective material. For example, using an emotional Stroop task in which valenced-words were presented against a background colour for approximately 1ms and followed by a mask, [Mogg, Bradley, Williams, and Mathews \(1993\)](#) showed that preattentive bias for negative information occurred in the anxiety group only, while the MDD group were comparable to controls. The absence of attention bias in the early stages of processing has been replicated throughout the literature (for review, see [Mogg & Bradley, 2005](#)). Nevertheless, research on attention bias at later stages of conscious processing provides more robust evidence for the presence of a mood-congruent bias (e.g. [Gotlib, Krasnoperova, Yue, & Joormann, 2004](#)), and once attention is directed to the negative material, MDD individuals typically spend longer periods of time engaged with it (e.g. [Kellough, Beevers, Ellis, & Wells, 2008](#)). This suggests that MDD is not characterised by an automatic attention bias, as proposed by the cognitive model, but instead is associated with difficulty disengaging from negative material once attended to. As a result, a positive feedback loop is initiated in which depressive symptoms are maintained by the interaction between hot attentional control deficits and rumination. Impaired disengagement from negative, self-relevant thoughts maintains an inward focus that strengthens ruminative processes, overall serving to worsen the depressive mood ([Koster et al., 2011](#)). Findings by [Yaroslavsky, Allard, and Sanchez-Lopez \(2019\)](#) supported the mediational role of rumination between hot attentional disengagement deficits (slow disengagement from sad faces, fast disengagement from happy faces) and depressive symptoms. This suggests that hot cognitive deficits manifest in subsequent forms of hot cognition, namely rumination, to maintain depressive symptoms. In addition, experimental research using attention bias modification strategies has corroborated the mediational role of rumination in the link between attention bias and depressive symptoms ([Yang, Ding, Dai, Peng, & Zhang, 2015](#)). Attention bias modification strategies typically involve training the individual to direct attention away from a negative stimulus towards a neutral stimulus. This is often achieved using a dot-probe paradigm where the target probe is located more frequently behind the neutral stimulus when presented simultaneously with a negative stimulus; after repetition, this training gradually helps to facilitate a more positive attention bias. Following eight sessions of attention bias modification (90% of targets appeared in the neutral word position, relative to the sad word position) over a 2-week period, [Yang et al. \(2015\)](#) demonstrated that depressive symptoms significantly improved and were maintained at 3-month follow-up; no improvements were shown for the control attention training (50% of targets appeared in the neutral/sad word position) or assessment-only conditions. In addition, more participants remained asymptomatic at 7-month follow-up subsequent to attention bias modification, relative to the comparison conditions. Findings showed that this effect was fully mediated by rumination and, there-

fore, change in attention bias could not directly account for improved depressive symptoms. Hence, it is suggested that deficient hot cognitive control abilities consequently manifest as a ruminative response style as a result of impaired disengagement from negative material. This process overall sustains the negative affect and associated attention bias.

Nevertheless, findings have not unequivocally converged to demonstrate that targeting hot cognition alone can account for depressive symptom improvement. Considering control attention training has often shown similar efficacy to attention bias modification strategies, cold cognitive abilities may also play a potential role in symptom improvement. [Beevers, Clasen, Enock, and Schnyer \(2015\)](#) found that symptom improvement was not significantly different for control attention training (50% of targets appeared in neutral/negative location) relative to a homework supplemented, 4-week attention bias modification training consisting of eight sessions (80% of targets appeared in the neutral location, relative to the negative location); across the training groups, an overall 40% symptom improvement was observed. Such findings suggest different mechanisms of symptom improvement via hot and cold processes, although this warrants further investigation to better understand the driving mechanism. In the attention bias modification condition, symptom change may be somewhat accounted for by change in attention bias, yet for the control attention training, benefits may have been a result of engaging in an activity that promoted focused and sustained attention. This allows us to postulate that cold attention abilities are involved in symptom improvement but also that their dysfunction may represent the potential mechanism by which hot attention biases materialise following affective interference. Additionally, [Jonassen et al. \(2019\)](#) showed that attention bias modification training (87% of targets appeared in the positive location, relative to the negative location), when completed twice daily over a 2-week period, did not significantly differ from control attention training (50% of targets appeared in the positive/negative location), with both contributing to significant self-reported depressive symptom improvement. Notably, significant, albeit smaller, improvements on clinician-rated depressive symptoms were found for the attention bias modification group only, with such symptom improvement closely associated with a more positive attention bias. Overall, changes in attention bias did not significantly differ between the training groups, suggesting that attention bias modification may exert its effect by means of another mechanism, potentially by training general attention ability. Typically, the only difference between attention bias modification training and the control training condition is the frequency of target presentation in the negative location. Consequently, session duration or frequency of training cannot account for the lack of differential findings between the active and control intervention conditions, although these factors may become relevant for comparisons between experimental studies. Inclusion of an assessment-only comparison will help to elucidate whether training attention ability, irrespective of an attention bias focus, is the underlying driving mechanism of symptom improvement.

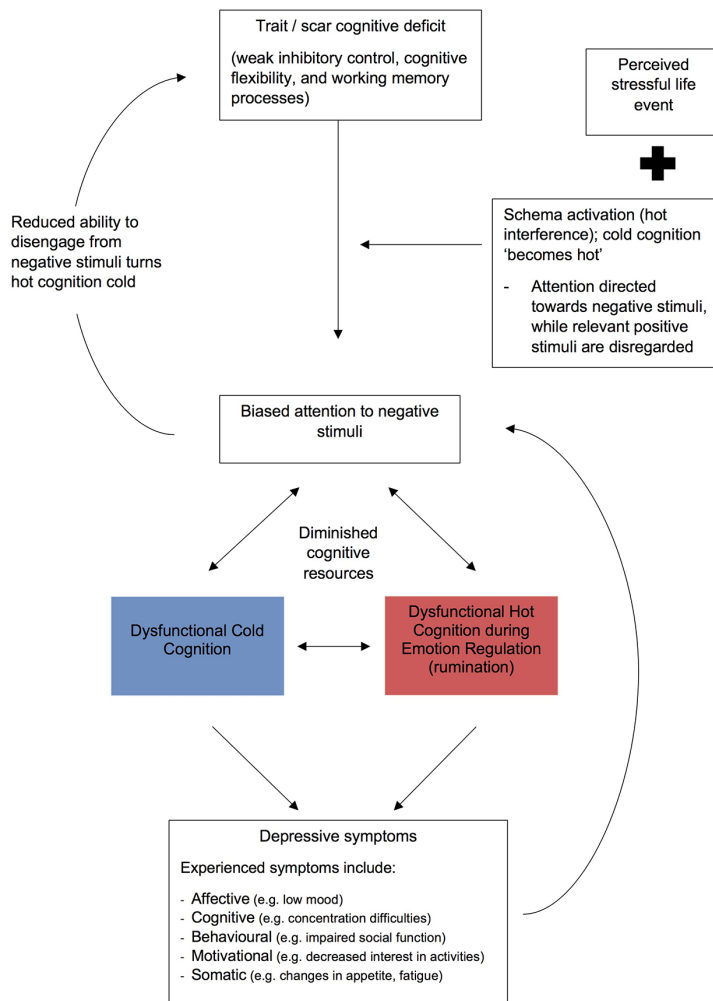


Figure 1. Model of the interaction between cold cognitive deficits and the hot cognitive attention bias during depression.

Note. When triggered by a perceived stressful life event, weaknesses in cognitive flexibility and inhibitory processes interact with the schema (negative core belief, e.g. 'I am useless') leading to a failure in disengaging attention from negative stimuli, i.e. attention bias. Subsequent hot ruminative processes magnify the accessibility of negative material and represent a means by which the bias affects depressive symptoms. There is a consequent reduction in available cognitive resources while hot cognition is activated. This contributes to broader cognitive deficits, including a general attention deficit, which likely lends itself to the expression of the attention bias for negative stimuli. Such deficits impact day-to-day functioning, potentially triggering subsequent hot cognition. The interaction between hot and cold pathways serves to perpetuate the activated schema and attention bias, overall worsening depressive symptoms. Components of the model are informed by Beck's cognitive model of depression.

In summary, biased attention is understood to be central to the maintenance of MDD. Impaired cognitive control reduces the ability to disengage from negative information, thus contributing to exacerbated hot cognitive processes, such as rumination, which reinforce the attention/disengagement bias to overall maintain depressive symptoms. Cold cognitive deficits appear to equally be relevant as general attention training has been shown to improve depressive symptoms, independent of change in attention bias. This suggests differentiated, but likely complimentary hot and cold cognitive processes.

Biased Information Processing in Preference of Negative Material

According to the cognitive model, MDD is associated with a pattern of interpretation in which stimuli tend to be interpreted negatively (Gotlib & Joormann, 2010). Resultantly, a positive blockade is experienced as reduced processing abilities contribute to poorer processing of positive stimuli alongside a decreased salience of positive stimuli (Nutt et al., 2007). The MDD interpretation bias is considered central to symptom maintenance. Literature has supported that individuals with MDD tend to employ negative interpretations of ambiguous information, relative to healthy controls, using a variety of methods (for review, see Everaert, Podina, & Koster, 2017). For example, Butler and Mathews (1983) showed that when asked to interpret an ambiguous sentence from a given list of options, MDD individuals selected the negative option more frequently than controls. However, such findings in the literature have been critiqued for over-reliance on self-report measures, which likely better capture a response bias as opposed to a negative interpretation bias. A response bias could facilitate a pattern of responding that presents as an interpretation bias as individuals with MDD tend to choose negatively-valenced responses when presented as an option, irrespective of their own interpretation of the scenario. In support of this, Lawson and MacLeod (1999) demonstrated that when response time was used as an indicator of interpretation bias, dysphoric individuals did not differ to controls in terms of their reaction time to target negative words following an ambiguous sentence. If an interpretation bias was evident, it could be expected that dysphoric individuals would show faster reaction times to negative words than neutral words as the negative processing bias would prime a negative interpretation. These findings have been replicated (e.g. Bisson & Sears, 2007), albeit not consistently throughout the literature (e.g. Hindash & Amir, 2012). Lack of equivocal support throughout the literature could be explained by the severity of depressive symptoms; negative interpretation biases are possibly more pronounced for those with more severe symptoms as a result of exacerbated hot cognition. Consistent with this, Lawson, MacLeod, and Hammond (2002) showed that the magnitude of eye-blink reflex to negative stimuli was larger for those with more severe depressive symptoms, relative to those with less severe symptoms, indicative of greater negative processing.

It is understood that MDD is not driven by the depressive mood nor the depressive thoughts per se, but rather the way in which the individual processes their depressive

mood. During MDD, this is usually maladaptive processing that involves rumination or repetitive thinking around the causes and consequences of one's mood (Nolen-Hoeksema, 1991). Wisco, Gilbert, and Marroquín (2014) demonstrated that the association between interpretation biases and depressive symptoms was conferred through rumination of negative thoughts as well as dampening of positive thoughts, although the effects through rumination were stronger, comparatively. In addition, reverse mediational analyses provided further evidence of the directionality of effects as the indirect effect of rumination on depressive symptoms through interpretation bias was not significant. As these findings are grounded in correlational research, it is not possible to draw causal conclusions. Nevertheless, such findings suggest that the hot cognitive interpretation bias prompts the hot regulatory process of rumination to promote the maintenance of depressive symptoms. Consideration of longitudinal research by Hirsch et al. (2018), examining the effect of multi-session cognitive bias modification strategies to target interpretation biases, further corroborates this mechanism. This training involved participants listening to scenarios that were emotionally ambiguous but were resolved positively (76% of trials), negatively (12%), or remained unresolved (12%). In the control, all ambiguous scenarios remained unresolved. At 1-month follow-up, findings suggested that change in interpretation bias following cognitive bias modification partially mediated the interventional effects on rumination but also on depressive symptoms among patients with MDD. This supports the idea that the mechanism by which negative interpretation biases impact depressive symptoms is through further hot ruminative processes. However, active control conditions have previously reduced negative interpretation biases when no training effects were expected (Blackwell et al., 2015; Williams et al., 2015). For example, Blackwell et al. (2015) did not show superior effects on depressive symptoms following multi-session cognitive bias modification, relative to the attention control condition which resolved ambiguous information either positively (50% of trials) or negatively (50%). By drawing attention to the fact that outcomes can be resolved positively, and therefore, by training general attention ability, albeit inadvertently, the attention control training still showed benefits for depressive symptoms. Although further research is required to confirm this, it could be argued that the interpretation bias is a manifestation of cold attention deficit that has been 'made hot' by the activated negative schema.

One aspect of biased processing that has drawn interest throughout the cold cognitive deficit literature is feedback sensitivity. As mentioned, seemingly cold cognitive deficits may in fact be hot as a result of a 'catastrophic response to perceived failure' (Elliott et al., 1996), or in other words, affective interference from an activated, negative schema when processing feedback. Individuals with MDD can perform just as well as healthy controls on several measures of cold cognitive abilities, but once feedback on an error is received, performance thereafter is likely reduced (e.g. Beats et al., 1996). Cold cognitive deficits may manifest owing to a repetitive, ruminative response on the feedback that serves to confirm an underlying core belief (e.g. 'I am useless' or 'I am a failure'), thus

interfering with performance on the task at hand. Elliott et al. (1997) supported this by demonstrating that when MDD individuals were re-assessed upon remission, general cognitive performance on the 1-Touch Tower of London CANTAB task was comparable to healthy controls, but an abnormal response to negative feedback persisted. Thus, the response could not merely be due to an overall higher failure rate. This suggests that hot cognition exerts influence on cold cognitive ability and contributes to deficient performance. However, it is important to note that this finding was exclusive to the 1-touch Tower of London measure in a sample of 28 MDD patients and was not replicated in the Delayed Matching to Sample Test. In a direct comparison between a feedback condition and a no feedback (paired associates) condition, Mörkl, Blesl, Jahanshahi, Painold, and Holl (2016) demonstrated that performance in probabilistic classification learning was impaired during the feedback condition but not for the no feedback condition, relative to controls. Feedback-learning involved receiving a ‘thumbs up’ or ‘thumbs down’ in response to the classification of each card to a certain type of weather (rainy/fine). This corroborates that hot information processing biases can manifest as cold cognitive deficits in various domains of learning and attention during seemingly neutral cognitive tasks. Whether this deficit is initiated as an epiphenomenon of the processing bias/feedback sensitivity or is merely exacerbated during the acute depressive state (i.e. ‘becomes hot’) still warrants further research considering the low-effortful task employed by Mörkl et al. (2016). The consideration of task demands is important when assessing the extent of cognitive control deficits in MDD. Indeed, when tasks are considered more effortful and require more complex processing, the inefficient allocation of cognitive resources to the task at hand means that deficits in cold cognitive functioning become more pronounced (Hammar, Lund, & Hugdahl, 2003; Hartlage, Alloy, Vázquez, & Dykman, 1993). Deficits in various cognitive measures including attention, learning and memory, and executive function have been documented in MDD *without feedback* and therefore cannot merely be a manifestation of feedback sensitivity (e.g. Rock et al., 2014). Nevertheless, a direct comparison of MDD cognitive performance in the presence or absence of feedback would better help to elucidate whether the hot and cold elements involved in the activation and maintenance of the processing bias are mutually reinforcing (i.e. underlying cold deficit is exacerbated by hot ruminative processes following feedback, in turn manifesting as further cold cognitive deficit). Thus, a differential magnitude of deficit may be observed, contingent on the catastrophic response to feedback.

Interestingly, literature has not consistently supported the explanation of a catastrophic response, but rather it is proposed that error post-feedback represents a failure to internalise the feedback through learning and, as a result, performance is not adjusted. The findings of Steele, Kumar, and Ebmeier (2007) align with this interpretation as MDD individuals showed a blunted response following error-feedback in a gambling task suggesting that they did not learn from their past performance. Typically, a ‘post-error slowing’ is demonstrated where the individual considers the feedback to avoid a repetition of

error and to adjust performance accordingly. This process manifests as an increase in reaction time. Nevertheless, MDD individuals did not show increased reaction time post-error, suggesting that not even a ruminative response style was employed to process the feedback. Thus, a basic deficit in cold cognitive ability likely accounted for poor performance, not hot ruminative processes. Further to this, using a non-affective flanker task with switch or no-switch blocks (no performance feedback offered), [Schroder, Moran, Infantolino, and Moser \(2013\)](#) demonstrated that anhedonic depressive symptoms were not associated with post-error slowing but were associated with poorer post-error accuracy. As the association between anhedonic depressive symptoms and post-error accuracy was only shown in the more cognitively-demanding switch block condition, the availability of cognitive resources appears to be an important factor for cognitive control ability. These findings allow for the consideration that deficits in attention and the ability to update the contents of working memory during an effortful task account for subsequent poor performance as post-error slowing and deficient post-error accuracy were observed independent of feedback. Although the explanatory potential of deficient motivation in anhedonic depression cannot be overlooked to account for these findings (but see [Grahek et al., 2018](#)), the premise that cold cognitive deficits are not merely a manifestation of biased processing is of empirical and theoretical interest.

In summary, the processing bias proposed by the cognitive model appears to be largely maintained by the interaction between hot and cold cognitions. For the most part, ruminative processes carry the effect of this bias on depressive symptoms by stimulating accessible, negative, self-relevant information to reinforce a negative interpretation. Arguably, cold cognitive deficit, in seemingly non-affective contexts, may be a manifestation of hot cognition through a catastrophic response to feedback, and subsequent rumination on this feedback. Nevertheless, cold deficits have reliably been shown in the absence of feedback and symptom improvement has been achieved following control, non-affective attention training, suggesting that there is a complex interaction that likely incorporates both hot and cold cognition as mutually reinforcing, overall serving to maintain depressive symptoms.

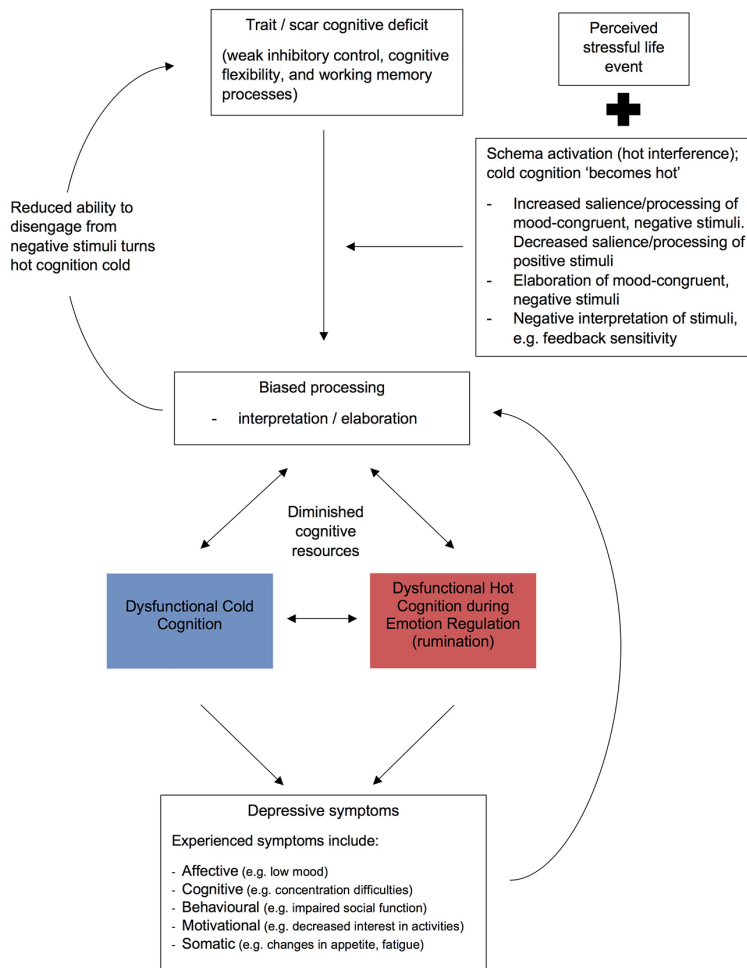


Figure 2. Model of the interaction between cold cognitive deficits and the hot cognitive processing bias during depression.

Note. When triggered by a perceived stressful life event, weaknesses in cognitive flexibility, working memory, and inhibitory processes interact with the depressive schema resulting in a bias towards processing information negatively, congruent with the activated schema. There is a consequent reduction in available cognitive resources when the schema and associated bias is activated. As a result, broader cognitive deficits are observed during the acute depressive state. Specifically, the inability to update the contents of working memory with a shift to positive information (cognitive flexibility) and expel irrelevant, negative information from working memory (inhibition) contribute to rumination, i.e. repetitive, negative thinking style, which further serves to maintain the processing bias and worsen depressive symptoms. Yet, ruminative processes do not always account for cold cognitive deficits in post-error adjustment, suggesting some degree of independence between the hot and cold pathways for biased information processing. Components of the model are informed by Beck's cognitive model of depression.

Biased Memory for Negative Material

Biased memory recall during MDD is perhaps one of the most consistent and well-supported cognitive biases (Gotlib & Joormann, 2010). This is best understood as an instance of memory in which mood-congruent information (i.e. negative information consistent with negative mood state) is better encoded and recalled than mood-incongruent information (Matt, Vázquez, & Campbell, 1992). Due to the negative mood state that is characteristic of MDD, symptomatic individuals tend to recall negative information more readily as prompted by the accessibility of active, negative schemas, thus serving to maintain the negative mood. This negative recall is likely facilitated by biases at encoding as a result of preferential attention to negative experiences as well as the maladaptive interpretation of ambiguous personal experiences to resolve as negative encounters (Dagleish & Werner-Seidler, 2014). Of note, a recall bias in non-affective, cold cognitive tasks has even been observed during MDD, presenting as a serial position effect in list-learning that is characterised by impoverished recall of items from the middle region, relative to healthy controls (Foldi, Brickman, Schaefer, & Knutelska, 2003). It is postulated that the active, negative schema (e.g. 'I am a failure') interferes with subsequent learning and recall by means of affective interference, drawing focus to task irrelevant information (e.g. 'I will never finish this list'). Consequently, recall has been enhanced for mood-congruent negative information and compromised for incongruent, positive or neutral information, as demonstrated across both explicit (for review, see Matt et al., 1992) and implicit (for review, see Gaddy & Ingram, 2014) memory tasks. A meta-analysis (Matt et al., 1992) on recall performance among MDD patients demonstrated, on average, that individuals recall 10% more negative information than positive information on explicit memory recall tasks. A type of explicit memory known as autobiographical memory (AM) is characterised by a particular recall bias during MDD which takes the form of an overgeneralisation, or a lack of specifics in the content recalled, usually in response to negative cues (e.g. Dagleish & Werner-Seidler, 2014; Semkovska, Noone, Carton, & McLoughlin, 2012). Research has demonstrated that overgeneral AM is likely state-dependent, with improvement in specificity shown upon remission (e.g. Semkovska et al., 2012), however, overgeneral AM has also received support as a trait vulnerability for subsequent depressive symptoms, particularly in interaction with stressful life events (e.g. Gibbs & Rude, 2004).

