Comparing thought suppression and mindfulness as coping techniques for spider fear

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A b s t r a c t
The current study compared thought suppression, focused attention (mindfulness) and unfocused attention as strategies for managing spider fear. Spider fearful participants were exposed to a strategy induction before completing a Behavioural Approach Test (BAT). The BAT is a 10 step measurement of how close participants are willing to move towards a spider. Participants were instructed to use what they learned in the pre-BAT induction to help them advance through the steps of the BAT. The results of the study indicated that participants given the thought suppression or the unfocused attention induction moved through significantly less steps of the BAT than did those given the focused attention (mindful) induction. Additionally, the thought suppression group felt significantly more anxious than the focused and unfocused attention groups following completion of the BAT. These results are discussed in terms of the impact of thought suppression on avoidance behaviour in phobias.

1. Introduction

We have all attempted to banish thoughts of feared events or stimuli at some point in our lives. Attempted suppression of unwanted intrusive thoughts (UITs) is a strategy associated with clinical disorders, such as phobias, post-traumatic stress disorder and anxiety. Research indicates that suppression of UITs is a highly counterproductive coping strategy (Beevers, Wenzlaff, Hayes, & Scott, 1999; Hooper, Saunders, & McHugh, 2010). In spite of this however, the adoption of this coping strategy is widespread.

1.1. Behavioural accounts of phobias

Research suggests that thought suppression may play a role in the aetiology and maintenance of phobias (Wenzlaff & Wegner, 2000). Indeed escape/avoidance behaviours, such as thought suppression, form the basis for behavioural accounts of phobias (Purdon, 1999). One such account is offered by the theory of general anxiety (Thorpe & Salkovskis, 1997). According to this theory, although phobic individuals are hyper-vigilant to threat cues, in the presence of a threat they will suppress or avoid particular aspects of the threatening stimulus. For example, phobic subjects tend to report only a vague description of the stimulus that they fear, as they often avoid all contact with it. Avoidance of the stimulus is believed to be controlled by a need to reduce any anxiety that may arise from having direct contact with the stimulus, thus prohibiting habituation to the fear stimulus.

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A common response to feared stimuli is attempted thought suppression. The effect of thought suppression across a number of different phobias has been investigated. Muris, de Jong, Merkelbach, Postema, and Vet (1998) found that dental fearful patients reported higher levels of intrusive and negative thinking during a dental procedure than non-fearful patients. Similarly, Fawzy, Hecker, and Clark (2006) found that participants who were instructed to suppress snake related thoughts exhibited a more pronounced attentional bias towards snake related pair words suggesting a causal relationship between the two.

Spider phobia is documented as the most prevalent specific phobia in Western culture and has a prevalence rate of 3.5% amongst the general population (Fredrikson, Annas, Fischer, & Wik, 1996). When these individuals (physically or mentally) encounter a spider they often experience intense fear and consequently develop avoidance behaviours that can interfere with normal everyday functioning. However Wenzel, Barth, and Holt (2003) found evidence to suggest that suppression may not be the best strategy to manage unwanted spider related thoughts. They primed participants with pictures and stories of spiders. Subsequently, both groups of participants were required to complete two 5 min periods. The first group had to suppress thoughts of spiders for 5 min, before entering a 5 min free expression period where they were free to think of what they liked but had to indicate the presence of the unwanted thought each time it appeared. The second group had to express thoughts of spiders out aloud for the first 5 min period, before also completing a free suppression period. Results indicated that spider fearful participants experienced fearful related thoughts for a longer phase of time than non-spider fearful participants when implementing suppression strategies.

1.2. Mindfulness as a coping strategy

Recently, a technique known as mindfulness has emerged as an alternative to thought suppression for dealing with UITs and feelings (Najmi, Riemann, & Wegner, 2009). The technique focuses on increasing an individual’s willingness to experience distressing thoughts without altering their content or frequency (Hayes, Strosahl, & Wilson, 1999). Mindfulness is employed in a growing number of clinical therapies such as Mindfulness Based Stress Reduction (Kabat-Zinn, 1990), Mindfulness Based Cognitive Therapy (Williams, Teasdale, Segal, & Kabat-Zinn, 2007) and Acceptance and Commitment Therapy (Hayes et al., 1999).

