Targeting Fear of Spiders with Control-, Acceptance-, and Information-Based Approaches: An Analogue Comparison

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Abstract

The relative impact of control-, acceptance-, and information-based approaches in the treatment of specific phobia was evaluated using an analogue preparation with college students reporting a midevel fear of spiders. Participants first listened to a brief protocol that presented one of the three approaches before completing the perceived-threat behavioral approach test (PT-BAT; Cochrane, Barnes-Homes, & Barnes-Holmes, 2008). During the PT-BAT, participants placed their hands in a series of opaque jars that they were erroneously and convincingly lead to believe were increasingly likely to actually contain a spider. Participants in the acceptance-based condition progressed the farthest in the PT-BAT and were more willing to repeat the procedure a week later despite not differing from their counterparts in the other two approaches in their levels of subjective distress reported during the PT-BAT. Implications of the findings for the relative efficacy of control- versus acceptance-based approaches in treatment of specific phobia, their possible differential mechanisms of action, and the use of the PT-BAT as a dependent measure in further analogue as well as clinical research are discussed.

Keywords: arachnophobia, acceptance and commitment therapy, avoidance
Targeting Fear of Spiders with Control-, Acceptance-, and Information-Based Approaches: An Analogue Comparison

Anxiety disorders are one the most prevalent mental health problems in this country (Orsillo, Roemer, Block-Lerner, LeJeune, & Herbert, 2004), impacting 25% of the population at some point in their lifetime (Eifert & Herbert, 2005). As one of the more common forms of anxiety disorders, specific phobia has a lifetime prevalence rate of 10-12% (Kessler et al., 2005), accounts for about 40% of all phobias (Chapman, 1997), and includes fear and related avoidance of small animals, such as snakes and insects. One of the more prevalent forms of small animal phobia in Western societies involves fear of spiders, with as many as 55% of females and 18% of males estimated to experience arachnophobia (Davey, 1992).

The most widely researched and empirically supported approach for treatment of anxiety disorders, more generally, and specific phobia, in particular, is cognitive behavior therapy (CBT; Chambless et al., 1996, 1998). CBT is perhaps most usefully viewed not as a single self-contained treatment, but as a therapeutic approach that in its various forms incorporates relaxation techniques, cognitive restructuring, and exposure procedures to varying degrees in targeting specific phobia (Choy, Fyer, & Lipsitz, 2007) as well as other types of anxiety disorders (Barlow, 1988). More importantly, for the purposes of this study, CBT for anxiety disorders can be defined conceptually rather than technically as a first order, control-based approach that seeks to directly change, reduce, eliminate, or alter the content of anxiety-related thoughts, feelings, and sensations (Hayes, 2004). Successfully doing so is thought to result in a corresponding reduction in avoidance of the phobic object or stimulus.

More recently, second order change strategies that seek to alter the way clients relate and
react to unwanted thoughts and feelings have been developed as alternative approaches to assist those who struggle with anxiety (Eifert & Forsyth, 2005). These strategies include, but are not limited to, acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999). As its names suggests, ACT emphasizes both the acceptance of unwanted anxiety-eliciting thoughts and related emotions and bodily sensations as well as commitment to value-directed behavioral change. Instead of teaching clients ways to directly reduce or change anxious thoughts and feelings, ACT and related acceptance-based approaches seek to remove them as barriers to committed action by showing clients how to respond to such psychological experiences in more accepting and mindful ways. Among anxiety-related disorders, ACT has shown promise in alleviating stress (Bond & Bunce, 2000), math anxiety (Zettle, 2003), generalized anxiety disorder (Roemer, Orsillo, & Salters-Pedneault, 2008), social anxiety (Block & Wulfert, 2000), and obsessive-compulsive disorder (Twahig, Hayes, & Masuda, 2006). The relatively few studies comparing ACT and CBT in the treatment of anxiety disorders have shown it to be just as, if not more, efficacious than CBT (Forman, Herbert, Moitra, Yeomans, Geller, 2007; Lappalainen, Lehtonen, Skarp, Taubert, Ojanen, & Hayes, 2007; Levitt, Brown, Orsillo, Barlow, 2004). Unfortunately, however, there has been no published research that we have been able to locate comparing ACT and CBT in treatment of specific phobia, more generally, and of spider phobia, in particular.

