



Effects of brief mindful acceptance induction on implicit dysfunctional attitudes and concordance between implicit and explicit dysfunctional attitudes



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ABSTRACT

Mindfulness-based interventions have been shown to be effective in alleviating depressive symptoms. While much work has examined the effects of mindfulness training on subjective symptoms and experiences, and less is known regarding whether mindfulness training may alter relatively uncontrollable cognitive processes associated with depressed mood, particularly implicit dysfunctional attitudes. The present study examined the effects of a brief mindful acceptance induction on implicit dysfunctional attitudes and degree of concordance between implicit and explicit dysfunctional attitudes in the context of sad mood. A total of 79 adult participants with elevated depressive symptoms underwent an autobiographical mood induction procedure before being randomly assigned to mindful acceptance or thought wandering inductions. Results showed that the effect of mindful acceptance on implicit dysfunctional attitude was significantly moderated by trait mindfulness. Participants high on trait mindfulness demonstrated significant improvements in implicit dysfunctional attitudes following the mindful acceptance induction. Those low on trait mindfulness demonstrated significantly worse implicit dysfunctional attitudes following the induction. Significantly greater levels of concordance between implicit and explicit dysfunctional attitudes were observed in the mindful acceptance condition versus the thought wandering condition. The findings highlight changes in implicit dysfunctional attitudes and improvements in self-concordance as two potential mechanisms underlying the effects of mindfulness-based interventions.

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Much research has established the efficacy of mindfulness-based interventions in improving psychological health. In the general population, mindfulness-based interventions have demonstrated efficacy in reducing anxiety (Anderson, Lau, Segal, & Bishop, 2007; Shapiro, Schwartz, & Bonner, 1998), depression (Anderson et al., 2007; Grossman et al., 2010; Shapiro et al., 1998), and perceived stress (Astin, 1997; Keng, Phang, & Oei, 2015), among other psychological symptoms. Among patients with a history of recurrent depression, mindfulness-based cognitive therapy (MBCT; Segal, Williams, & Teasdale, 2002), a form of intervention that incorporates intensive mindfulness meditation exercises and elements of cognitive therapy, has been shown to be effective in

lowering depressive relapses and symptoms (Kuyken et al., 2008; Ma & Teasdale, 2004; Teasdale et al., 2000). Given the established efficacy of mindfulness-based interventions (Hofmann, Sawyer, Witt, & Oh, 2010; Keng, Smoski, & Robins, 2011), there has been growing interest in examining the mechanisms of change underlying the outcome of these interventions. Several mechanisms of change that have been identified include increases in trait mindfulness and self-compassion (Keng, Smoski, Robins, Ekblad, & Brantley, 2012; Kuyken et al., 2010), improvements in autobiographical memory specificity (Williams, Teasdale, Segal, & Soulsby, 2000), and reductions in rumination (Shahar, Britton, Sbarra, Figueredo, & Bootzin, 2010). These findings highlight the role of mindfulness in promoting a decentered perspective towards one's thoughts and emotions, a more compassionate attitude in relating to oneself, as well as a more differentiated, as opposed to globalized, recall of one's experiences.

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Even though progress has been made with regards to understanding the effects and mechanisms of mindfulness training, the majority of research to date has focused on the effects of mindfulness on explicitly expressed symptoms and experiences. Relatively little work has examined the effects of mindfulness training on changes in more implicit, less directly controllable aspects of cognition, particularly implicit dysfunctional attitudes, which has been identified as a core feature of depression (Phillips, Hine, & Thorsteinsson, 2010).

1. Implicit cognition

Implicit cognition refers to automatic, relatively uncontrollable cognitive responses to experiences that are driven by pre-existing self-schemas (Ingram, Miranda, & Segal, 1998). It is distinct from explicit cognition, which is derived from deliberate processing of one's experiences, and are commonly assessed by participants' self-report of their experiences. Implicit cognition or attitudes, on the other hand, requires assessment under indirect or uncontrolled conditions, such as through the use of memory associations or reaction times (Phillips et al., 2010). Research has found that patients with depression tend to demonstrate negative self-referential implicit attitudes. For example, Meites, Deveney, Steele, Holmes, and Pizzagalli (2008) found that individuals with remitted depression reported more negative automatic associations between the self and positive mood states as compared to healthy controls on the Implicit Association Test (IAT). Similarly, Franck, de Raedt, Dereu, & Van den Abbeele (2007) found that currently depressed individuals without suicidal ideation showed significantly lower implicit self-esteem as compared to non-depressed individuals. A meta-analysis also found that implicit cognition predicts past, future, and current episodes of depression consistently (Phillips et al., 2010).