Overgeneral AM represents a hot cognitive profile that is specific to MDD. This hot cognition has been relatively well-explored in the literature in relation to ruminative processes, which tend to centre around the general themes made accessible by schema activation at recall (e.g. incidences of failure). Rumination then consolidates these themes, which further contribute to overgeneral AM recall (Watkins & Teasdale, 2001). On the other hand, the seminal work by Raes, Hermans, Williams, Geypen, and Eelen (2006) demonstrated that overgeneral AM can causally influence rumination, following experimental manipulation to prime either a specific or overgeneral recall style. Findings showed that among high-ruminators and subsequent to an overgeneral (vs. specific) re-

call style, sentences tended to be unscrambled into sentences with a ruminative meaning. Among non- or low-ruminators, this effect was not shown. Thus, it is better to consider the recall bias-rumination link as mutually reinforcing, in that hot cognition stimulates further hot cognition. As such, it could be conceptualised that the effect of memory recall bias on depressive symptoms is carried by a ruminative thinking style. In corroboration of this, [Liu et al. \(2017\)](#) demonstrated that ruminative responses, particularly the maladaptive brooding subtype, partially mediated the relationship between overgeneral AM and depressive symptoms. Albeit, the cross-sectional design cannot infer causality so it is possible that rumination is merely a covariate as opposed to the mediator of effect. The reverse mediational models conducted by the authors, however, did not support overgeneral AM as a potential mediator of the rumination-depressive symptom link. Likely these two hot cognitions are closely intertwined, making it difficult to discern the effect of one on another. Consideration of the role of executive cognitive abilities may better help elucidate the means by which this reciprocal interaction arises.

Ruminative processes that occur during the recall bias use up cognitive resources that otherwise would have been directed towards accessing the specifics of AM ([Van Vreeswijk & de Wilde, 2004](#)). To demonstrate this, [Cheung, Sin, Lam, and Lee \(2018\)](#) assessed the specificity of AM in MDD patients following negative and positive rumination induction. Results showed that MDD patients, relative to controls, produced fewer specific AMs following negative rumination compared to positive rumination. The authors suggested that an inhibitory deficit in MDD compromised the ability to filter out task-irrelevant negative information from working memory, thus impairing the ability to recall specific memories, stimulating a negative ruminative process. Although general inhibitory ability was not assessed by the authors, it could be the case that an underlying cold inhibitory deficit became hot in the presence of affective content. Building on this, [Hitchcock, Golden, Werner-Seidler, Kuyken, and Dalgleish \(2018\)](#) examined the central role of executive control in negative AM recall following positive and negative contextual cues among MDD patients. Results showed that following positive contextual cues, those with more severe depressive symptoms rated their negative memories more positively, relative to less severely depressed patients. As such, this suggests that the executive control deficits are somewhat state-dependent as differential effects were noted based on the magnitude of depressive symptoms. This can be explained by fewer executive resources available in those more severely depressed to override the priming generated by the positive contextual cue. In a second study by the authors using a community sample, poorer performance on a non-affective working memory task was associated with less negative ratings of AMs recalled and with the recall of a greater number of overtly positive AMs. Thus, compromised cold executive control appears to be the driving mechanism of this effect and not a negative recall memory bias, which Beck's cognitive model would hypothesise to occur independent of context. The influence of contextual priming, as shown in these findings, has important implications for mood maintenance. For example,

if intrinsic contextual cues (i.e. negative thoughts, rumination) override one's ability to derive benefit from the recall of positive or neutral memories necessary for cognitive restructuring, a core aspect of CBT, then outcomes may be less favourable. In this regard, cold executive deficits may play a central role in the maintenance of depressive mood state, over and above those accounted for by hot cognitions.

Overgeneral AM has also been conceptualised as a facet of a wider difficulty in memory processes such as the ability to make correct attributions about the origin of information, known as source memory. [Raes, Hermans, Williams, Demyttenaere, et al., 2006](#)) demonstrated that among 26 acute MDD patients, reduced AM episodic-specificity was associated with poorer source memory and working memory, but not verbal fluency or verbal learning and delayed recall. These associations were shown independent of current depressive symptoms. [Semkovska et al. \(2012\)](#) elaborated on these findings among a sample of 30 MDD patients with severe depression, corroborating that reduced AM episodic-specificity was associated with poorer working memory, but that verbal or visual learning and delayed recall were specifically associated with AM semantic-specificity for personal information (e.g. details regarding a family member). Among a remitted MDD sample of 122 individuals, the findings of [Spinhoven et al. \(2006\)](#) strengthen the argument that aspects of reduced AM specificity likely represent a facet of a more general memory deficit independent of the hot affective state, as AM specificity was shown to be associated with immediate and delayed memory recall, even when controlling for residual depressive symptoms. Yet, at 24-month follow-up, neither AM specificity nor other cognitive measures were predictive of relapse or recurrence. This brings to question whether it is the interaction between hot and cold components that may be necessary to trigger subsequent MDD events. Similarly, [Gibbs and Rude \(2004\)](#) suggested that overgeneral AM, when in conjunction with stressful life events, predicted the development of subsequent depressive symptoms 4-6 weeks later in a non-clinical sample. Thus, it could be the case that cold deficits condition, or likewise transfer, the effects of the hot memory recall bias.

The recall of specific memories is a core component of everyday functioning and has relevance for day-to-day tasks that rely on problem-solving, the generation of future plans, and social interactions that are built upon shared experiences ([Dagleish & Werner-Seidler, 2014](#)). Consequently, cold cognitive abilities are compromised without the script of past AMs to direct and guide behaviour, contributing to subsequent negative experiences in the everyday functioning of the individual. [Raes et al. \(2005\)](#) showed that reduced AM specificity fully mediated the association between rumination and social problem-solving (e.g. handling a situation at work), while partial correlations demonstrated that this association could not be better accounted for by depressive symptoms. Corroborating this, [Hitchcock et al. \(2016\)](#) documented that an AM intervention (MemFlex) showed far-transfer of effects by significantly improving problem-solving ability. Although the authors acknowledged that problem-solving was an intermediate outcome

that likely conferred the effect of overgeneral AM on depressive symptoms, they did not formally test the mediational process. In addition, planning ability has been observed as a cold cognitive deficit following the induction of a generic retrieval style (Williams et al., 1996). In a recent meta-analysis by Hallford, Austin, Takano, and Raes (2018), psychiatric diagnosis was associated with large deficits in episodic future thinking specificity. Moderation by cue valence (positive, negative, neutral) was non-significant, suggesting that the deficit is more general and not wholly contingent on valence, as would be suggested by Beck's cognitive model. It is important to note, however, that moderation by valence was across all studies ($k = 19$), so it is possible that MDD ($k = 7$) shows differential effects to other psychopathologies such as bipolar disorder or schizophrenia. A subsequent meta-analysis conducted solely including depressive samples resulted in 37 studies and suggested that depressive symptoms contributed to reduced specificity for future events, more so for positive future thinking relative to negative or neutral future thinking (Gamble, Moreau, Tippett, & Addis, 2018). Considering the ability to detail future scenarios is necessary to plan and pursue goals, it can be argued that the hot cognitive profile of MDD manifests as a broader spectrum of cold cognitive deficits including planning and problem-solving abilities. Such deficits are likely responsible for the negative experiences of everyday functioning and may serve as a source of reference to confirm and perpetuate the activation of negative schemas (e.g. 'I am a failure'), overall contributing to a maintenance of the MDD cycle.

In summary, the interaction between hot and cold cognitions in the memory recall bias is difficult to disentangle but lends support to the idea that both are mutually reinforcing for the activated bias as well as associated depressive symptoms. Rumination has been identified as the primary hot cognition that carries the effect of the negative recall bias by stimulating negative thoughts around the negative memory that was generated. A cold deficit in non-affective memory potentially facilitates the expression of the aforementioned recall bias, but likely this is determined by the strength of executive control, characterised by the individual's ability to flexibly disengage from mood-congruent negative information, inhibit further irrelevant negative information, and subsequently update the contents of working memory. Without the specifics in AM to provide a script to guide behaviour, a broader range of cold deficit is experienced, which impacts on efficient day-to-day functioning. Collectively, this may serve as self-referent negative information to maintain the activation of the relevant schema and recall bias.

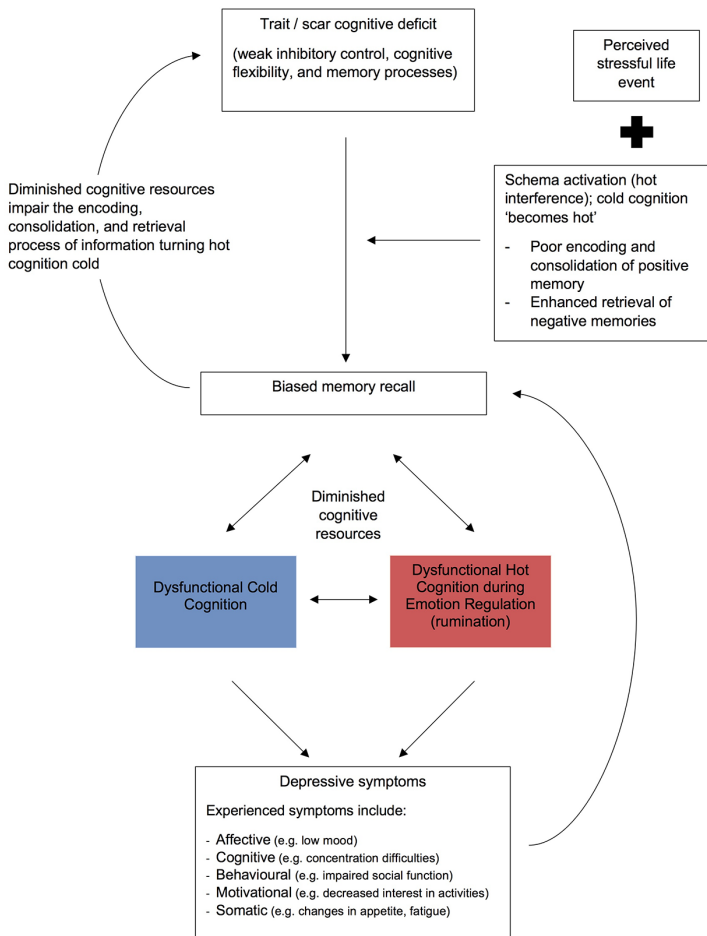


Figure 3. Model of the interaction between cold cognitive deficits and the hot cognitive memory bias during depression.

Note. When triggered by a perceived stressful life event, weaknesses in cognitive flexibility, memory, and inhibitory processes interact with the depressive schema resulting in a memory bias characterised by poor encoding of positive memories, over-retrieval of negative memories, and lack of specificity for autobiographical memories. There is a consequent reduction in available cognitive resources when the schema and associated bias is activated. As a result, deficits in hot and cold executive control perpetuate the activation of the memory bias due to a compromised ability to inhibit, shift away from, and update the contents of working memory, feeding into ruminative thinking centred on negative, non-specific events. Impaired memory processes contribute to broader cognitive deficits during the acute depressive state affecting day-to-day planning and problem solving, potentially triggering subsequent maladaptive mood-congruent recall of past events. The interaction between hot and cold pathways serves to perpetuate the negative memory cycle and worsen depressive symptoms. Components of the model are informed by Beck's cognitive model of depression.

An Integrated Hot-Cold Cognitive Model

As demonstrated above, the cold cognitive processes that underlie the negative schemas and cognitive biases proposed by Beck's cognitive model seem to largely be accounted for by two, complementary processes: (i) weakened executive control (cognitive flexibility, inhibition, working memory), which facilitates the activation and maintenance of a hot cognitive profile by means of affective interference, and (ii) further exacerbation of cold cognitive dysfunction by means of diminished cognitive resources which, in turn, likely represent internal stressors maintaining the depressive state.

The former process corroborates previous literature that cognitive biases are maintained by impoverished abilities to effectively disengage from negative material (Gotlib & Joormann, 2010). As such, the material present in working memory tends to be of mood-congruent, negative valence due to a poor ability to inhibit the generation of subsequent negative material or flexibly shift to potentially-relevant, positive material. For the most part, literature has examined the role of weakened executive control during MDD using affective tasks in which the ability to inhibit or shift from negative material is assessed (Koster, Hoorelbeke, Onraedt, Owens, & Derakshan, 2017). Resultantly, findings have created a narrative around various components of affective, hot cognitive processes. Our model provides a novel narrative as it includes non-affective, cold cognitive deficits in the MDD cycle to suggest that, in some circumstances, it is a general deficit that facilitates the expression of hot executive deficits towards the processing of negative material. Consistent with this, an accumulating body of literature demonstrates that cognitive deficits persist into remission (Semkovska et al., 2019), and therefore cannot merely be an epiphenomenon of mood state. Instead, these deficits are conceptualised as the means by which affective, hot deficits in cognitive domains such as attention and executive function manifest. Collectively, these factors work to initiate and maintain the depressive schemas and cognitive biases by making negative material readily accessible.

The latter process takes the form of exacerbated cold cognitive deficits, which likely act as internal stressors triggering the repeated activation of dysfunctional hot cognitions. In this way, the stressors become apparent in day-to-day functioning when deficient ability to attend, memorise, plan, and problem-solve provide a source of self-referent feedback to confirm negative schemas about the self. This sets up a self-perpetuating cycle as deficient cold cognition activates the influence of hot processing biases and a ruminative response style that collectively place large demands on cognitive resources, and in turn, deprive the allocation of resources to cold cognitions required in everyday function across work, home, and social environments. Again, cold cognitive deficits appear somewhat independent of hot schemas and biases as deficient functioning is observed even in the state of mood restoration (Evans, Iverson, Yatham, & Lam, 2014). In the context of Beck's cognitive model, cold cognitive deficits reinforce hot cognition by providing accessible schema-congruent material (e.g. 'I am a failure', 'I am not as good as others') and likely serve as a source of maintenance for the MDD cycle.

Our proposed model (Figure 4) postulates an interaction between cold and hot cognition in the onset and maintenance of MDD and is consistent with current neuropsychological models of MDD such as that by Roiser and Sahakian (2013). In their model, Roiser and Sahakian (2013) integrated the traditional cognitive framework with recent pharmacological findings to conceptualise MDD as the interaction between maladaptive top-down and bottom-up processes, with consideration of hot and cold components. The authors applied their findings to inform adjunctive treatment options that could address the hot/cold top-down cognition that contributes to negative expectations (e.g. CBT) or weakened executive control (e.g. transcranial magnetic stimulation), alongside the hot bottom-up cognition that accounts for negative perceptions (e.g. antidepressant medication). Our model further elaborates on this by providing a thorough, integrated account of cold cognitive abilities within the dominant cognitive framework of MDD. The proposed model lends itself to identifying novel initiatives to help interrupt the MDD cycle and best inform refined, psychological treatment options. This incorporates the consideration of hot and cold maladaptive cognitions. To date, CBT is well-established as an effective treatment for MDD by addressing the hot cognitive components that serve to maintain the depressive schemas. Several studies have shown that CBT has beneficial effects on cognitive biases of attention (e.g. Tobon, Ouimet, & Dozois, 2011), interpretation (e.g. Williams et al., 2015), memory (e.g. McBride, Segal, Kennedy, & Gemar, 2007), as well as maladaptive, ruminative emotion regulation strategies (for review, see Spinhoven et al., 2018). However, CBT has shown little, if any, influence on cold cognitive abilities (Groves et al., 2015; Porter et al., 2016). This possibly explains the relapse rates subsequent to treatment considering the cold cognitive aspects of the MDD cycle were not addressed. Attention training and improving control over thinking may facilitate the ability to flexibly shift attention and disengage from the negative schemas or associated biases. In support of this, cognitive remediation strategies, which explicitly target cognitive abilities shown to be deficient during MDD through repetitive and adaptive training, have shown much promise in strengthening such cold cognitive abilities (Motter, Grinberg, Lieberman, Iqnaibi, & Sneed, 2019; Motter et al., 2016; Semkovska & Ahern, 2017; Trapp, Engel, Hajak, Lautenbacher, & Gallhofer, 2016). A comprehensive review by Koster et al. (2017) provides a compelling discussion on the potential means by which cognitive training affects depressive symptoms.

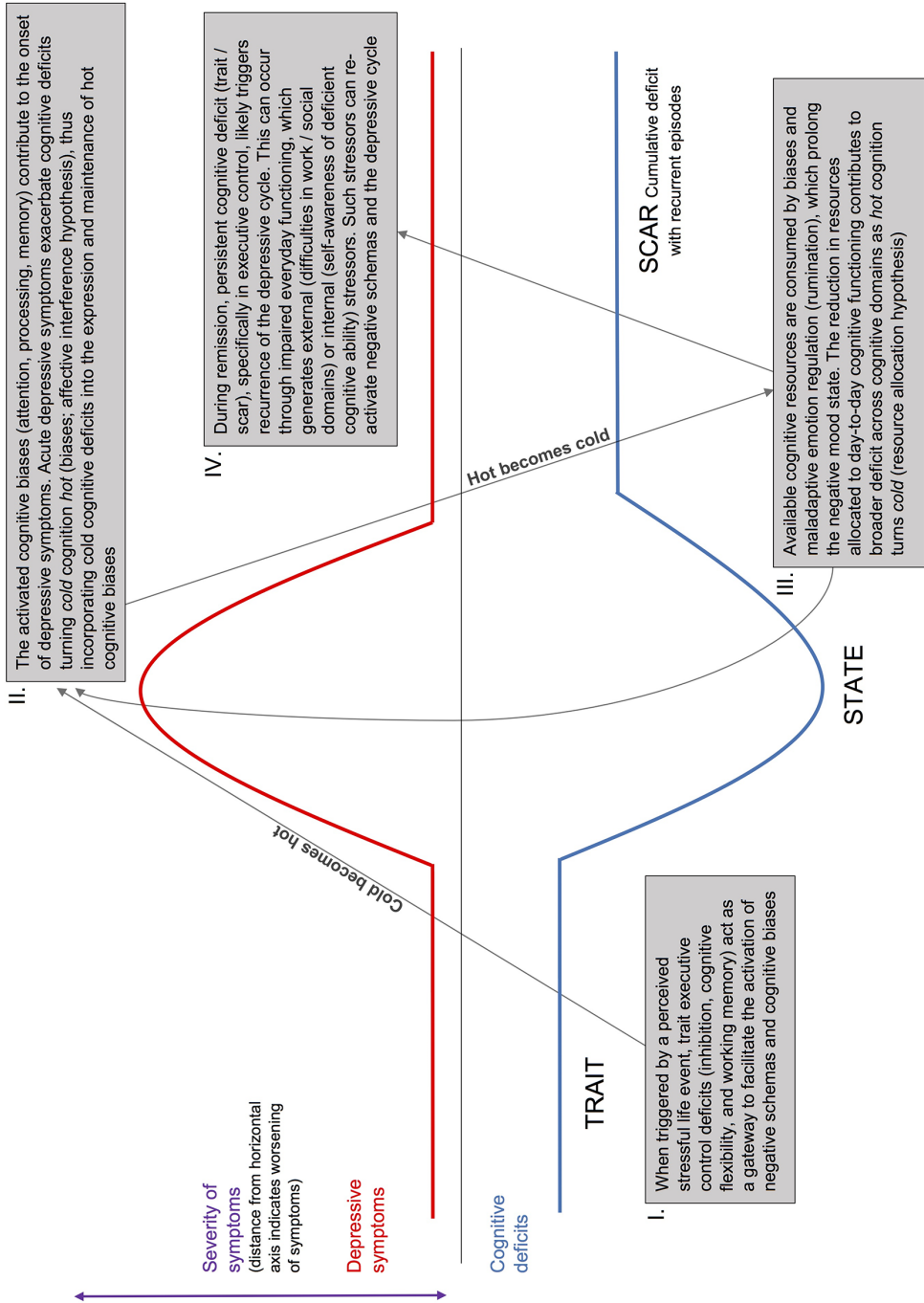


Figure 4. Model of the interaction between cold cognitive deficits and hot cognition during depression (model adapted from Allott, Fisher, Amminger, Goodall, & Hetrick, 2016). The interaction process is explained through parts I – IV.

In summary, cognitive training may exert benefit by altering mediational hot cognitive factors (e.g. rumination), by targeting the underlying neurocircuitry known to be compromised during depression (for review, see [Drevets, Price, & Furey, 2008](#)), or finally by influencing vulnerability to the activation of cognitive biases. The consideration of cognitive training as an adjunct to CBT may best complement outcomes for depressive symptoms by fully accounting for the interaction between hot and cold cognitions in the onset and maintenance of MDD. Patient preference largely favours psychological treatment over medication ([McHugh et al., 2013](#)) and this gives prominence to the need for integrated treatment options that are embedded within the cognitive theory framework.

Significant developments have been made in understanding the role of cognition in MDD, but further integrative research with the aim of refining cognitive models of MDD will be necessary to improve approaches towards prevention and treatment. No single form of cognition solely drives the depressive cycle, thus modelling the interplay between various facets of hot and cold cognition is a promising avenue to stimulate research. Researchers should endeavour to identify the relative contribution of hot and cold cognitions in interventional research to best account for the mechanisms by which symptom improvement can be achieved. This is a crucial step in transitioning from the symptom-based to the mechanism-based view of MDD ([Grahek et al., 2018](#)). In addition, consideration of hot and cold cognitive processes in longitudinal research may help to account for the directionality of effects. Cold deficits may serve as the initiating mechanism for hot cognitions, as suggested in the literature (e.g. [Allott et al., 2016](#)), but once a major depressive episode is initiated, the extent to which cold deficits are necessary for the maintenance of negative schemas and associated biases is not well understood. An important aim of our integrated model is to encourage hypothesis-driven research efforts to examine the potential of hot and cold cognitive mechanisms in novel treatment initiatives.

In conclusion, our integrated hot-cold cognitive model of MDD provides a preliminary framework to identify the central role that cold cognitive abilities play in conjunction with the more widely recognised hot cognitive processes that underpin Beck's conceptualisation of MDD onset and maintenance. The growing body of research on deficits in non-affective, cold cognitive abilities during remission confirms that cold cognition is not merely an epiphenomenon of the acute state. Here, we have proposed a re-framing of the cognitive model to account for the complex interaction between cognition and emotion during MDD. By doing so, this stimulates further opportunity to develop innovative treatment strategies that can effectively address a full functional recovery from this highly recurrent and debilitating disorder.

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Evaluating a Programme for Intercultural Competence in Psychotherapist Training: A Pilot Study

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Abstract

Background: Great cultural diversity among clients poses considerable challenges to mental health service providers. Therefore, staff in the mental health sector needs to be adequately trained. To date, however, there is little empirical evidence regarding such training. The present pilot study evaluates the effect of a standardised training programme to improve the intercultural competence of therapists.

Method: Intercultural competence and therapeutic relationship were measured three times (pre, post and follow-up) in N = 29 psychotherapists. A control group of N = 48 therapists was included at pre-test to control for covariables.

Results: The data show a significant increase in intercultural competence as well as an improvement in the therapeutic relationship. Interestingly, this positive outcome extends to non-immigrant clients.

Conclusion: The results confirm the assumption that culture is not limited to ethnic or national background but includes other dimensions such as age, gender and socioeconomic status which shape illness beliefs and expectations in the psychotherapeutic context. Therefore, intercultural competence can be considered a general therapeutic skill that can be taught in short interventions like the one developed in this study.

Keywords

evaluation, intercultural competence, diversity, psychotherapy, migration, awareness



Highlights

- Mental health services and practitioners need to be able to respond appropriately to increasing cultural diversity.
- Intercultural competence in psychotherapy can be enhanced by special training programmes.
- These training programmes should focus on three components: intercultural knowledge, cultural awareness and culture-specific therapeutic skills.