Research directly comparing the effectiveness of these largely opposing techniques (thought suppression vs. mindfulness) is scarce. Marcks and Woods (2005) compared mindful acceptance based techniques with suppression in the management of personally relevant UITs. These researchers supplied three groups (thought suppression, acceptance and monitor only) with technique appropriate instructions. The instructions (i.e., a paragraph of text) were presented to the participants prior to the 5 min thought monitoring period, during which the occurrence of each UIT was recorded by the participant pressing a button in front of them. Finally, upon completion of the 5 min period the distress associated with the experience of personally relevant UITs was measured via a self-appraisal form. The findings indicated that those who were instructed to suppress their intrusive thoughts could not do so and reported an increased level of distress after adhering to the suppression instruction. In comparison, those in the acceptance condition reported a decrease in discomfort but not thought frequency. The monitor only group experienced a lower frequency of thoughts and lower distress than the other two groups. Marcks and Woods (2005) concluded that their data provided initial evidence that acceptance may be an effective strategy for managing personally relevant UITs.

In a subsequent study Najmi et al. (2009) compared mindful acceptance and thought suppression in dealing with UITs across a group of participants diagnosed with Obsessive Compulsive Disorder (OCD) and a non-clinically diagnosed control sample. Across five separate sessions the participants in each group were exposed to one of five instructions (mindful acceptance, focused distraction, creating associates, thought suppression and a baseline condition), again the dependent measures were identical to those used by Marcks and Woods (2005), that is, (1) the number of UITs post-instruction during a 5 min period and (2) distress level in coping with UITs. The results indicated that across both the OCD and control groups the effort involved in coping with UITs was the greatest when applying the thought suppression instruction. Additionally, the mindful acceptance instruction participants reported significantly less distress than during the 5 min suppression period. The focused distraction group reported no difference in distress either during or post-measure while the thought suppression group indicated a higher level of distress post-task compared to during the task. Taken together, these studies provide evidence that mindful acceptance based techniques may be more useful than thought suppression in dealing with UITs. It should be noted, however, that neither study included an actual technique (e.g. thought suppression or acceptance) induction. Specifically, participants were simply required to read a brief paragraph before entering the 5 min period. In addition to this, both studies measured self-reported UITs rather than a direct behavioural measure of the effectiveness of each technique, thus the behavioural impact of the techniques is based on the participants own self-reported number of UITs and level of distress.

Typically, mindfulness training is implemented over a number of sessions (Shapiro, Schwartz, & Bonner, 1998). However, even a 15 min focused attention instruction has been shown to produce mindfulness consistent behaviour on a subsequent task. For example, Arch and Craske (2006) tested the immediate effects of a 15-min focused breathing induction involving ‘mindfulness’ of breath instructions, which provided a short experimental analogue of mindfulness. The findings indicated that participants in the focused attention group demonstrated more positive responses to external stimuli after the induction than an unfocused attention group. McHugh, Simpson, and Reed (2010) employed a 10 min version of the Arch and Craske (2006) focused attention induction to reduce decision making deficits in an older population. The focused attention induction in their study reduced decision making deficits on a card selection task relative to an unfocused attention control induction.

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The current study aims to determine whether a focused attention (i.e. mindfulness) induction compared to thought suppression and an unfocused attention control induction can reduce spider avoidance in those scoring high on a spider fearful questionnaire. It is predicted that the focused attention (mindfulness) group will move through significantly more steps of the spider avoidance measure than either the unfocused attention or thought suppression groups. It is additionally predicted, in accordance with Marcks and Woods (2005) and Najmi et al. (2009) that participants in the thought suppression group will experience an inflation in anxiety levels from the beginning to the end of the study when compared to the focused attention/unfocused attention groups.

2. Method

2.1. Participants

Sixty spider fearful participants were recruited from the Psychology Department’s subject pool at Swansea University, and received course credit for their participation (participants were informed that they would receive their credit regardless of how they scored on both the spider fear questionnaire and the behavioural measure). All participants had completed one to two years of their University education. The gender and age demographics were similar between each group (Thought suppression; 18 female, 2 male. Mean age = 24.75, SD = 10.33. Focused attention; 16 female, 4 male. Mean age = 23.8, SD = 6.87. Unfocused attention; 14 female, 6 male. Mean age = 26.55, SD = 11.05). Once participants had scored above a certain criterion on the Fear of Spiders Questionnaire (see the FSQ exclusion criteria below) they were randomly assigned to one of the three groups.

2.2. Measures

(1) Fear of Spiders Questionnaire (FSQ, Szymanski & O'Donohue, 1995). The FSQ is an 18 item questionnaire employed to assess participants’ pre-experimental level of spider fear. The FSQ is reported to have excellent psychometric properties and is a sensitive measure in discriminating between spider fearful and non-spider fearful people (Caseras et al., 2010). Caseras, et al. (2010) recently conducted a study using the FSQ and reported the mean score for a spider fearful participant to be 87 (SD = 21.12).

