Claustrophobia, Judicious Use of Safety, and Return of Fear: A Literature Review

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An extensive literature review was conducted in an effort to investigate, understand, explain, and offer potential answers and solutions as to the extent safety behaviors interfere with the outcome of using exposure therapy for Claustrophobia. This review explored existing literature about claustrophobia and safety behaviors within the context of exposure therapy and whether the “judicious use” of safety mechanisms diminish presumed deleterious effects of use of “artificial safety” during exposure and to what degree return of fear appears to be related to use of, or availability of, safety during exposure.

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Claustrophobia, Judicious Use of Safety, and Return of Fear: A Literature Review

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SUBMITTED TO THE FACULTY

OF

SCHOOL OF PROFESSIONAL PSYCHOLOGY

PACIFIC UNIVERSITY, FOREST GROVE, OREGON

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JILL DAVIDSON

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OF

DOCTOR OF PSYCHOLOGY

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Abstract

An extensive literature review was conducted in an effort to investigate, understand, explain, and offer potential answers and solutions as to the extent safety behaviors interfere with the outcome of using exposure therapy for Claustrophobia. This review explored existing literature about claustrophobia and safety behaviors within the context of exposure therapy and whether the “judicious use” of safety mechanisms diminish presumed deleterious effects of use of “artificial safety” during exposure and to what degree return of fear appears to be related to use of, or availability of, safety during exposure.
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INTRODUCTION

The purpose of this study was to conduct an extensive literature review to investigate the extent safety behaviors interfere with the outcome of using exposure therapy for the treatment of claustrophobia. To this end, this review aimed to explore existing literature about claustrophobia, safety behaviors within the context of exposure therapy, whether judicious use of safety mechanisms diminish presumed deleterious effects (e.g., escape and avoidance as demonstrated by premature termination or other non-compliance with treatment), and to what degree return of fear appears to be related to use of- or availability of- safety during exposure. Eysenck and Frith (1977) defined return of fear in the context of exposure therapy as the renewal of a weakened or extinguished fear that was present earlier and is not the onset of new fears by conditioning or other learning processes. Judicious use of safety behavior is defined in the context of exposure therapy as the careful, deliberate planning for—and rationalized use of—behaviors in uncomfortable situations that make the feared stimuli more tolerable (Rachman, Radomsky, & Shafran, 2008).

Problem Statement

Despite the significant functional impact of claustrophobia, research into its treatment has been surprisingly limited. Exposure is most often the simplest, quickest and least expensive means to symptom relief (Deacon & Abramowitz, 2006; Rosqvist, 2005; Taylor et al., 2003). Research has supported the use of exposure therapy as the treatment of choice for anxiety disorders, including psychopharmacology. Some researchers have indicated safety behaviors facilitate therapeutic processes, making
exposure more tolerable, and increasing the acceptability of treatment while providing patients with an enhanced sense of control. Other researchers indicated safety behaviors during exposure treatment effect outcome and return of fear. These discrepancies have important implications for the clinical use of exposure therapy. Clinicians often endeavor to prevent access to safety aids during exposure treatment and often instruct patients to eliminate the use of safety behaviors during exposure. Allowing the judicious use of safety behaviors may be beneficial in engaging clients during exposure therapy, and in some circumstances, may not necessarily be counter-therapeutic.
LITERATURE REVIEW

Definitions

The following terms are defined for use in this study:

*Claustrophobia:* A phobia that is hallmarked by persistent, excessive, and unreasonable fear that is necessarily cued by the presence or anticipation of a specific situation (i.e., enclosed spaces and difficulties with breathing) (Febbrarro & Clum, 1995).

*Anxiety disorder:* A disorder that is characterized by inaccurate appraisals of threat which often persist despite the habitual non-occurrence of feared outcomes (Barlow, 2002).

*Safety behaviors:* Overt or covert actions designed to avert or cope with a perceived threat, used in uncomfortable situations to alleviate distress. Safety behaviors are typically escape and avoidance based (e.g., leaving crowded areas as personal space is diminished, avoiding riding in elevators) (Salkovskis, Clark, & Delder, 1996).

*Judicious use of safety behaviors:* The purposeful, use of careful, deliberate planning for— and rationalized use of— behaviors during exposure that make the feared stimuli more tolerable (Rachman, Radomsku, & Shafran, 2008).

