

# Mechanisms of Change During Attention Training and Mindfulness in High Trait-Anxious Individuals: A Randomized Controlled Study

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The first aim of this study was to compare attention manipulation techniques deriving from metacognitive therapy (the Attention Training Technique; ATT) and mindfulness-based approaches (Mindfulness-Based Progressive Muscle Relaxation, MB-PMR) to a thought wandering control (TWC) condition, in terms of their impact on anxiety and four mechanisms: distancing, present-focused attention, uncontrollability and dangerousness, metacognitive beliefs, and cognitive flexibility (Stroop task). The second aim was to test indirect effects of the techniques on anxiety via the mechanism measures. High trait anxious participants ( $N = 81$ ,  $M_{age} = 23.60$ ,  $SD_{age} = 7.66$ , 80% female) were randomized to receive ATT, MB-PMR, or the TWC condition. Measures of cognitive and somatic anxiety, distancing, present-focused attention, metacognitive beliefs, and cognitive flexibility were administered before or after the attention manipulation task. Compared to the TWC group, ATT and MB-PMR were associated with greater changes on cognitive (but not somatic) anxiety, present-focused attention, metacognitive beliefs, and uncorrected errors for threat-related words on the Stroop

task. The pattern of means was similar for distancing, but this did not reach statistical significance, and Stroop speed increased equally for all conditions. Indirect effects models revealed significant effects of condition on state anxiety via distancing, metacognitive beliefs, and present-focused attention, but not via Stroop errors. ATT and MB-PMR were associated with changes on anxiety and the mechanism measures, suggesting that the mechanisms of change may be more similar than different across these techniques.

*Keywords:* attention training; mindfulness; mechanisms; anxiety

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ANXIETY DISORDERS CAN BE CHRONIC and debilitating, and they account for a large proportion of the burden of disease at the population level (Mathers, Vos, & Stevenson, 1999). Understanding mechanisms of change in anxiety disorders is critical for developing effective and efficient interventions. Adding to the existing arsenal of effective behavioral and cognitive treatments (see Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012), emerging evidence suggests that metacognitive therapy and mindfulness and acceptance-based interventions can effectively treat anxiety disorders (Kocovski, Fleming, Hawley, Huta, & Antony, 2013; Normann, van Emmerik, & Morina, 2014). However, it is currently unclear how these interventions reduce

anxiety and the degree to which they work via common versus distinct mechanisms.

Similarities and differences across different cognitive behavior therapies have been debated (e.g., Hayes, Levin, Plumb-Villardaga, Villatte, & Pistorello, 2013; Hofmann & Asmundson, 2008). The principle of parsimony places the burden on theorists who wish to distinguish between models of change to demonstrate that therapies deriving from the different frameworks operate via distinct mechanisms, and that these differences account for substantial and meaningful improvements in therapeutic outcomes. Mennin, Ellard, Fresco, and Gross (2013) argued that many theorized differences in change mechanisms across cognitive behavior therapies may be more apparent than real, and that any genuine differences may be dwarfed by considerable commonalities. These researchers therefore recommended that future research focus on identifying common goals, change principles, and processes across therapies rather than only comparing the efficacy of different approaches. Identifying common and distinct change processes modified by different therapeutic techniques, and determining the most critical processes associated with cognitive, affective, and behavioral change, will enable researchers and clinicians to develop the most effective and efficient interventions for targeting these processes, regardless of the brand of therapy from which techniques derive. The aim of this study was to identify mechanisms of change across two techniques deriving from metacognitive therapy and acceptance-based behavior therapy (ABBT) that are both designed to target attentional self-regulation.

#### METACOGNITIVE THERAPY AND THE ATTENTION TRAINING TECHNIQUE

Metacognitive Therapy (MCT) derives from the Self-Regulatory Executive Function (S-REF) model, which suggests that emotional disorders are maintained by the Cognitive Attentional Syndrome (CAS; Wells & Matthews, 1996; see Wells, 2009). The CAS is characterized by excessive self-focused attention, repetitive negative thinking, heightened focus on threat, and coping strategies that inadvertently maintain distress. The central objective of MCT is to promote “detached mindfulness” and alter dysfunctional metacognitive beliefs about one’s own thinking (e.g., “my thoughts are uncontrollable”) that drive the CAS and maintain emotional distress. Detached mindfulness has been defined as “awareness of the automatic and non-volitional ebb and flow of internal events, primarily thoughts,” where “thoughts are seen as objects in the mind that are separate from reality”

(Wells, 2006, p. 340). Wells further describes detached mindfulness as “objective awareness of thoughts and internal events in the absence of conceptual analysis and in the absence of goal-directed responses” (p. 340). The five characteristics of detached mindfulness include consciousness of thoughts (meta-awareness), understanding of thoughts as objective events and not facts (cognitive decentering), flexible attention that is not anchored to any one event (detachment), low levels of analytical and meaning-based inner dialogue (low conceptual processing), and a deemphasis on goal-directed responses that circumvent threat (low goal-directed coping; Wells, 2006). To alter metacognitive beliefs the CAS must be disrupted to increase flexible control over thinking and behavior and to allow belief-disconfirming information to be processed.

The Attention Training Technique (ATT) is used in MCT to facilitate disengagement from the CAS by shifting attention away from inflexible self-focused attention, thus promoting detached mindfulness and attentional control (Wells, 2006). The ATT progresses through stages that require selective attention to one sound at a time, rapidly shifting attention between individual sounds, and divided attention across all sounds. Recent reviews have reported that metacognitive therapy guided by the metacognitive model (Normann et al., 2014) and the ATT alone (Knowles, Foden, El-Deredy, & Wells, 2016) is associated with large effects on anxiety and depression.

#### ABBT AND MINDFULNESS-BASED PROGRESSIVE MUSCLE RELAXATION

Mindfulness and acceptance-based approaches also suggest that poor attentional self-regulation (i.e., psychological inflexibility), rather than internal or external focus of attention per se, contributes to the development and maintenance of anxiety disorders, particularly when it occurs to aid experiential avoidance (Bishop et al., 2004). Mindfulness has been defined as “the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145). Techniques that cultivate mindfulness have been incorporated in a range of interventions including mindfulness-based cognitive therapy for depression (MBCT; Segal, Teasdale, & Williams, 2002), mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1994), Acceptance and Commitment Therapy (ACT; Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Twohig, 2012), and acceptance-based behavior therapy (ABBT; Hayes-Skelton, Orsillo, & Roemer, 2013; Roemer, Orsillo, & Salters-Pedneault, 2008).

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