As a consequence of continuously increasing global mobility, as well as war and environmental migration, cultural diversity in Western societies is growing rapidly. These processes are generating a degree of cultural diversity that requires mental health service administrators and practitioners to be able to respond appropriately.

Yet, in mental health services a considerably smaller percentage of immigrants is being treated now than would be expected considering their overall population share. This has been explained by some as a product of lower service use by clients with a migration background (Chen & Rizzo, 2010; Claassen, Ascoli, Berhe, & Priebe, 2005; Koch, Hartkamp, Siefen, & Schouler-Ocak, 2008; Lindert et al., 2008; Machleidt, Behrens, Ziegenbein, & Calliess, 2007; Ta et al., 2015). Previous studies have also shown that institutional barriers can hamper service uptake, including problems of language and other means of communication (Claassen et al., 2005; Kirmayer et al., 2011; Yeo, 2004), perceived or expected discrimination, and structural and financial barriers (Chen & Rizzo, 2010; Kirmayer et al., 2011). Moreover, surveys of psychotherapists have shown a high degree of insecurity and helplessness in intercultural contexts, which can lead to a greater likelihood of rejecting them as patients or to higher dropout rates (de Haan, Boon, de Jong, & Vermeiren, 2018; von Lersner, 2015; Wohlfart, Hodzic, & Özbek, 2006).

The status quo, outlined above, suggests that an intercultural opening up of the mental health sector is urgently needed (Kirmayer et al., 2011; Machleidt et al., 2007), implying an adaptation of institutional and organisational structures to the needs of immigrant clients. Meanwhile, Benish, Quintana, and Wampold (2011) in their meta-analysis have suggested that intercultural therapies have better outcomes when therapists include patients' culturally shaped explanatory models in treatment. Furthermore, therapists should be better prepared for this group of clients through their professional training, in order to reduce insecurities and improve treatment outcomes in the long run (Aggarwal, Cedeño, Guarnaccia, Kleinman, & Lewis-Fernández, 2016; Kirmayer, 2012; von Lersner, Baschin, Wormeck, & Mösko, 2016).

Intercultural Competence Training

Even though intercultural competence appears to be of high relevance in clinical settings, evaluations of intercultural training in the psychotherapeutic context are unfortunately still very rare (Kulik & Roberson, 2008; Mösko, Baschin, Längst, & von Lersner, 2012). To our knowledge, there has been no such training evaluation in German-speaking areas.

In the present study, we evaluated an intercultural training programme for therapists aimed at improving intercultural competence and therapeutic relationship. Thus, we evaluated cognitive, skill-based and affective learning, as well as possible improvements in the therapeutic relationship, as components of behavioural change that should emerge after training. Since the training programme was being conducted for the first time, our evaluation has the character of a pilot study.

Before discussing the intercultural training, the concept of culture as it is used in the present study needs to be defined. According to Geertz (1973, p. 83), culture describes 'a system of inherited conceptions expressed in symbolic forms by means of which men communicate, perpetuate, and develop their knowledge about, and attitudes toward, life'. Thus, it can be said to refer to a set of values and norms shared by a group of people independently of their national or ethnic backgrounds.

Meanwhile, in its current usage, the term intercultural competence stands for a wide range of definitions associated with numerous practical implications (Steinhäuser, Martin, von Lersner, & Auckenthaler, 2014). However, a widely used concept in clinical settings is the one formulated by Sue and Sue (1990), which includes the following three dimensions:

- *Awareness*: Exploration of and reflection on one's own cultural embeddedness as well as its influence on perceptions of clients and the formation of the therapeutic relationship.
- *Knowledge*: Knowledge of the cultural background of the client and possible implications for his or her worldview.
- *Skills*: The development of culturally sensitive intervention strategies and techniques.

These three components, which can be said to constitute the basis of effective treatment in intercultural settings, represent a goal that is unlikely to be achieved in a one-off training session; rather, it requires an active, ongoing process that practitioners have to go through over a longer period of time (Guzder & Rousseau, 2013).

The model developed by Sue and Sue (1990) has also become the basis of national guidelines on intercultural competence in various countries and organisations, such as the *Multicultural Guidelines* of the American Psychological Association (2003, 2008) and the *Guidelines for Training in Cultural Psychiatry* (Kirmayer et al., 2012). They have also been applied in a European strategy paper on intercultural competence in the mental health sector (Bennegadi, 2009) and in the *German Guidelines for the Training of Intercultural Competence of Psychotherapists* (von Lersner et al., 2016).

Intercultural competence training can be carried out in multiple ways and can be quite heterogeneous with regard to target groups, duration, methods used and content, to name only a few dimensions. The majority of intercultural training evaluation studies in the health sector have been conducted with nursing staff and doctors as well as university students as subjects (Delgado et al., 2013; Khanna, Cheyney, & Engle, 2009).

Four systematic reviews, covering 69 studies from 1980 through to 2010, have analysed the effectiveness of intercultural training for nursing staff and medical doctors mainly in the US (Beach et al., 2005; Chipps, Simpson, & Brysiewicz, 2008; Lie, Lee-Rey, Gomez, Berekyei, & Braddock, 2011; Price et al., 2005). Beach et al. (2005) reported very good evidence of increased cultural knowledge among doctors and nursing staff as a result of such training, a result that was replicated by Chipps et al.'s (2008) study focusing on staff in rehabilitation centres. There is also good evidence from these studies that awareness and skills (see Sue & Sue, 1990) can change and improve through such training. An evaluation of training programmes by Kulik and Roberson (2008) also reported large benefits in intercultural awareness and knowledge across target groups and training settings, but little improvements on the skills dimension. Regarding the quality of training schemes, both Lie et al. (2011) and Price and colleagues (2005) suggest that the quality of the evaluation studies examined was only low to moderate: most of them failed to control for confounding variables and effect sizes varied between zero and moderate. Thus, in contrast to the large number of training schemes available, there is a conspicuous lack of transparently documented and published studies on their effectiveness.

One concept that is widely used in intercultural competence training—and in the training programme evaluated in our study too—is the diversity approach. According to this perspective, there are six diversity dimensions that can influence perceptions of commonality and difference and are likely to lead to forms of discrimination: age; gender; sociocultural background, including migration history and skin colour; handicaps and skills; sexual orientation; and religion (van Keuk, Ghaderi, Joksimovic, & David, 2011). Diversity training can focus on one or more of these dimensions, implying that cultural background is only one possible dimension. Participants should learn to be aware of the different types of diversity among their clients and how to deal with them in a positive way. A meta-analysis of the effectiveness of diversity training by Kalinoski et al. (2013) found significant effects on knowledge and skills but none on attitudes and awareness. Their analysis of training methods and structural factors suggested that training sessions lasting 12–16 hours and applying active training methods such as role play, discussion or critical incident technique had the greatest effectiveness, with training spread over multiple sessions being more effective than one-session programmes.

Effective training should have a positive impact on the cultural competence of the therapist as well as improving the therapeutic process, wherein the therapeutic relationship is of special interest. Norcross (2010, p. 113) defines the client–therapist relationship as ‘the feelings and attitudes that therapist and client have toward one another and how

these are expressed'. Meanwhile, [Khanna and colleagues \(2009\)](#) describe the therapeutic relationship within the intercultural therapeutic process as an important predictor of compliance and outcomes. Therefore, the present pilot study focuses on this aspect as well. With regard to efficiency, it is also relevant to evaluate whether rather short interventions, such as the one developed for the present study, can initiate such positive change.

From the start, we assumed that our programme would have a positive impact on the intercultural competence of participants, and that these effects would be quantifiable across our three points of measurement—before, immediately after and three months after participation—of the programme. We further hypothesised that having to consider intercultural issues during the programme would affect the therapeutic relationship in a beneficial way. As such an impact would probably only unfold with time ([Guzder & Rousseau, 2013](#); [Kulik & Roberson, 2008](#)), we assumed that the effects would be most observable during the follow-up analysis. Further, as another goal of the pilot study was to assess whether the training programme could serve groups of therapists with different levels of experience, we included therapists in training as well as experienced therapists and analysed the effects of the training on them separately. We assumed that participants would benefit from the training regardless of their level of therapeutic experience; that is, that therapists in training would benefit from the programme in a comparable manner to that of experienced therapists.

Method

Study Design

Data were collected in Berlin as part of a project conducted in the Department of Psychotherapy and Somatopsychology at Humboldt University of Berlin, in collaboration with the Department of Medical Psychology of University Medical Centre Hamburg-Eppendorf, from October 2013 until March 2014. The project was funded by the European Integration Fund (EIF) and ethical approval for the study was given by the Ethical Review Board of the Department of Psychology at Humboldt.

The conceptual underpinnings of the training programme evaluated in this study were based on the *Guidelines for Inter-/transcultural Competence Training of Psychotherapists*, which were developed during a previous project by our workgroup ([von Lersner et al., 2016](#)).

Data were acquired before (pre-), immediately after (post-) and three months after (follow-up) the training programme.

Participants were recruited through mailing lists of educational institutions for clinical psychologists and psychological associations in Berlin. We included five institutes for cognitive behavioural therapy as well as five for psychoanalysis and depth psychology.

The main inclusion criterion for participation in the training programme was having had professional training in psychotherapy for adult clients. Therapists who were still in training had to have passed on to the practical stage and be treating clients under supervision. A control group that did not participate in the programme was polled online during the pre-measurement phase. Participation in both groups was voluntary, based on informed consent and without any incentives or remuneration. Unfortunately, as we recruited participants through mailing lists, we were not able to track a reliable response rate.

Figure 1 illustrates the flow of participants in the course of the study.

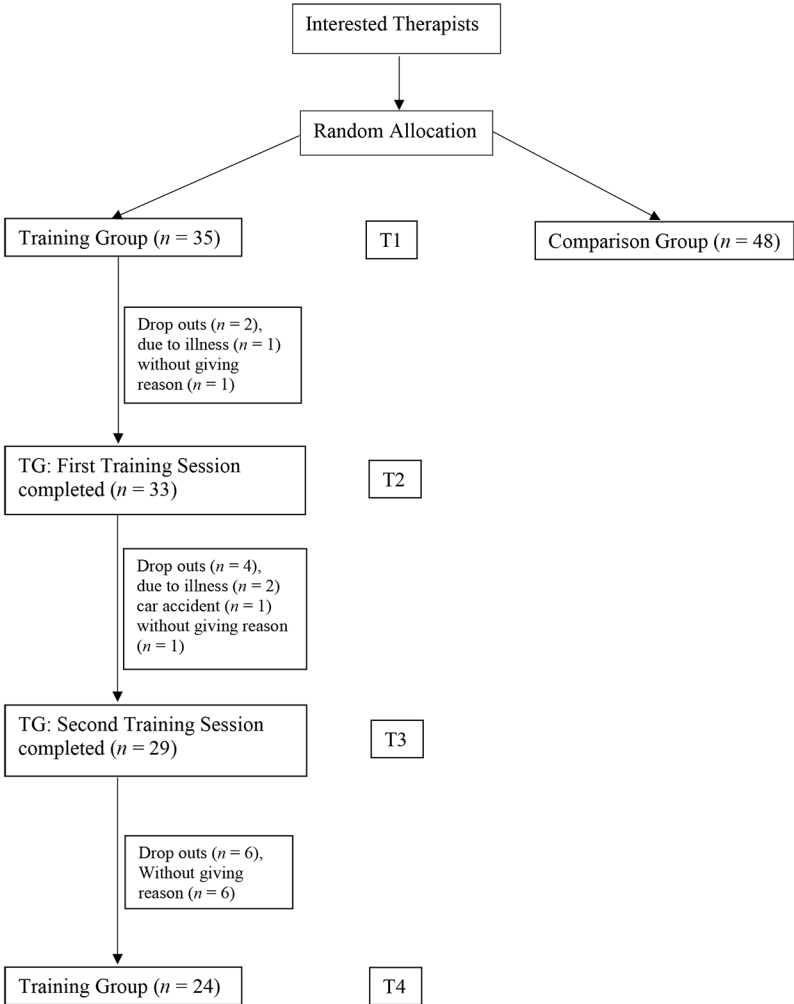


Figure 1. Flow of participants.

Implementation of the Training Programme

Before implementation of the training programme, a pilot training session was carried out with psychology students. Subsequent adjustments were made for the final training manual which would guide the training programme analysed here.

The intervention took place in Berlin and consisted of two consecutive days of training—16.5 hours in total. Three weeks later, an additional, one-day refresher session was carried out consisting of six units of 45 minutes each (4.5 hours total). Experienced therapists and therapists in training received separate training circuits, which were run by experienced intercultural trainers from the project team.

Programme Content

The learning objectives defined in the aforementioned *Guidelines for Intercultural Competence* (von Lersner et al., 2016) formed the basis of the content of the training programme. As recommended by Hager, Patry, and Brezing (2000), an outline of the training programme was discussed by an expert panel (consisting of the project team and four experienced intercultural trainers from the University Medical Centre Hamburg-Eppendorf and the Transcultural Centre in Stockholm), and subsequent adaptations incorporated into the final version by the project team. Table 1 provides a brief overview of the different aspects of intercultural competence covered by individual modules of the programme. In terms of the didactic methods employed, input lectures, self-reflective exercises, critical incident technique, plenary discussions and role play were included.

Table 1

Overview of the Training Modules

Module	Content
Culture	e.g. definition of culture in the personal and therapeutic context, transcultural competence, ethnocentrism, diversity
Migration	e.g. information on facts and figures on migration pathways, stressors & resources, political framework
Experiencing cultural foreignness in everyday life	e.g. personal experiences of cultural foreignness, stereotypes & prejudices, individual norms and values, discrimination
Working with cultural brokers and interpreters	e.g. the meaning of language in the therapeutic process, language barriers, rules for the inclusion of interpreters in the therapeutic setting

Module	Content
Psychometric testing & classification of mental disorders	e.g. opportunities and limitations of culture-sensitive testing, epidemiology of mental disorders in different cultural settings, culture-specific symptom presentation, cultural concepts of distress in DSM-5
Exploration and anamnesis	e.g. Cultural Formulation Interview, culture-specific explanatory models of mental illness
Experiencing cultural foreignness in the clinical setting	e.g. critical incidents
Booster Session (three weeks later)	e.g. supervision, clarification of outstanding questions, identification of 'cultural pitfalls' (Auernheimer, 2002) on the basis of own examples

Measures

Sociodemographic Data

Basic variables regarding the sociodemographic background of participants—gender, age, migration background, therapeutic approach and first language—were recorded. Further, information regarding prior experience of intercultural competence training as well as level of personal interest in the topic was collected.

Personality Traits

In order to assess the influence of the personality trait of openness, the survey also included the short version of the Big Five Inventory (BFI-10; Rammstedt & John, 2005), which measures the Big Five Personality dimensions using just two items for each of them. Rammstedt (2007) reports satisfactory values for the test's quality criteria, and the items on openness exhibit moderate values for retest reliability ($r_{tt} = .62$).

Intercultural Competence

The intercultural competence of participants was measured via the widely used four-dimension Multicultural Counseling Inventory (MCI; Sadowsky, Taffe, Gutkin, & Wise, 1994). The MCI is based on the three dimensions of intercultural competence formulated by Sue and Sue (2012)—knowledge, awareness and skills—but also seeks to capture an additional, fourth dimension: the multicultural therapeutic relationship. This four-factor structure allows single scores to be calculated for each of the dimensions as well as an overall sum score for intercultural competence. The 40 items of the MCI comprise statements about counselling and therapy in intercultural settings. Participants are asked to respond on a five-point Likert scale, ranging from 1 = 'very inaccurate' to 5 = 'very accurate'. For the present study, the MCI was translated into German via the back-translation

method (Brislin, 1970) and adapted linguistically from counselling to therapeutic settings. The MCI meets the requirements for questionnaires in terms of reliability ($.71 \leq \alpha \leq .90$) as well as validity. In our sample, it had a Cronbach’s alpha $\alpha = .88$ at T_1 , $\alpha = .88$ at T_3 and $\alpha = .89$ at T_4 , which represent good values. Cronbach’s alphas for the subscales were as follows: $\alpha_{\text{relationship}} = .68$, $\alpha_{\text{awareness}} = .78$, $\alpha_{\text{knowledge}} = .85$ and $\alpha_{\text{skills}} = .79$ at T_1 ; $\alpha_{\text{relationship}} = .63$, $\alpha_{\text{awareness}} = .80$, $\alpha_{\text{knowledge}} = .80$ and $\alpha_{\text{skills}} = .76$ at T_3 ; and, $\alpha_{\text{relationship}} = .67$, $\alpha_{\text{awareness}} = .82$, $\alpha_{\text{knowledge}} = .79$ and $\alpha_{\text{skills}} = .84$ at T_4 .

Therapeutic Relationship

In addition to the multicultural therapeutic relationship dimension of the MCI, a closer examination of the therapeutic relationship was achieved using the German version of the Scale to Assess the Therapeutic Relationship in Community Mental Health Care, Clinician Version (STAR-C; McGuire-Snieckus, McCabe, Catty, Hansson, & Priebe, 2007). The self-report STAR-C questionnaire consists of 12 items that seek to evaluate the quality of the therapeutic relationship from the perspective of the therapist. It consists of three factors: 1) positive collaboration, 2) positive clinician input and 3) emotional difficulties. Participants rated the therapeutic relationship separately for their clients with and without a migration background. Retest reliability of the German version is $r = .54$, which is satisfactory (Gairing, Jäger, Ketteler, Rössler, & Theodoridou, 2011). In our sample, Cronbach’s alphas were as follows: $\alpha_{\text{STAR_German clients}} = .67$ and $\alpha_{\text{STAR_Immigrant clients}} = .42$ at T_1 ; $\alpha_{\text{STAR_German clients}} = .64$ and $\alpha_{\text{STAR_Immigrant clients}} = .45$ at T_3 ; and, $\alpha_{\text{STAR_German clients}} = .64$ and $\alpha_{\text{STAR_Immigrant clients}} = .62$ at T_4 which reflect moderate to poor values.

Figure 2 gives an overview of the research design and the measures used at different sections of the study. Evaluation at T_1 and T_4 was carried out online, whereas at T_2 and T_3 data was collected in a paper and pencil format.

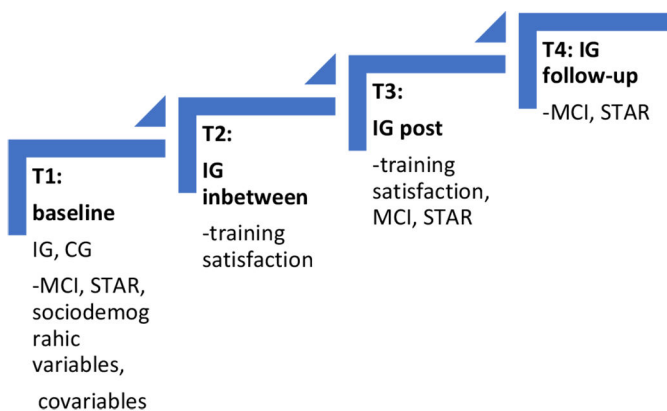


Figure 2. Overview of the research design.

Note. IG = Intervention group. CG = Control group.

Statistical Analysis

Data analysis was carried out using SPSS (Version 22.0). In order to compare characteristics of the intervention and the control group, between-subject descriptive variables were compared using independent-sample *t*-tests or Wilcoxon rank-sum tests for continuous data and chi-square analysis for categorical data. Within-subject descriptive variables were compared using either paired-sample *t*-tests or Wilcoxon signed-rank tests, depending on data level.

Internal consistency of the STAR-C, BFI and MCI variables and therefore the reliability of the measures used in this study was examined by calculating Cronbach's alpha for the pre-, post- and follow-up total scores.

In order to control for possible selection bias for the variables of prior intercultural competence (MCI pre) and prior knowledge, as well as proportion of immigrant clients, personal interest and openness, univariate ANOVAs were carried out. Post-hoc tests using Bonferroni correction allowed us to localise the effects.

Further, to calculate the influence of the training programme on intercultural competence the Friedman test was used. For localisation of the effects over time, Wilcoxon signed-rank tests were applied to non-parametric data and *t*-tests to parametric data. Meanwhile, interaction between time and status of participants (trainee vs. experienced therapist) was examined in a MANOVA with repeated measures.

Throughout the whole study, effect size is reported as Cohen's *d*, *r* and ω . An alpha of .05 was used to define statistical significance in all analyses, and power analysis was carried out using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007).

Results

Sample Characteristics

At T1 the intervention group consisted of 35 participants. Table 2 shows demographic characteristics of this group in comparison to the control group. Statistical analysis showed significant differences between the groups in terms of age and therapy method with the control group being younger and containing a larger percentage of CBT therapists.

Table 2

Demographic Variables of Training Group and Control Group at T1

Demographic variables	Intervention group (N = 35)		Control group (N = 48)		p
	n	%	n	%	
Gender					.55
Female	31	88.6	42	88.0	
Male	4	11.4	6	12.0	
Age					.01
21 – 30 years	8	22.9	18	37.5	
31 – 40 years	10	28.6	23	47.9	
41 – 50 years	9	25.7	5	10.4	
51 – 60 years	5	14.3	2	4.2	
> 61 years	3	8.6	0	0.0	
Therapy method					< .001
CBT	18	51.4	45	93.8	
Psychoanalysis	14	40.0	3	6.3	
No information	3	8.6			
Previous intercultural training					.34
Yes	3	8.6	8	16.7	
No	32	91.4	40	83.3	
Proportion of immigrant clients in daily practice					.70
< 10%	14	40.0	19	39.6	
10 – 30%	13	37.1	19	39.6	
30 – 60%	4	11.4	7	14.6	
60 – 90%	2	5.7	2	4.2	
> 90%	2	5.7	1	2.1	
Immigrant background					.35
Yes	14	40.0	14	29.2	
No	21	60.0	34	70.8	

Note. CBT = Cognitive Behavioural Therapy.

*p ≤ .05. **p ≤ .01.

The whole training programme and evaluation was completed by N = 24 participants, 33% of whom were between 31 and 40 years old and 82% female; 58% were trained (or still in training) in CBT; and 13% had previously participated in intercultural training programmes lasting on average six hours. Regarding prior experience of immigrant clients, a quarter of participants reported that immigrants made up about 30% of their clientele, whereas the remaining participants treated significantly fewer. Furthermore, 38% of

participants had a migration background themselves, meaning that either they themselves or one of their parents had immigrated to Germany (Federal Statistics Office, 2016).

Prerequisites and Verification of Selection Bias

The verification of differences between the intervention and control groups before training revealed no significant differences in terms of intercultural competence before training (MCI-Pre), $t(68.53) = -1.35$, $p = .183$, proportion of immigrant clients, $H = 2.739$, $p = .434$, $\chi^2(4) = 3.01$, $p = .556$, or openness ($W = 726.5$, $p = .361$). However, there were significant differences between the intervention group and control group regarding interest ($W = 1509.5$, $p < .001$) and prior intercultural knowledge ($W = 261$, $p < .001$). Within groups, i.e. between trainees and therapists, no significant differences in mean values were detected.

Intercultural Competence

Table 3 shows the development of intercultural competence over time by presenting the results of the four subscales as well as the total score for the MCI.