*Exposure therapy:* A type of behavioral therapy that focuses on the experience of previously-avoided, anxiety-provoking stimulus, where fearful individuals deliberately and repeatedly face fears and come into contact with progressively stronger fear-inducing stimuli until habituation is reached (Olatunji, Deacon, & Abramowitz, 2009).
Return of fear: The reappearance of a previously weakened or extinguished fear (Rachman, 1979).

Anxiety Disorders/Specific Phobia

Anxiety disorders are characterized by inaccurate appraisals of real or perceived threat. According to the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders (APA, 2000), specific phobia is a common disorder which has prevalence rates in the general population between 4% and 8.8%. The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) specific phobia criterion includes: (a) marked and persistent fear that is excessive or unreasonable, and (b) fear that is cued by the presence or anticipation of a specific object or situation (Criteria A); exposure to the phobic stimulus almost invariably provokes an immediate anxiety response (Criteria B), which may take the form of a situationally bound or situationally predisposed panic attack; the person must recognize that the fear is excessive or unreasonable (Criteria C); the phobic situation is avoided or else is endured with intense anxiety or distress (Criteria D); the avoidance, anxious anticipation, or distress only qualify a diagnosis of specific phobia if they in some way impair the person’s daily, occupational, academic, social, and/or relational life in a significant way (Criteria E); in those under the age of 18 the duration of the phobic response is 6 months or more (Criteria F); the fear or avoidance cannot be accounted for better by another Axis I or Axis II disorder (Criteria G). There are five specific phobias that are recognized: animal, natural environment (beaches, heights, water, etc.); situational (public transportation, small spaces, tunnels, bridges,
etc.); other (fear of choking, vomiting, etc.); and blood-injection-injury type (APA, 2000).

**Claustrophobia/Exposure**

Claustrophobia is a common anxiety disorder, which is classified as a specific phobia (situational type) in the DSM-IV (APA, 2000). It is hallmarked by persistent, excessive, and unreasonable fear that is necessarily cued by the presence or anticipation of a specific object or situation (e.g., dogs, heights, flying, enclosed spaces). This anxiety response consistently produces patterns of avoidance and escape when the feared stimulus is either anticipated or encountered. It is not unusual for individuals suffering with this sort of fear to panic in the presence of its influence. Specific phobias are the most commonly occurring anxiety disorders and have estimated prevalence rates between 4% and 18% (Kamphuis, Emmelkamp, & Krijn, 2002; Rachman, 2006), making its efficacious, effective, and efficient treatment of paramount importance.

As vexing as claustrophobia can be, exposure therapy has a well-established track record and has unequivocally been established through a myriad of well-controlled, randomized trials as being the treatment of choice for phobias (Barlow, 2002; Craske, 1999; Craske, 2003; Edelmann, 1992; Rosqvist, 2005; Rothbaum, 2006). In exposure therapy, clients are asked to repeatedly confront (i.e., face, whether in real life or in imagination) feared stimuli until anxiety subsides and habituation is reached, as evidenced by reduced physiological arousal and reactivity and by diminished perceptions (i.e., thoughts) of danger. For individuals with claustrophobia, exposure would, in essence, consist of repeatedly experiencing enclosed—and increasingly smaller—spaces,
such as elevators, closets, and back seats of smaller cars. There is a strong evidentiary base that exposure therapy is highly effective in treating claustrophobia in up to 90% of individuals suffering in this manner (Öst, 1997).

While the etiology of anxiety disorders is not certain, several factors are thought to play a role in their development. There is likely a genetic factor which predisposes some people to developing anxiety disorders. Some studies show that, when compared to fraternal twins, if one identical twin has an anxiety disorder the other twin is more likely to have an anxiety disorder (Tambs et al., 2009). Life experiences including exposure to abuse, violence, and poverty may increase an individual’s susceptibility to these disorders (Najman et al., 2010). People are well known hedonists by nature, and avoid feeling discomfort or pain and seek pleasure and comfort at all cost (Rosqvist, 2005). This natural instinct to avoid fear has likely been passed on from one generation to the next.

Biological, evolutionary, life experiences and operant conditioning, in which rewarded behaviors increase and punished behaviors decrease, may contribute to the development of anxiety disorders in some people. In Operant Conditioning, behavior is modified by its consequences. When people are faced with a real or perceived threat, they often withdraw from the situation, negatively reinforcing the avoidance of the feared stimuli, and reducing their anxiety. This process may cause or contribute to the development of a phobic response (Ferreira & De Rose, 2010). Anxiety can be a learned behavior, and conversely be unlearned with the help of therapeutic intervention.

