

# Psychological Acceptance: Experimental Analyses and Theoretical Interpretations

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## ABSTRACT

There has been a recent explosion of interest in experiential avoidance as a source of human psychopathology and acceptance-based interventions as a means of combating the deleterious effects of such avoidance. Most of this work has focused on clinical outcome measures, but a small body of research has also employed experimental analogs. The first part of the current article reviews the key studies in this analog research and concludes that the results support the argument that acceptance interventions provide some possible advantages over more traditional control- or distraction-based interventions. The second part of the article provides the beginnings of a technical analysis of acceptance in terms of Relational Frame Theory, a modern behavioral approach to human language and cognition.

*Key words:* Psychological acceptance, Suppression, Experiential avoidance.

## RESUMEN

*Aceptación psicológica: análisis experimental e interpretaciones teóricas.* Se ha producido una reciente explosión de interés en la evitación experiencial como fuente de psicopatología humana y en las intervenciones basadas en la aceptación como herramienta para combatir sus efectos nocivos. La mayor parte de este trabajo se ha centrado sobre medidas de resultado clínico, pero algunos estudios han empleado también análogos experimentales. La primera parte de este artículo revisa los estudios clave de esta investigación sobre análogos y concluye que los resultados apoyan el argumento de que las intervenciones de aceptación proporcionan algunas posibles ventajas sobre otras intervenciones más tradicionales basadas en el control o la distracción. La segunda parte del artículo proporciona los comienzos de un análisis técnico de la aceptación en los términos de la Teoría de los Marcos Relacionados, una moderna aproximación conductual al lenguaje humano y la cognición.

*Palabras clave:* aceptación psicológica, supresión, evitación experiencial.

The concept of psychological acceptance has been at the forefront of religious practices and beliefs (e.g., Catholicism) for many years. In these contexts, it appears that one is required to adopt a strategy of acceptance in the face of physical or emotional suffering, about which one can do little else except wait for the pain to subside. Indeed, it makes intuitive sense that in the context of physical or psychological suffering, such a strategy may well have some value. Indeed, recent experimental research in the

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behavior and cognitive therapies appears to lend empirical support to this perspective. Specifically, a small but growing body of evidence indicates that in certain contexts the absence of psychological acceptance in favor of what has been termed experiential avoidance may correlate with a number of psychological problems. In the first part of the current paper we briefly review the experimental research that has been conducted in the area of acceptance and experiential avoidance, (for a recent review of the clinical outcome research on these issues, see Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004). In the second part of the paper we attempt to provide a behavioral and functional interpretation of the concept of psychological acceptance<sup>4</sup>.

## PART I

### *Experiential Avoidance*

Although experiential avoidance is not necessarily problematic, as a psychological strategy it does appear to underlie several forms of psychopathology, including depression and generalized anxiety disorder (Hayes & Gifford, 1997). The term experiential avoidance applies when an individual demonstrates unwillingness to contact particular private experiences, such as bodily sensations, emotions, thoughts, and memories, especially when these are evaluated negatively (Hayes, Strosahl, & Wilson, 1999). As a result of this unwillingness, the individual then attempts to alter the form or frequency of these events as well as the contexts that occasion them. Although some forms of avoidance (e.g., distraction or relaxation) may be beneficial, the same strategy may, on other occasions, be counterproductive and can even interfere with an individual's progress towards valued goals (Blackledge & Hayes, 2001). For example, an individual may have limited participation in intimate relationships in attempts to avoid feelings of vulnerability and thoughts of possible rejection (Forsyth, Parker, & Finlay, 2003). Indeed, some authors have suggested that the thoughts and feelings associated with an aversive event themselves become aversive, and this reduces further opportunities for attaining valued goals (Blackledge & Hayes, 2001). As a result, the individual who attempts to avoid these feelings, etc. will not only move further away from valued living, but will continue to feel hopeless and uneasy (Wenzlaff & Wegner, 2000).

On occasions on which experiential avoidance is counterproductive in the long run, one might question why individuals continue to engage in this type of psychological strategy. The most likely answer lies in the perceived decrease of the negatively evaluated experiences, thoughts, feelings, etc. (Hayes, Strosahl, Wilson, Bissett, Pistorello, Toarmino, et al., in press). In other words, if one engages in distraction, one could argue that, at least in the short term, direct contact with the aversive events is avoided, and thus the associated discomfort is reduced or eliminated. Paradoxically however, some authors have argued that experiential avoidance is correlated with increases in the frequency or intensity of the avoided thoughts and feelings (Blackledge & Hayes, 2001). That is, attempts to avoid, control, or distract oneself from unpleasant thoughts etc. may result in more, rather than less, of those unwanted thoughts. In the following section, we briefly review the experimental evidence that demonstrates the counterproductive effects of thought suppression, as a form of experiential avoidance.