Table 3

Intercultural Competence on the MCI Over the Course of the Training

Sub-scale of the MCI	Pre		Post		Follow-up		Pre-Post	Pre-Follow-up	Post-Follow-up
	T1		T3		T4		<i>d</i>	<i>d</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Skills	3.80	0.51	3.75	0.51	3.93	0.40	-.10	.28**	.39*
Awareness	3.09	0.86	3.32	0.67	3.33	0.74	.35*	.30*	.01
Therapeutic Relationship	3.39	0.46	3.38	0.47	3.54	0.31	-.02	.38	.40**
Knowledge	3.22	0.58	3.51	0.50	3.64	0.48	.54*	.79**	.27
Total Score	3.41	0.46	3.52	0.30	3.62	0.33	.28*	.53**	.32*

* $p \leq .05$. ** $p \leq .01$.

The data indicate a significant effect of time as a variable across both groups (experienced therapists and therapists in training, $\chi^2(2, N = 24) = 17.70$, $p < .01$, $\omega = .86$). The Wilcoxon signed-rank test revealed significant changes between all three measurement times (Pre to Post: $z = -3.29$, $p < .01$, $\phi = .67$, $1 - \beta = .43$; Post- to Follow-up: $z = -2.29$, $p < .001$, $\phi = .47$, $1 - \beta = .44$; Pre to Follow-up: $z = -4.00$, $p < .01$, $\phi = .82$, $1 - \beta = .79$). Significant changes on the dimensions of awareness and knowledge occurred immediately after training, whereas values for skills and therapeutic relationship increased significantly at follow-up. The status of trainees had no influence on training outcomes, meaning that

experienced therapists and therapists in training benefitted from the training programme to the same degree, $F(2, 44) = 2.23$, $p = .12$, $\eta^2 = .09$.

The therapeutic relationship, as seen from the perspective of the therapist, was investigated in further detail using STAR-C. Thus, participants were asked at T₁, T₃ and T₄ to rate their therapeutic relationships with their non-immigrant and immigrant clients, separately.

Statistical analysis revealed significant improvement in the therapeutic relationship with non-immigrant clients from T₁ to T₃, $t(28) = -1.73$, $p = .047$, and a clear trend toward significant change from T₁ to T₄, $t(24) = -1.47$, $p = .076$, and T₃ to T₄, $t(22) = -0.43$, $p = .334$. Yet, in contrast, no significant changes were observed with immigrant clients, T₁ to T₃: $t(28) = -0.58$, $p = .284$, T₁ to T₄: $t(24) = -1.40$, $p = .086$, and T₃ to T₄ $t(22) = -0.82$, $p = .210$ (see Table 4).

Table 4

Therapeutic Relationship Over the Course of the Training Measured With STAR-C

Therapeutic Relationship	Pre		Post		Follow-up		Pre-Post	Pre-Follow up	Post-Follow up
	T1		T3		T4				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>d</i>	<i>d</i>	<i>d</i>
Non-immigrant clients	3.40	.39	3.47	.26	3.52	.25	.21	.37	.20
Immigrant clients	3.35	.30	3.37	.25	3.46	.30	.07	.37	.33

Discussion

In this pilot study we evaluated an intercultural training programme for psychotherapists, focusing particularly on changes over time in the intercultural competence of participants as well as the therapeutic relationship from the perspective of the therapist. In order to control for a possible selection bias among participants a control group was included at T₁ and we measured variables such as interest in intercultural issues prior to training and prior knowledge and experience of immigrant clients, as well as work experience.

International evaluation studies point to a general effectiveness of intercultural competency training (Benish et al., 2011; Betancourt & Green, 2010; Kalinoski et al., 2013; Kulik & Roberson, 2008), and our first evaluation of one such training programme in Germany follows these studies in its overall assessment. Even though intercultural competence training programmes for therapists existed prior to our study, no systematic evaluation had been carried out with this target group.

Applying our approach, intercultural competence as measured with the MCI increased significantly. This was the case for the total score as well as the separate scores for each of the four dimensions of the inventory.

Our training programme also had an immediate effect on the dimensions of awareness and knowledge, as described by [Beach et al. \(2005\)](#). In the domain of awareness, this implies, for example, reflecting on one's own prejudices and examining stereotypes so as to develop better awareness of and openness to cultural diversity, and learning about the interplay between one's own attitudes towards immigrant clients and the therapeutic process. Meanwhile, increases in the domain of knowledge imply being better informed about the diversity of cultural groups, differences in cultural concepts of distress and styles of communication, and the use of cultural brokers in therapy. It may also include greater understanding of the socio-political contexts in which intercultural therapy takes place. These are areas of improved intercultural competence that can be absorbed rather quickly and immediately.

In contrast, effects on the dimensions of skills and the therapeutic relationship, again as measured by the MCI, only became evident at the three-month follow-up. As already presumed by [Kulik and Roberson \(2008\)](#), it seems that such changes only become prevalent with direct interaction with clients; thus, these aspects can only be reliably evaluated after participants have returned to work rather than immediately after participation in the programme.

[Campinha-Bacote \(2002\)](#) and [Guzder and Rousseau \(2013\)](#) describe the development of intercultural competence as an ongoing process in which trainees are constantly challenged to be aware of and question their own cultural imprints, thereby becoming able to take their clients' different cultural backgrounds into account in therapy. But critical analysis of one's own values and norms, and the acquiring of new skills, are comprehensive and long-term developmental processes that do not happen overnight. Interestingly, though, the results of the present study indicate that this process can be successfully initiated through training programmes like the one presented here.

Our comparison of the study group and the control group revealed that groups did not differ in terms of intercultural competence before training, proportion of immigrant clients or openness but did differ in terms of interest and prior intercultural knowledge. We cautiously take this to assume that selection bias can thus be excluded, and that by and large training outcomes can be attributed solely to the training programme. At the same time, we have to consider that the sample of this pilot study was too small to carry out reliable regression analyses and to safely rule out a selection bias. This shortcoming could be addressed in future research by larger samples and the inclusion of a control group across all times of measurement.

One reason for the positive outcome of the programme could be the teaching methods used. According to [Kalinowski et al. \(2013\)](#), emotion-focused techniques such as critical incident technique, self-reflective units or active sessions can be more effective in intercultural training than simply imparting theoretical knowledge. The training programme that we developed, implemented and evaluated here includes a high proportion of emotion-activating methods throughout. In each module, a brief introduction is followed by

exercises in which participants can try out a new approach, discuss case vignettes or reflect upon their own perspective. Kalinoski et al. (2013) also demonstrated that training sessions distributed over two or more points in time tend to be more effective compared with longer, one-off interventions. As our training programme consisted of core or primary training sessions spread over two days and an additional refresher session three weeks later, this could also account for the positive outcomes observed. Besides effective training methods and structure, an additional success factor could be the greater specificity of the target group we selected compared with those participating in previous training programmes, given that the programme was specifically both developed for and evaluated by psychotherapists.

As we have mentioned, there was no significant difference in programme outcomes between experienced therapists and therapists in training, suggesting that the programme is appropriate for all therapists regardless of level of experience. This is important for the practical applicability of the programme, as one can either use one programme for all therapists or develop separate curricula for participants of different experience levels. The data suggest that the level of therapeutic experience is not important and thus that the training programme could be applied in postgraduate training as well as in trainings at a later point in therapists' careers. This finding is in line with the *Guidelines for Intercultural Training* (Kirmayer et al., 2012, von Lersner et al., 2016), which are based on the same assumption and define quality criteria for intercultural training across all groups of therapists.

Therapeutic Relationship

To assess the impact of the programme on the therapeutic process, we examined the perceived therapeutic relationship from the perspective of the participants over the course of the training. However, our study generated unexpected findings. Overall, from the perspective of the therapist, it seems that the therapeutic relationship benefits significantly from additional training. This was evident from the STAR-C post measurement as well as the relevant sub-domain of the MCI at follow-up. Yet, when participants were asked to rate the therapeutic relationship for non-immigrant and immigrant clients separately, significant improvement was observable for non-immigrant clients only. At first sight this would appear to be an unexpected outcome, given that the training programme focused on intercultural issues with the intention that immigrants should particularly benefit from it.

Two possible reasons for this counter-intuitive effect are considered here. First, if we recall the definition of culture on which our training programme is based, this effect should not be so surprising. According to Geertz (1973), culture consists of a set of values and norms shared by a group of people independently of their regional origin, a perspective that is also linked to the concept of diversity introduced earlier in this paper. Thus, during the training sessions regional origin and migration status were only two of nu-

merous dimensions associated with culture and diversity. The results found here would seem to confirm this perspective: the quality of the therapeutic relationship improved for the majority of clients irrespective of their immigrant status, suggesting that factors such as openness, greater sensitivity towards clients' socio-cultural background and better awareness of one's own cultural norms and expectations can be beneficial to all clients.

Secondly, our sample size was rather small at T_1 and had decreased further by the time of the follow-up, with the remaining therapists treating a rather small number of immigrants—at or below 30% of their clients—in their daily practice. Thus, it may be due to the small size of this reference group that improvements in the therapeutic relationship between these immigrant clients and their therapists were simply not readily apparent. At the same time, our statistical results clearly point to a positive trend regarding the effect of the training on the therapeutic relationship. This appears to have been confirmed when we used the MCI—on which only the therapeutic relationship with immigrant clients was rated—which reported significant improvement. Nonetheless, we feel that, as a consequence of this pilot study, the evaluation should be repeated with a larger sample and more reliable measures in the future. Internal consistencies of STAR-C scales were unsatisfactory and might have had a negative effect on the outcome values. Consideration should also be given to modifying the training programme's units on migration-related issues, so as to increase the likelihood that the therapeutic relationship with immigrant clients benefits in the same way as that with non-immigrant clients did. Furthermore, in order to achieve robust positive training outcomes, [Guzder and Rousseau \(2013\)](#) recommended ongoing supervision following training. This could support participants in terms of strengthening their newly acquired skills and dealing with any uncertainties arising in the process, both of which may have a long-term, positive impact on the therapeutic relationship.

Limitations and Implications

In addition to its positive outcomes, the study also has a number of limitations. Because of the small sample size, some statistical trends may have been imperceptible that may have been significant with a larger dataset. Also, effect sizes were relatively small. Another result of the small sample size is that our findings cannot be confidently generalised to all therapists. Thus, further studies with larger sample sizes are urgently needed to underpin the effects found in this study. In the meantime, in view of the lack of studies in this field internationally, as well as in Germany, our pilot data provide important information and empirical insights.

The statistical values of the STAR-C were also unsatisfactory, potentially reducing the explanatory power of our findings on the therapeutic relationship. This limitation should be addressed in future research. Nevertheless, significant effects of the programme were established in spite of the poor statistical values of the STAR-C and the small sample size.

Hence, necessary further studies with larger samples are currently being carried out by our team.

In line with Kulik and Roberson (2008), we believe that in future research it would be interesting to evaluate the impact of single training units or specific interventions. In addition, shorter versions of the programme could be evaluated to increase the applicability of the approach in time-strapped clinical settings. Turning to methodological issues, we feel that in the intercultural therapy context it is difficult using questionnaires to measure awareness or attitudes as they may manifest instead at the behavioural level. Hence, it might be useful to examine video recordings of therapy sessions—with real or simulated clients, before and after training intervention—to examine the behavioural level more directly. Other indicators of behavioural change resulting from the training might be client satisfaction with treatment, duration of treatment, percentage of immigrant clients and immigrant-client drop-out rates. It would also appear to be necessary to evaluate client perspectives on the therapeutic relationship, especially those of immigrants.

Conclusions

We conclude from this first evaluation of our intercultural training programme that it offers an effective intervention in terms of enabling psychotherapists to be more culturally sensitive towards clients from migration backgrounds. Such effects were demonstrable to our satisfaction, even with our small sample. We suggest that this training programme—which is actually a rather brief intervention—could lead to significant improvements in therapeutic practice in crucial ways.

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The Phenomenon of Treatment Dropout, Reasons and Moderators in Acceptance and Commitment Therapy and Other Active Treatments: A Meta-Analytic Review

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Abstract

Background: Treatment dropout is one of the most crucial issues that a therapist has to face on a daily basis. The negative effects of premature termination impact the client who is usually found to demonstrate poorer treatment outcomes. This meta-analysis reviewed and systematically examined dropout effects of Acceptance and Commitment Therapy (ACT) as compared to other active treatments. The goals of this study were to compare treatment dropout rates and dropout reasons, examine the influence of demographic variables and identify possible therapy moderators associated with dropout.

Method: The current meta-analysis reviewed 76 studies of ACT reporting dropout rates for various psychological and health-related conditions.

Results: Across reviewed studies ($N = 76$), the overall weighted mean dropout rate was 17.95% (ACT = 17.35% vs. comparison conditions = 18.62%). Type of disorder, recruitment setting and therapists' experience level were significant moderators of dropout. The most frequently reported reasons for dropout from ACT were lost contact, personal and transportation difficulties, whereas for comparative treatments they were lost contact, therapy factors and time demands.

Conclusion: Given that most moderators of influence are not amenable to direct changes by clinicians, mediation variables should also be explored. Overall, results suggest that ACT appears to present some benefits in dropout rates for specific disorders, settings and therapists.

Keywords

acceptance and commitment therapy, dropout, attrition, meta-analysis, premature termination



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Highlights

- There was no difference in dropout rate between ACT and control conditions (17.35% vs.18.62%). Significant moderators were client disorder, therapists' experience level and recruitment and setting.
- Comparison condition frequently reported therapy related dropout factors, suggesting that ACT may be a more acceptable option.

Acceptance and Commitment Therapy (ACT), is a so-called third wave Cognitive Behavior Therapy (CBT) and has been applied successfully to treat numerous problems and disorders (Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Ruiz, 2012). ACT helps clients choose to do what takes them closer to their goals (especially when dealing with problematic thoughts and emotions) rather than aiming to reduce symptoms directly (Hayes, Hayes, Strosahl, & Wilson, 2012). The focus is placed on the experience of the person and the function of any behavior rather than on actions being carried out based on the literal content of a belief (Hayes et al., 2006). The overall aim of treatment is to increase psychological flexibility or the ability to fully contact the present moment, choosing to act guided by the person's values in the context at hand (Fletcher & Hayes, 2005). Most existing reviews and meta-analyses of ACT support that it is at least as equally effective as traditional Cognitive Behavioral Therapy (tCBT) on indices of symptom reduction and more effective than other comparison conditions (A-Tjak et al., 2015; Powers, Vörding, & Emmelkamp, 2009; Ruiz, 2012).

Treatment outcomes and effectiveness, however, are affected not only by the specific treatment provided but also by other factors such as premature termination/dropout or non-completion of the specified interventions (Barrett, Chua, Crits-Christoph, Gibbons, & Thompson, 2008). Premature therapy termination or treatment dropout is a significant problem or obstacle limiting the effectiveness of any therapeutic approach and results in detrimental outcomes in patients (Barrett et al., 2008; Wierzbicki & Pekarik, 1993). Unfortunately, there is no consensus definition about what constitutes treatment dropout. General definitions of dropout include: termination of the intervention prior to the patient recovering from the problem(s) for which treatment was initially sought (Hatchett & Park, 2003; Swift, Callahan, & Levine, 2009), or treatment termination without the agreement of the therapist and before the scheduled end point (Stone & Rutan, 1984). However, in research protocols premature termination may be considered as missing a number of pre-arranged sessions (e.g., four consecutive weeks in DBT; Linehan, 1993) irrespective of the patient's recovery status.

Reviews and meta-analyses of this phenomenon focus on examining first the rates of dropout and, secondly, variables associated with its occurrence. Swift and Greenberg (2012) examined dropout definition as a moderator of dropout rates and found higher rates when the therapist judged dropout status, compared to other definitions. This was

one of the first comprehensive reviews of the dropout phenomenon encompassing various forms of psychotherapy and concluded that 1 in 5 clients drop out prematurely, a rate somewhat lower than previous reviews (e.g., [Wierzbicki & Pekarik, 1993](#)). Client diagnosis, age, education, gender, marital status, time-limitations of treatment, use of manual or protocol, treatment setting, providers' level of experience, dropout definition, study type and search strategy were found to be significant moderators of dropout. However, this meta-analysis did not include studies of third wave psychological treatments, like ACT. Moreover, it focused only on adult populations and did not include substance or alcohol abuse disorders, health-related problems (e.g., weight management, emotional burnout), and self-help interventions. Finally, it focused on providing a broad analysis of premature discontinuation in psychological treatments and not on reasons for dropout.

This study aims to examine the dropout phenomenon in ACT (compared to other active interventions) because of ACT's emphasis on connecting clients with their deeply held values and through this process to motivate them towards behavior change. If ACT is successful in mobilizing individuals via the treatment process, we expect that this would prevent premature termination and thus ACT would result in lower dropout rates compared to other interventions. To date, only one meta-analysis on dropout has included ACT ([Ong, Lee, & Twohig, 2018](#)). This study found that only therapist experience significantly predicted dropout, specifically that when ACT was provided by master's level therapists higher dropout rates were observed, compared to other levels of therapists' experience (e.g., PhD level psychologist, MD physician, graduate student). However, understanding dropout in ACT can be further facilitated in four important ways. First, inclusion of variables found to predict dropout in previous meta-analyses (e.g., gender, race, marital status, employment and years of education) will allow for comparison across studies and methods (e.g., [Swift & Greenberg, 2012](#)). Second, inclusion of variables that assess how the therapy and study were implemented (e.g., length of intervention, hours of intervention, setting, definition of dropout, study type, year of publication and region) can reveal clues as to how interventions can actively minimize dropout. Third, testing the reasons and timing of dropouts provides hypotheses for researchers and therapists to actively intervene to prevent this phenomenon of paramount clinical significance. Finally, some methodological details regarding comparison groups are worthy of reexamination. For example, we believe that including waitlist control conditions in the comparisons may bias the dropout findings in favor of waitlist control. This is because people on the waitlist are fundamentally different to patients in a control condition. In the waitlist, patients usually maintain hope that things will get better once the treatment begins and are not motivated to actively change during the waiting period. When clients do drop out during this period, by definition it has nothing to do with the active treatment. Thus a cleaner comparison of treatment dropout should be carried out between different active treatments (including active controls). Towards this goal, comparative conditions should be other active interventions.

A minority of patients may drop out because they improved or met their goals; however numerous individuals drop out because of a problem with the treatment or therapists or for other unforeseen circumstances. Specifically, proposed problems or reasons associated with increased dropout rates include: client demographic characteristics (e.g., younger age, female gender, low socioeconomic status; [Wierzbicki & Pekarik, 1993](#)); type of psychopathological difficulties (e.g., eating or personality disorders); therapist characteristics (e.g., provider in training); therapy setting (e.g., university-based clinics); and specific factors (e.g., non-time limited therapy), and environmental variables or acute problems that take greater priority ([Bados, Balaguer, & Saldaña, 2007](#); [Roe, Dekel, Harel, & Fennig, 2006](#); [Swift & Greenberg, 2012](#)).

Researching these reasons is difficult as variables and methods vary widely depending on the study and its focus, the population studied, the treatment setting or the treatment offered ([Roe et al., 2006](#); [Todd, Deane, & Bragdon, 2003](#)). However, there is an agreement that certain common reasons account for dropout. These include: lack of improvement or accomplishment of goals, dissatisfaction with the treatment, and environmental obstacles and constraints ([Hunsley, Aubry, Verstervelt, & Vito, 1999](#); [Pekarik, 1992](#); [Roe et al., 2006](#); [Todd et al., 2003](#)). In addition to common factors, clients report specific reasons for discontinuation, including: external circumstantial problems and difficulties (e.g., transportation problems, moving away, timetables), illness and new responsibilities, improvement due to therapy, satisfactory achievement of treatment goals, high treatment costs, dissatisfaction with the therapist and psychotherapy, no need for services and need for independence and trying to solve problems without therapy ([Bados et al., 2007](#); [Roe et al., 2006](#); [Todd et al., 2003](#)).

Interestingly, very little attention has been given to the timing during treatment when premature termination occurs and most studies do not even report this information. Some have proposed that the first two sessions are critical for premature termination, given that most dropouts (70%) occur at this point, making it a critical period to successfully engage the client in treatment ([Olfson, Mojtabai, Sampson, Hwang, & Kessler, 2009](#)). [Karekla \(2004\)](#) observed that in a comparison trial of CBT vs. ACT for panic disorder, though dropout rates between the two approaches were similar, most individuals who dropped out in the CBT condition did so immediately after the introduction of exposure. Such a pattern was not evident for the ACT group, where individuals dropped out at various times during treatment unrelated to specific treatment components. It was concluded that ACT might present an advantage over CBT not in terms of symptom reduction but that it may better prepare individuals to engage in exposure of previously avoided internal and external events and in dealing with the dropout problem. To date, none of the reported reviews or meta-analyses of ACT have examined in depth dropout, dropout reasons, extensive list of moderators, and compared to active treatments.

Current Study

The purpose of this study is to examine dropout rates, dropout reasons' associated factors, and potential moderators of dropout, in ACT compared to active comparison conditions. The goals of this study were to: (i) compare treatment dropout rate and timing between ACT and other active treatments; (ii) examine the influence of demographic variables such as age, gender, treatment setting, race, education, duration of treatment, ethnicity and diagnosis on dropout; (iii) identify possible therapy-associated moderators of dropout; and (iv) examine timing and possible reasons for dropout.

Method

This review was registered in the International Prospective Register of Systematic Reviews (see [Supplementary Materials](#)).

Literature Search

The literature search was conducted using the computerized literature databases Google Scholar, EBSCOhost (Academic Search Ultimate, Medline, Psychology and Behavioral Sciences Collection, PsycARTICLES, PsychInfo, OpenDissertations) and Science Direct (until June 2018) with the following keywords based on title: "Acceptance and Commitment Training", "Acceptance-based behavior therapy", "ACT-based", "Experiential avoidance", "Psychological flexibility", "RFT-based", "CBS-based", "Third wave CBT therapies" "Acceptance and Commitment Therapy", and "ACT"; alone first and then also combined with the terms "drop out" or "dropout" or "discontinuation" or "outcome" or "premature termination" or "termination". The reference lists of all identified articles were examined for additional potentially eligible studies, as well as existing meta-analyses and reviews. A request for unpublished studies was sent to the Acceptance and Commitment Therapy (ACT) listserv (https://contextualscience.org/emailing_lists), as well as to the primary or secondary authors of identified articles, via email.

Eligibility Criteria

Identification and selection of the included studies was performed by the second author, a clinical psychology doctoral student, who was first trained and instructed in the procedure of conducting meta-analysis by the first and last authors. Everything was checked by the first author. The last three authors all have experience in meta-analysis and served to check all steps taken in the process of this study.

This study includes all published and unpublished (e.g., dissertation) Acceptance and Commitment Therapy studies that included dropout information and met the following criteria. Studies were included if they: (1) were in English, (2) reported dropout rates after beginning psychotherapy or reported no dropouts (i.e., all participants completed treat-

ment), and (3) used an active comparison condition. Studies were excluded if: (a) data originated from the same sample as another included study (so as to avoid violating the meta-analytic assumption of data independence); (b) information to calculate effect sizes was lacking and contact with authors was not possible; and (c) case studies.

The literature search resulted in 4399 articles in total. After screening the titles and abstracts, and following the examination of the full papers, 76 studies met all aforementioned inclusion criteria and were retained for analysis (see [Figure 1](#) for procedure details). Based on the Rosenthal's suggestions for computing the fail-safe n , it was found that the total Z value was -1.181 and the number of missing studies we would need to retrieve and incorporate to result in a non-significant p -value was 147 studies (see also [Borenstein, Hedges, Higgins, & Rothstein, 2009](#)).