The primary purpose of this study was to further compare a control versus acceptance-based approach in addressing fear of spiders in an analogue type preparation. Specifically, brief CBT and ACT-consistent protocols were compared against each other as well as an information-based approach in impacting a midlevel fear of spiders among college students. College student
samples have commonly been used in investigating spider fear as a "disorder of convenience" and as an analogue of arachnophobia (Cochrane, Barnes-Holmes, & Barnes-Holmes, 2008; Muris & Merckelbach, 1996; Olatunji et al., 2009).

A second purpose was to further evaluate a novel approach that has been recently developed for assessing approach/avoidant behavior within specific phobia. The perceived-threat behavioral approach test (PT-BAT; Cochrane et al., 2008) is a graduated procedure during which participants are led to believe that there is an increased probability of a phobic object, such as a spider or other small animal, present within a series of opaque containers in which they are asked to place their hands for a short period of time. In actuality, the participants are not exposed, physically or visually, to a spider, but are deceived to believe that there may be spiders within the containers. The PT-BAT has been shown to be a valid measure for discriminating among different levels of fear of spiders, but this is the first time, apart from research briefly summarized by Cochrane and his associates, that it has been used as a dependent measure of approach/avoidant behavior in a treatment study.

Although this study was more exploratory in nature rather than hypothesis-guided, certain outcomes were nonetheless expected to be more likely than others. Other experimental psychopathology studies similar to this one comparing the impact of control- versus acceptance-based approaches on approach/avoidant behavior have largely focused on coping with induced pain rather than with specific fears. In general, greater pain tolerance has been associated with protocols that emphasize the acceptance of physical discomfort than those that seek to minimize it (Gutierrez, Luciano, Rodriguez, & Fink, 2004; Hayes, Bissett et al., 1999). For this reason, it
was expected that participants presented with an acceptance-based strategy would progress the furthest in the PT-BAT. Based upon findings that information-based approaches are relatively inefficacious in increasing pain tolerance (Hayes, Bissett et al.) and in reducing anxiety (e.g., Laberge, Gauthier, Cote, Plamondon, & Cormier, 1993) and associated avoidant behavior (Blanchard, 1970; Moses & Hollandsworth, 1985; Wolitzky-Taylor, Horowitz, Powers, & Telch, 2008), it was anticipated, in turn, that those who received a control-based protocol would display less avoidance during the PT-BAT than participants provided with reassuring information about spiders.

In addition to the PT-BAT, two subjective ratings were also used to compare the three treatment protocols. One was a measure of subjective distress obtained at various points throughout the PT-BAT, and the other a rating of the willingness of participants to repeat the procedure. These two subjective measures were included to complement the objective assessment of approach/avoidant behavior provided by the PT-BAT by permitting a more fine-grained evaluation of the differential response of participants to the three conditions. The inclusion of both distress and willingness ratings seemed especially germane given recent research that suggests that both may be particularly sensitive in detecting differences between control- and acceptance-based approaches that do not necessarily parallel those reflected by more objective measures.

Reductions in subjective ratings of pain-related distress associated with acceptance-based approaches generally have been found to be unrelated to increases in pain tolerance. For example, Hayes, Bissett et al. (1999) found equivalent reductions in an aggregate distress
measure across the three approaches examined in their study despite significant differences in pain tolerance during the cold pressor task favoring an acceptance-based protocol. Moreover, an acceptance-based approach also has been associated with greater tolerance to shock-induced pain, but significantly greater levels of subjective distress than a control-based protocol (Gutierrez et al., 2004). These aggregate findings seem consistent with the conceptual model upon which ACT is based (Hayes, Luoma, Bond, Masuda, & Lillis, 2006) in that acceptance-based protocols would be anticipated to instigate more approach towards and contact with challenging situations in the absence of corresponding reductions in levels of subjective distress that would otherwise undermine such overt behavior. On collective empirical and conceptual grounds, there thus appeared to be sufficient basis for at least a tentative and conditional prediction of findings for our subjective measure of distress. It was our general expectation that there would either be no difference across the three treatment approaches, or if a difference did emerge, that the greatest reduction in subjective distress would be produced by the control-based protocol.