FSQ Exclusion Criteria: Participants qualified for the current experiment if they scored within two standard deviations of Caseras et al.’s mean score. Thus, participants were excluded from the current experiment if they had an FSQ score of less than 45. Two participants were excluded on the basis of this criterion. Participants’ average FSQ score was 86.131 (SD = 17.995).

(2) State–Trait Anxiety Inventory (STAI-S and STAI-T, Spielberger, Gorsuch, & Lushene, 1970). The STAI, which is comprised of two scales with 20 items, was administered to provide a measure of participants’ pre-experimental trait (STAI-T) and state (STAI-S) anxiety level and also participants’ post-experimental state anxiety level. The measure involves respondents rating each item on a scale ranging from 1 to 4, which yields an overall range of 20–80 points on each subscale. Higher scores indicate higher levels of trait or state anxiety. Test–retest reliability ranges from .73 to .86 on the STAI-Trait and .16 to .54 on the STAI-State. The internal consistency of the subscales has been found to be acceptable.

(3) Acceptance and Action Questionnaire II (Bond et al., in press). The AAQ-II is a 10 item measure included to provide a pre-experimental measure of psychological flexibility, which is the core construct of the ACT model of psychopathology and a construct which is highly correlated with mindfulness (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Higher scores on the AAQ-II indicate greater psychological flexibility. The AAQ-II has good psychometric properties and factorial structure (Ruiz, 2010).

(4) Induction adherence. An induction adherence measure was included to provide a self-report of the extent to which participants employed the induction during the behavioural task. The statement ‘To what extent did you implement the instructions provided on the audio tape when undertaking the spider approach task?’ was measured on a Likert scale of 1–10 where 1 was equal to ‘not at all’, 5 was equal to ‘moderately so’ and 10 was equal to ‘very much so’.

2.3. Design

A single factor between subjects’ design was employed with the scores of each group (focused attention, thought suppression and unfocused attention) on the BAT and the pre-experiment/post-experiment STAI-S serving as the dependent measures.

2.4. The inductions

Each induction involved a 9 min recorded audio message. The recording commenced with instructions to the participant. After the initial induction instructions, a reminder was delivered approximately every 30 s. The focused attention (mindfulness) induction was based on the induction used by Arch and Craske (2006). The induction involved an in vivo short
experiential focused attention (mindfulness) breathing exercise. The thought suppression induction was similar in format to the focused attention induction with the exception that the induction encouraged participants to suppress unwanted thoughts rather than to focus on their breathing. Finally, the unfocused attention induction encouraged participants to allow their minds to wander freely through thoughts of past and future events without focusing on any one thought. It is important to note that no unwanted thought was targeted during these inductions. Instead, the inductions were employed to provide participants with a technique for dealing with unwanted negative content when any such content would arise. In particular the inductions were designed to enable participants to ‘return’ to the induction technique each time their mind wandered, as could be the case in the behavioural task.

2.5. The Behavioural Approach Test (BAT; Kindt & Brosschot, 1999)

Spider fearful behaviour was measured using the Behavioural Approach Test (BAT). Participants stood 3 m away from a table with a glass jar on it. Inside the glass jar was a living spider which was roughly 3 cm in diameter. A lid was securely fastened on top of the jar so the spider could not escape. In this test participants were instructed to ‘use the induction they received via the audio tape to move through as many steps of the test as they could’.

Participants could score between 1 and 10 on the BAT. The task began with the participant positioned 3 m from the table on which a spider was placed in a container. BAT points are earned as follows: BAT score 1: move 1 m closer to the spider. BAT score 2: move another metre towards the spider. BAT score 3: move another metre towards the spider (i.e., next to the table). BAT score 4: touch the jar for 10 s. BAT score 5: lift the jar. BAT score 6: open the lid of the jar. BAT score 7: touch the spider with a pencil for more than 10 s. BAT score 8: remove the spider from the jar. BAT score 9: touch the spider for more than 10 s with their finger. BAT score 10: place the spider on their hand. Participants were allowed to terminate the test at any stage during the BAT and their last completed step was the experimental dependent measure.

As there are multiple versions of the BAT, each with a different number of steps and often used with different sized spiders, it is difficult to ascertain the average amount of steps a spider fearful and non-spider fearful person will complete. The current study employed the BAT used by Kindt and Brosschot (1999). In their study they found that the average number of steps completed on the BAT by spider fearful participants with no induction was 6.1, while participants who are not spider fearful typically scored 9.4. However it is important to note that their study was conducted on children and not young adults.