Coding Procedures

Treatment dropout was defined as the percentage of patients who began treatment, but according to the author(s) dropped out prematurely, thus utilizing the author(s)' definition. For reliability and validity purposes we included only studies that reported dropout rates during treatment and not prior to treatment initiation.

Participant, therapist, treatment and study characteristics were coded (see [Table 1](#) for details about coding of each of the variables). Eight participant characteristics included: client disorder, gender, age, race, marital status, employment, years of education and population. Eight treatment variables were comparison condition, treatment status, length of intervention, length of intervention in sessions, hours of intervention, format of treatment, treatment setting and description of treatment setting (as per [Swift & Greenberg, 2012](#)). Two treatment provider variables regarding experience level: 1) experience level of ACT therapists, and 2) experience level of therapists in comparison groups. Finally, four study variables included: definition of dropout, study type, year of publication and region.

The second and third authors coded all variables separately and these were checked for accuracy by the first authors. There was a 95% agreement rate between coders with disagreements resolved via a consensus among the authors (for further coding details contact the authors).

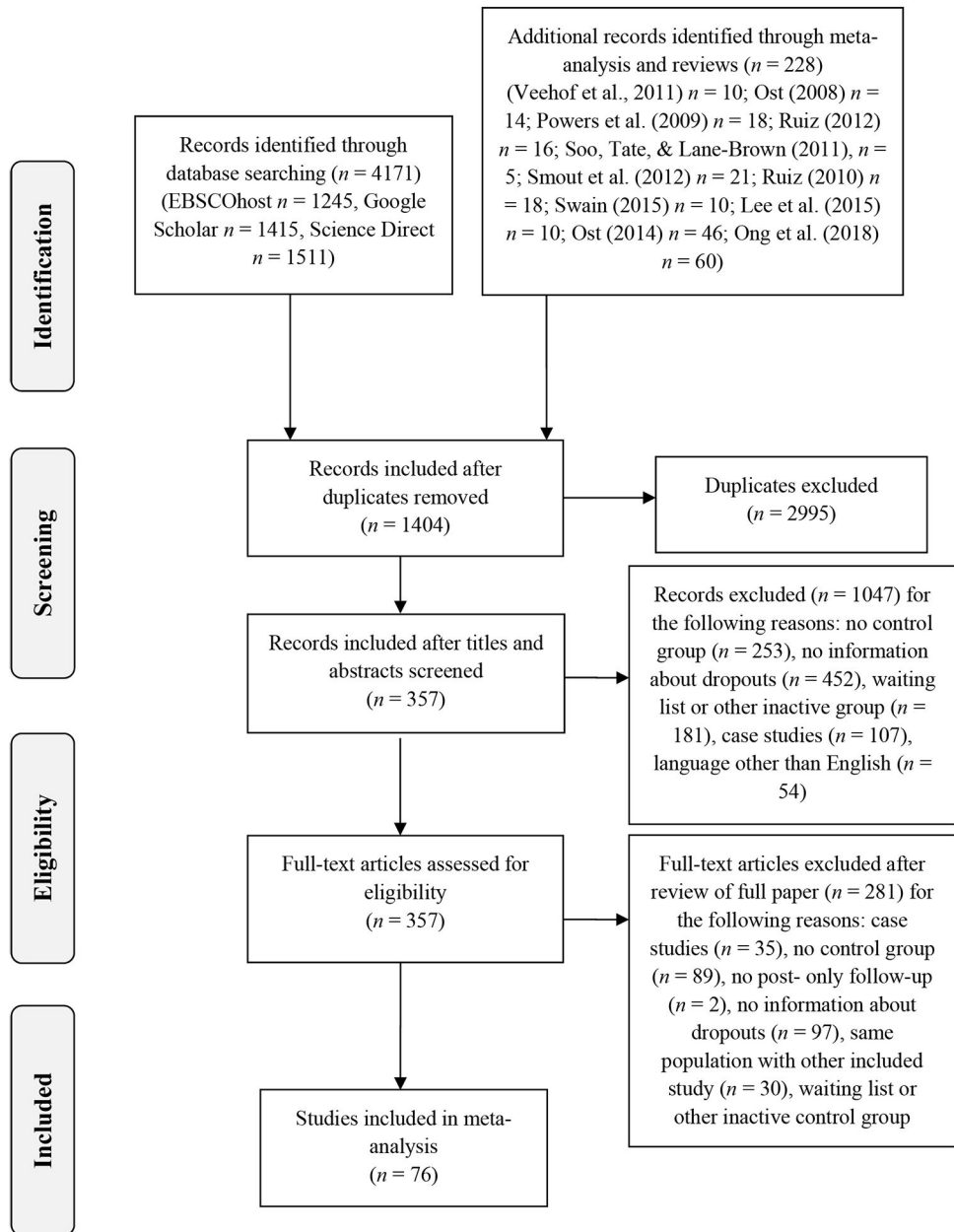


Figure 1. Flow chart of information from identification to inclusion of studies in this review.

Table 1

Details Regarding the Coding of Each of the Variables

Participant characteristics	
Client disorder	Anxiety disorder (including social phobia, public speaking anxiety, generalized anxiety disorder and obsessive compulsive disorder), depression, substance abuse or dependence, chronic pain (including fibromyalgia, osteoarthritis and headaches), eating pathology/disorder (including diabetes, obesity, weight problems and eating disorders), health conditions and chronic illnesses (i.e. Parkinson's disease, multiple sclerosis, brain injury, cancer and HIV), smoking, other health problems (stress, distress, physical activity, tinnitus, procrastination and sickness absence) and severe psychopathology (including borderline personality disorder, treatment resistant and psychosis)
Gender	Percentage of female participants in each study
Age	Average age in years of participants in each sample
Race	Percentage of White (including Caucasian, Australian and European), Black (including African American) and other (Hispanic, Latino, Asian American/ Pacific Islander, Native American, Alaskan American and American Indian/ Alaskan native)
Marital status	Percentage of participants who were single (non-married, never married, divorced, separated or widowed) vs. married (cohabiting, living with partner/spouse/family or in a relationship)
Employment	Percentage of participants who were working, either full-time or part-time
Years of education	Participants' average number of completed education years in each study. In cases where the mean number of education in years was not provided, we calculated this based on the data reported.
Population	Adults or children and adolescents
Treatment variables	
Comparison condition	CBT, Treatment as Usual (TAU; studies in which TAU consisted of only administering medication were coded as medication only), medication only (i.e., Medication Treatment as Usual plus Enhanced Assessment and Monitoring, Recommended Pharmacological Treatment, Specialty Medical Management, Methadone maintenance, Selective Serotonin Reuptake Inhibitors, Medical Treatment as Usual, Nicotine Replacement Treatment and Bupropion Regimen), other active treatment (i.e., Narcotics Anonymous, Applied Behavior Analysis, smokefree.gov, online discussion forum, usual care, counseling services, Workplace Dialogue Intervention, Present-Centered Therapy, physical exercise, Drug Counseling, Tinnitus Retraining Therapy and Expressive writing), component of CBT (including Progressive Relaxation Training, Systematic Desensitization, Applied Relaxation, Cognitive Therapy, Stress Inoculation Training, Relaxation Training) and education only (education, Befriending, Pedometer-based walking program)
Treatment status	Providing any treatment/training to the comparison condition or not
Length of intervention	Total length of treatment in weeks (in cases where months were reported, each month was calculated to equal 4 weeks)
Length of intervention in sessions	Total number of treatment sessions
Hours of intervention	The overall duration of intervention in hours
Format of treatment	Individual, self-help (including web-based and online format), group, or combination (group & individual)
Treatment setting	Outpatient, inpatient or self-help (including web-based and online format)
Description of treatment setting	University affiliated clinic (psychology department training clinic and university counseling center), outpatient clinic affiliated with a hospital or medical school, public/community outpatient clinic, research/specialty clinic, private outpatient clinic/practice, therapy took place at participant's home (i.e., web-based/online intervention or self-help) and inpatient or residential treatment

Treatment provider variables

Experience level of ACT therapists	Master level therapists or doctoral students/interns/residents, doctoral level or licensed therapists, mix of doctoral level, student trainees, and others (e.g., licensed clinicians, psychiatrists, social workers, psychiatric nurses), no therapists (i.e., for online/web-based or self-help formats), mix of different psychologist levels and non-psychologists (e.g. drug staff, alcohol counselor, physician, psycho-pharmacologist)
Experience level of therapists in comparison groups.	Master level therapists or doctoral students/interns/residents, doctoral level or licensed therapists, mix of doctoral level, student trainees, and others (e.g., licensed clinicians, psychiatrists, social workers, psychiatric nurses), no therapists (i.e. it was applicable for online/web-based or self-help formats), mix of different psychologist levels, psychiatrists and non-psychologists (e.g. drug staff, alcohol counselor, physician, psycho-pharmacologist).

Study variables

Definition of dropout	Failed to complete treatment/discontinued treatment/left before treatment end, or refused to return to treatment, failed to attend all sessions, failed to submit pre and post treatment data and attended less than or equal to either: 25-40%, 50-75% or 76-90% of total sessions
Study type	Efficacy (i.e., studies that emphasize internal validity) or effectiveness (i.e., emphasize external validity of the experimental design). If the study type was not specifically reported, efficacy was coded as studies utilizing: (a) strict exclusion criteria, (b) careful pre-selection of clients, (c) treatment following a strict protocol and was more controlled than effectiveness studies, (d) randomization of participants to treatments, and/or (e) therapists receiving training before and supervision during the study

Year of publication

Region	In which each study was conducted
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Data Analysis

First, the dropout rate for each study condition (ACT vs. comparison group) was calculated (i.e., the total number of patients who dropped out of each treatment group, out of the total number of patients included in each group). Then, the weighted average dropout rate (i.e., weighted dropout rate for each study condition based on the total number of patients included in the study) was computed for each of the 76 included studies. The number of participants dropped from each group was included in the Comprehensive Meta-Analysis software (CMA; version 2.0, Biostat, Englewood, NJ), along with the sample size of each group (treatment and comparison). Odds ratio was then computed. Odds ratios higher than 1 suggest that dropout rates are higher in the intervention versus the comparison condition (i.e., comparison group is better).

Random-effects models were used to estimate the effect size of rate ratio in the included studies, as the assumptions of random-effect models suggests that study characteristics influence the true effect of treatments, and that sampling error varies between studies (DerSimonian & Kacker, 2007). The Q statistic and the I^2 statistic were calculated. Random-effects models are considered appropriate when there is significant heterogeneity ($p < .05$) according to the Q index, and when heterogeneity is high (>75%) based on the I^2 index.

First, an unconditioned model without having any predictors or moderators was calculated using CMA, in order to detect the general rate ratio of dropouts between treat-

ment and comparison conditions. In order to examine if the results of the general model were subject to biases related to the publication of studies with favorable outcomes, publication bias was investigated by assessing the asymmetries evident in a funnel plot, with the Egger's regression test (Egger, Smith, Schneider, & Minder, 1997) and the Begg and Mazumdar test (Kendall's statistic). A stratified subgroup analyses was then run in order to test the moderating role of categorical study characteristics and meta-regression analyses to test the moderating role of continuous study characteristics. Q statistic was calculated for the subgroup analyses, in order to examine if the differences detected between the mean effect sizes of the groups of studies with a particular characteristic were significant. The meta-regression analyses were computed using a general mixed-effects method-of-moments (Kacker, 2004) estimate for the inter-study variance τ^2 (DerSimonian & Kacker, 2007).

Results

Characteristics of Reviewed Studies

All identified studies were included in the meta-analysis; no structured qualitative assessment of the reviewed articles was performed. The large majority of included studies employed a randomized controlled trial design, or at least a controlled trial design. This suggests that all studies are at least of a moderate methodological quality (Petrisor & Bhandari, 2007), and attempted to compare ACT to an active treatment comparison condition.

See Table 2 for characteristics of included studies. Most studies dealt with the treatment of anxiety ($n = 14$, 18.4%) and chronic pain ($n = 14$, 18.4%); and targeted adults ($n = 73$, 96.1%) using a group treatment format ($n = 34$, 44.7%). ACT was compared mostly with TAU ($n = 17$, 22.4%) and CBT ($n = 17$, 22.4%). Most studies were delivered in an outpatient setting ($n = 60$, 78.9%) and participants were most frequently recruited via community advertisements ($n = 21$, 27.6%). Treatment in ACT groups was delivered mostly by psychologists of various training levels ($n = 19$, 25%) and licensed or doctoral level psychologists ($n = 15$, 19.7%). In comparison group treatment was provided mostly by a mix of doctoral level, student trainees and others ($n = 15$, 19.7%) and a mix of psychologists with different training levels ($n = 13$, 17.1%). The most frequent definition of dropout was "failed to complete treatment, left treatment prior to its end, or refused to return to treatment" ($n = 53$, 69.7%). Finally, efficacy-type studies ($n = 42$, 55.3%) were more than effectiveness-type studies ($n = 34$, 44.7%).

Table 2
 Characteristics of Studies Included in the Meta-Analysis (N = 76)

Study & Region	Disorder	N	Control group(s)	% dropout		Mean Age	% female	Setting	Format	Tx weeks
				ACT	control group(s)					
Abad et al. (2016); Asia	Cancer	36	CBT	0.00	16.66	NI	100	O	G	NI
Alonso-Fernández et al. (2016); Europe	CP	101	MS	43.40	29.17	83	78	O	G	9
Arch et al. (2012); US	Anxiety	128	CBT	35.09	32.39	38	52	O	Ind	12
Avdagic, Morrissey, & Boschén (2019); Australia	GAD	51	CBT	12.00	23.08	36	67	O	G	6
Azkhosh et al. (2016); Asia	Substance Abuse	60	Narcotics Anonymous	20.00	15.00	27	NI	O	I	12
Bethay et al. (2013); US	Intellectual Disability	34	ABA	10.00	11.11	38	77	O	G	3
Bricker et al. (2013); US	Smoking	222	Smokefree.gov	45.95	46.85	45	62	S	S	3
Buhrman et al. (2013); Europe	CP	76	Online Discussion Forum	15.79	15.79	49	59	S	S	7
Butryn et al. (2011); US	Physical activity	54	Education	20.00	5.26	23	100	O	G	3
Clarke et al. (2014); Europe	Treatment resistant	61	TAU-CBT	13.33	22.58	43	67	O	G	16
Clarke et al. (2017); Europe	Osteoarthritis	31	Usual Care	31.25	0.00	67	71	O	G	6
Craske et al. (2014); US	SP	87	CBT	20.69	36.36	28	46	O	Ind	12
Davoudi et al. (2017); Asia	Smoking	70	Other active treatment	2.86	5.71	30	0	O	Ind	8
Djordjevic & Frögel (2012); Europe	Stress	113	TAU	28.99	29.55	25	79	O	G	6
England et al. (2012); US	Anxiety	45	HAB	23.81	20.83	32	80	O	G	6
Finnes et al. (2017); Europe	Sickness Absence	352	WDI	7.32	12.90	46	78	O	Ind	10

Study & Region	Disorder	N	Control group(s)	% dropout		Mean Age	% female	Setting	Format	Tx weeks
				ACT	control group(s)					
Flaxman & Bond (2010); Europe	Distress	107	SIT	13.51	10.81	39	72	O	G	3
Forman et al. (2007); US	Anxiety	101	CT	33.90	42.20	28	80	O	Ind	M = 15.27
Forman et al. (2013); US	Obesity	128	SBT	9.46	20.37	46	100	O	G	40
Gaudio & Herbert (2006); US	Psychosis	40	TAU	5.26	4.76	40	36	Inp	Ind	3
Gaudiano et al. (2015); US	Depression	13	MTAU	16.66	42.86	50	54	O	Ind	16
Ghielen et al. (2017); Europe	Parkinson	46	TAU	13.04	8.70	63	39	O	G	6
Gifford et al. (2004); US	Smoking	76	NRT	36.40	38.10	43	59	O	G & Ind	7
Gifford et al. (2011); US	Smoking	303	BP	33.08	46.82	46	59	O	G & Ind	10
Glassman (2014); US	Anxiety	25	TCBT	0.00	8.33	24	73	O	Ind	1
González-Fernández et al. (2018); Europe	Cancer	66	BA	29.41	22.73	52	92	O	G	12
Gregg, Callaghan, Hayes, & Glenn-Lawson (2007); US	Type 2 diabetes	81	Education	0.00	0.00	51	47	O	G	1
Hancock et al. (2018); Australia	Anxiety	193	CBT	20.59	9.52	11	58	O	G	10
Hayes et al. (2004); US	Polysubstance-Abusing Opiate Addicts	124	MM, ITSF	45.24	24.00	42	51	O	G & Ind	16
Hayes, Boyd, & Sewell (2011); Australia	Depression	38	TAU	13.63	31.25	15	71	O	Ind	NI
Hayes-Skelton, Roemer, & Orsillo (2013); US	Anxiety	81	AR	25.00	21.95	65	33	O	Ind	16
Hernández-López et al. (2009); Europe	Smoking	81	CBT	37.21	23.68	42	64	O	G	7
Hesser et al. (2012); Europe	Tinnitus	99	CBT	2.86	6.25	49	43	S	S	8
Juarascio et al. (2013); US	ED	140	TAU	15.15	8.11	27	100	Inp	G	M = 3.91

Study & Region	Disorder	N	Control group(s)	% dropout		Mean Age	% female	Setting	Format	Tx weeks
				ACT	group(s)					
Kemani et al. (2016); Europe	Pain	60	AR	0.00	16.66	40	73	O	G	12
Kingston (2008); Europe	Treatment resistant	40	CBT	15.00	40.00	44	60	O	G	16
Kocovski, Fleming, Hawley, Huta, & Antony (2013); US	SAD	137	CBT	30.19	39.62	35	54	O	G	12
Lang et al. (2017); US	Distress	160	PCT	33.75	30.00	34	20	O	Ind	12
Lanza, Garcia, Lamelas, & González-Menéndez (2014); Europe	Substance Use	50	CBT	0.00	0.00	33	100	NI	G	16
Lassen (2010); US	Psychosis	28	TAU	14.29	42.86	42	39	O	G	2
Lillis et al. (2016); US	Weight loss	162	CBT	16.05	13.58	50	85	O	G	52
Luciano et al. (2014); Europe	Fibromyalgia	156	RPT	9.80	11.54	48	96	O	G	NI
Luoma, Kohlenberg, Hayes, & Fletcher (2012); US	Substance Use	133	TAU	10.29	0.00	34	46	Imp	G	1
McCracken et al. (2014); Europe	CP	73	TAU	18.92	2.78	58	68	O	G	5
McMillan et al. (2002); Europe	TBI	145	PE	12.00	19.15	34	22	S	S	4
Moffitt & Mohr (2015); Australia	Physical Activity	76	PWP	0.00	5.40	44	83	S	S	12
Moitra et al. (2017); US	HIV	34	TAU	11.77	5.88	34	21	O	Ind	3
Morton, Snowdon, Gopold, & Guymer (2012); Australia	BPD	41	TAU	23.81	30.00	35	93	O	G	12
Moshier et al. (2018); Europe	Breast Cancer	47	Education	21.74	12.50	56	100	O	I	6
Mo'tamedi, Rezaeiaram, & Tavallaie (2012); Asia	Chronic headache	30	MTAU	26.67	0.00	36	100	O	G	8
Nordin & Rorsman (2012); Europe	Multiple sclerosis	21	RT	9.09	0.00	46	76	O	G	15
Palmeira et al. (2017); Europe	Obesity	73	TAU	8.33	10.81	42	100	O	G	
Parling et al. (2016); Europe	Eating Disorders	43	TAU	25.00	15.80	26	98	O	Ind	19

Study & Region	Disorder	N	Control group(s)	% dropout		Mean Age	% female	Setting	Format	Tx weeks
				ACT	% dropout control group(s)					
Petersen & Zettle (2009); US	Comorbid depression and alcohol use	24	TAU	20.00	7.69	38	50	Inp	Ind	M = 3.2
Scott et al. (2018); Europe	CP	63	SPM	25.81	21.88	46	64	S	Ind	12
Shawyer et al. (2012); Australia	Psychosis	44	Befriending	4.76	9.09	39	44	O	Ind	15
Shawyer et al. (2017); Australia	Psychosis	96	Befriending	6.12	8.51	36	39	O	Ind	8
Shayeghian et al. (2016); Asia	Diabetes	106	Education	5.66	0.00	55	60	O	G	10
Simister et al. (2018); US	Fibromyalgia	67	TAU	9.09	0.00	40	95	S	S	8
Smout et al. (2010); Australia	MUD	104	CBT	56.86	56.60	31	40	O	Ind	12
Steiner et al. (2013); US	Fibromyalgia	28	Education	0.00	0.00	49	100	O	Ind	8
Stotts et al. (2012); US	Methadone Detoxification	56	TAU	40.00	53.85	40	37	O	Ind	24
Thorsell et al. (2011); Europe	CP	90	AR	36.54	18.42	46	64	S	S	7
Trompeter, Bohlmeijer, Veehof, & Schreurs (2015); Europe	CP	238	EW	28.05	36.71	53	76	S	S	12
Twohig et al. (2010); US	OCD	79	PRT	9.80	13.20	37	61	O	Ind	8
Tyrberg, Carlbom, & Lundgren (2017); Europe	Psychosis	21	TAU	4.55	0.00	41	38	I	Ind	1
Vakili et al. (2013); Asia	OCD	27	SSRIs	10.00	27.27	27	44	O	G	NI
Wang et al. (2017); Asia	Procrastination	79	CBT	11.54	7.69	21	47	O	G	8
Weinland et al. (2012); Europe	BS	39	TAU	21.05	10.00	43	90	S	S	6
Westin et al. (2011); Europe	Tinnitus	64	TRT	0.00	10.00	51	47	O	Ind	10
Wetherell et al. (2011a); US	Anxiety	21	CBT	0.00	44.44	71	48	O	Ind	12
Wetherell et al. (2011b); US	CP	114	CBT	10.53	14.03	55	51	O	G	8
White et al. (2011); Europe	Psychosis	27	TAU	0.00	23.08	34	22	O	Ind	10

Study & Region	Disorder	N	Control group(s)	% dropout		Mean Age	% female	Setting	Format	Tx weeks
				ACT	control group(s)					
Wicksell, Melin, Lekander, & Olsson (2009); Europe	LPP	32	MDT	0.00	0.00	15	78	O	Ind	12
Wolitzky-Taylor, Arch, Rosenfield, & Craske (2012); US	Anxiety	121	CBT	36:36	25:76	38	57	O	Ind	12
Zettle (2003); US	Mathematics Anxiety	24	SD	14:29	36:84	31	83	O	Ind	6

Note. NI = not indicated; US = United States; OCD = Obsessive Compulsive Disorder; SP = Social Phobia; MUD = Methamphetamine Use Disorders; SAD = Social Anxiety Disorder; GAD = Generalized Anxiety Disorder; CP = Chronic Pain; LPP = Longstanding pediatric pain; TBI = Traumatic Brain Injury; BS = Bariatric Surgery; ED = Eating disorders; BPD = Borderline Personality Disorder; MS = Minimal Support Group; CBT = Cognitive Behavioral Therapy; CT = Cognitive Therapy; PRT = Progressive Relaxation Training; SD = Systematic Desensitization; SSRIs = Selective Serotonin Reuptake Inhibitors; NCC = Non-standardized Control Condition; RPT = Recommended Pharmacological Treatment; TAU = Treatment as Usual; MM = Methadone maintenance; ITSF = Intensive Twelve Step Facilitation Therapy Plus Methadone Maintenance; PE = Physical Exercise; AR = Applied Relaxation; MDT = Multidisciplinary treatment and amitriptyline; MTAU = medical treatment as usual; EW = Expressive writing; SBT = Standard Behavioral Treatment; SPM = Specialty Medical Management; BP = Bupropion Regimen; NRT = Nicotine Replacement Treatment; ABA = Applied Behavior Analysis; PWP = Pedometer-based walking program; TRT = Timmitus Retraining Therapy; WDI = Workplace Dialogue Intervention; RT = Relaxation Training; BA = Behavioral Activation; SIT = Stress Inoculation Training; HAB = Exposure with Habituation Rationale; PCT = Present-Centered Therapy; tCBT = Traditional Cognitive Behavioral Therapy; O = Outpatient; Imp = Inpatient; S = Self-help; G = Group; Ind = Individual.