A more confident prediction about findings on the willingness measure was possible based upon related research that has included it as a dependent variable. In particular, two studies (Eifert & Heffner, 2003; Levitt et al., 2004) found that participants who received an acceptance-based protocol were more willing than their counterparts in control-based and other comparison conditions to undergo a second carbon dioxide challenge. Accordingly, it was expected that higher levels of willingness to participate in the PT-BAT a second time would be reported by participants presented with the acceptance-based approach.
Method

Participants

Participants were undergraduate students at a Midwest university who completed an online posting of the Fear of Spiders Questionnaire (FSQ; Szymanski & O’Donohue, 1995). Those who reported at least a midlevel of anxiety (FSQ score 15-32) were invited to participate in a “Fear of Spiders Study.” Students who indicated either lower or higher levels of spider fear were excluded to avoid both ceiling and floor effects, respectively, in evaluating the three treatment approaches. Additional exclusion criteria included current psychotherapy and/or pharmacotherapy for treatment of anxiety. Six of 42 participants who completed the study did not find the PT-BAT credible and thus were excluded from further analyses. The remaining 36 participants had a mean age of 23 (SD = 5.67; range = 18 – 44) with the majority being female (53%), single (94%), and Caucasian (64%). All participants were treated per the “Ethical Principles of Psychologists and Code of Conduct” (American Psychological Association, 2002).

Measures and Materials

Background Information Questionnaire. In addition to being questioned about current treatment for anxiety, participants were also asked to disclose any past critical incidents involving spiders, including attacks or being bitten by them. This information was not used for matched random assignment, but to subsequently verify that participants across the three conditions did not significantly differ from each other in such histories.
Fear of Spiders Questionnaire. The FSQ is an 18-item self-report measure for assessing level of spider phobia. Participants rated their agreement with statements such as “Spiders are one of my worst fears” on a 7-point Likert-type scale (0 = strongly disagree, 6 = strongly agree). Total scores range from 0-108 with a cutoff of 15 or above reflecting at least a midlevel fear of spiders (Cochrane et al., 2008). The FSQ has adequate internal consistency (alpha coefficient = .92; Szymanski & O’Donohue, 1995) as well as test-retest reliability (Muris & Merckelbach, 1996). Significant correlations between FSQ scores and performance on a behavioral avoidance test as well as its ability to discriminate between subclinical and clinical samples of arachnophobics attest to its validity (Muris & Merckelbach).

Acceptance and Action Questionnaire (AAQ). The AAQ is a 9-item self-report inventory designed to assess experiential avoidance (Hayes, Strosahl et al., 2004). Each question is rated on a 7-point Likert-type scale, with lower scores reflecting more experiential willingness and acceptance. The AAQ has shown good psychometric properties including good convergent and discriminate validity (Hayes, Strosahl et al.). It is widely used in research involving acceptance-based approaches such as ACT and was included because how participants respond to and cope with distressing challenges has been found to be related to levels of experiential avoidance. More specifically, participants high in experiential avoidance have typically reported more negative psychological reactions to challenges, such as the cold pressor, and less willingness to tolerate them (e.g., Gird & Zettle, in press; Zettle et al., 2005; Zettle, Petersen, Hocker, & Provines, 2007). Including the AAQ made it possible to rule-out any treatment condition effects that could be attributed to differential levels of experiential avoidance among participants.
Distress Thermometer. Participants rated their levels of subjective distress on a scale of 0-10 prior to the presentation of the PT-BAT and immediately following each completed container.

The Perceived-Threat Behavioral Approach Test. The PT-BAT was adapted from a procedure developed by Cochrane et al. (2008) that has been shown to discriminate among college students reporting differing levels of spider fear as assessed by the FSQ. It was identical to the PT-BAT of Cochrane and associates in presenting participants with a series of opaque containers that purportedly housed a spider with increasing degrees of probability, in requiring participants to keep their hand in each container entered for at least 30 s., and in obtaining measures of subjective distress after each completed container. However, while the procedure of Cochrane et al. was fully automated with the use of a computer and light sensors for monitoring the length of time participants kept their hands in the containers, our PT-BAT was administered by an assistant who presented instructions to participants and monitored as well as timed their progression through the procedure.