A two factor model has been proposed which suggests that fear is comprised of two distinct components including fear of suffocation and fear of confinement (Harris, Robinson, & Menzies, 1999; McGlynn et al., 2007; Radomsky et al., 2006). The separate
involvement of both fear and confinement of claustrophobia has been demonstrated by measuring each construct using the Claustrophobia Questionnaire (Rachman & Taylor 1997) which consists of 14 items that measure fear and 12 items that measure the restriction of space. When fear of confinement or fear of suffocation is targeted alone in treatment, fear is reduced for the target area; however, the fear that was not targeted is not impacted (Rachman, 1997; Rachman & Taylor, 1993). Rachman and Taylor (1993) predicted that symptoms of claustrophobia will be partially reduced if only the fear of suffocation or restriction is treated; but when both fear of suffocation and restriction are treated, claustrophobic symptoms will be considerably reduced. Thus, it is imperative to target both components of fear, suffocation, and confinement in the treatment of claustrophobia. Exposure therapy has been scientifically demonstrated as unequivocally efficacious and effective, and even as a treatment of choice for claustrophobia (Barlow, 2002; Craske, 1999; Craske, 2003; Edelmann, 1992; Rosqvist, 2005; Rothbaum, 2006).

Booth and Rachman (1991) explored the process of change in claustrophobic patients by comparing three different interventions for the treatment of fear in claustrophobia. Participants were randomly assigned to one of four groups: pure exposure (exterceptive); exposure to the sensations of anxiety (interoceptive exposure); modification of negative conditions; or a control group. The subjects were assessed using seven measures that were given throughout the study including pre-intervention, post-intervention, and follow-up. The assessment tools included the Anxiety Sensitivity Index (Reiss et al., 1986), measure that focused on the Behavioral Approach Test (Chambless, Caputo, Bright, & Callagher, 1984), self report measures based on a visual analogue scale, and a pulse meter used to assess heart rate. The apparatus used in this study was a
filing cabinet measuring 7x 4x 2 feet and was placed in a small dark room. The exposure group was superior to the other groups on scores of predicted and reported fear, negative cognitions, heart rate, physical sensations, and reported panic. The cognitive group had reduced scores for negative cognitions and physical sensations, and still reported fear and panic. The interceptive group had lower scores on negative cognitions and physical sensations. In conclusion, the cognitive group and interceptive group were effective in reducing fear, but not as effective as exposure alone. In addition, it took less time to reduce the fear in the exposure group. Unlike the lasting improvement over time in the exposure group, there is lack of support that continued improvement overtime will occur as a result of cognitive intervention.

Another study conducted by Öst, Alm, Brandberg, and Breitholtz (2001) examined whether cognitive-behavioral therapy was better than no treatment for claustrophobia, if one-session of exposure treatment was as effective as five sessions of exposure for claustrophobia, and also compared the effects of exposure with that of cognitive therapy without direct exposure. Forty-six patients meeting criteria for claustrophobia were randomly assigned to four conditions including one-session of exposure, five-sessions of exposure, five-sessions of cognitive therapy, and a five week wait list. The single session exposure group consisted of one three hour long session and the second and third groups consisted of five hours of gradual treatment across five sessions. Results showed that all treatments were significantly better than the wait-list condition, and the five treatments produced clinically significant change in claustrophobic fear reduction. At post treatment, 79% of the treatment patients showed clinically significant improvement compared to only 18% of the control group. At the one
year follow-up, 100% of the single session exposure group still had clinically significant improvement compared to the five-session exposure group of 81%. Öst et al. (2001) concluded that both exposure and cognitive therapy were effective in the treatment of claustrophobia. However, at the one-year follow-up, the one-session exposure therapy group had a statistically higher success rate in lasting therapeutic effects.

Botella, Banos, Perpina, Villa, Alcaniz, and Rey (1998) observed the efficacy of exposure treatment for claustrophobia using only virtual reality (VR). The study consisted of a single subject who suffered clinically significant claustrophobic impairment and distress. The subject, a 43-year-old female, participated in eight exposure sessions over a three-week period consisting of VR exposure. Six self-report measures were given to the subject prior to treatment, post-treatment, and at a one-month follow-up. The therapist encouraged the participant to interact with the enclosed environment long enough until her Subjective Units of Distress Scale (SUDS) rating decreased (Wolpe, 1958). The subject’s anxiety level and SUDS rating was assessed every five minutes during each exposure session. All self-report measures were reduced post-treatment and maintained at the one-month follow-up. Specifically, avoidance and fear measures were significantly decreased, that is, the patient’s anxiety for closed spaces decreased, providing evidence that the VR exposure treatment alone was efficacious.