### *Thought Suppression*

The 'white bear' experiment by Wegner, Schneider, Carter, and White (1987) is a classic demonstration of the effects of thought suppression. In simple terms, participants who were instructed to try to suppress thoughts of a white bear found it difficult to do so, and subsequently reported more 'white bear' thoughts than participants who had not been instructed to suppress these thoughts. In an attempt to account for this finding, Wegner and colleagues proposed a two-stage 'ironic process' theory. According to this view, an individual conducts a conscious search for an alternative thought that will replace the to-be-suppressed thought, while an unconscious monitoring process simultaneously searches for failures to suppress and remains vigilant for occurrences of the unwanted thought (Wenzlaff & Wegner, 2000). Because the monitoring process may continue after effortful distraction has ceased, the individual's sensitivity to the unwanted material continues. Furthermore, the replacement thought becomes associated with the unwanted thought and thus the presence of the former occasions the latter (Abramowitz, Tolin, & Street, 2001). As a result, the suppression of unwanted thoughts may result in an ironic increase of those thoughts, both during the thought suppression phase (i.e., the immediate enhancement effect) and after (i.e., the rebound effect; Wegner, et al., 1987).

As well as demonstrating the counterproductive effects of thought suppression under laboratory conditions, a number of studies have investigated the suppression of anxious or obsessive thoughts that may have more direct implications for generalized anxiety disorder and obsessive-compulsive disorder (Wenzlaff & Wegner, 2000). For example, in a recent study by Koster, Rassin, Crombez, and Näring, (2003), the researchers investigated the suppression of anxious thoughts about an imminent painful electrocutaneous stimulus. The results of the study indicated that participants instructed to suppress these thoughts reported increases in both levels of anxiety and the frequency of anxious thoughts compared to non-suppression participants. In another study, Purdon and Clark (2001) compared participants who were, or were not, asked to suppress personally relevant neutral, obsessive, or positive thoughts. Although these researchers found no paradoxical effects in terms of the frequency of thoughts, the suppression of obsessive thoughts was associated with greater subsequent discomfort and a more negative mood compared to the suppression of positive or neutral thoughts.

A number of studies have also reported similar findings in the context of physical pain, rather than psychological events. For example, Cioffi and Holloway (1993) demonstrated that participants who attempted to suppress the pain of a cold pressor task reported more lingering discomfort than participants who had been assigned to a monitoring or distraction condition. Furthermore, the same researchers showed rebound effects of this manipulation on a later task. That is, the suppression group rated a subsequent innocuous vibration as more unpleasant than the other groups.

### *Acceptance as an Intervention*

Based on the findings described above, a number of authors have argued that the use of thought control or suppression strategies such as those commonly employed in

cognitive behavior therapy may in fact be detrimental to clinical improvement (Zettle, 2003). For example, relaxation, thought stopping, and cognitive restructuring explicitly attempt to regulate and/or modify private events (Hayes, Bisset, Korn, Zettle, Rosenfarb, Cooper, et al., 1999). In contrast, a number of alternative treatment packages (e.g., Acceptance and Commitment Therapy, see Hayes, et al., 1999) have sought to employ acceptance-based techniques in attempting to enable clients to deal effectively with painful internal events. Unlike strategies for cognitive control, these techniques attempt to facilitate clinical improvement by altering the context within which private events function, rather than by altering the content of the private events themselves (Zettle, 2003). In simple terms, acceptance-based strategies attempt to teach clients to experience emotions and bodily sensations fully and without avoidance (Hayes, et al., 1999). According to this perspective, the feelings in question can then be perceived as just feelings that have no intrinsic power to harm, in the same way as thoughts are just thoughts rather than prescriptive realities that control behavior (Blackledge & Hayes, 2001).

*Experimental Evidence.* In an attempt to explore the validity of acceptance-based techniques, a number of studies have recently compared acceptance-based and control-based strategies in laboratory contexts. For example, McHugh, Barnes-Holmes, Barnes-Holmes, Wilson, and Luciano (2004) employed an automated matching-to-sample (MTS) procedure for the presentation of neutral (e.g., flowers and animals) and unpleasant (e.g., mutilated bodies) visual images. All of the images were adopted from the International Affective Picture System (IAPS: Lang, Bradley, & Cuthbert, 1999). As well as attempting to manipulate the use of acceptance versus control rationales, this study also sought to manipulate the effects of experimenter-demand characteristics by altering the degree to which the experimenter directly influenced the participants while completing the MTS task.

In order to manipulate therapeutic rationale explicitly, McHugh, et al. presented all participants with an initial vignette in which they were asked to 'imagine that they had witnessed a horrific road accident, from which they were required to rescue victims and that they found the sight of blood extremely aversive'. All participants were thereafter provided with a set of specific instructions designed to help them cope with this situation. Participants in the suppression conditions were instructed to think of the victims' blood as only tomato ketchup in an attempt to control their emotional reactions and to avoid feelings of discomfort. Conversely, participants in the acceptance conditions were instructed to try to fully embrace their emotional reactions and to accept that this would be the most horrific experience of their lives.