The apparatus in the PT-BAT consisted of a sequence of eight jars (22.9 cm in height with a 10.2 cm diameter opening) sitting side by side, approximately .6 cm apart, and secured to a wooden holder (28.6 cm wide x 105.4 cm long). In order to obscure viewing the contents of the jars, each was covered in a blue, opaque cloth with a rubber gasket affixed over the opening. Each gasket rubber had two 8.9 cm slits that intersected in the middle and permitted participants to place their hands into and out of the jars while not allowing them to see into them.
Separate labels indicating the probabilities of a contained spider matching those of Cochrane et al. (2008) were placed on the wooden holder above each jar. The labels were as follows: (a) jar 1, “Empty”; (b) jar 2, “Had spider inside, now empty”; (c) jar 3, “20% chance of spider”; (d) jar 4, “40% chance of spider”; (e) jar 5, “60% chance of spider”; (f) jar 6, “80% chance of spider”; (g) jar 7, “100% chance of spider”; and (h) jar 8, “Nonpoisonous tarantula.”

**Willingness.** Following the completion of the PT-BAT, participants were asked to indicate their willingness to return and complete the experiment the following week (0 = not at all likely, 10 = extremely likely).

**Treatment Approaches**

Each of the treatment protocols were presented on compact discs (CDs) that participants listened to over headphones. The CDs were approximately 20 min long and were introduced to participants as “containing information regarding how to respond to any distress you may have or experience towards spiders,” but varied in content by corresponding to one of three different approaches for targeting fear of spiders. At the end of each protocol, participants were encouraged to “use what you learned to help you cope with your fear towards spiders” during the PT-BAT.

**Control-based approach (CBA).** The CD in this condition presented two anxiety-reduction and management techniques common within CBT for specific phobia as “some strategies to help better manage both your mind and body’s reaction to stressful and frightening situations.” Approximately half of the time was devoted to cognitive restructuring. Anxiety-eliciting thoughts common in spider phobia, such as “This spider is going to harm me” were
illustrated, and alternative, restructured coping self-statements suggested (e.g., “This may be frightening, but it is not going to harm me”). The second half of the CD focused on teaching participants progressive muscle relaxation (PMR) that targeted six different muscle groups as a way “of conquering your fears by relaxing both your mind and your body at the same time.”

Acceptance-based approach (ABA). This protocol was introduced with the rationale that “increasing evidence has shown that avoiding or trying to eliminate unpleasant emotions and related thoughts can actually intensify them.” The CD then presented three components in abbreviated form that are common to ACT as “alternative ways to respond to the discomfort you may feel when encountering an anxiety producing object or situation, such as a spider.” The first was a brief 6 min mindfulness exercise to enable participants to become nonjudgmentally aware of unpleasant bodily sensations, thoughts, and emotions. The second component lasting approximately 4 min presented and illustrated several techniques for defusing anxiety-eliciting thoughts, such as by singing them or restating them in a cartoon voice. The final ACT-related component presented was the “passengers on a bus” metaphor (Hayes, Strosahl et al., 1999, pp. 157-158) to weaken the behavioral control exerted by the type of unwanted private events common in fear of spiders.

Information-based approach (IBA). This approach was introduced with the rationale that “one thing that can help alleviate and ease your anxiety and fears about spiders is to gain as much information and knowledge about arachnids as possible.” Information that debunked a number of myths and misconceptions associated with spiders, such that most spider bites are painful and live-threatening, was presented along with accurate information about the valuable
ecological role played by spiders in controlling unwanted insects and associated diseases in humans. The protocol concluded by reminding participants that "spiders are more our friends than enemies and are more deserving of our admiration than our fear and disgust."

**Procedure**

After obtaining informed consent, potential participants were administered the Background Questionnaire, followed by the AAQ. No participants were excluded because of current treatment for anxiety or due to a personal history of adverse events involving spiders. Participants next completed a baseline Distress Thermometer before listening to a CD for the treatment condition to which they were randomly assigned. As a manipulation check, participants immediately afterwards completed a 4-item questionnaire in which they were asked to indicate which of the listed coping options matched what was heard on the CD. All participants correctly answered at least three of the questions. Before the presentation of the PT-BAT, participants were shown a 20.3 cm x 12.7 cm photograph of a common house spider followed by the administration of another Distress Thermometer.