The above studies support the efficacy, effectiveness, and efficiency of exposure therapy for the treatment of claustrophobia; however, these studies do not address whether the use of safety behaviors during exposure treatment affect return of fear. Emotional processing theory (Foa & Kozak, 1986) emphasized the goal of treatment was providing anxious individuals with corrective information which disconfirmed their
inaccurate appraisals of threat. Accordingly, exposure treatment is thought to be most effective with minimal interferences with disconfirming threats, such as safety behaviors. Individuals with claustrophobia exhibit an immediate anxiety response to their feared stimuli, which can take the form of a panic attack, and people will frequently avoid the feared stimuli even if the fear is recognized as being excessive (APA, 2000). Exposure therapy aims at evoking the most central fears in individuals with claustrophobia: fear of restriction and suffocation. When faced with anxiety provoking stimuli, an individual may experience uncomfortable symptoms of anxiety such as shallow breathing, racing heart, constricted throat, tingling skin, nausea, tension, and narrowed awareness of self and others. Needless to say, exposure therapy can be uncomfortable. Patients often engage in safety behaviors during exposure work to make the exposure less invasive and more tolerable. There is evidence that the use of safety behaviors during exposure treatment can be anti-therapeutic and that the judicious use of safety behaviors may be used to facilitative treatment outcome (Rachman, Radomsky, & Shafran, 2008).

Safety Behaviors

Individuals with phobias—whether circumscribed or more broadly focused—tend towards relying on what is called safety behaviors (Powers, Smits, & Telch, 2004). Thwaites and Freeston (2005) described safety behaviors and coping strategies as being on a continuum, “with repeated, excessive, or situationally inappropriate use, it is possible that the behavior shifts along a continuum from adaptive coping strategy to safety behavior, depending upon the intention, actual function and objective benefit to the individual” (p. 178). Safety behaviors are either overt or covert actions designed to avert
or cope with a perceived threat. They are typically escape and avoidance based, such as
avoiding riding in elevators or sitting in the backseat of cars, or leaving crowded areas as
personal space is diminished. In claustrophobia, safety behaviors are most closely related
to the two-factor model (Mowrer, 1939, 1947, 1960) which explains claustrophobia,
namely restriction within the context of personal space and suffocation (Rachman &
Taylor, 1993). There is discrepancy within the field of clinical psychology as to how
much—or whether—safety behaviors interfere with lasting reduction of claustraphobic
fears.

Garcia-Palacios, Hoffman, Richards, Seibel, and Sharar (2007) evaluated the use
of safety behaviors in patients who were otherwise unable to complete a magnetic
resonance imaging (MRI) brain scan. Two patients meeting DSM-IV criteria for a
specific phobia, claustrophobia, situational type were used for this study. The patients
were randomly assigned to one of two treatment conditions, consisting of different safety
behaviors, namely virtual reality, distraction, or music while attempting to complete the
MRI scan. The first patient received a virtual reality movie as a safety behavior and was
able to complete the MRI scan reporting low anxiety during the scan and an increase in
self-efficacy after the scan was complete. The second patient received music as a safety
behavior and was unable to complete the MRI, and asked to terminate the scan early.
The distraction of virtual reality successfully reduced claustraphobic fear and anxiety
during an MRI scan; however, music alone did not provide a reduction in the
claustraphobic response. These results suggest that safety behaviors (e.g., focused,
attention-sustaining distraction) may be beneficial in initially helping patients complete
exposure to feared stimulus and temporarily reduce anxiety symptoms.
Milosevic and Radomsky (2008) examined the role of safety behavior in the treatment of anxiety disorders, specifically in the treatment of specific phobia. Snake-fearing participants were randomly assigned to two treatment groups. Participants in each treatment group received 45 minutes of exposure to the feared stimulus with or without the use of safety gear such as goggles and gloves. During exposure, participants in the safety behavior group were able to get significantly closer to the snake compared to the non-safety behavior group. Post-treatment, both groups were asked to approach the snake without safety gear. Each group had comparable treatment gains and had clinically reduced subjective anxiety and fearful cognitions. Measures used to assess the participants fear included the Fear of Snakes questionnaire (Szymanski & O’Donohue, 1995), Subjective Units of Distress Scale (Wolpe, 1958), and the Agoraphobic Cognitions Questionnaire for Snake Phobia and Body Sensations questionnaire (Chambless, Caputo, Bright, & Gallagher, 1984). This study demonstrated treatment gains using exposure therapy for a specific phobia with and without the use of safety aids and illustrated that safety behavior may not be detrimental to the treatment outcome of exposure therapy. Although the safety behavior of wearing gloves was beneficial in treatment, it was unclear if the glove-wearing group actually experienced snakes as being less dangerous post-treatment without wearing gloves (e.g., the exposure treatment may not have had lasting effects).