Following this experimental phase, all participants were then exposed to a series of automated MTS trials that involved matching on the basis of simple themes. However, while the majority of trials presented neutral images, approximately ten percent of trials required participants to match aversive pictures. Because of the simplicity of the matching task, the researchers were not primarily concerned with levels of matching accuracy, but were more concerned with whether or not participants would choose to be exposed to the negative pictures and, if so, how long they would they take in seconds (i.e., response time) to complete the trial. In order to manipulate this willingness to view the

aversive images directly, the automated procedure presented a warning on screen prior to each negative image trial, during which participants could refuse to match the negative images and simply move on to the next trial or could choose to be exposed to the pictures in question.

In order to explore the effects of demand characteristics, McHugh, et al., manipulated both the degree of direct monitoring by the experimenter towards participants and the specific instructions for completing the MTS trials. That is, participants in the No Instruction/No Monitoring Conditions were informed that it did not matter whether or not they looked at the negative pictures and the experimenter sat approximately thirty feet away from the nearest participant and pretended to read a book. In contrast, participants in the Instruction/Monitoring Conditions were explicitly told that it was very important for them to look at the negative pictures and the experimenter walked around the laboratory actively monitoring each participant's performance, and occasionally encouraging them verbally with phrases such as "You're doing well, please keep working".

The results of the study indicated a clear interaction effect between coping strategy and level of experimenter influence with regard to the length of time participants spent in the presence of the negative images. Specifically, participants in the Acceptance/High Demand Condition spent significantly longer in the presence of the negative images after the acceptance rationale than all other groups of participants (including those who had been assigned to an Acceptance/Low Demand Condition and a Control/High Demand Condition). The researchers argued that these findings indicated that explicit instructions to control negative emotional content did not affect an individual's ability to experience aversive images, whereas attempting to accept negative emotional content actually increased one's ability to experience aversive material.

In attempting to account for the effect of demand characteristics, the researchers argued that this factor exerted its influence on the degree to which participants employed the appropriate psychological strategy in which they had been instructed. That is, the low demand conditions were correlated with low levels of adherence to the therapeutic rationale, whereas the high demand conditions were not. The result of this effect suggested that those participants who had been instructed to employ an acceptance rationale (and who did so) were more willing to endure the negative images. However, this was not the case for those participants exposed to a control-based rationale.

A number of researchers have also administered acceptance-based rationales in experimental contexts designed explicitly to analog clinical syndromes. For example, Hayes, Bisset, et al. (1999) employed a cold pressor task as an analog for acute clinical pain. Participants in one condition were provided with an acceptance-based rationale that attempted to disconnect thoughts and feelings (e.g., the thought that 'I can't stand this pain') from overt behavior (e.g., the length of time a participant's hand was kept under water). In contrast, participants in another condition were provided with a control-based rationale involving positive self-talk, controlled breathing, and positive imagery that attempted to control and modify the pain as experienced directly. The results of the study indicated that participants in the acceptance group showed greater tolerance of pain than those in the control-based intervention, even though both groups produced similar subjective pain ratings.

Although the results of the study by Hayes, et al., showed more positive outcomes for psychological acceptance than control, the implications of the findings were limited to some degree by the fact that both interventions contained several components, thus making it difficult to isolate experimentally the variables most highly correlated with the outcomes. However, a more recent study by Gutiérrez, Luciano, Rodríguez, and Fink (2004) attempted to overcome some of these methodological limitations, and to create an experimental context that might also provide an analog of clinical pain.

In this study, the researchers designed the acceptance- and control-based rationales such that both contained similar formal (e.g., use of metaphors) and functional components (e.g., behavioral commitment to produce overt change). Furthermore, an electric shock preparation was employed, rather than a cold-pressor task, so that the intensity and duration of the stimulus (i.e., the shock) could be systematically manipulated. The basic experimental preparation involved the presentation of an acceptance- or control-based rationale, followed by a nonsense-syllable matching task that involved successive exposures to increasingly painful shocks. The results of the study indicated that the participants assigned to the acceptance-based protocol showed significantly higher tolerance to pain, with this effect becoming more pronounced as the shocks became longer and more frequent. In contrast, the participants provided with a control-based rationale were more likely to discontinue the task when they reached a rating of 'very much pain', although this group paradoxically displayed greater reductions in the self-report measures of pain.

A similar study was more recently conducted by Johnson, Stewart, Barnes-Holmes, Barnes-Holmes, Luciano, Wilson, and McHugh (2004), who attempted to circumvent the possibility of experimenter bias by developing an automated procedure that was responsible for the delivery of the therapeutic rationale. In this study, participants controlled the presentation of acceptance or control-based protocols via digitized video clips incorporated in a computer program. Furthermore, in order to ensure that the clips presenting the rationales demonstrated equal levels of therapist empathy and persuasiveness, both sets of clips were independently rated and were not found to be significantly different on any dimension. Furthermore, the researchers employed additional controls for strategy adherence by asking participants to summarize in their own words the content of the protocols to which they had been exposed, and then having these summaries independently rated for the level of correspondence with the actual protocols delivered.