**PT-BAT.** The following instructions were first read to participants:

In this next task you will be asked to place your hand in a container that may or may not contain a house spider. The containers will increase in the likelihood of having a house spider inside. You will be asked to place your hand in the jars for 30 seconds each, and if at any point you wish to discontinue, you are able to. You can use any of the techniques that you may have heard on the CD to help you complete
this task.

During the PT-BAT participants were seated directly in front of the holder and permitted to move their chair as they proceeded through the task so they would not encounter physical discomfort in placing their left hand in each jar. Before the presentation of each jar, they were informed of the increased probability of a spider being housed within it, with this same information printed on labels located directly above each container. The investigator was positioned behind participants and started a stopwatch once they placed their hand in the jar. Participants who removed their hand prematurely, were instructed to place it back within the jar until 30 s elapsed. Immediately after the completion of each jar, participants completed a Distress Thermometer.

Following the PT-BAT, participants completed a questionnaire that provided further manipulation checks and obtained a measure of their willingness to repeat the task. Participants were first asked if they used any of the suggestions presented to them on the CD and, if so, which ones. All participants cited at least one protocol-specific technique that was used during the PT-BAT. Participants next rated their willingness to come back and repeat the task in 1 week (1 = unwilling, 10 = very willing). Finally, a manipulation check was also conducted on the integrity and credibility of the PT-BAT. Participants were first asked to write down the probabilities associated with each jar they completed. All were able to recall an acceptable level of the probabilities (i.e., at least 80%) correctly. Secondly, participants rated whether they believed the range of probabilities across the PT-BAT was truthful (1 = not believable, 7 = very believable). A total of 6 participants, 2 within each treatment approach, were excluded from the
study because they indicated a 2 or less on this believability scale, leaving an equal number of final participants \((n = 12)\) within each condition.

**Results**

Prior to analyzing the three dependent variables, participants in the three different treatment conditions were compared with each other on demographic, background, and other preintervention variables.

**Analyses of Demographic and Background Variables**

Background and pretreatment information analyzed in comparing participants assigned to the three approaches is provided in Table 1. No differences were detected for any of these variables with the exception of ethnicity and history of being harmed by a spider.

**Ethnicity.** Further analysis following a significant one-sample chi-square test, \(\chi^2(2, 34) = 6.02, p = .05\), showed that the proportion of Caucasian participants in ABA (92%) was significantly higher than that (50%) within the other two approaches, \(\chi^2(1, 34) = 5.04, p = .03\). Aggregate comparisons of Caucasian versus nonCaucasian participants, however, indicated no differences between them on any of the dependent variables, and, for this reason, ethnicity was eliminated as a variable from any subsequent analyses.

**History of being harmed by a spider.** As seen in Table 1, the three treatment conditions differed from each other in the proportion of participants who reported having been previously harmed by a spider, \(\chi^2(2, 34) = 6.22, p = .05\). Follow-up analyses indicated that the
proportion of ABA participants indicating such a history (6 of 12) differed significantly from that in IBA (1 of 12), $\chi^2(1, 24) = 5.04, p = .03$; and accounted for this overall finding.

These results created some concern as it seemed reasonable to expect that participants who reported having been harmed by a spider would exhibit both a greater fear and avoidance of them. If so, the overall therapeutic impact of ABA on the dependent variables might be attenuated. Further analyses, however, suggested that comparisons between ABA and the other two conditions were not contaminated by the previous experiences of participants with spiders. Specifically, across all participants, Mann-Whitney tests revealed no significant differences on any of the three dependent variables nor FSQ scores between those who reported a history of being harmed by a spider ($n = 9$) and those without such a background ($n = 27$). Moreover, within ABA, these two subgroups also did not differ from each other on any of these measures. Accordingly, participant history of being harmed by a spider also was eliminated as a variable from any further analyses.

Analyses of Dependent Variables

Descriptive statistics for the three dependent variables for each of the three treatment approaches are provided in Table 2.