Although the above study demonstrated that the use of safety behaviors does not impact treatment outcome, Powers, Smits, and Telch (2004) illustrated different findings. The Power et al. study examined the effects of perceived availability of threat-relevant safety behaviors during treatment versus the actual use of safety behaviors. Participants
who had marked claustrophobic fear were assigned to one of five treatment groups including exposure only, exposure with safety-behavior availability, exposure with safety-behavior utilization, credible placebo treatment, and a wait-list. The participants in all three exposure groups were asked to lie in a chamber. The participants assigned to the safety behavior utilization group were told they had to use at least one safety behavior during exposure to help cope with their fear. The safety behaviors included opening a small window in the chamber to allow access to fresh air being blow in by a fan, communicating with the experimenter through the use of a two way radio, and unlocking the door of the chamber after two minutes of exposure. The treatment group with safety behaviors available was told to use the safety strategies only if needed to stay in the chamber. Outcome measure assessment included Rachman and Taylor’s (1993) self-claustrophobia questionnaire that was administered pre-treatment, post-treatment, and at the two-week follow-up. The three groups had significantly different treatment outcomes. The exposure alone group had 94% high end state functioning, the safety behavior available group had 45%, the safety behavior utilized group had 44%, the placebo group had 25%, and lastly, the wait list group had 0%. According to these findings, making safety behaviors available to claustrophobic individuals during exposure had a marked deleterious effect on fear reduction. Powers et al. (2004) suggested that it was the perception of the availability of the safety aids during exposure treatment as opposed to their actual use that had a negative effect on fear reduction.

Salkovskis, Clark, and Gelder (1996) proposed that safety-seeking behaviors maintain catastrophic cognitions, that is when people avoid or escape situations where panic occurs, fear does not subside; safety behaviors help patients avert a perceived
threat. Participants included 147 men and women who met DSM-IV-TR diagnostic criteria for panic disorder. Participants filled out self-rating scales including the Bodily Sensations questionnaire, Agoraphobic Cognitions questionnaire and the Safety Seeking Behaviours scale (Chambless, Caputo, Bright, & Gallagher, 1984) to rate the frequency of various safety behaviors the participants experience during panic. The association between cognitions and behaviors was assessed and it was concluded that safety-seeking behaviors were related to the threats perceived by patients who experience panic. Thus, the hypothesis of the study was supported that cognitions are maintained by escape and avoidance as well as by safety behaviors. Salkovskis et al. (1996) concluded that safety-seeking behaviors which are maintaining catastrophic cognitions should be eliminated in the treatment of panic patients.

De Silva and Rachman (1984) evaluated whether two groups of agoraphobic patients had different treatment outcomes during exposure when only one of the groups was allowed to use safety behaviors. Participants included 18 people who met DSM-IV-TR criteria for agoraphobia. The first group completed the exposure session until their self-rated anxiety dropped by 50%, while the second group of participants was asked to leave the exposure exercise, without waiting for their anxiety to drop, when their self-rated level of anxiety peaked. Treatment outcome was consistent between both groups, and participants in both groups improved. The group of patients who used safety behaviors (i.e., escape) did not demonstrate an increase in avoiding feared stimulus, and reported an increased sense of control.

