Journal of Behavior Therapy and Experimental Psychiatry 61 (2018) 66–71

Contents lists available at ScienceDirect

Journal of Behavior Therapy and Experimental Psychiatry

journal homepage: www.elsevier.com/locate/jbtep

The attention training technique causally reduces self-focus following worry provocation and reduces cognitive anxiety among self-focused individuals

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ARTICLE INFO

Keywords:
Anxiety
Attention training technique (ATT)
Focus of attention
Metacognitive
Self-focused attention

ABSTRACT

Background and Objectives: The attention training technique (ATT) is a component of metacognitive therapy developed to interrupt self-focused, threat-based processing underlying anxiety disorders. Whereas extant research supports the benefits of ATT, including in relation to anxiety reduction, study findings lead to equivocal conclusions as to whether ATT causally interrupts self-focused attention (SFA) as intended. An additional gap in the literature relates to investigating if ATT is especially effective for reducing anxiety among individuals experiencing a heightened self-focused state. The present study sought to address those two gaps in the literature.
Method: Participants scoring high on a measure of general worry severity completed a worry provocation that increased SFA and then were randomized to ATT (n = 45), a mindfulness task (n = 44), or a distraction task (n = 44).
Results: ATT caused large reductions in SFA, whereas there were no changes in focus of attention following the mindfulness or distraction task. Anxiety reduction was found in relation to all three tasks; however, ATT, relative to distraction, was found to cause greater reduction in cognitive anxiety for individuals highly self-focused before the task.
Limitations: The present study used an analogue sample and the design did not allow for an examination of the long-term benefit of ATT.
Conclusions: Results support ATT causally interrupting self-focused states and that ATT is particularly effective in reducing cognitive anxiety among individuals who are self-focused.

1. Introduction

Ingram (1990) defined self-focused attention (SFA) as "awareness of self-referent, internally generated information that stands in contrast to an awareness of externally generated information derived through sensory receptors" (p. 156). Although SFA can be adaptive in certain contexts (Baer, 2009), SFA shares moderate associations with negative emotional states (Ingram, 1990; Mor & Winquist, 2002). In fact, some conceptual models posit that SFA is a process that plays a central role in the development and maintenance of anxiety disorders. For example, Wells's (2009) metacognitive model "… assumes that the control of attention in psychological disorder becomes inflexible as attention is bound up with perseverative, self-focused, worry-based processing and monitoring for threat" (p. 56). Self-focused, threat-based processing in the form of rumination and worry is characteristic of the cognitive attentional syndrome (CAS), a deleterious form of self-focused processing that maintains threat perceptions, depletes the ability to process information inconsistent with dysfunctional beliefs, and contributes to performance deficits (Wells & Matthews, 1996).

The attention training technique (ATT) is a component of metacognitive therapy developed to interrupt excessive and inflexible forms of SFA underlying the CAS (Wells, 1990, 2009). ATT is an auditory-listening technique involving selective attention, attention switching, and divided attention. Individuals initially are instructed to listen to specific sounds while disregarding others (i.e., selective attention) for the first 5 min, are then instructed to rapidly switch their focus of attention between sounds (i.e., attention switching) for the next 5 min, and are instructed to focus on multiple sounds at once (i.e., divided attention) for the final 2 min. Manipulating focus of attention and strengthening attentional control through ATT putatively enables individuals to redirect attention from perseverative forms of SFA characterizing the CAS and, thus, interrupt the nonadaptive self-processing (Wells, 1990, 2009).

Extant research supports the usefulness of ATT in reducing anxiety and aspects of the CAS (Fergus & Bardeen, 2016; Knowles, Foden, El-Deredy, & Wells, 2016). In addition, preliminary findings suggests that

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https://doi.org/10.1016/j.jbtep.2018.06.006
Received 22 January 2018; Received in revised form 30 May 2018; Accepted 11 June 2018
Available online 12 June 2018
0005-7916/

exposure that modifies focus of attention in the service of mitigating SFA may be more effective than exposure alone for social anxiety (Vogel et al., 2016; Wells & Papageorgiou, 1998). Although preliminary, those findings point to a possible broader use of ATT as an adjunctive treatment for exposure that modifies focus of attention. Despite such promising findings, it remains unclear if ATT in fact causally influences SFA in its intended manner or under what conditions ATT is particularly effective in reducing anxiety.

As noted, ATT was developed to interrupt the CAS, in part, through manipulating focus of attention (Wells, 1990, 2009). Initial studies examining the impact of ATT on focus of attention used single-case experimental study designs. Two studies established a baseline episode before implementing ATT, ATT was then withdrawn, and a self-focused activity was introduced to reverse the effects of ATT before reintroducing ATT (Wells, 1990; Wells, White, & Carter, 1997). Both studies supported the notion that self-focused states can worsen anxiety and that ATT mitigates those effects. Three studies more directly examined the impact of ATT on focus of attention with study findings leading to equivocal conclusions. Nassif and Wells (2014) found that participants who reported intrusion-related distress evidenced greater external focus of attention following ATT than following a distraction task. Using a repeated-measures design, Fergus, Wheless, and Wright (2014) found that a single-session of ATT caused a greater shift from SFA to an external focus of attention relative to a mindfulness-based progressive muscle relaxation task among an unselected sample of participants. McEvoy, Graville, Hayes, Kane, and Foster (2017) failed to replicate Fergus et al.'s findings of changes in focus of attention following a single-session of ATT among participants high in trait anxiety.