The results of this highly controlled experimental investigation once again indicated that the acceptance-based intervention produced significantly greater tolerance for self-delivered painful stimulation than the control-based intervention. Furthermore, in line with the findings reported by Hayes, Bisset, et al. (1999) the subjective ratings of pain did not differ between the groups. In summary, therefore, these four preliminary studies by Hayes, et al. (1999), McHugh, et al. (2004), Gutiérrez, et al. (2004), and Johnson, et al. (2004) indicated that an acceptance-based intervention is more effective in improving tolerance for experimentally induced pain or aversive visual images than a control-based intervention.

*Clinical Evidence.* Although the findings of the acceptance-based studies described

thus far were largely consistent with one another, and a number of these had explicitly attempted to provide experimental analogs of clinical conditions, one might still argue that their outcomes may not be replicated with participants presenting with actual clinical problems. Two recent studies, however, suggest that this is not the case (Eifert & Heffner, in press; Levitt, Brown, Orsillo, & Barlow, in press).

A clinical sample of sixty patients diagnosed with Panic Disorder participated in a carbon dioxide challenge designed by Levitt, et al. (in press). These researchers compared the effects of acceptance- and control-based rationales by using a ten-minute audiotape in which either strategy was described. This study also contained a control condition in which participants were presented with a ten-minute neutral narrative. The results of the study were highly consistent with those described thus far. Specifically, participants in the acceptance group were significantly less anxious and less avoidant than both the suppression and control groups in terms of subjective anxiety and willingness to participate in a second challenge. These findings, therefore, suggest that the acceptance intervention increased tolerance for panic-related symptoms without reducing the subjective or physiologically measured severity of those symptoms. Furthermore, the use of suppression was positively related to more subjective anxiety during the challenge, and the use of acceptance was related to more willingness to participate in a second challenge. The authors, therefore, concluded that acceptance-based techniques may be a useful intervention for facilitating reductions in subjective anxiety and experiential avoidance in patients with Panic Disorder.

Eifert and Heffner (in press) also compared acceptance- and control-based rationales in the context of avoiding panic-related symptoms during a CO<sub>2</sub> challenge with a clinical population comprised of individuals who scored high on measures of anxiety sensitivity. Participants assigned to a control condition were provided with explicit training in diaphragmatic breathing, whereas participants assigned to an acceptance condition were instructed to engage in mindful observations. The results of the study indicated that participants in the control condition took progressively longer to initiate each trial relative to those in the acceptance condition. The researchers accounted for this *response-delay effect* by arguing that participants in the control condition were using the delay as a means of gaining experiential control. Of course, this effect constituted the primary dependent measure in the study described previously by McHugh, et al., (2004) in the context of aversive visual images. Furthermore, similar effects were recorded more recently in a study by Cochrane, Barnes-Holmes, Barnes-Holmes, Luciano, and Wilson (2004, see below) with participants categorized as high avoiders, as rated on the Acceptance and Action Questionnaire (AAQ -see Hayes, et al., in press).

In summary, therefore, two recent empirical studies involving clinical or sub-clinical populations have produced findings that are highly consistent with those recorded with experimentally induced pain or discomfort in indicating that acceptance-based strategies increase tolerance for physical or emotional stressors relative to control-based strategies. Furthermore, this increase does not appear to be mediated by a perceived reduction in the severity of the aversive stimulation (as indicated by subjective or physiological measures).

*Predispositions towards Acceptance or Avoidance*

One issue that pertains to the results of a number of studies described thus far concerns the extent to which the positive outcomes reported for the use of acceptance perhaps resulted from a stronger preexperimental predisposition on the part of some experimental participants towards acceptance rather than control. For example, perhaps those participants assigned to the control conditions were in fact more predisposed to avoidance and than those assigned to the acceptance condition. Specifically, it is not possible to know without prior assessment for these factors whether certain individuals are more predisposed to experiential avoidance or acceptance than others. Although a number of the studies described above did explicitly control for this possibility (e.g., Johnson, et al., 2004), and it seems unlikely that this would account for the highly consistent series of results recorded to date, it nonetheless remains an important consideration.

The AAQ is currently the only assessment tool that specifically measures the construct of experiential avoidance. The AAQ assessment items target links between experiential avoidance and excessively negative evaluations of private experience, inaction, literalness of thought, and a strong need for cognitive and emotional control. A number of studies have reported correlations between the AAQ and various other assessment tools. For example, Hayes, et al. (in press) suggested that the AAQ correlates with measures of general psychopathology, including depression, anxiety and general mental health. The AAQ is significantly associated with the White Bear Suppression Inventory (WBSI, Wegner & Zanakos, 1994), which measures the tendency to suppress unwanted thoughts; with related behaviors as assessed by the Thought Control Questionnaire (TCQ; Wells & Davies, 1994); and with subscales of the Ways of Coping Questionnaire (WOC; Folkman & Lazarus, 1988). Finally, a recent study by Bond and Bunce (2003) demonstrated that higher levels of acceptance, measured by the AAQ, predicted better mental health and job performance.