Sloan and Telch (2002) evaluated the effects of safety-seeking behavior and guided threat reappraisal on fear reduction during exposure therapy for patients
displaying marked claustrophobic fear. Participants were randomly assigned to one of three 30-minute exposure treatment conditions consisting of guided threat focus and reappraisal, safety-behavior utilization, or exposure only. Outcome assessments including the Claustrophobic Concerns questionnaire (Valentiner, Telch, Petruzzi, & Bolte, 1996), during a behavioral approach test along with measures of restriction of space and suffocation were gathered pre-treatment, post-treatment, and at two-week follow-up. At post-treatment, the percentages of participants in the different treatment groups who met criteria for clinically significant improvement after exposure are as follows: The guided threat with reappraisal on fear reduction group were 100%, the safety behavior utilization group was 44%, with 77% in the exposure alone group. It could be inferred from these findings that making safety behaviors available during exposure treatment for claustrophobia interferes with fear reduction, while guided threat reappraisal enhances treatment responsivity. The question arises whether encouragement of claustrophobic patients to utilize safety-seeking behaviors while confronting phobic threats is efficacious, and suggests that worse outcomes are obtained when individuals are allowed to use safety behaviors during exposures.

Salkovskis, Clark, Hackman, Wells, and Gelder, (1999) hypothesized that patients who utilized safety-seeking behaviors during exposure treatments maintained greater amounts of anxiety and safety-seeking behaviors play a role in maintaining key threat beliefs. Patients, meeting criteria for panic disorder with agoraphobia were exposed to an agoraphobic situation. Within the exposure period, participants maintained their safety-seeking behaviors or were asked to stop their safety seeking behaviors. Two days after the initial exposure patients were asked again to participate in the same behavioral
experiment of exposure. The participants who stopped utilizing the safety-seeking behaviors during exposure treatment showed a greater decrease in both anxiety and catastrophic beliefs related to panic compared to participants who continued the exposure utilizing safety behaviors.

Telch, Valentiner, Doron, Young, Powers, and Jasper (2004) hypothesized that distraction, a safety behavior, during exposure treatment for claustrophobia had negative effects on fear reduction in treatment outcome. Participants with marked claustrophobic fear were randomly assigned to one of four exposure treatment groups and each received 30-minutes of self-guided exposure. One group attended to threatening words and images during exposure and was compared to a control group that attended to neutral words and images while a third group performed a demanding cognitive loaded task during exposure and was compared to an exposure only control group. Measures used to assess fear included a Likert scaled self-report measure of fear, heart-rate reactivity, measures of clinically significant change (Jacobson & Truax, 1991), and treatment process measures. These measures were administered post-treatment and at a two week follow up. Results showed that the participants who engaged in demanding cognitive tasks during exposure had a greater return of fear compared to the other three treatment groups. Thus, distraction during exposure was harmful to fear reduction post treatment.

In contrast to the findings reviewed above, Bandura, Jeffrey, and Wright (1974) found that giving patients approval to use safety behaviors during exposure treatment did not decrease the effectiveness of treatment or the outcome. Participants included 36 snake phobic individuals who had all stopped or significantly decreased recreational activities such as hiking, fishing, and camping due to their intense fear of snakes. The patients were
asked to complete various exposure tasks such as looking at and touching a boa constrictor and letting the boa constrictor loose in a room and retrieving it, after watching someone model the exposure activity. If the patient was not able to perform the exposure task asked, he or she was provided a safety aid such as physical barrier (gloves). Each safety aid was rated on hierarchical scale and exposure to the snake was completed using different levels of safety aids. Bandura et al. (1974) found that the snake phobic participants who were unable to complete the exposure tasks after it was modeled for them were able to complete the task with the use of safety aids. The more the patients were aided, the braver they were and the more they were able to complete the exposure exercises. In addition, the moderate induction aids compared to the highly rated aides produced comparable results in the ability of patients to complete the exposure exercises; produced greater generalization compared to low-rated or no aids.
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Return of Fear

Rachman (1979) explained the principle of exposure to something feared:

It is said that learner riders who fall off a horse should remount as soon as possible and that learner fliers who suffer an accident should get airborne again as soon as soon possible. The advice seems to apply only to those tasks in which the learner is expected to experience fear during the course of acquiring the requisite skills. The assumption underlying such advice appears to be that unless the learner resumes his training without delay, his fear will grow-or return. (p.164)

Despite exposure-based treatments, return of fear does occur in some patients.

Rachman and Lopatka (1987) examined the relationship between return of fear and different types of therapeutic interventions for the treatment of fear. Three subject groups identified as being phobic of snakes and spiders were given different levels of psychoeducation and exposure therapy in a one-session trial. The three treatment groups consisted of a full learning group, an under learning group, and an over learning group, to determine if different amounts of therapeutic modeling had an effect on the relationship between the extent of fear-reduction and return of fear.