Regarding reasons reported for dropout, the majority of studies did not report data about client variables separately for dropout and completers. Of the 65 studies presenting drop-outs in the ACT condition, only 27 studies (41.54%) reported reasons for dropout. Regarding comparisons, all participants completed treatment in 11 studies, whereas for the remaining 65 studies with dropouts, only 30 (45.15%) reported dropout reasons. For ACT, the most frequently reported reasons for dropout were: lost contact ($n = 15$, 55.55%), personal ($n = 12$, 44.44%), transportation difficulties ($n = 10$, 37.04%) and therapy factors ($n = 9$, 33.33%). However, for comparison condition(s) the main reasons for dropout were: lost contact ($n = 19$, 63.33%), therapy factors ($n = 11$, 36.67%) and time demands ($n = 10$, 33.33%). For percentages of clients reporting each of the reasons for the included studies, see Appendix A in [Supplementary Materials](#).

Dropout Rates

Across all studies and comparison conditions, the overall weighted mean dropout rate was 17.95%, 95% CI [15.12, 20.77]. ACT trials reported an average dropout rate of 17.35%, 95% CI [14.33, 20.37] and comparison conditions reported an average dropout rate of 18.62%, 95% CI [15.29, 21.96]. In the CMA, the unconstrained model with the 76 studies of ACT vs. comparison conditions, showed that the heterogeneity detected using the fixed-effects model was very small and non-significant, with $Q(75) = 79.371$, $p = .343$, $I^2 = 5.507\%$. It was thus justifiable to hypothesize that the random errors among the studies were not considerably different and that fixed-effects models could be followed. Despite dropout rates in ACT appearing to be lower than in comparison groups when examining the overall weighted mean dropout rate the difference did not reach statistical significance, as the point estimate of the odds ratio and its confidence intervals included value 1 (i.e., equal odds/risk to dropout) with $OR = 0.931$, 95% CI [0.809, 1.070], $z = -1.011$, $p = .312$; see Appendix B in [Supplementary Materials](#)). The funnel plot for the investigation of publication bias in the meta-analysis (see Appendix B in [Supplementary Materials](#)) indicated no asymmetry, suggesting that there was no statistically significant publication bias, with Egger test $t(74) = 0.591$, 95% CI [-0.617, 0.334], $p = .556$ or the Begg and Mazumdar Kendall's tau, with $\tau = -0.079$, $p = .313$.

Quantitative Synthesis of the Findings of the Reviewed Studies: Meta-Analysis

Participant Moderators

Eight participant variables were first examined as moderators of therapy dropout (see [Table 3](#)).

Table 3
Results From the Subgroup Analysis of Participant, Study and Provider Categorical Moderators on Therapy Dropout

Moderator	N	Mean Dropout Rate		95% CI		Z	p	Q	P
		ACT	Control	ACT	Control				
Client disorder									
Anxiety disorder or social phobia	14	19.41	27.27	13.03, 25.79	21.05, 33.49	-0.663	0.507	7.101	0.526
Depression	2	16.82	19.47	10.57, 23.06	-3.62, 42.56	-0.567	0.571		
Substance abuse or dependence	6	28.73	24.91	11.08, 46.38	4.72, 45.09	0.122	0.903		
Other health related problems	10	12.80	12.90	5.88, 20.01	7.16, 18.64	0.064	0.949		
Chronic Pain	14	18.23	11.93	10.89, 25.66	5.61, 18.24	0.738	0.461		
Chronic health conditions	7	13.86	12.23	6.92, 20.81	6.33, 18.13	0.215	0.829		
Eating pathology/disorder	8	12.59	9.83	6.86, 18.32	4.88, 14.79	0.379	0.705		
Smoking	5	31.10	32.23	16.65, 45.55	16.81, 47.65	-1.265	0.206		
Severe psychopathology	10	10.38	22.37	5.84, 14.92	12.28, 32.47	-2.473	0.013		
Population									
Children and adolescents	3	11.41	13.59	-0.45, 23.26	-4.54, 31.72	0.759	0.448	0.029	0.866
Adults	73	17.59	18.83	14.49, 20.70	15.42, 22.24	-1.149	0.251		
Country									
United States	32	19.75	23.06	15.02, 24.49	17.20, 28.93	-1.538	0.124	1.470	0.689
Australia	8	17.22	21.68	4.82, 29.62	9.60, 33.76	-0.441	0.659		
Europe	29	16.28	14.88	11.70, 20.86	10.90, 18.86	0.493	0.622		
Asia	7	10.96	10.33	3.91, 18.01	2.98, 17.68	0.221	0.825		
Therapist experience level in ACT groups									
Masters/ master level therapists or doctoral students, interns, residents	13	23.26	24.20	14.56, 31.96	15.53, 32.87	0.747	0.455	5.611	0.468
PhD therapists, doctorate	15	15.24	14.25	8.69, 21.80	9.01, 19.50	0.006	0.995		
Mix PhD, students and others	15	16.34	21.90	10.17, 22.52	13.32, 30.48	-2.366	0.018		
Not informed	5	10.90	11.57	3.08, 18.73	0.20, 22.94	-0.738	0.461		
Psychologists mixed levels	19	16.15	18.35	10.34, 21.95	11.43, 25.26	-0.080	0.936		
No therapists (online)	8	19.92	17.43	8.87, 31.16	6.10, 28.75	0.059	0.953		
Non-psychologists	1	21.74	12.50	-	-	0.833	0.405		

Moderator	N	Mean Dropout Rate		95% CI		Z	p	Q	P
		ACT	Control	ACT	Control				
Therapist experience level in comparison groups									
Masters/ master level therapists or doctoral students, interns, residents	10	24.37	23.10	14.65, 34.09	13.38, 32.82	0.765	0.444	5.990	0.541
Mix PhD, students and others	15	14.99	20.58	9.82, 20.15	14.21, 26.95	-1.479	0.139		
Psychiatrists	2	34.74	42.46	31.49, 37.99	33.91, 51.01	-2.087	0.037		
PhD therapists, doctorate	9	17.85	17.84	7.37, 28.34	10.28, 25.41	1.221	0.222		
Non-psychologists (drug staff, alcohol counselor, physician, psycho-pharmacologist)	9	13.49	18.06	8.05, 18.94	7.18, 28.94	-0.122	0.903		
Not informed	12	14.49	9.45	9.37, 19.61	3.05, 15.85	-0.579	0.563		
Psychologists mixed levels	13	15.03	17.29	6.41, 23.66	8.05, 26.52	0.060	0.953		
No therapists (online)	6	21.53	21.57	6.74, 36.33	8.14, 35.00	-0.284	0.777		
Definition of dropout									
failed to complete treatment/ discontinued treatment/leave before the end of tx/refused to return in tx	53	15.35	18.40	11.65, 19.06	14.36, 22.43	-0.234	0.815	0.166	0.999
attended less than or equal to 50-75% of total sessions/weeks	11	22.82	18.68	15.69, 29.94	9.51, 27.86	-1.267	0.205		
attended less than or equal to 76-90% of total sessions	6	24.63	20.47	14.94, 34.31	5.70, 35.23	-0.358	0.720		
failed to attend all sessions	2	20.54	21.45	-5.37, 46.44	4.69, 38.21	-0.131	0.896		
attended less than or equal to 25-40% of total sessions or groups	2	21.60	22.41	8.96, 34.24	-5.62, 50.44	-0.317	0.751		
failed to submit pre and post-treatment data	2	10.96	12.15	1.48, 20.43	5.02, 19.28	-0.279	0.781		
Study type									
Efficacy	42	17.37	20.37	13.06, 21.67	15.71, 25.03	-1.248	0.212	0.366	0.545
Effectiveness	34	17.33	16.46	13.10, 21.56	11.74, 21.18	-0.064	0.949		

Note. Tabled are weighted mean dropout rates of client, design and provider moderators using random-effects analysis. k = number of relevant studies included in each analysis; Mean Dropout Rate = the mean percentage of participants terminating prematurely; CI = confidence intervals; Z = two-tailed test indicating which levels of the moderators are significant; Q = test of heterogeneity between levels of each moderator. * p < .05. ** p < .01. *** p < .001.

Regarding categorical moderators, there were no significant differences between subgroups. This was expected as heterogeneity among the studies was very small and the studies were generally favoring ACT groups but this finding did not reach statistical significance. However, separate investigation of the effect sizes in each subgroup of studies showed that a significant finding was noted in the subgroup analysis for the type of disorder under investigation (see Appendix C in [Supplementary Materials](#)); where in studies with a population with a severe psychopathology (i.e., borderline personality disorder, treatment resistant and psychosis) the dropouts were significantly lower in ACT groups compared to comparisons ($OR = 0.473$, $z = -2.473$, $p = .01$). In terms of the six participant continuous moderators, meta-regression analyses based on the odds ratio using a method-of-moments estimation showed that none of them (gender, marriage, ethnicity, employment and mean age) were independent predictors of the effect size.

Treatment Moderators

Eight treatment variables were tested as moderators of dropout rate (see [Table 4](#) for categorical variables). Subgroup analyses of treatment setting showed again non-significant between-group differences for all the variables examined. However, a statistically significant effect was noted in the subgroup analysis using the recruitment setting, as having recruited the population from a public outpatient clinic and/or community advertisements resulted in significantly lower odds of the population to drop out from ACT groups compared to comparison groups, $OR = 0.652$, $z = -2.985$, $p = .003$. No significant differences were found among the rest of the examined treatment moderators and no other significant effect sizes in specific subgroups were noticed.

Provider and Study Moderators

Only a small amount of studies reported therapist gender, age, and ethnicity, deeming it impossible to analyze them as moderators. The experience levels of the therapists in ACT and comparison groups showed non-significant differences. However, in the subgroup analysis of the ACT therapists' experience level a significant effect size was found for the subgroup of therapists from mixed experience levels, including doctoral level, student trainees, and others (e.g., licensed clinicians, psychiatrists, social workers, psychiatric nurses). The odds on dropout from ACT groups were significantly lower than from comparison groups when the ACT therapists consisted of a multi-level and multi-domain team, with $OR = 0.734$, $z = -2.366$, $p = .018$. Also, in the subgroup analysis of the comparison groups' therapists a significant effect favoring ACT groups was found in the subgroup of psychiatrists. When the comparison groups had psychiatrists as the main and only therapists, then participants had significantly higher odds to dropout, compared to ACT groups, with $OR = 0.638$, $z = -2.087$, $p = .037$. Regarding study moderators, subgroup analyses based on region and type of study, or when examining the predictive ability of the year of publication in meta-regression analyses showed no significant results.

Table 4
Results From the Subgroup Analysis of Treatment Categorical Moderators on Therapy Dropout

Moderator	N	Mean Dropout Rate		95% CI		Z	p	Q	P
		ACT	Control	ACT	Control				
Treatment format in ACT groups									
Group	34	15.92	15.26	12.32, 19.52	11.06, 19.47	-0.154	0.878	0.131	0.988
Individual	30	16.37	20.96	11.09, 21.66	15.12, 26.80	-0.518	0.605		
Combined	3	38.24	36.31	31.13, 45.35	23.28, 49.34	-1.112	0.266		
Self-help	9	19.04	17.62	8.97, 29.10	7.62, 27.61	-0.521	0.602		
Description of recruitment setting									
Outpatient clinic affiliated with hospital or med-school	11	16.88	18.72	6.28, 27.48	7.46, 29.98	0.738	0.461	9.254	0.235
Private outpatient clinic/practice	2	12.05	28.03	7.64, 16.45	-1.04, 57.10	-1.351	0.177		
Public outpatient clinic and community advertisements	21	14.44	21.30	9.39, 19.49	14.84, 27.76	-2.985	0.003		
Research or specialty clinic	6	17.49	17.91	6.94, 28.03	11.57, 24.25	0.989	0.323		
University affiliated clinic (psychology training clinic and university counseling center)	10	26.04	24.41	19.01, 33.07	13.98, 34.84	-0.449	0.653		
Inpatient or residential treatment	6	9.21	3.43	3.27, 15.14	0.28, 6.57	0.442	0.659		
At home (self-help and web-based treatments)	11	19.90	17.54	11.66, 28.14	9.36, 25.72	-0.476	0.634		
Not informed	9	18.46	15.66	8.72, 28.21	8.76, 22.56	1.031	0.302		
Treatment setting									
Outpatient	60	17.77	20.24	14.34, 21.20	16.48, 24.00	-1.063	0.288	0.442	0.802
Inpatient	6	9.21	3.43	3.27, 15.14	0.28, 6.57	0.442	0.659		
Self-Help (including web-based)	10	19.71	18.05	10.61, 28.81	9.07, 27.02	-0.405	0.686		
Treatment status									
Providing treatment	59	16.31	19.23	12.92, 31.95	15.50, 22.95	-1.139	0.255	1.273	0.259
Non-providing treatment	17	20.94	16.53	14.50, 27.39	8.93, 24.13	-0.035	0.972		

Moderator	N	Mean Dropout Rate		95% CI		Z	p	Q	P
		ACT	Control	ACT	Control				
Comparison group									
CBT	17	18.73	24.25	11.18, 26.27	16.89, 31.61	-0.188	0.851	2.845	0.724
TAU	17	14.30	13.60	10.57, 18.04	7.42, 19.79	0.413	0.680		
Medication only	9	22.63	23.61	13.08, 32.18	12.30, 34.92	-1.037	0.300		
Other active treatment	12	20.58	21.42	12.07, 29.09	11.93, 30.92	-1.452	0.147		
Component of CBT	12	17.07	19.36	10.03, 24.10	12.83, 25.89	-0.596	0.551		
Education only	9	11.30	7.77	1.78, 20.82	1.77, 13.77	1.233	0.218		

Note. Tabled are weighted mean dropout rates of treatment moderators using random-effects analyses. *k* = number of relevant studies included in each analysis; Mean Dropout Rate = the mean percentage of participants terminating prematurely; CI = confidence intervals; Z = two-tailed test indicating which levels of the moderators are significant; Q = test of heterogeneity between levels of each moderator. * *p* < .05. ** *p* < .01. *** *p* < .001.

Sensitivity Analyses

We performed sensitivity analyses based on decisions taken before, or based on the previous findings of the meta-analysis. The exclusion of the three studies that consisted of dissertations, showed that the main effect did not change significantly, with $OR = 0.951$, 95% CI [0.826, 1.094], $z = -0.705$, $p = .481$, even though heterogeneity was slightly reduced, with $Q(72) = 73.808$, $p = .419$, $I^2 = 2.450$. The next sensitivity analysis concerned the exclusion of studies with very wide confidence intervals of the odds ratio and showed again no change of the main effect. Later on, we investigated the main effect when excluding recent papers (2016-2018), as the meta-regression analysis for the predictive ability of the year of publication showed a trend to significance. This sensitivity analysis (see Appendix D in [Supplementary Materials](#)) showed that the main effect became marginally significant, with $OR = 0.852$, 95% CI [0.727, 0.998], $z = -1.984$, $p = .047$, even though heterogeneity was slightly increased but remained at small levels, with $Q(54) = 60.961$, $p = .240$, $I^2 = 11.418$. The finding of the sensitivity analysis concerning the year of publication suggested that when considering research done before 2016, the dropouts from ACT groups were significantly lower than from active comparison groups.

Discussion

Treatment dropout is an important parameter impacting treatment outcomes ([Barrett et al., 2008](#); [Wierzbicki & Pekarik, 1993](#)). Despite the acknowledgement of the importance of considering dropout rates and how these influence treatment effectiveness conclusions, this phenomenon has not been extensively examined. This paper aimed to investigate the phenomenon of dropout in a relatively newly developed therapeutic approach, Acceptance and Commitment Therapy. Compared to other cognitive behavioral approaches, ACT presents with advances in improving client engagement to treatment, emphasizes the therapeutic relationship, and provides meaning for any changes to be made during treatment, postulated to be associated with more participant engagement. Indeed, change in values has been found to precede changes in suffering ([Gloster et al., 2017](#)). As such, we aimed to examine if those advances presented in ACT could overcome some of the treatment acceptability criticisms presented with older generations of interventions, which may have contributed to increased dropout rates from psychological treatments. However, the overall dropout rate was not significantly different between ACT and comparison groups in the present meta-analysis.

As noted by others, we found that there is no consensus regarding the definition employed by investigators. We adopted a broad definition of treatment dropout, utilizing what was reported by each study author and particularly considering dropouts to be the percentage of cases of individuals who began treatment but did not complete it as intended by its developer. Based on this definition, the yielded overall dropout rate across all

studies included in this meta-analysis was 17.95%, which is comparable to recent previously meta-analytically reported rates (i.e., 19.70%; [Swift & Greenberg, 2012](#)). For ACT, the calculated mean dropout rate was 17.35%. This is similar again to the rates reported by [Galloway-Williams, Martin, Clum, and Cooper \(2013\)](#) and [Ong et al. \(2018\)](#) for ACT. When including all possible reasons and comparing across all comparison conditions, the dropout rate was not significantly different (18.62%) from ACT groups. However, the reason why individuals terminate their treatment prematurely needs to be considered in relation to dropout rates.

Unfortunately, the majority of examined studies did not include dropout reasons, limiting our ability to draw conclusions regarding the reasons for dropout. Despite the limited number of studies presenting reasons for dropouts, some important differences between ACT and other groups were identified. For example, most individuals who dropped out from ACT groups did so because of lost contact and for (unrelated to therapy) personal reasons. Dropout reasons in comparison conditions however, included additionally therapy-related reasons (e.g., not satisfied with the treatment or feeling that the therapy was too time consuming). In particular, when ACT was compared to CBT, the most frequent reason for dropping out of CBT was therapy factors (i.e., of the 5 studies who reported reasons for dropout from CBT, all of them mentioned therapy factors). In contrast, in ACT, the reasons of time demands, transportation, personal and therapy were equally reported. This is in line with findings reported by [Karekla \(2004\)](#) who found differences in the timing of dropout in relation to the treatment components between tCBT and ACT participants. The pattern of dropout in tCBT was linked to the initiation of exposure whereas the same pattern was not found for those in the ACT condition (where individuals who dropped out did so for unrelated reasons to treatment and discontinued at different time points and not before exposure was introduced). These findings lend support to the idea that ACT may be a more acceptable treatment choice over previous waves of tCBT, and may better prepare (e.g., via use of values) individuals to engage and ultimately benefit from even the most difficult of treatment content (e.g., exposure to feared stimuli; see also [Gloster et al., 2014, 2015](#)). In the future, researchers are advised to examine and report upon the timing and reasons for dropout.

In this review, we found that ACTs' premature termination rates were lower for dealing with certain types of psychopathology (severe psychopathology). This finding may highlight the important addition of ACT skills for severe psychopathologic conditions; however this needs to be further explored. Interestingly, participants' age did not moderate dropout rates, suggesting that all age groups result in similar dropout rates. This is a divergence from the [Swift and Greenberg \(2012\)](#) meta-analysis, where younger individuals had higher dropout rates ([Barrett et al., 2008](#)).

The subgroup analyses based on the description of the treatment setting showed that dropout rates from ACT groups were lower for studies in which the treatment was delivered in a public outpatient clinic and population was recruited by community advertise-

ments. However, one should note that these studies were highly heterogeneous, including participants with anxiety disorders, eating disorders, substance abuse, other health problems, chronic pain, health conditions/chronic illnesses, smoking, severe psychopathology (i.e., BPD, psychosis, treatment resistant), and depression. Additionally, in most of these studies the comparison condition was not another psychologically active intervention (i.e., in 57% of them the comparison group was treatment as usual, medication only and education). Due to the high heterogeneity of these studies, this finding should be interpreted with caution and further examined in the future.

In terms of provider moderators, experience level of providers in ACT and comparison groups were significantly related to dropout rates. Specifically, when treatment was delivered by a multi-level and multi-domain team, ACT had lower dropout rates than comparison conditions. This is a divergence from the studies of [Ong et al. \(2018\)](#) and [Swift and Greenberg \(2012\)](#), who reported no significant results when treatment was delivered by multidisciplinary teams. In particular, in the study of [Ong et al. \(2018\)](#), ACT had higher dropout rates than comparison groups when treatment was administered by master's-level clinicians/therapists whereas in the study of [Swift and Greenberg \(2012\)](#) dropout rates were higher when the treatment was provided by trainees. Differences between these studies may be a result of the definition used for therapist experience level, therefore more research is needed in this domain to be able to conclusively make recommendations as to the level of experience or the consistency of the therapeutic team that leads to higher effect sizes. For the guidance of future researchers examining dropouts in treatments, a checklist of definitions and variables to be collected which can be utilized before, during and while reporting their findings, to ensure that adequate information regarding dropouts is available, is presented in Appendix E (see [Supplementary Materials](#)).

Limitations

This study has several limitations that need to be considered in the interpretation of findings. First, the inclusion criteria were made broad enough in order to include a large number of studies. All age groups were included; as well as various psychopathological and non-psychopathological problems, and studies combining ACT with other interventions or medication. Though we attempted to deal with this heterogeneity in the disorders, interventions, populations and age conditions by examining moderators of interest, this heterogeneity may have still affected the clarity of any differences between ACT and comparison groups on dropout rates.

A second limitation may be related to the coding procedure. Specifically, for the variable of comparison condition, when a study had two comparison conditions we selected to compare only the active treatment (e.g., CBT) and excluded the inactive comparison condition (e.g., wait-list). A third limitation has to do with reasons reported for dropouts. Specifically, the majority of studies did not report dropout reasons, making conclusions about true reasons for dropout impossible or biased for the studies that reported these

reasons. In order to further elucidate the phenomenon of treatment dropout, future studies should examine and report reasons why participants drop out as well as the timing when this occurs. Finally, in our meta-analysis it was not possible to carry out a comparison between the demographic characteristics of dropouts and completers due to insufficient data provided by studies. We would like to encourage researchers to ensure that they report information separately for completers and dropouts so as to facilitate further understanding into the phenomenon of dropout.

Clinical Implications

This review examined dropout rates of a third wave CBT intervention in a range of disorders, populations, ages and comparison conditions. Our findings show that overall dropout rates between ACT and comparison conditions were not found to differ significantly. Additionally, moderation analyses suggest that experience level of therapists in ACT and comparison conditions, description of treatment setting, and client diagnosis are associated with an increased likelihood of dropout. Therefore, interventions aiming to lower attrition should plan a-priori how to better engage users belonging to these groups.

Our findings suggest that ACT may present some potential advances for improving client engagement and retention, such as emphasizing that any behavior change needs to be linked with the persons' values, or it may include more interesting treatment content through the use of metaphors and experiential exercises. However, more research is still needed prior to being able to assertively make these conclusions.