One potential reason for the inconsistent pattern of findings relates to study methodology. Like Fergus et al. (2014), McEvoy et al. (2017) examined the impact of ATT from a natural baseline. Nassif and Wells (2014) examined the impact of ATT following a 5-min rest episode after listening to a narrative of an idiographic stressful event. The intended use of ATT is to redirect attention in the service of interrupting self-focused, threat-based processing of the CAS and the methods of prior studies do not allow for direct inferences to be made as to whether ATT causally alters focus of attention in the intended manner. For example, none of the studies examined if ATT causally interrupts SFA immediately following a CAS-relevant provocation (e.g., a worry provocation). A study addressing such methodological limitations would offer a more ecologically valid examination of the impact of ATT than prior research and help speak to whether ATT alters focus of attention in the intended manner.

Despite findings that ATT reduces anxiety (Fergus & Bardeen, 2016; Knowles et al., 2016), and even in the absence of changes in focus of attention (McEvoy et al., 2017), it seems plausible that state focus of attention could influence the effectiveness of ATT on anxiety reduction. A moderating variable helps explicate conditional effects (Hayes, 2018), such as whether a treatment is particularly effective under certain conditions. Support for the possible moderating effect of state focus of attention in relation to ATT comes from findings from Van Ryckeghem, Crombez, Van Hulle, and Van Damme (2012) that a distraction task designed to facilitate a shift to external focus of attention evidenced diminished benefit among individuals prone toward SFA. Wells (2009) contends that ATT and distraction are not synonymous, with ATT extending beyond distraction by directly targeting processes, such as attentional control, underlying the ability to alter focus of attention. Extant findings offer preliminary support for the proposed effects of ATT on such underlying processes (Callinan, Johnson, & Wells, 2015; Fergus & Hiraoka, 2018). Because ATT may more directly target processes responsible for maintaining threat-based, self-focused states than distraction, ATT may outperform distraction in reducing anxiety among individuals experiencing a heightened self-focused state following a CAS-relevant provocation. In other words, state focus of attention could moderate the effectiveness of ATT, versus distraction, on anxiety reduction when the CAS is active. Potential moderators of the effectiveness of ATT remain unexamined in the existing literature.

The purpose of the present study was two-fold. The first aim was to examine if ATT causally alters focus of attention among individuals with high general worry severity. Individuals with high general worry severity were selected because they were expected to show a high propensity to engage in the CAS and ATT is meant to interrupt self-focused states characteristic of the CAS. To examine this aim, participants with high general worry severity completed a worry provocation that evoked SFA and then were randomized to a single-session of ATT, a mindfulness task, or a distraction task. Because ATT and mindfulness tasks may alter focus of attention in opposite directions, a distraction task was included to help address if any observed difference between ATT and the mindfulness task was the result of one or both of those tasks exerting an effect. The extant literature provides support for predictions that ATT would either causally reduce SFA or not alter focus of attention. Because participants were predicted to be in a heightened self-focused state following the worry provocation, the mindfulness task was expected to lead to no change in focus of attention given that mindfulness tasks evoke a self-focused state from natural baseline (Fergus et al., 2014; McEvoy et al., 2017). Although some speculate that distraction may cause external focus of attention (Van Ryckeghem et al., 2012), such changes in focus of attention following distraction have not always been found (Nassif & Wells, 2014). No predictions were thus made about changes in focus of attention following the distraction task.

The second aim was to examine state focus of attention before the task as a moderator of the effectiveness of ATT on subsequent anxiety reduction. Following from findings highlighting that SFA may inhibit the effectiveness of distraction (Van Ryckeghem et al., 2012) and proposed conceptual differences suggesting that ATT more directly targets processes that maintain worry-based, self-focused states than does distraction (Wells, 2009), ATT, relative to distraction, was expected to be more effective in reducing anxiety among individuals in a self-focused state before the task. SFA may not be problematic within a mindfulness context (Baer, 2009) and, for that reason, state focus of attention was not expected to be a moderating variable when comparing the effectiveness of ATT and the mindfulness task. To control for the effects of the propensity to experience negative emotion (e.g., Barlow, 2002; Ingram, 1990; Mor & Winquist, 2002), baseline trait anxiety and depressive symptoms were included as covariates.

2. Method

2.1. Participants

A sample of undergraduate psychology students (N = 1345) was screened for study eligibility, which was scoring at least 62 on the Penn State Worry Questionnaire (Meyer, Miller, Metzger, & Borkovec, 1990). That cutoff score identifies individuals with heightened general worry severity (Behar, Alcaine, Zuellig, & Borkovec, 2003). Of those participants, 330 met the eligibility criteria and were invited to participate in the lab-based session. Among the eligible participants, 133 (40.3% of eligible participants) participated in the lab-based session. Those who were eligible and did versus did not participate showed no significant differences in scores on the questionnaires completed before the lab-based session or age (magnitude of t-values ranged from 0.17 to 1.16, $ps > .247$). In addition, there were no sex differences ($\chi_{(1)} = 0.01$, $p = .946$) or differences in ethnoracial self-identification ($\chi_{(6)} = 7.70$, $p = .261$) among those two sets of individuals. Among the 133 participants who participated in the lab-based session, the average PSWQ score was 69.0 (SD = 4.79). The average age of that sample was 18.9 years (SD = 1.6) and the sample was primarily female (86.5%). Approximately 59.4% of the sample self-identified as White, 21.8% as Latino, 9.0% as Asian, 4.5% as Black, 4.5% as multi-racial, and 0.8% as "other" race/ethnicity.