2.6. Procedure

The spider fearful participants (i.e. those scoring above 45 on the FSQ), were randomly assigned to one of the three experimental groups. Before beginning the experiment they were required to complete the STAI-S, the STAI-T and the AAQ-II.

Participants were then instructed to listen to one of the three inductions (thought suppression, focused attention, and unfocused attention). After the induction, the participants were directed to a separate laboratory and brought to a marker 3 m away from a table on which the spider was placed in a see-through jar, in order to begin the BAT. After the BAT, participants completed the induction adherence measure. The session ended with participants returning to the first laboratory to complete the STAI-S again to determine if any changes in levels of state anxiety had occurred pre- to post-experiment.

3. Results

The current experiment tested participants for pre-experimental levels of spider fear (FSQ), anxiety (STAI-S and STAI-T) and psychological flexibility (AAQ-II) in order to control for pre-experimental differences on these measures. It also compared scores on the induction adherence measure post-BAT across groups (See Table 1). As expected the means for the groups in terms of pre-experimental spider fear, anxiety, psychological flexibility and post-BAT induction adherence were similar. A series of one way analyses of variance (ANOVA) revealed that there were no significant differences between the groups at the .05 level.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Thought suppression</th>
<th>Focused attention</th>
<th>Unfocused attention</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSQ</td>
<td>90.35 (15.68)</td>
<td>86.4 (16.65)</td>
<td>87.6 (19.53)</td>
</tr>
<tr>
<td>STAI Trait b</td>
<td>39.6 (12.51)</td>
<td>34 (9.18)</td>
<td>37.1 (12.22)</td>
</tr>
<tr>
<td>STAI State I</td>
<td>37.65 (10.7)</td>
<td>36.1 (9.94)</td>
<td>41.35 (14.74)</td>
</tr>
<tr>
<td>STAI State II</td>
<td>54.45 (9.9)</td>
<td>42.6 (10.52)</td>
<td>49.35 (14.46)</td>
</tr>
<tr>
<td>AAQ-II d</td>
<td>54.14 (9.56)</td>
<td>53.55 (7.81)</td>
<td>50.5 (17.74)</td>
</tr>
<tr>
<td>Manipulation check</td>
<td>7.25 (1.83)</td>
<td>7.3(1.94)</td>
<td>7.45 (2.21)</td>
</tr>
</tbody>
</table>

a Fear of Spiders Questionnaire.

b State–Trait Anxiety Inventory (Trait).

c State–Trait Anxiety Inventory (State).

d Acceptance and Action Questionnaire II.
3.1. Anxiety measure

A single factor (group; thought suppression, focused attention and unfocused attention) one way ANOVA was conducted to determine whether any differences emerged between the groups in state anxiety, post-experiment. The analysis revealed a significant main effect, $F(2, 59) = 5.07; p < .05$ (adjusted $R^2 = .95$). Post-hoc Tukey HSD tests revealed a significant difference between the thought suppression group and the focused attention group ($p < .05$), and between the thought suppression group and the unfocused attention group ($p < .05$). However, no significant difference emerged between the focused attention group and the unfocused attention group. Upon examination of the mean scores, the thought suppression group ($M = 54.45$) experienced a significant increase in state anxiety compared to the focused attention group ($M = 42.6$) and the unfocused attention group ($M = 49.35$).

In order to determine whether there were any significant differences within groups, from pre- to post-experimental procedure, in terms of STAI-S score, paired sample $t$ tests were conducted. The results revealed a significant main effect for the thought suppression group, $t(19) = -4.76; p < .05$, the focused attention group, $t(19) = 2.60; p < .05$, and the unfocused attention group, $t(19) = 2.435; p > .05$, suggesting that the participants from all groups experienced an increase in state anxiety from pre- to post-experiment.

3.2. Behavioural Approach Test (BAT)

A single factor (group; focused attention, thought suppression and unfocused attention) one way ANOVA revealed a significant main effect, $F(2, 59) = 9.42; p < .05$ (adjusted $R^2 = .92$) suggesting that there were significant differences in BAT score between each group. Post-hoc Tukey HSD tests revealed a significant difference between the thought suppression group ($p < .05$), the thought suppression group and the unfocused attention group ($p < .05$) and the unfocused attention group and the focused attention group ($p < .05$). The mean point at which the participants from each group terminated their participation in the BAT is represented in Fig. 1. Examination of the mean BAT scores shows that the focused attention group ($M = 7.4$) moved through significantly more steps of the BAT than the thought suppression group ($M = 4.85$) and the unfocused attention group ($M = 6$). Additionally the thought suppression group moved through significantly less steps of the BAT than the unfocused attention group.