Future Research

The findings of the present study offer possible hypotheses about which therapeutic processes are associated with client retention. However, more studies are needed that will examine particular reasons for premature treatment termination, timing when this phenomenon occurs and how it may be linked to specific treatment components, and associated variables in third wave treatments.

Moderators of the dropout effect for different therapeutic approaches are critical in that they illuminate areas that may still have potential for improvement in the context of an otherwise effective intervention. This needs to be further examined. For example, even if ACT has lower dropout rates than some comparison conditions overall, but females drop out more from ACT than comparison conditions, then ACT may need to consider how females are being engaged in the intervention and attempt to find ways to improve engagement (e.g., maybe more gender sensitive metaphors). Additionally, common vs. specific factors in the psychotherapies being examined and in relation to how these may affect dropout also need to be examined. Researchers are encouraged to examine and report the reasons for dropout when a person discontinues the treatment prematurely. Further understanding of these reasons should allow us to examine whether it is dis-

satisfaction with the common factors (e.g., therapeutic alliance, expectations, cultural adaptations, empathy) that contribute to premature discontinuation or whether dropout is related to specific factors (e.g., specific ingredients of the intervention provided). It is essential that participant engagement and premature termination continue to serve as topics of exploration in the clinical psychology arena, so as to improve the effectiveness of interventions, decrease treatment dropout rates, and enhance the possible treatment effects for participants.

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Data Availability: Datasets for the studies are freely available (see the [Supplementary Materials](#) section).

Supplementary Materials

The following data and materials are available for this study (for access see Index of [Supplementary Materials](#) below):

Via the PsychArchives repository:

- Appendix A: Percentages of clients reporting each of the reasons for the included studies
- Appendix B: Forest and funnel plots of included studies
- Appendix C: Forest plot of subgroup analyses based on the type of disorder under investigation
- Appendix D: Sensitivity analysis for the year of publication
- Appendix E: Checklist of definitions and variables to be collected in order to properly document dropouts

Via the International Prospective Register of Systematic Reviews (PROSPERO):

- Preregistered protocol (CRD42017068456) of the current study

Index of Supplementary Materials

Karekla, M., Konstantinou, P., Ioannou, M., Kareklas, I., & Gloster, A. T. (2019). *Supplementary materials to "The phenomenon of treatment dropout, reasons and moderators in Acceptance and Commitment Therapy and other active treatments: A meta-analytic review"*. PsychOpen. <https://doi.org/10.23668/psycharchives.2594>

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Note. Asterisk (*) marks references of studies included in the meta-analysis.

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Successful Aging in Individuals From Less Advantaged, Marginalized, and Stigmatized Backgrounds

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Abstract

Background: Health and well-being in later life are heavily influenced by behaviors across the life course, which in turn are influenced by a variety of wider contextual, social, economic, and organizational factors. There is considerable potential for inequalities in health-promoting behaviors and health outcomes, arising from poverty, social, and environmental factors. This suggests that individuals from disadvantaged backgrounds and circumstances may have more exposure to (chronic) stressors, coupled with reduced access to resources, and increased susceptibility to risk factors for ill-health and mental disorders in later life. This drastically decreases the likelihood for successful aging in individuals from less advantaged backgrounds. Nevertheless, despite these adverse circumstances, some high-risk, disadvantaged individuals have been shown to achieve and maintain good health and well-being into later life.

Method: This scientific update provides an overview of recently published research with samples that, against expectations, demonstrate successful aging.

Results: Favorable personality traits, cognitive strategies, and a high-level of intrinsic motivation, paired with a supportive social environment, have been found to build a prosperous basis for successful aging and positive health outcomes in later life for individuals living in aversive environmental circumstances.

Conclusion: For clinical psychologists, the movement towards the investigation of underlying mechanisms of successful aging from a psychological perspective, particularly in disadvantaged individuals, may be a critical step towards understanding the vast heterogeneity in aging.

Keywords

successful aging, disadvantaged backgrounds, marginalization and stigmatization, LGBT, disparities in racial and ethnic minorities



Highlights

- Successful aging is possible in disadvantaged individuals.
- Psychological and social resilience resources may compensate for the impact of disadvantage.
- The application of multi-level resilience models can aid future research on successful aging.

Old age is a life stage characterized by a high degree of diversity between individuals. A growing body of literature has been dedicated to understanding this heterogeneity in aging. Special focus has been placed on the positive end of the aging spectrum. At the moment, there exists no universally-accepted definition for what constitutes this “positive end of the aging spectrum”. The “successful aging” (SA) construct, which is often used in research to examine positive aging research questions, is currently defined and operationalized in more than 100 different ways (Cosco, Prina, Perales, Stephan, & Brayne, 2014). However, despite the current lack of a commonly-accepted definition, experts in the field generally agree that the SA construct should consist of several different dimensions, including a (mental and physiological) health facet, a (subjective) well-being facet, as well as a social (engagement) facet (Kleineidam et al., 2018). Nevertheless, despite its broad variety of operationalizations, the SA construct as a whole constitutes a meaningful and useful construct that can be applied to examine why some individuals are more likely than others to remain predominantly healthy and maintain a high level of physical functionality and social activity even into older age (Kleineidam et al., 2018).

In this regard, it is particularly useful to examine what factors can be identified in connection with more favorable aging processes and outcomes. Previous research on SA has uncovered a range of predictors, including socio-demographic factors and specific behaviors linked to SA. Socio-economic status (SES; including income and wealth), education, and health-promoting behaviors (e.g., non-smoking, healthy diet, physical activity), are among the frequently identified predictors for SA (e.g., Daskalopoulou et al., 2018; Gopinath, Kifley, Flood, & Mitchell, 2018; Kok, Aartsen, Deeg, & Huisman, 2016; Vauzour et al., 2017; Whitley, Benzeval, & Popham, 2018). Other branches of health-related research can also provide additional evidence for potential risk and protective factors that are essential in predicting SA. For instance, an important line of research on the (long-term) impact of early-life stress suggests that childhood neglect and abuse can increase the risk of future ill health and mental disorders, and may thus diminish the probability of SA (Jones, Nurius, Song, & Fleming, 2018; Nurius, Fleming, & Brindle, 2017). In fact, supporting this, a recently published large-scale longitudinal study found a meaningful link between early-life stress and SA trajectories (Kok, Aartsen, Deeg, & Huisman, 2017).

Upon closer examination of the factors that may promote or hinder SA, it appears as if SA may be a rather elitist paradigm, seemingly reserved for more advantaged and al-

ready healthy individuals. That is, those who grow up in more functional families, who were provided with the opportunity for a good education, and the necessary access to health-literacy and services, coupled with the essential assets and time required to implement health-promoting behaviors. This leaves a rather pessimistic prospect for individuals who grew up and lived in poverty or come from underprivileged educational backgrounds; as well as for those who experienced early misfortune in the form of childhood stressful life events, abuse and neglect, or those living with chronic health conditions (e.g., Bøe, Serlachius, Sivertsen, Petrie, & Hysing, 2018; Kok et al., 2017; Lê-Scherban et al., 2018). Are these individuals deprived of the opportunity to age successfully?

This scientific update aims to answer this question by providing an overview of the latest research dedicated to the investigation of SA in individuals from less advantaged backgrounds. For this, a list of 'disadvantaged' groups was first compiled and the search was then limited to articles on older adults. A search of the databases was conducted for articles published since 2017. Given the wide diversity in how the SA construct is currently defined in the scientific literature, the search was not restricted by applying a particular SA definition or operationalization.

Successful Aging Within the Context of Socio-Economic Disadvantage and Childhood Adversity

The research group of Kok and colleagues (Kok, van Nes, Deeg, Widdershoven, & Huisman, 2018) qualitatively examined SA in Dutch individuals ($N = 11$; Age_{range} = 78-93 years) who had a low lifetime socio-economic position (SEP). More specifically, the authors were interested in the identification of resilience factors that protected those individuals from the potentially negative impact of chronic socio-economic adversity. Several resilience-enhancing factors were identified, including 'social support', 'generativity', 'pro-active management', 'cognitive restructuring', 'enduring', and 'surrendering'. Confirming, but also expanding the resilience conceptualization for low SEP individuals previously proposed by Chen and Miller (2012), the authors concluded that in addition to mental re-evaluation of the disadvantaged background, it also appears to be necessary to have a supportive social environment (which also requires pro-social behaviors) and the will to actively confront the external circumstances in question, i.e., by changing the adverse environment with one's own actions (Kok et al., 2018).

Another recent study (Scelzo et al., 2018) examined a sample of very old individuals living in rural villages in the southern part of Italy ($N = 29$; Age_{range} = 90-101 years). Rural areas tend to show health-disparities due to a disproportionate lack of services in medically underserved areas, issues of access to existing services, differences in patient expectations and health-seeking behaviors, as well as the delivery of health care (Douthit, Kiv, Dwolatzky, & Biswas, 2015). While not directly assessing SA in this study,

(extreme) longevity can be regarded (and has previously been used) as a proxy to assess (the consequences of) SA (see [Cosco et al., 2014](#)). The qualitative part of this mixed-method study examined themes related to (extreme) longevity. Common themes associated with SA were identified, including ‘positivity’, i.e., resilience and an optimistic outlook on life (also including self-efficacy and perseverance); being a ‘controlling’ or ‘strong’ personality; being socially active and engaged, i.e., having tight bonds with family members; religious beliefs; as well as being hard working; and having a “love of the land” (p. 33). Altogether, the above findings show some parallels to those reported by [Kok et al. \(2018\)](#): In addition to the importance of having mental resources, such as the capacity for acceptance/perseverance (facilitated by religious beliefs or particular personality traits), there is also the necessity of actively engaging with or changing the external environment (e.g., by being hard working), which is framed within the context of a functional and close social network.

Another example of SA despite adverse life circumstances can be seen in the case of Swiss former indentured child laborers (i.e., former *Verdingkinder*). Due to extreme poverty, death of a parent, divorce, or single motherhood, children were taken away from their parents and placed in foster families (mostly farmers), where they had to work for their living ([Leuenerberger & Seglias, 2008](#)). Given that, in those times, the foster-care system was still poorly controlled, these children (in most cases forcefully separated from their families of origin) often experienced little to no protection. Documented by individuals who came forward publicly with their experiences, and corroborated by contemporary witnesses, these biographies are filled with reports of (extreme levels of) childhood abuse and neglect. A qualitative study ([Höltge, Mc Gee, Maercker, & Thoma, 2018a](#)) investigated SA in former *Verdingkinder* ($N = 12$; $M_{\text{age}} = 71$ years; $\text{Age}_{\text{range}} = 59\text{--}88$). SA was defined as (self-rated) good health, feelings of happiness, balance and/or calmness most of the time, and a high level of satisfaction with (social) life. The factors ‘light-heartedness’, ‘social-purpose’, and ‘self-enhancement’ were identified as predictors for SA. These individuals, after what they had endured in early-life, took on a positive perspective following conscious reflection (i.e., a proxy for a resilience resource). While striving to experience positive feelings, they nevertheless kept a realistic perspective on life by acknowledging that negative experiences are part of a normal existence (i.e., cognitive re-evaluation). In general, participants could be classified as stress-resilient, a resource that was described to be developed through active coping and by coming to terms with their difficult past. They strongly valued (harmonic) social relationships and had the altruistic desire to help others (i.e., social component). Furthermore, they developed a strong motivation for self-improvement that pushed them to work hard and to continuously engage in further education (i.e., active engagement with external environment).

Successful Aging in Racial and Ethnic Minorities

Similar to individuals from disadvantaged backgrounds or adverse childhood circumstances, individuals from minority groups often face issues of marginalization and stigma, which can influence their health and well-being into later life. One such example can be seen in racial and ethnic minorities, who, in addition to potentially higher levels of disadvantages and inequalities (Zubair & Norris, 2015), can also face problems with exclusion and discrimination, which may compound health issues and ultimately hinder SA (Ferraro, Kemp, & Williams, 2017). However, despite these additional stressors, evidence is emerging that some individuals can experience good health into older age. For example, a study of perceived discrimination and psychological well-being in African American older adults ($N = 397$; Age_{range} = 65-89) found that the characteristic of 'self-acceptance', an awareness and acceptance of personal strengths and weaknesses, was shown to buffer the negative effect of discrimination on depressive symptomology, an indicator of psychological well-being (Yoon, Coburn, & Spence, 2019). Another study (Klokgieters, van Tilburg, Deeg, & Huisman, 2018a) examined the potential buffering effect of various religious activities against the negative impact of disadvantage (e.g., no/low resources) in older Turkish and Moroccan immigrants ($N = 455$; Age_{range} = 55-66 years). While a positive relationship was found between well-being and private religious activities, there was no indication of a buffering effect for any of the religious activities against the experienced disadvantage.

Successful Aging in Individuals Living With HIV

Another minority group that has experienced much stigma and discrimination is that of individuals living with the human immunodeficiency virus (HIV). HIV is a chronic illness, associated with a higher risk of experiencing psychosocial challenges and physiological issues. However, with advances in medicine, individuals with HIV are living longer, better lives and research has started focusing on SA and SA-related factors in this population. A qualitative study in individuals with HIV ($N = 30$; Age_{range} = 50-73) assessed barriers to and strategies for SA (Emlet, Harris, Furlotte, Brennan, & Pierpaoli, 2017). Results showed that while stigma, prejudice, and discrimination were identified as potential SA barriers, a number of SA-related themes emerged, including resilience components, such as self-care, mastery, and spirituality; social support; and the importance of the environmental context, such as structural support, social networks, and communities. Another qualitative study on SA in individuals with HIV ($N = 24$; Age_{range} = 50-73) identified similar themes, emphasizing components over which persons had individual control (Solomon et al., 2018). These included staying positive, maintaining social support and connectedness with others, taking responsibility and being self-reliant for one's well-being, and engaging in meaningful activities. These findings indicate that a combination of

individual characteristics, such as control and mastery, and external influences, such as social and structural support, are important in fostering SA in this marginalized population.

Successful Aging in LGBT Older Adults

A population that also faces additional barriers to SA, are lesbian, gay, bisexual, and transgender (LGBT) older adults. Despite the risks of ill-health and social isolation for LGBT older adults (Wright et al., 2017), discrimination is often reported as a barrier to the utilization of health and community services (Alencar Albuquerque et al., 2016). A large-scale study of $N = 2,415$ LGBT older adults identified risk and resilience pathways to positive health outcomes in later life (Fredriksen-Goldsen, Kim, Bryan, Shiu, & Emler, 2017). Results showed that marginalization was a risk factor associated with fewer social resources and poorer mental health outcomes. However, resilient pathways were identified in which psychological (e.g., positive identity appraisal) and social (e.g., social connectedness) resources were associated with health-promoting behaviors, which in turn facilitated good physical health into older age. These findings suggest that the interaction of social and psychological factors can help LGBT older adults to maintain good health and foster SA, even within an environmental context of marginalization.

The above research suggests that SA is possible for individuals from less advantaged, marginalized, and stigmatized backgrounds. However, as this is a relatively new and emerging topic, the exact mechanisms through which SA is fostered in these disadvantaged populations are not yet known. Some theories and models are presented in the next section, which may be applied to help explain the underlying mechanisms of this process of SA.

Underlying Mechanisms of Successful Aging

The ‘steeling effect’ is one theory that may explain positive health in the face of adversity (Liu, 2015; Rutter, 2006, 2012). This theory proposes that previous exposure to adversity (e.g., disadvantaged circumstances, discrimination) may have a ‘steeling’ or strengthening effect on individuals, which can increase their resistance to later stress or adversity. It further suggests that moderate adversity may be more beneficial than no or high adversity, as it is adequately challenging to facilitate the development of coping skills and the utilization of resources (for a review see Höltege, Mc Gee, Maercker, & Thoma, 2018b). However, there is a lack of research applying this model in human studies (for one such study see Höltege, Mc Gee, & Thoma, 2018), particularly with older adults, and the role of steeling for SA remains poorly understood. Furthermore, while some studies have examined aspects of adverse circumstances as part of a larger assessment, such as exposure to

social and environmental stress (Seery, Holman, & Silver, 2010), future research is needed to apply this steeling model specifically to individuals from disadvantaged populations.

The above literature suggests that a combination of psychological and individual factors (e.g., mastery and control, self-efficacy) and external social factors (e.g., social engagement, connectedness with others) can contribute to resilience and SA in disadvantaged populations. However, it is also important to consider the enabling environmental and context factors, which are particularly important in this specific population due to their adverse backgrounds and circumstances. Supporting this is the social ecological model of resilience, which emphasizes the role of environmental factors in health and well-being, and suggests that resilience is facilitated by the interaction between the individual and their environment (Ungar, 2012). Specifically, this model suggests that the environment can facilitate access to resilience-promoting resources; that resilience may differ as a result of the complex and changing nature of an individual's circumstances and the interaction with their personal traits; and that the resilience process is culturally and temporally embedded and is therefore influenced by the cultural norms of the time, which is particularly important for specific cultural groups such as minorities (Ungar, 2011). The importance of the individual-environment interaction for the well-being of disadvantaged populations can be seen in the reoccurring finding that environmental and contextual factors, such as social support and social engagement, were significant in supporting individual resilience and SA (e.g., Emler et al., 2017; Kok et al., 2018; Scelzo et al., 2018).

Further support comes from a resilience conceptualization in the field of sociology (Schafer, Shippee, & Ferraro, 2009). Schafer and colleagues (2009) argue that in order to actively buffer or overcome disadvantage, several processes must take place: First, an individual must become aware (i.e., recognition/subjective evaluation) of one's undesirable position, adversity, or misfortune. Second, the individual must take action (i.e., constructive adaptation) to counteract or amend the adverse situation and/or to avoid negative consequences. Third, to efficaciously face disadvantage, one must activate and apply adequate and effective resources. These resources may be located within oneself (e.g., IQ, resiliency traits) and/or within the socio-economic system, in the form of social relationships, SES, and economic resources (Schafer et al., 2009). As in the social ecological model of resilience, this conceptualization highlights the importance of both individual and social-context factors in overcoming disadvantage.

The interaction between individual and environment is also reflected in and supported by another model of resilience by Liu, Reed, and Girard (2017). This model proposes that resilience is dynamic and is formed through the interaction of factors across multiple, interconnected levels. These levels include core resilience, which are inherent, stable characteristics and traits, such as gender, race, and ethnicity; internal resilience, which are learnable and changeable factors, such as active coping, mastery, and self-acceptance; and external resilience, which are contextual and environmental factors, such as social

resources and support. This model could be applied in future research to better understand the multi-level mechanisms underpinning the processes of resilience and SA.

In addition, the construct ‘Sense of Coherence-Revised’ (SOC-R) could be examined in conjunction with Liu et al.’s (2017) model. This construct may help explain how individuals can utilize these multi-level factors to facilitate resilience and SA, as it is the ability to integrate and balance positive and negative experiences in order to maintain and develop health and well-being following stress or adversity (Bachem & Maercker, 2016; Mc Gee, Höltge, Maercker, & Thoma, 2018a, 2018b). It is based on the salutogenic theory, which views health as a continuum, and proposes that SOC-R can help individuals to utilize resources (e.g., personality traits, mastery, social support) appropriate for their current circumstances and move them towards good health on this continuum (Antonovsky, 1987). In this way, SOC-R can positively influence the aging process and foster SA (Bachem & Maercker, 2016). The above theories and models provide a theoretical basis for future research to examine the mechanisms and factors associated with resilience and SA, particularly in populations with disadvantaged backgrounds.

It should be emphasized that this article constitutes a short, current update and overview of the latest developments and publications in this particular field. As such, a systematic review of the literature was not conducted. This may have resulted in a non-comprehensive or even biased delineation of existing literature and the deduction of oversimplified conclusions. It is possible that additional mechanisms and factors exist, which were not discussed in this short update that links SA to adverse experiences and disadvantaged backgrounds. The association between SA and disadvantage is complex and underlying mechanisms are still poorly understood. Disadvantage can have multiple forms and can also hide behind alleged “advantaged” circumstances. For instance, a large-scale longitudinal study on SA (Kok et al., 2017) showed that not only low, but also high SEP, was linked to stressful life events (e.g., higher divorce rate). It is also important to note that the potential buffering impact of psychological resources may depend on the particular context, such as the cultural background (Klokgieters, van Tilburg, Deeg, & Huisman, 2018b).

Conclusion

Research on SA is continuously uncovering predictors for more favorable aging processes and outcomes. This scientific update and overview focused on very recent developments and trends in this area, examining SA in less advantaged populations. Findings from these studies highlight the importance of considering a combination of psychological and individual resilience factors, as well as external social and environmental components. Individual, psychological, and social factors can play a compensatory role for individuals living with negative environmental influences. For clinical psychologists, the movement towards the investigation of underlying mechanisms of SA from a psychologi-

cal perspective, particularly in disadvantaged individuals, may be a critical step towards understanding the vast heterogeneity in aging.

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Integrating Metta Into CBT: How Loving Kindness and Compassion Meditation Can Enhance CBT for Treating Anxiety and Depression

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Abstract

Background: Loving kindness meditation and compassion meditation are traditional Buddhist practices that have recently been introduced and investigated in psychotherapy with promising results. Both meditation practices emphasize metta, a mental state of positive energy and kindness towards oneself and other beings, as opposed to the anger, hostility, or self-loathing that often accompany emotional problems.

Method: We conducted a qualitative review of the literature to produce an integrative review.

Results: Metta meditation appears to be particularly useful for treating depression and social anxiety, both characterized by low positive affect and negative attitudes and core beliefs about the self.

Conclusion: Metta meditation can aid therapy by promoting more adaptive self-images, social connectedness, and emotional experiences.

Keywords

meditation, CBT, depression, anxiety, loving kindness, compassion



Highlights

- Loving kindness and compassion meditation (metta) have been recently introduced in psychotherapy.
- Metta addresses shame, anger, and hostility, and promotes an accepting attitude towards oneself.
- Metta meditation increases positive affect.
- Metta meditation can be particularly useful in social anxiety and depression.

Loving Kindness and Compassion Meditation in Psychotherapy

Initially derived from Buddhist practices, the concept of mindfulness, briefly defined as the non-judgmental, accepting experience of the present, as it unfolds moment by moment, has nowadays become ubiquitous in the fields of psychotherapy and mental health, as well as in self-help and popular psychology. Psychotherapy interventions, such as Mindfulness-Based Stress Reduction (MBSR; [Kabat-Zinn, 1982] and Mindfulness Based Cognitive Therapy (MBCT; [Segal, Williams, & Teasdale, 2002] are considered established interventions for conditions such as chronic stress and depression (Hofmann, Sawyer, Witt, & Oh, 2010). Furthermore, mindfulness has become an integral part of various psychological interventions, such as Acceptance and Commitment Therapy (ACT; Hayes, 2004) and Dialectical Behavioral Therapy (DBT; Linehan et al., 1999). More recently, other forms of meditation inspired by Buddhist philosophy, especially loving kindness and compassion meditation, have been introduced and investigated in mental health interventions (Hofmann, Grossman, & Hinton, 2011; Zeng, Chiu, Wang, Oei, & Leung, 2015). Although the term was originally associated with loving kindness, we will refer to both as *metta* interventions, as both types of interventions instill a sense of positive energy (*metta*) directed at oneself and other beings. Taking a mindful stance, they further encourage a kinder view on oneself and others, which is central to addressing many emotional intra and interpersonal problems (e.g., anger, hostility, depression, anxiety). Due to the warmth and sense of connection they provide, metta interventions increase positive affect, particularly emotions related to calmness and safety. In this article, we will explore how metta-derived practices can help build a healthier view and a warmer attitude towards oneself, and how we can combine them with more traditional intervention techniques, specifically cognitive-behavioral therapy (CBT), when treating depression and social anxiety.