**PT-BAT.** Before examining the number of jars completed, an ANOVA of believability ratings indicated that participants across the three treatment approaches found the deception of the PT-BAT to be equally and acceptably credible; CBA ($M = 5.3$, $SD = 1.5$); ABA ($M = 4.8$, $SD = 1.1$); IBA ($M = 5.4$, $SD = 1.4$). Another ANOVA detected a significant difference across the three treatment approaches in the number of jars completed, $F(2, 35) = 3.74, p = .03$, $\eta^2 = .18$. 
Scheffe tests indicated that ABA participants completed significantly more jars ($M = 7.3$) than their IBA counterparts ($M = 5.4$). CBA participants completed an intermediate number of jars ($M = 6.7$) that did not differ from the other two approaches.

**Distress Thermometer.** No significant differences were noted in the distress levels of participants upon completion of the final jar, $F(2, 35) = 1.78, p = .18$.

**Willingness.** Results also showed a significant effect for treatment condition on participants' willingness to return and repeat the PT-BAT the following week, $F(2, 35) = 4.85, p = .01, \eta^2 = .23$. As with the number of jars completed, Scheffe tests revealed that the only significant difference among the conditions was in a greater willingness of ABA participants to repeat the PT-BAT ($M = 7.9$) than those in IBA ($M = 4.8$).

**Discussion**

The primary purpose of this study was to further evaluate the relative impact of three different approaches in targeting fear of spiders using an analogue preparation. The overall findings are consistent with what was generally expected and add further support to the differentiation between control- and acceptance-based approaches in treatment of specific fears within CBT more broadly defined. Based on previous research (Gutierrez et al., 2004; Hayes, Bissett et al., 1999), it was expected that ABA participants would display the highest levels of approach behavior by progressing the furthest during the PT-BAT. By contrast, those in IBA were anticipated to show the highest levels of avoidance. Consistent with our expectations, only
ABA completed more jars during the PT-BAT than IBA, while CBA fell between these two conditions and did not differ significantly from either.

As predicted, the findings from the PT-BAT did not parallel differences across the three treatment conditions in the levels of subjective distress reported by participants while completing it. From an empirical and conceptual perspective, it was expected that any differences among the protocols in subjective distress would favor CBA. This was because CBA, compared to the other two conditions, placed greater emphasis on the management and minimization of distress as way of diminishing avoidance. While CBA participants reported the lowest levels of distress upon completion of the PT-BAT, it did not differ significantly from the other two conditions. Given the limited sample size in this study, the statistical power to detect significant differences across the three protocols in Distress Thermometer ratings was necessarily restricted. Including additional participants would have likely yielded a significant difference in levels of subjective distress between CBA and IBA, and quite possibly between CBA and ABA as well. Such results would be consistent with those of Gutierrez et al. (2004) in suggesting that control-based approaches impact how participants respond to distressing situations through a process that differs from that activated by acceptance-based strategies.

Past research that evaluated participants willingness to return and undergo a second carbon dioxide challenge (Eifert & Heffner, 2003; Levitt et al., 2004), found that acceptance-based groups were more willing to do so than control-based and other comparison conditions. On this basis and as expected, participants in the ABA condition indicated higher levels of willingness to repeat the PT-BAT 1 week later than their CBA and IBA counterparts. These
findings, especially when combined with the nonsignificant, but expected trend, in the subjective distress measure, provide additional evidence suggesting that control- and acceptance-based approaches to anxiety disorders not only differ from each other in the strategies they employ, but perhaps even more importantly, in the processes those strategies activate.

A secondary purpose of this study was to further investigate the viability and utility of the PT-BAT as a way of assessing small animal fears and phobias. Our findings are consistent with those of Cochrane et al (2008) in suggesting that the deception employed by the PT-BAT is one that participants find credible. Of the 40 participants that completed the PT-BAT in this study, 36 (90%) of them believed that the jars did contain spiders with the varying specified levels of probability. Our experience in this study with the PT-BAT also lends support to the recommendation of Cochrane and his associates that it can be used as a dependent measure in evaluating treatment of fear of spiders in a nonclinical sample.