*Physical Stressors.* Two recent studies systematically compared the responses of individuals who were preexperimentally predisposed to high or low levels of experiential avoidance, on challenges presenting physical stressors. In one study, Karekla, Forsyth, and Kelly (in press) compared the responses of individuals rated by the AAQ as high or low 'avoiders' on a CO<sub>2</sub> inhalation challenge. The results of the study indicated that the high avoiders reported more severe cognitive symptoms, and more fear, panic, and uncontrollability than their less avoidant counterparts. However, in support of previous findings this result was not attributable to differences between the groups on physiological measures, including heart rate and skin conductance. Thus, the high or low predisposition avoidance levels seem to relate to how bodily arousal was experienced rather than the actual occurrence of physiological sensations.

In a related study, Feldner, Zvolensky, Eifert, and Spira (2003) also compared the responses of high and low avoiders on a CO<sub>2</sub> inhalation challenge, while simultaneously manipulating the use of acceptance versus control rationales. All participants were subjected to four inhalations of 20% carbon dioxide-enriched air. Half of these were instructed to simply observe their emotional responses during the challenge, whereas



the remaining half were instructed to suppress their reactions to the aversive state. The results of the study indicated that participants rated as high avoiders demonstrated greater levels of cognitive distress and less perceived control overall compared to the low avoiders. In addition, the instructions to suppress reactions to the effects of the CO<sub>2</sub> resulted in greater anxiety for the high avoiders but a decrease in self-reported anxiety for the low avoiders relative to simply observing their responses. Once again, these differences were not attributable to differences on physiological measures. In summary, therefore, both studies support the view that a predisposition to emotional avoidance serves to exacerbate acute psychological distress to a physical stressor.

*Emotional Stressors.* One issue that pertains to the two studies described in the previous section concerns the extent to which the findings apply to stressors that are psychological (as is the case with many clinical conditions), rather than physical. Although this is clearly a critical issue in research of this kind, it remains the case that research on responses to emotional stimuli is extremely difficult to conduct. For example, emotional response patterns are often unreliable, and may be greatly influenced by both the experimental procedures and the specific stimuli employed (Lang, Bradley, & Cuthbert, 1998). Nonetheless, two very recent studies have examined the responses of high and low avoiders to emotionally challenging stimuli (Cochrane, et al., 2004; Sloan, in press).

In the study by Sloan (in press), participants were presented with six brief film clips intended to elicit pleasant (i.e., happiness and contentment), unpleasant (i.e., fear, sadness, and disgust), and neutral emotional states. In line with the results of Feldner, et al. (2003), the high avoiders reported greater negative affect following two of the unpleasant film clips (fear, disgust) than the low avoiders. In contrast, the former group exhibited attenuated heart rate reactivity to the same clips than the latter. Sloan accounted for the latter finding by suggesting that the high avoiders may have attempted to control their internal experiences by looking away or otherwise disengaged emotionally from the unpleasant film clips. Once again, another physiological measure employed, (i.e., facial electromyopathy) failed to discriminate between the groups.

The second study to focus on the effects of emotional stressors on those more or less predisposed to avoidance was conducted by Cochrane, et al. (2004). In Experiment 1, fifteen high avoiders and fourteen low avoiders completed a simple MTS task in which arbitrary stimuli were paired with either aversive or neutral IAPS images. Similar to the data reported from the CO<sub>2</sub> challenge by Eifert and Heffner (in press), the high avoiders took significantly longer to emit a correct response that produced an aversive rather than a neutral image, whereas no such difference was recorded with the low avoiders. Once again, although the high avoiders reported greater levels of anxiety following the experiment, they rated the aversive images as less unpleasant and less emotionally arousing than their low avoiding counterparts.

In Experiment 2, the researchers compared three groups of avoiders, namely high, mid-range and low, as rated on the AAQ. While these participants were exposed to the same MTS task, they were simultaneously connected to electrophysiological equipment that recorded event related potentials (i.e., averaged segments of electroencephalograms that were time-locked to the presentation of the unpleasant and

neutral pictures). The results of this study supported those from Experiment 1 in terms of differences between high and low avoiders on measures of reaction times and subjective ratings. The analyses of the event related potentials data also confirmed that the participants had attended to the content of the images and differentiated between aversive and neutral images (see Cuthbert, Schupp, Bradley, Birbaumer, & Lang, 2000). Perhaps more interestingly, the event related potentials also showed significantly greater levels of activity on the left hemisphere relative to the midline for the high avoiders, but not for the mid-range or low-avoiders. It is important to emphasize, however, that this latter finding must be treated with extreme caution because the number of participants in each of the three avoidance groups was only six. Nonetheless, in interpreting this finding the researchers suggested that if such a neurophysiological difference between high and mid-range or low avoiders proved to be robust, and if greater left-hemispheric activity indicated greater verbal activity (as suggested by Kolb & Whishaw, 2001), this finding might indicate that the high avoiders were engaging in verbally-based distraction and suppression strategies. For example, these individuals might be engaging in self-talk such as, "These pictures are not real," or "Try to think about something nice," etc.). In any case, the results of the Cochrane, et al. study overall support those reported by Sloan in terms of discriminating between high and low avoiders, and both studies thus appear to validate the concept of experiential avoidance as measured by the AAQ.