The subjects ranked their levels of fear pre-treatment as they approached the feared stimulus from 0 to 100, where 0 equaled no fear and 100 equaled the most fear possible. Four weeks post-treatment, the subjects approached the feared stimulus again
and ranked their fears. Four measures were collected including pre-treatment fear, end of session fear, duration of exposure, and fear at the post-training session.

The three groups did not differ in the initial intensity of fear. Initially, the full learning group had their fears reduced to zero, the under learning group had fears reduced by 50% and the over learning group, who received 15 additional minutes of treatment, had their fears reduced to zero. The under learning group had significantly less exposure than the two other groups and the end-of-session fear ratings for the three groups were significantly different. The return of fear score was calculated by subtracting the end-of-session fear score from the four-week post-training fear score.

In total, 24 out of the 39 subjects had a return of fear, a higher score at post treatment than the end-of –session score. There were no significant differences on the return of fear between the groups and contrary to the predicted outcome, the return of fear had little relation to the amount of fear that is reduced in the session. However, the results of this study did show the time taken for a subject to achieve a full reduction of fear to the stimulus was positively related to the return of fear; the shorter the duration to complete the fear-reduction session, the lower the probability return of fear would occur. The full learning group, which was exposed to stimuli for a less amount of time compared to the over-learning group, had less return of fear. In this study, longer fear-reduction sessions were followed by greater amounts of returning fear. Overall, Rachman and Lopatka (1987) found that patients who required a longer time to reduce their fear may be more vulnerable to a return of fear.

Kamphuis and Telch (2000) hypothesized a difference in treatment outcome related to return of fear during exposure treatment with and without cognitive distraction.
Participants included 58 patients meeting DSM-IV-TR diagnostic criteria for claustraphobia and were assigned to one of four exposure conditions: exposure with guided threat reappraisal, exposure with a cognitive load distraction task, exposure with guided threat reappraisal, and cognitive load distraction task and exposure only. Throughout treatment, participants rated both predicted and actual performance of entering a chamber related to fear, panic, approach behavior, perceived threats, and self-efficacy. The treatment outcomes differed among the four exposure groups in relation to return of fear. The authors suggested that fear reduction during exposure therapy is related to cognitive distraction (i.e., safety behaviors). The exposure groups where participants engaged in cognitively demanding distraction tasks, had less fear reduction and an increase in return of fear.

Dugas, Radomsky, and Brillon (2003) reviewed existing literature on different anxiety disorders to review the efficacy and predictors of maintenance of different treatments at preventing relapse of anxiety symptoms in successfully treated patients. They concluded that behavior therapy and cognitive behavior therapy are superior compared to other forms of psychotherapy in preventing relapse or the return of fear in successfully treated anxiety disordered patients. According to Dugas et al., “therapy can be effective for the tertiary prevention of anxiety disorders, that behavior therapy and cognitive-behavioral therapy may be particularly effective at preventing relapse” (2003, p. 180). In conclusion, the return of fear in patients was diminished when behavioral or cognitive-behavioral interventions were used.

Powers, Whitley, Smits, Bystritsky, and Telch (2008) examined post-treatment return of fear amongst different exposure treatment groups, specifically the perceived
effects of taking medication related to treatment improvement and return of fear.

Participants included 95 undergraduate students and community volunteers displaying marked claustrophobic fear. Participants were randomly assigned to treatment groups that included a waitlist, psychological placebo condition, one session of exposure treatment, and exposure treatment in conjunction with an inactive pill. Participants in the exposure plus medication group were told one of three things about the pill: (a) the pill was described as sedating and would make exposure easier, (b) the pill was described as stimulating and would make exposure more difficult, or (c) the pill was described as a placebo and would have no effect on treatment. The one-session exposure only treatment group demonstrated significantly greater improvement compared to the placebo treatment or waitlist group. The level of initial improvement was comparable between the groups of participants who did and did not take a pill during exposure treatment. However, the return of fear percentages for the three groups who were given a pill were 39%, 0%, and 0%. The return of fear was 0% for the exposure only treatment condition. At the one-week follow-up, participants who were led to believe they took a sedating herbal supplement that would reduce anxiety displayed a markedly higher return of fear compared to the other treatment conditions. The other three exposure conditions continued to demonstrate significant improvement compared to the placebo treatment and wait list, including the group of participants who were led to believe they had taken an herbal stimulant with anxiogenic. In addition, the treatment group believed to have taken an anxiety reducing pill, and prior to post-treatment measure attributed their reduction of anxiety to taking a pill, was less likely to maintain improvement and more likely to experience return of fear.
Shafran, Booth, and Rachman (1993) explored the relationship between cognitive variables and the reduction of claustrophobia. The researchers indicated that the amount and believability of cognitions during exposure treatment were directly related to the reduction of fear. They found that fear reduction was directly related to a reduction of body sensations during exposure treatments and that return of fear is directly related to the return of these sensations. When the participants’ cognitions were manipulated, and central conditions involving being trapped and suffocated were removed, there was a correlation between an absence of believable cognitions and fear reduction. Belief in one of these conditions, being trapped or suffocated, was associated with the maintenance of fear. The return of fear was not affected by how fast the fear was reduced during exposure treatment. Conversely, the role of negative cognitions (e.g., thinking one will suffocate, panic, become trapped, embarrassed, or die) was related to the return of fear and participants who reported a return of fear post treatment also reported an increase in negative cognitions.