Despite promise the PT-BAT has shown thus far, obviously more research is needed to support further use of the procedure as a valid and useful measure of small animal avoidance with both analogue as well clinical populations. For example, both types of samples could be administered a PT-BAT as well as a more traditional behavioral approach/avoidance task in which the phobic object, such as a spider, is clearly visible. A high correlation between the two measures would further attest to the concurrent validity of the PT-BAT and its use as a more convenient and economical way to assess avoidance of small animals such as spiders and insects. Perhaps the most rigorous test of the PT-BAT in assessing its potential as more than an analogue
measure of specific phobia would be to determine the extent to which it converges with other outcome measures in treatment of arachnophobia.

Like the PT-BAT, the interventions examined in this study also constituted analogues of clinical procedures. Our overall results suggest that acceptance-based approaches such as ACT can provide a viable therapeutic alternative to more traditional forms of CBT in assisting clients who struggle with specific phobia. In particular, our findings especially when combined with those from similar investigations (e.g., Eifert & Heffner, 2004; Levitt et al., 2004) suggest that acceptance-based approaches may be more efficacious in inducing current and continued interaction with feared stimuli than those which target the control of anxiety-related thoughts and bodily sensations. Moreover, the findings from the Distress Thermometer suggest that these effects cannot be simply attributed to reduced levels of distress experienced by the recipients of acceptance-based approaches.

An interpretation of the findings from this study must be tempered by recognizing the limitations inherent within any analogue study. The extent to which results like those reported here would generalize to treatment of clinical arachnophobia and other forms of specific phobia remains an empirical question. The findings from this and related research seem sufficiently encouraging to pursue this next step by comparing the relative efficacy of traditional CBT versus an acceptance-based approach such as ACT in treatment of specific phobia. The inclusion of process measures in such an investigation would appear to be of paramount importance. Knowing the specific mechanisms of change underlying a particular therapeutic approach that has been shown to be relatively more efficacious than an alternative is likely to be more useful in
ultimately moving us closer to alleviating human suffering and promoting psychological well-being.
References


Footnotes

\(^1\text{Copies of the CDs may be obtained by contacting the first author.}\)
Table 1

Demographic and Background Information of Participants by Treatment Approaches

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Treatment Condition</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>CBA (n = 12)</td>
</tr>
<tr>
<td>Gender</td>
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<td>Male</td>
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</tr>
<tr>
<td>Female</td>
<td>7</td>
</tr>
<tr>
<td>Age</td>
<td>23.5 (7.35)</td>
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<tr>
<td>Marital Status</td>
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<td>Single</td>
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<tr>
<td>Race/Ethnicity</td>
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<tr>
<td>Caucasian</td>
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</tr>
<tr>
<td>Other</td>
<td>6</td>
</tr>
<tr>
<td>FSQ</td>
<td>23.30 (5.66)</td>
</tr>
<tr>
<td>AAQ</td>
<td>30.75 (6.41)</td>
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<tr>
<td>PrePT-BAT Distress Level</td>
<td>1.33 (1.23)</td>
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<tr>
<td>History of being harmed by a spider</td>
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<tr>
<td>Yes</td>
<td>2</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
</tr>
</tbody>
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Note. Nonparanthenetical data are means or frequency counts; paranethetical data, standard deviations.
Table 2

*Analysis of Dependent Measures Across Treatment Approaches*

<table>
<thead>
<tr>
<th>Dependent Measures</th>
<th>CBA</th>
<th>ABA</th>
<th>IBA</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$ ($SD$)</td>
<td>$M$ ($SD$)</td>
<td>$M$ ($SD$)</td>
<td></td>
</tr>
<tr>
<td>Number of jars completed</td>
<td>6.67 (1.87)</td>
<td>7.33 (0.89)</td>
<td>5.41 (2.19)</td>
<td>$p = .03^a$</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>ABA &gt; IBA$^b$</td>
</tr>
<tr>
<td>Distress level after final jar</td>
<td>5.50 (3.00)</td>
<td>6.83 (1.85)</td>
<td>7.33 (2.39)</td>
<td>$p = 1.78$</td>
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<tr>
<td>Willingness to repeat PT-BAT</td>
<td>6.67 (3.03)</td>
<td>7.92 (0.99)</td>
<td>4.75 (2.96)</td>
<td>$p = .01$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ABA &gt; IBA</td>
</tr>
</tbody>
</table>

$^a$Denotes ANOVA two-tailed $p$ values. $^b$Summarizes significant differences between conditions.