The data from the Cochrane, et al. (2004) study raised a number of questions concerning participants' ratings of anxiety and their subjective responses to the aversive visual material. In this study, preexperimental anxiety measures (as measured on the STAI-S; Spielberger, 1983) did not discriminate between the groups, and yet the high avoiders reported higher levels of anxiety *following* the experiment than the other two groups. Indeed, this finding is similar to that reported by Feldner, et al., (2003), in which no differences emerged between high and low avoiders in anticipatory anxiety, but greater levels of post-experiment anxiety were recorded with the high avoiders. This finding is also consistent with the fact that the AAQ is known to correlate with measures of anxiety, including the Beck Anxiety Inventory (Hayes, et al., in press). Indeed in another study employing a biological challenge technique, the high avoiders also scored higher in trait anxiety compared to the low avoiders (Karekla, et al., in press).

In contrast to previous research, however, high avoiders in the Cochrane, et al. study rated the aversive images as less unpleasant and less emotionally arousing than their less anxious and less avoidant counterparts. Specifically, previous studies found that high avoiders reported greater cognitive distress during the CO<sub>2</sub> challenge (Feldner, et al., 2003; Karekla, et al., in press), as well as greater negative affect to unpleasant film clips (Sloan, in press) than low avoiders. In the former two studies, however, the cognitive distress was related to symptoms of panic and perceived efficacy to regulate emotional responses, and these characteristics were not assessed in the Cochrane, et al. study. As a result, a direct comparison on these measures among the various studies is not possible.

One possible factor that may also have contributed to the difference between the findings reported by Sloan and reported by Cochrane, et al. concerns the amount of

material to which participants were exposed. In the Sloan study, significant effects were obtained using just two unpleasant film clips, whereas in the Cochrane, et al. study participants were asked to report their subjective responses to eighteen extremely unpleasant and eighteen neutral pictures. Therefore, perhaps the lower affect ratings recorded for the aversive images by high avoiders in the latter study constituted an attempt to avoid their emotional responses, but this strategy only emerged across multiple exposures to the unpleasant pictures. In contrast, this strategy may not have emerged across only two film clips as presented in the Sloan study. Insofar as this suggestion is correct, it is possible that the higher levels of postexperimental anxiety reported by the high avoiders in Cochrane's work reflected a post-suppression 'rebound' effect, with a paradoxical increase in anxiety. Indeed, this result would be consistent with findings reported in the thought suppression literature (Wenzlaff & Wegner, 2000). In any case, such an interpretation remains only speculative and further research will be needed to explore the apparently complex relationships among predispositions towards acceptance and avoidance, tolerance for physically or emotionally challenging stimuli, and the subjective affect ratings of such stimuli.

## PART 2

### *A Technical Analysis of Acceptance*

The experimental research conducted and reviewed thus far consistently indicates that a strategy of psychological acceptance can increase tolerance for physically and emotionally challenging events, relative to other psychological strategies such as suppression and distraction. Moreover, clinical outcome research has also indicated that acceptance-based strategies may be of some benefit (see Hayes, et al., 2004). However, acceptance is not a technical or explanatory term in behavioral psychology, and thus some effort must be made to offer a theoretical interpretation of this widely-used but largely ill-defined concept. This need has recently begun to be addressed by behavioral researchers working under the rubric of Relational Frame Theory (RFT -a modern behavioral and functional approach to human language and cognition; see Hayes, Barnes-Holmes, & Roche, 2001). In the following section, a brief summary of this theoretical analysis of acceptance is provided.

According to RFT, acceptance, when stripped down to its core verbal or relational elements appears to involve the following: (1) a rule or relational network in which a possibly aversive event is made contingent on a particular behavior (e.g., "If I go to the mall, I will feel panicky"); (2) an action that brings the individual into contact with that aversive event (i.e., going to the mall); (3) the construction of a relational network that coordinates with that contact (e.g., "I am at the mall and I feel panicky); and (4) the occurrence of a frame of coordination between this network and the original rule or relational network (i.e., "I was right, I said that I would feel panicky, and I did"). From an RFT perspective, the coordination between relational networks, as described above, plays a key role in the apparent efficacy of acceptance-based strategies. That is, because the two networks cohere, and relational coherence has a high probability of reinforcement within the verbal community, the likelihood of following an acceptance-based strategy

in the future is increased. For example, the panic disordered client may be more likely to continue with a shopping trip if he is told that he will likely experience feelings of intense panic and can continue shopping, rather than being told that his fears are irrational and that nothing really bad can happen.