According to the Buddhist tradition, loving kindness (*metta*) and compassion (*karuna*) are two of the four *brahma viharas*, or sublime states, which also include sympathetic joy (*mutida*; feeling joy when others are joyful) and equanimity (*upekkha*; tranquility, equidistance, calmness) (Hofmann et al., 2011). They are centered on the idea of universal and

unconditional kindness and interconnection among human beings, as opposed to the harshness and isolation which often accompany the experience of emotional suffering. Whereas loving kindness meditation promotes an attitude of warmth and positive energy directed at oneself and all other beings, compassion entails the drive and commitment to alleviate suffering (Graser & Stangier, 2018). Thus, compared to loving kindness, the experience of compassion encompasses a warm feeling of sadness. Self-compassion (i.e., an attitude of compassion directed towards the self), as defined by (Neff, 2003) has emerged as a somewhat separate concept made up of three components: mindfulness (as opposed to over-identifying with one's own suffering), common humanity (as opposed to isolation), and self-kindness (a kind attitude towards the self, as opposed to harshness and self-criticism). An alternative conceptualization promoted by Gilbert describes compassion (and self-compassion implicitly) as a positive affect motivational system, with evolutionary roots and specific neurobiological underpinnings, channeled on soothing and providing care, safety, and empathy (Gilbert, 2005; MacBeth & Gumley, 2012). Studies have shown self-compassion to be consistently inversely related to psychopathology measures (e.g., depression, anxiety, stress), pointing to its potential role in preventing negative, dysfunctional emotions (see MacBeth & Gumley, 2012).

In practice, loving kindness meditation (LKM) involves the mental repetition of phrases directed at others' and one's well-being and relief from suffering, in a non-judgmental and observing mental stance (e.g., "may you be well", "may you be happy", "may we be safe"). As LKM progresses, kindness is directed towards more and more challenging recipients, starting with oneself or a friend, continuing with a neutral person, and ending with the entire universe (Hofmann et al., 2011). The purpose is to experience a wish for universal well-being with a kind and tender mindset. Compassion meditation is similar to LKM, but encompasses the acknowledgement of suffering (e.g., "this is a moment of suffering"), recognizing the communality of suffering (e.g., "suffering is a part of life) and committing to a position of kindness to oneself or others (e.g., "may I be kind to myself"), often accompanied by compassionate imagery – imagining a compassionate person, character, or any other entity evoking features of wisdom, empathy, and understanding (Gilbert & Procter, 2006; Neff, 2011). However, there are multiple techniques for delivering LKM and compassion meditation (see Finlay-Jones, 2017 for a review) and many exercises actually combine the two, generating some conceptual overlap in the field (Shonin, Van Gordon, Compare, Zangeneh, & Griffiths, 2015).

So far, previous results have shown that LKM and compassion meditation interventions are effective in reducing depression, and increasing mindfulness, compassion, and self-compassion (against passive control conditions), as well as positive emotions (against relaxation) (Galante, Galante, Bekkers, & Gallacher, 2014). Evidence suggests that these meditation interventions are useful for both clinical and healthy populations, in addressing psychological distress, positive and negative affect, the frequency and intensity of positive thoughts and emotions, interpersonal skills, and empathic accuracy (Shonin et

al., 2015). A recent review (Graser & Stangier, 2018) also evidenced that, looking at randomized trials only, compassion-based interventions are effective for psychotic disorders, depression, eating disorders, and patients with suicide attempts, while loving kindness interventions are effective in treating chronic pain, and a combination of both is useful for borderline personality disorder. Still, there are few randomized trials and even fewer that compared compassion and loving kindness interventions with active control conditions. Therefore, it is not certain whether these related strategies bring a unique, unshared contribution to relieving distress or promoting positive affect. Also, results are difficult to summarize because of the divergent conceptualizations of metta interventions; using very similar terminology, studies refer to compassion and/or loving kindness interventions as 1. Single sessions consisting of brief exercises (e.g., Feldman, Greeson, & Senville, 2010), 2. Several sessions of meditation (e.g., Carson et al., 2005; Hofmann et al., 2015), 3. Specific interventions which include, but are not restricted to compassion/loving kindness meditation, such as compassion-focused therapy (e.g., Gilbert & Procter, 2006) or cognitively-based compassion training (e.g., Mascaro, Rilling, Tenzin Negi, & Raison, 2013), or 4. Combining these interventions with CBT (e.g., Beaumont, Galpin, & Jenkins, 2012).

Loving Kindness and Self-Compassion in Depression and Social Anxiety Disorder

Negative Self-Views, Self-Criticism, and Shame in Depression and Social Anxiety

Conceptually, due to their focus on promoting a kind, accepting view of oneself and others, these interventions particularly resonate with disorders characterized by self-criticism and shame (Gilbert & Procter, 2006), anger, and hostility (Hofmann et al., 2011). The experience of shame and self-criticism is transdiagnostic, prevalent in disorders such as depression, social anxiety disorder, psychotic disorders, PTSD, eating disorders, and personality disorders (Gilbert, Pehl, & Allan, 1994; Thompson & Waltz, 2008).

For instance, in depression, the classical cognitive-behavioral model (Beck & Alford, 2009) emphasizes the role of negative core beliefs related to oneself (worthlessness/ helplessness, unlovability), which further lead to a strain of negative automatic thoughts supporting the depressed, negative affect. Depressed individuals thus often have a harsh, critical attitude towards themselves, which is difficult to change. In this sense, studies have found that self-coldness (i.e., the reverse of self-compassion, including self-judgment, isolation, and over-identification) is a strong predictor of depressive symptoms in the general population both cross-sectional and longitudinally, over a period of 1 year (López, Sanderman, & Schroevers, 2018). Also, depressed outpatients score lower on self-compassion as compared to never-depressed participants, even when controlling for de-

pression levels, with symptom-focused rumination and behavioral avoidance mediating the relation between self-compassion and depression (Krieger, Altenstein, Baettig, Doerig, & Holtforth, 2013). Self-compassion also predicts subsequent depressive symptoms in clinical patients, while depression does not predict self-compassion (Krieger, Berger, & Holtforth, 2016), and the relation between self-compassion and depression appears to be mediated by emotion regulation skills (Diedrich, Burger, Kirchner, & Berking, 2017). Additionally, personality traits such as dependency (the tendency to rely excessively on other people and their approval) and self-criticism are related to depression severity scores in clinical (Luyten et al., 2007) and remitted depressives (Mongrain & Leather, 2006), and constitute independent predictors (Luyten et al., 2007).

Similarly, socially anxious individuals display low self-esteem, high self-criticism, and dependency, with self-criticism as the strongest predictor of social anxiety symptoms (Iancu, Bodner, & Ben-Zion, 2015). Also, people with social anxiety disorder show lower levels of self-compassion when compared to healthy controls, and within group, self-compassion is related to fear of negative and positive evaluation (Werner et al., 2012). Additionally, shame and shame-proneness (the tendency to experience shame frequently) are particularly important in social anxiety disorder, being associated with social anxiety symptoms even after controlling for levels of depression and guilt (Fergus, Valentiner, McGrath, & Jencius, 2010). Following psychological intervention, changes in social anxiety symptoms are further associated with decreases in shame proneness (Fergus et al., 2010).

Emotion Regulation and Negative Self-Schemas

Emotions can be regulated *intrapersonally* (Hofmann, Sawyer, Fang, & Asnaani, 2012) or *interpersonally* (Hofmann, 2014; Hofmann & Doan, 2018). Strategies that involve other people are interpersonal emotion regulation and include strategies such as soothing and social modeling (Hofmann, Carpenter, & Curtiss, 2016). These strategies appear to enhance emotions by targeting the social self (Hofmann & Doan, 2018). An example of an intrapersonal emotion regulation is cognitive reappraisal (e.g., Hofmann, 2016), a strategy aimed to cognitively modify one's perspective as to elicit an alternative emotional response (as conducted in the process of cognitive restructuring). It is usually less effectively used by currently depressed participants (Visted, Vøllestad, Nielsen, & Schanche, 2018). Possibly, this is because cognitive reappraisal is demanding on the executive functions, which are sometimes impaired in depression, or because cognitive change is incongruent with the depressive mood and its subsequent negative and ruminative thinking style (Gotlib & Joormann, 2010). Alternative accounts posit that depressive thinking is hard to change because although patients may logically understand that their thinking is distorted, they cannot embrace kinder, healthier views of themselves if they lack the emotional experience of being cared for. Many depressed patients report having been abused, bullied, or heavily criticized during childhood, and experienced little parental warmth. Self-

criticism thus becomes a sort of inner voice, towards which the patient often assumes a submissive position (Gilbert, Clarke, Hempel, Miles, & Irons, 2004). Therefore, in these cases, the motivational system related to soothing and safeness appears to be “malfunctioning”. Usually, the activation of the soothing system (i.e. prompted by affection and safety signals perceived from others or oneself) deactivates defensive emotions (e.g., anxiety) and behaviors, and also turns off behaviors related to goal seeking, achieving, and acquiring, instead eliciting a state of calmness and connectedness. However, with depressed individuals, this system seems to be suppressed, possibly because its development was impaired at critical times in the past (Gilbert, 2005). In other words, depressed people have difficulty soothing themselves because the experience of being cared for is affectively foreign. This is why metta interventions could be particularly useful, since they do not aim to merely restructure negative self-views, but to create an inner experience of warmth and peace by promoting a qualitatively different kind of attitude towards oneself. Furthermore, self-criticism is highly prevalent in social anxiety disorder compared to other anxiety disorders, and remains at elevated levels even in people with history of social anxiety only (Cox, Fleet, & Stein, 2004). Also, people with social anxiety often have high levels of perfectionism and unrealistic social standards (Hofmann, 2007), intrusive self-deprecating thoughts, and hostility and paranoia (Hofmann & Otto, 2018), which combine with poor cognitive and emotion regulation strategies in the face of perceived threats and challenges, further complicating treatment (Flett & Hewitt, 2014). Cognitive models of social anxiety disorder also emphasize maladaptive self-beliefs (Clark & Wells, 1995; Farmer, Kashdan, & Weeks, 2014) as central to symptom development, like high standard self-beliefs, conditional self-beliefs (e.g., “If people see I’m anxious, they’ll think badly of me”), and unconditional beliefs (e.g., “I’m weak”). Similarly to depressed patients, individuals with social anxiety disorder also have diminished levels of positive affect due to lack of normative positive biases, unusual processing of positive events in the form of dampening positive affect, and lack of positive self-evaluations, which also contribute to living in a cold, harsh inner world (Farmer et al., 2014).

Efficacy of Metta Interventions in Depression and Social Anxiety. Can We Change the Inner Experience (Qualia) in Relation to Oneself?

Compassion-based (metta) interventions have been found to be effective in treating depression, anxiety, and shame, although the conceptualizations and treatment approaches are diverse (Finlay-Jones, 2017; Kirby, 2017). For instance, compassion-focused therapy (Gilbert & Procter, 2006) is itself a form of psychotherapy, including the functional analysis of self-criticism and safety behaviors, explicitly training clients in decentering from their inner self-critical voice, and using experiential techniques such as compassion imagery, compassionate letter writing, or the two-chair technique. Compassion-focused therapy has been found to be effective in increasing happiness and mindfulness and de-

creasing worry and emotional suppression in the general population (Jazaieri et al., 2014), as well as in schizophrenic, anxious, depressed, and disordered eating populations (see Graser & Stangier, 2018 and Kirby, 2017). Another type of compassion intervention, mindfulness-based compassionate living was administered online and was found to be effective in reducing depressive and anxiety symptoms in participants with high levels of self-criticism, thus pointing to its potential as a transdiagnostic intervention (Krieger et al., 2019).

As an emotion regulation strategy, self-compassion is similarly effective as reappraisal and acceptance in reducing depressed mood following a mood induction task in depressed participants, but the effect seems to be moderated by baseline levels of depression, in the sense that self-compassion appears to be more effective than reappraisal for more severely depressed participants (Diedrich, Grant, Hofmann, Hiller, & Berking, 2014). Also, even a short, 7-minute LKM exercise (i.e., imagining two loved ones sending their love to the participants) can increase explicit and implicit positivity towards strangers and implicit positivity towards the self, as well as positive affect (calm, happy, loving) when compared to a control condition (Hutcherson, Seppala, & Gross, 2008).

Regarding social anxiety, a recent study (Cândeia & Szentágotai-Tătar, 2018) examined self-compassion as an emotion regulation strategy (i.e., for people with social anxiety) comparing self-compassion to cognitive reappraisal and waitlist. They found no differences at posttest between the groups, although the self-compassion group had significantly lower levels of shame-proneness and fear of negative evaluation at posttest compared to the pretest levels. Also, shame-proneness decreased from pre to posttest only in the self-compassion and cognitive reappraisal groups. Similar results had been previously obtained, showing that self-compassion and cognitive reappraisal as emotion regulation strategies are similarly effective in reducing self-conscious negative emotions (a combination of shame, embarrassment, shyness, guilt, and regret), and more effective than responsibility reattribution and control condition (Arimitsu & Hofmann, 2017). All these results suggest that metta interventions can *qualitatively* change the inner experience of oneself, thus fostering feelings of warmth, acceptance, and peace.

Positive Affect and Its Role in Depression and Social Anxiety: How Metta Interventions Can Help

The data previously presented suggest that being overly self-critical and exhibiting an inflexible vision of oneself are at the core of depression and social anxiety disorder. Therefore, metta-focused interventions may be particularly beneficial for treating these problems. According to the emotion dysregulation model of mood and anxiety disorders (Hofmann et al., 2012), apart from the enduring negative affect, both depression and social anxiety are characterized by deficiencies in positive affect (Brown, 2007), which are less specifically targeted by CBT protocols, potentially with the exception of behavioral activation. Increasing positive affect is especially important in depression and social

anxiety since, apart from increasing well-being as proposed by the broaden and build theory (Fredrickson, 2001), it enhances behavioral repertoires, promoting approach behaviors to relevant situations (e.g., social situations, pleasant activities, new contexts and challenges), instead of the typical withdrawal and avoidance behaviors. Essentially, positive emotions extend the behavioral spectrum in reverse to negative emotions, which are associated with more circumscribed responses (e.g., withdrawal associated with sadness). When it comes to loving kindness and compassion specifically, the action tendencies that follow are those of interactional and interpersonal engagement, even if the emotional responses may differ between the two (happiness versus compassion), thus pointing to their unique contribution in alleviating depression and social anxiety (Hofmann et al., 2011). Metta meditation has the potential to increase positive affect, especially since it does not rely on transient, hedonic values, but fosters a deeper sense of kindness and connectedness (Hofmann et al., 2011, 2012). In this sense, meta-analytic results show that loving kindness increases the level positive emotions, potentially more so the peaceful and prosocial emotions, to a larger extent compared to compassion interventions (Zeng et al., 2015). This is not surprising, given the fact that compassion and self-compassion interventions stem from the experience and acceptance of suffering. Also, in a proof-of-concept study, loving kindness meditation, administered as a 12-session group intervention, was found to be effective for symptoms of dysthymia and depression, as well as for increasing positive affect (Hofmann et al., 2015).

Including Metta Interventions Into CBT

Apart from using them as independent interventions, metta interventions can be used adjunctively to CBT protocols in order to increase positive affect levels and to create an appropriate emotional climate for clients to easily accept the cognitive restructuring of negative self-schemas. Metta meditation can be time restricted as to accommodate typical CBT sessions, with the advantage of facilitating cognitive restructuring and potentially also increasing the level of positive affect. Metta interventions can be delivered as exercises in individual and group psychotherapy, practiced in the beginning or at the end of the CBT session, and then also as homework. We can also design interventions which include one or two sessions of metta interventions, then maintain the interventions as homework while the protocol proceeds as usual. Some authors also designed protocols where compassion-based sessions are introduced at the end of treatment, following the first standard CBT sessions (e.g., Asano et al., 2017). However, given that both loving kindness and self-compassion meditation are, like mindfulness, abilities acquired in time, it is essential to practice them continually. Nowadays, we can find various types of loving kindness and self-compassion exercises online, which is a useful resource for both patients and practitioners. Although we believe these interventions can be easily practiced by CBT trained therapists (with no additional credentials), exercising these abilities oneself, as well as advanced reading and practical training are important prerequisites. So

far, few studies have tested the combination of CBT and metta interventions in clinical trials.

To date, experimental data has shown that adding a preparatory self-compassion exercise prior to a cognitive reappraisal task increases the efficacy of the latter in depressed individuals, thus providing encouraging results (Diedrich, Hofmann, Cuijpers, & Berking, 2016). That is, participants who practiced a self-compassion exercise (seeing oneself as from outside with a compassionate mindset) showed afterwards a greater reduction in negative emotions during cognitive reappraisal, following a negative mood induction task. These results point to the usefulness of metta interventions in facilitating cognitive restructuring, thus providing another argument for incorporating them into CBT.

Similarly, one of our ongoing studies aims to investigate how group CBT plus positive affect training (including mindfulness and loving kindness meditation) fares for people with low positive mood, irrespective of disorder. In this study, the protocol (12 sessions) introduces the concept and practice of mindfulness as an adjunct to forthcoming loving kindness meditation in the first two sessions, while the concept of loving kindness is introduced and practiced starting with session 3 (approximately 40 minutes). The following group sessions (4-12) begin with a brief 10-minute mindfulness exercise, then classic CBT techniques and exercises (e.g., thought record, cognitive restructuring, behavioral activation) are introduced, and followed by metta meditation (10 minutes) and debriefing (10 minutes), each time promoting a more challenging target of loving kindness (e.g., beloved friend, then someone neutral, etc.). Participants are also instructed to practice the meditation exercises at home.

Other studies have investigated the use of compassion-based interventions (i.e., not only meditation, but also exercises such as letter writing) in combination with CBT. For instance, a single group feasibility study tested the combination of CBT with compassion intervention sessions in depressed participants with good results (Asano et al., 2017). The protocol (10 sessions) used standard CBT and, in the last three sessions approached shame and self-criticism, memories of compassion, and compassion letters. Combining CBT with compassionate mind training in 12 sessions (combining imagery exercises with other techniques, like letter writing and grounding) was also shown to be effective for people referred to therapy as victims of traumatic incidents, with the CBT plus compassionate mind training scoring higher on self-compassion post-therapy (Beaumont et al., 2012).

Finally, we have to keep in mind the fact that some barriers may restrict the usefulness of metta interventions. For instance, individuals high on self-criticism often show a fear of compassion and self-compassion, because these states are experienced as unfamiliar and sometimes, as a sign of weakness (Gilbert, McEwan, Matos, & Rivis, 2011). Also, precisely because metta interventions foster a sense of calm and soothing rather than a more energetic kind of positive affect, they may appeal less to some people who value the latter kind of emotions more (Galante et al., 2014). In these cases, introducing other

compassion-based techniques besides meditation could be helpful (e.g., two-chair technique with the critical and the criticized self).

Conclusion

Metta interventions have been shown to be effective for a wide range of emotional problems, reducing shame and self-criticism, and also increasing positive affect. This allows for conversions into promising interventions especially for disorders characterized by harsh, critical, inflexible self-views and low positive affect, with depressive and social anxiety disorders as the most prevalent. Precisely because loving kindness and compassion are experienced less by these patients, metta interventions appear to be particularly useful; whether they really succeed, however, is still an empirical question (e.g., they may be difficult to practice by these participants again, because they lack these abilities in the first place). More data are needed in clinical populations, as well as for comparisons with active control groups. Nonetheless, so far it seems that metta interventions are effective as independent interventions, as well as emotion regulation strategies, and potentially as adjuncts to CBT protocols as well. Future research should look into the added benefits of combining loving kindness and compassion interventions with established treatment protocols and address their mechanisms of change.

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Some Guidelines for Reporting National Regulations on Clinical Psychology for Papers in the Section “Politics and Education” of CPE

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As pointed out in the editorial paper by Laireiter and Weise (2019)¹, manuscripts submitted to this section should address the following two topics: (1) legal regulations on education, training, and practice in clinical psychology and psychological treatment in the corresponding country, (2) specific aspects related to politics and education, e.g. prerequisites for, and contents of, training in various psychological treatments, or the relationship between clinical psychology and psychological treatment in the respective country. In addition, commentaries on university studies (e.g. Master's or Doctorate level), European harmonization, or pan-European regulations (e.g. by the European Federation of Psychologists' Associations or other organizations) are also welcome.

To facilitate writing of papers but also to make presentations from different countries equivalent and comparable, the editors decided to refine the general criteria by offering more specific guidelines for reporting national regulations in clinical psychology. These guidelines are not a must, but can be seen as a reference and support for structuring papers in this section of CPE. Additionally, authors are not bound to report about all points; they may select parts of it or even focus on only a few of them.

- **Legal or state regulations for psychology:** Do legal regulations for psychology exist in your country? Are they for psychology in general or for clinical psychology (or any other field of psychology) in specific? Please describe.

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- **Legal or state regulations for psychological treatment:** Are there (different/further) legal regulations for psychotherapy? What is the relation between clinical psychology and psychotherapy, e.g. are they independent from each other (i.e. two independent professions), or is one part of the other? Which one is superior? Are other professions also subject to state regulations in your country (e.g., social workers)?
- **Details of legal regulations:** What are the details of national regulations for (clinical) psychologists? Is there, for example, a state law or act on psychology? Does this refer to clinical psychology? What other fields of psychology are also part of this act? Please describe the main structure of the regulations in clinical psychology. Do other state laws, e.g. insurance acts, national health system acts, regulate clinical psychology and their professional activities?
- **Professional status of clinical psychologists:** What is the professional status of clinical psychologists in your country? Is it a “free” profession in which clinical psychologists are allowed to take up residence and work autonomously and without instruction and supervision by any other profession (e.g. psychiatrists, physicians) in the National Health System (NHS) of your country? Is its professional activity limited to specific sectors of the NHS, e.g. to inpatient medical settings, psychiatry or psychosomatics? Do patients have direct and independent access to psychological treatment, or is access to it dependent on the referral by physicians?
- **Core professional activities:** What are the core professional activities of clinical psychologists provided by legal regulations in your country (e.g. assessment/diagnostics, psychological treatment/psychotherapy, emergency interventions, preventive interventions, health promotion, counseling/coaching, supervision, teaching, research)?
- **Training in (clinical) psychology:** What kind of university training and postgraduate training is required to provide clinical psychological diagnostics and treatment? Give an overview on the criteria (e.g. Master in (clinical) psychology, additional requirements) and elements of training (theory, supervision, practice etc.) including hours/training units. Please comment on the curricula: Are there specific regulations for certain treatment traditions or approaches or limitations to specific traditions, e.g. psychodynamic, CBT, humanistic? Are internships in outpatient and inpatient treatment centers required and to what extent? Are there specific trainings and regulations for clinical psychologists for adults versus for children and adolescents?
- **Licensing/public register:** Is there any kind of licensing for clinical psychologists? What are the main criteria for receiving a license (or any other kind of public approval) as a clinical psychologist? How many clinical psychologists in your country are licensed or have another kind of public approval (e.g. being listed in a public register for clinical psychologists), for example compared to psychiatrists or (other) psychotherapists?