4. Discussion

The results of the current experiment support the prediction that participants in the focused attention (mindfulness) group display a behavioural advantage over those participants in the thought suppression and unfocused attention groups. Specifically, the spider fearful participants exposed to the focused attention induction were more likely to approach a spider post-induction than spider fearful participants exposed to either a thought suppression or unfocused attention induction. Additionally, the prediction that participants in the thought suppression group would experience a greater increase in state anxiety when compared to those participants in the focused or unfocused attention groups was also supported. The findings of the current experiment broadly support those of Marcks and Woods (2005) and Najmi et al. (2009) providing further tentative support for mindfulness as a preferred technique for dealing with unwanted thoughts. Moreover, the results also provide further evidence that thought suppression is an ineffective strategy in coping with UITs.

One notable feature of the current results is that spider fearful behaviour was reduced after a relatively brief induction. This result is in line with previous findings from Arch and Craske (2006) and McHugh et al. (2010), that is, even a short induction phase in focused compared to unfocused attention can alter post-induction performance. Importantly, the current findings indicated that thought suppression was ineffective as a strategy for coping with unwanted thoughts, despite its

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Fig. 1. Mean (standard error) scores on the BAT for participants in the thought suppression, focused attention and unfocused attention groups.
widespread adoption. The inflated behavioural avoidance in the thought suppression condition when compared to the focused attention (mindfulness) condition supports behavioural accounts of phobias that suggest avoidance behaviours promote phobia maintenance (Ost, 1996). Indeed the current findings suggest that inducing a focused attention (mindful) state in the participants promoted approach behaviour towards the feared stimulus thus circumventing attempted suppression or avoidance of the feared stimulus. Ironically, confronting these stimuli rather than avoiding them reduced participants’ anxiety levels compared to thought suppression, despite the fact that phobic individuals typically avoid their feared stimulus in order to reduce any anxiety that may arise from having direct contact with it (Purdon, 1999). The current data support behavioural theory that prohibiting complete activation of fear structures stops habituation to the feared stimulus (Ost, 1996).

Of course, there were some methodological limitations with the study. A pre-induction measure of mindfulness (e.g. Toronto Mindfulness Scale, Anderson, Lau, Segal, & Bishop, 2007) could have assessed the two groups’ pre-experimental differences in mindfulness, which would rule out the possibility that results in the BAT were due to the pre-experimental levels of mindfulness and not due to the induction. In the current experiment there was no pre-induction measure of mindfulness, there was, however, a pre-experimental measure of psychological flexibility, a related construct, as measured by the AAQ-II. Given the strong relationship between mindfulness and psychological flexibility it is unlikely that group differences in pre-experimental mindfulness were responsible for the distinction in participants’ behavioural performance (see Baer et al., 2006).

The STAI-S was administered to participants pre- and post-experiment, and the results found that all participants and the thought suppression group in particular, experienced a significant increase in state anxiety. However, it is impossible to determine whether this increase in anxiety was due to the induction or the distress caused in the spider avoidance task. Therefore in future research the STAI-S would have to be administered pre-experiment, post-induction and post-BAT. Finally, it could be argued that a focused breathing induction could act as a form of distraction, thus a sophisticated form of thought suppression rather than a mindfulness induction. Previous research that has employed the focused attention induction suggests this is not the case (McHugh et al., 2010). Specifically, McHugh et al. (2010) exposed older participants to a decision making task that has been demonstrated to be impacted on by attentional deficits. Distraction leads to a higher cognitive load which should in practice hamper further performance on the decision making task. However, findings from this work indicated that the older participants in the focused attention induction demonstrated less decision making deficits in the task following this induction.

Despite the participant sample being ‘spider fearful’ rather than clinically diagnosed as spider phobic, the fact that the current experiment demonstrates a significant result is exciting. Firstly, for those with sub-clinical spider fear, a brief 10 min intervention could affect subsequent behaviour towards spiders and would possibly, over time, reduce a spider based anxiety. Secondly, it is possible that the results of the current study could be extended to those suffering from clinical phobia i.e. perhaps a larger scale mindfulness based treatment package could aid the remediation of phobias, although this is a tentative postulate and more empirical work is needed in this regard. This is the first study to attempt to compare mindfulness versus thought suppression as a coping strategy for spider fear. The results are particularly noteworthy given that the study demonstrated significant effects after a short focused breathing induction with a sample that had no previous experience with mindfulness practice. In summary, the findings reported herein suggest that mindfulness may be a useful treatment for overcoming spider fear.

References