As another example, consider the following experimental analog based on the study by Gutiérrez, et al. (in press) reviewed earlier. A female participant is told that she is going to receive electric shocks of increasing intensity, and that she will perceive them to be very painful, but despite this pain, she can continue with the experimental task. In this case, the original rule (i.e., “this is going to hurt”) may coordinate with her own verbal construction of what happens to her in the experiment, and this coherence between the two networks makes it more likely that she will respond in accordance with the additional part of the rule (i.e., “although it hurts, you can continue with the task”). In contrast, imagine that the participant was told that if she engaged in some form of distraction, she could successfully control the level of perceived pain. In this latter case, a frame of distinction may emerge between the rule provided by the experimenter and the relational network generated by the participant when the shocks become quite intense. This distinction or relational incoherence between the experimenter’s and the participant’s rules may then lead her to end the experimental task. In other words, the participant might think something along the lines of, ‘You were wrong, I can’t control the pain and I am going to stop the experiment now’.

Although as yet preliminary, this RFT analysis appears to explain, at least in behavioral terms, why an acceptance-based strategy may encourage greater persistence or tolerance in the face of aversive stimulation than a suppression or distraction strategy. Furthermore, this analysis does not make any specific predictions about expected levels of physiological arousal or subjective affect that an individual may experience during an aversive event. The only prediction is that acceptance will increase behavioral tolerance of the event in question. Thus, the RFT interpretation appears to capture many features of the data reviewed in Part 1 of the current article. Of course, future research will be necessary to determine the validity and accuracy of this interpretation and its relevance to clinical problems.

#### CONCLUSION

It is perhaps ironic that the religious wisdom of our grandmothers appears to be recapitulated in a modern science of psychology. Of course, our science requires more than the mere recognition of the value of well-worn phrases handed down across the generations. Working out the true value of acceptance and indeed other psychological strategies in the face of aversive circumstances will require careful and systematic analyses in both experimental and clinical research settings. Only then will we know if our grandmothers have the last laugh.

#### NOTES

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## REFERENCES

- Abramowitz, J.S., Tolin, D.F., & Street, G.P. (2001). Paradoxical effects of thought suppression: A meta-analysis of controlled studies. *Clinical Psychology Review, 21*, 683-703.
- Barnes-Holmes, Y., Barnes-Holmes, D., McHugh, L., & Hayes, S.C. (2004). Relational frame theory: Some implications for understanding and treating human psychopathology. *International Journal of Psychology and Psychological Therapy, 4*, 355-375.
- Blackledge, J.T. & Hayes, S.C. (2001). Emotion regulation in acceptance and commitment therapy. *Psychotherapy in Practice, 57*, 243-255.
- Bond, F.W. & Bunce, D. (2003). The role of acceptance and job control in mental health, job satisfaction and work performance. *Journal of Applied Psychology, 88*, 1057-1067.
- Cochrane, A., Barnes-Holmes, D., Barnes-Holmes, Y., Bond, F., Luciano, C., & Wilson, K. (2004). *Analyzing acceptance and avoidance using negative and neutral visual stimuli: Reaction times, accuracy, and event related potentials*. Paper, Annual Convention of the Association for Behavior Analysis, Boston, USA.
- Cacioppo, J.T., Berntson, G.G., Larsen, J.T., Poehlmann, K.M., & Ito, T.A. (2000). The psychophysiology of emotion. In M. Lewis & J.M. Haviland-Jones (Eds.), *Handbook of emotions (2<sup>nd</sup> ed)*. Guilford Press: New York.
- Cioffi, D. & Holloway, J. (1993). Delayed costs of suppressed pain. *Journal of Personality and Social Psychology, 64*, 410-420.
- Cuthbert, B. N., Schupp, H. T., Bradley, M. M., Birbaumer, N., & Lang, P. J. (2000). Brain potentials in affective picture processing: Covariation with autonomic arousal and affective report. *Biological Psychology, 52*, 95-111
- Eifert, G.H. & Heffner, M. (in press). The effects of acceptance versus control contexts on avoidance of panic-related symptoms. *Journal of Behavior Therapy and Experimental Psychiatry*.
- Feldner, M.T., Zvolensky, M.J., Eifert, G.H., & Spira, A.P. (2003). Emotional avoidance: An experimental test of individual differences and response suppression using biological challenge. *Behaviour Research and Therapy, 41*, 403-411.
- Folkman, S. & Lazarus, R.S. (1988). *Ways of coping questionnaire manual*. Mind Garden/Consulting Psychologists Press: Palo Alto, CA.
- Forsyth, J.P., Parker, J.D., & Finlay, C.G. (2003) Anxiety sensitivity, controllability and experiential avoidance and their relation to drug of choice and addiction severity in a residential sample of substance-abusing veterans. *Addictive Behaviors, 28*, 851-870.
- Gutiérrez, O., Luciano, C., Rodríguez, M., & Fink, B.C. (2004). Comparison between an acceptance-based and a cognitive-control-based protocol for coping with pain. *Behavior Therapy, 35*, 767-783.
- Hayes, S.C., Barnes-Holmes, D., & Roche, B. (2001). *Relational frame theory: A post-Skinnerian account of human language and cognition*. Plenum-Kluwer: New York.
- Hayes, S.C., Bissett, R.T., Korn, Z., Zettle, R.D., Rosenfarb, I.S., Cooper, L.D., & Grundt, A.M. (1999). The impact of acceptance versus control rationales on pain tolerance. *The Psychological Record, 49*, 33-47.
- Hayes, S.C., Masuda, A., Bissett, R., Luoma, J., & Guerrero, L.F. (2004). DBT, FAP, and ACT: How empirically oriented are the new behavior therapy technologies? *Behavior Therapy, 35*, 35-54.