Even though negative implicit cognition has been shown to be a feature of depression, surprisingly little research has examined ways in which implicit cognition can be modified through psychological interventions. Within the literature, several approaches such as memory diary (Gotlib & Krasnoperova, 1998) and use of expanded dysfunctional thought records (Friedman & Whisman, 2004) have been proposed as strategies to modify implicit cognition, but little work has examined the effects of these strategies empirically.

2. Mindfulness and implicit cognition

Mindfulness training may be a promising approach for modifying implicit cognitive biases. Key elements of mindfulness training, particularly, systematic development of nonjudgmental, moment-to-moment awareness of one's thoughts, emotions, and bodily sensations, may facilitate the ability to modify relatively uncontrollable aspects of automatic processes (Friedman & Whisman, 2004). The potential role of mindfulness in modifying implicit cognition is illustrated through the Interacting Cognitive Subsystems (ICS) Model (Teasdale & Barnard, 1993; Teasdale, Segal, & Williams, 1995). The ICS model postulates that different aspects of experience, such as sensory, visual, and bodily sensory inputs, are processed in schematic models. These sensory inputs contribute to larger implied meanings and are directly relevant to the experience of emotion. In a depressive state, the schematic models may give rise to specific negative automatic thoughts, which then contribute to broader implied meanings, resulting in a negative feedback loop. Mindfulness training presumably enhances an individual's awareness of different aspects of information that may contribute to the larger implicational meanings, which enables the individual to break the maladaptive feedback loop. For example, a depressed

person who hears a story that reminds himself of a past experience of failure may automatically engage in implicit, ruminative thoughts regarding his (lack of) capability, which reinforces the belief that he is inadequate. With mindfulness training, the person may quickly learn to become aware of the story as simply a story, rather than allow the story to give rise to a chain of negative, implied meanings regarding his self-worth.

To date, several studies have highlighted the association between mindfulness and implicit cognitive processes. In a cross sectional study involving smokers, Waters et al. (2009) found that trait mindfulness was associated with a greater ability to detach from negative or distressing stimuli (as reflected by a negative IAT effect). Research following this study has examined whether implicit cognition is a process modifiable by brief mindfulness interventions. Hooper, Villatte, Neofotistou, and McHugh, (2010) found that a mindfulness induction resulted significant reductions in implicit experiential avoidance (assessed using the Implicit Relational Assessment Procedure) in a group of healthy participants, compared to a thought suppression induction. Brief mindfulness training has also been shown to reduce attentional bias to emotional stimuli on the emotional Stroop task among individuals with elevated anxiety symptoms (Lee & Orsillo, 2014). Further, Lueke and Gibson (2015) demonstrated that a 10-min mindfulness induction resulted in reductions on implicit race and age biases (as assessed by IATs) among undergraduate students. Taken together, these studies showed that implicit, relatively uncontrollable aspects of cognitive processing are modifiable through brief mindfulness training. No research however has examined whether mindfulness training may modify implicit dysfunctional attitudes, in the context of depressed mood.

Additionally, few studies have examined individual differences that may influence the efficacy of brief mindfulness inductions. Existing research shows that pre-existing levels of trait mindfulness positively predict subjective effects of brief mindfulness inductions (Huffziger & Kuehner, 2009; Keng, Robins, Smoski, Dagenbach, & Leary, 2013), presumably because individuals who are already mindful to begin with may be more able to engage effectively in a brief mindfulness induction. Considering these findings along with previously established associations between trait mindfulness and implicit cognition (Waters et al., 2009), it is plausible that trait mindfulness may moderate the effects of mindfulness training on implicit cognition.

3. Mindfulness and self-concordance

In addition to modifying negative implicit cognition, mindfulness training may provide an added benefit of increasing the degree of concordance between implicit and explicit cognition (also generally referred to as self-concordance). Self-concordance is usually operationalized by the degree to which implicit and explicit cognition (or affect) correlates with each other (e.g., Brown & Ryan, 2003). Greater self-concordance (or conversely, low self-discrepancy) would mean that an individual's expressed thoughts, attitudes, or emotions are largely consistent with his or her implicit emotions and cognitions.

Previous research has shown that a lack of concordance between implicit and explicit motives is associated with lower subjective well-being and greater psychosomatic symptoms (Baumann, Kaschel, & Kuhl, 2005), as well as weaker volitional strength, or self-control ability (Kehr, 2004a). Kehr (2004b) proposed a compensatory model of motivation and volition, which suggests that behavioral conflict due to discrepancies in implicit versus explicit motives might call for volitional conflict regulation (referring to attempts to resolve discrepancies between implicit and explicit motives), which results in depletion of self-control

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