- Hayes, S.C., Strosahl, K.D., & Wilson, K.G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. The Guilford Press: New York.
- Hayes, S.C., Strosahl, K.D., Wilson, K.G., Bissett, R.T., Pistorello, J., Toarmino, D., Polusny, M.A., Dykstra, T.A., Batten, S.V., Bergan, J., Stewart, S.H., Zvolensky, M.J., Eifert, G.H., Bond, F.W., Forsyth J.P., Karekla, M., & McCurry, S.M. (in press). Measuring experiential avoidance: A preliminary test of a working model. *The Psychological Record*.
- Hayes, S.C. & Gifford, E.V. (1997). The trouble with language: Experiential avoidance, rules and the nature of verbal events. *Psychological Science*, 8, 170-173.
- Johnson, B., Stewart, I., Barnes-Holmes, D., Barnes-Holmes, Y., Luciano, C., Wilson, K., & McHugh, L. (2004). *The effects of acceptance and valuing on persistence in the face of aversive stimulation*. Manuscript under review.
- Karekla, M., Forsyth, J.P., & Kelly, M.M. (in press). Emotional avoidance and panicogenic responding to a biological challenge procedure. *Behavior Therapy*.
- Kolb, B. & Whishaw, I. (2001). *An introduction to brain and behaviour*. Worth Publishers: New York.
- Koster, E.H., Rassin, E., Crombez, G., & Näring, G.W.B. (2003) The paradoxical effects of suppressing anxious thoughts during imminent threat. *Behaviour Research and Therapy*, 41, 1113-1120.
- Lang, P.J., Bradley, M.M., & Cuthbert, B.N. (1998). Emotion, motivation and anxiety: Brain mechanisms and psychophysiology. *Biological Psychiatry*, 44, 1248-1263.
- Lang, P.J., Bradley, M.M., & Cuthbert, B.N. (1999). *International affective picture system (IAPS): Instruction manual and affective ratings*. Technical Report A-4, The Center for Research in Psychophysiology, University of Florida.
- Levitt, J.T., Brown, T.A., Orsillo, S.M., & Barlow, D.H. (in press). The effects of acceptance versus suppression of emotion on subjective and psychophysiological response to carbon dioxide challenge in patients with panic disorder. *Behavior Therapy*.
- McHugh, L., Barnes-Holmes, D., Barnes-Holmes, Y., Wilson, K., & Luciano, C. (2004). *An experimental analysis of acceptance versus control strategies*. Paper presented at the Annual Conference of the International Association for Behavior Analysis, Campinas, Brazil.
- Purdon, C. & Clark, D.A. (2001). Suppression of obsession-like thoughts in nonclinical individuals: Impact on thought frequency, appraisal and mood state. *Behaviour Research and Therapy*, 39, 1163-1181.
- Sloan, D.M. (in press). Emotion regulation in action: emotional reactivity in experiential avoidance. *Behaviour Research and Therapy*.
- Spielberger, C.D. (1983). *State-Trait Anxiety Inventory (Form Y)*. Mind Garden: Redwood City CA.
- Wegner, D. & Zanakos, S. (1994). Chronic thought suppression. *Journal of Personality*, 62, 615-640.
- Wegner, D.M., Schneider, D.J., Carter, S.R., & White, T.L. (1987). Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology*, 53, 5-13.
- Wells, A. & Davies, M.I. (1994). The Thought Control Questionnaire: A measure of individual differences in the control of unwanted thoughts. *Behaviour Research and Therapy*, 32, 871-878.
- Wenzlaff, R. & Wegner, D.M. (2000). Thought suppression. *Annual Reviews Psychology*, 51, 59-91.
- Zettle, R.D. (2003). Acceptance and Commitment Therapy (ACT) vs. systematic desensitisation in treatment of mathematics anxiety. *The Psychological Record*, 53, 197-215.

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