Rachman, Robinson, and Lopatka (1987) tested the hypothesis that incomplete fear reduction in exposure therapy will be followed by a greater degree in return of fear than the return of fear in patients with a complete fear reduction in exposure. Forty snake-phobic volunteers were randomly assigned to one of two treatment conditions, 100% or 50% fear reduction. The subjects were each exposed to a live snake and initial fear was recorded. The subjects in the first group continued exposure to the feared stimulus until their level of fear was reduced 100%, while the second group was exposed until their fear was reduced to 50%. The subjects who were assigned to the 50% reduction of fear group had more fear after exposure than the subjects assigned to the 100% fear reduction group.
At four weeks post treatment, each group was given a (BAT) to determine if fear of the stimulus had returned. There was no difference amongst the two groups on their initial level of fear. Contrary to the hypothesis, patients assigned to the 100% fear reduction group had a greater return of fear four weeks post-treatment than the patients assigned to 50% fear reduction group. This study demonstrated that more is not better as the patients who received a greater amount of exposure had a higher rate in return of fear. The phenomenon of the return of fear may require its own explanation.

Craske, Moholman, Yi, Glover, and Valeri (1993) examined the return of fear in 21 individuals with claustrophobia who were randomly assigned to two treatment groups: exposure plus relaxation and exposure plus disconfirmation of misappraisals of bodily sensations. It is interesting that relaxation was incorporated with exposure in this study because exposure treatment relies on arousal, not relaxation. The treatment groups each received two four-hour sessions. The exposure plus relaxation group consisted of gradual in-vivo exposure with the aid of relaxation exercises such as muscle relaxation. The exposure plus disconfirmation of sensation fears consisted of gradual in-vivo exposure along with corrective information and behavioral testing regarding misappraisals of bodily sensations such as shortness of breath and suffocation. Psychological, behavioral, and subjective measures were given prior to treatment and at four weeks post treatment. The direct attempt to modify misappraisals of arousal sensations in the phobic patients provided short-term fear reduction. The exposure plus relaxation group also demonstrated a reduced amount of fear post-treatment; however, the claustrophobic fear returned four weeks post-treatment.
Grey, Sartory, and Rachman (1979) examined the prediction of high-demand exposure compared to low-demand exposure in relation to the return of fear. Participants included 27 patients who suffered from a specific phobia that interfered with normal living. Three in vivo exposure treatment conditions were assigned. Treatment consisted of three weekly sessions in which participants were exposed to ten, two minute presentations of the feared stimulus. The demand conditions were measured by client self report of fear ranging in scale of 0-100, where 0 equals no fear and 100 equals the most fear tolerable without escaping from the situation. In the high demand group, participants were exposed to the feared stimulus under maximum fear ratings. Participants in the Increasing Demands group were exposed at increasing levels of fear; the first session fear ratings reached 50, the second 75 and the third 100. The third group was treated under Low Demand conditions in which participants never rated fear more than 50. Results indicated that both the high and low demand groups demonstrated a greater reduction in fear during sessions when compared to the increasing demand group. In addition, the high and increasing demand group showed evidence of return of fear between treatment sessions. The return of fear may be attributed to participants not reaching habituation during the exposure experiments.

Alpers and Sell (2008) assessed self-report of fear in claustrophobic patients compared to psychophysiological monitoring using heart rate measurement while being exposed to small spaces. There were 10 participants including 8 women and 2 men, all with a primary diagnosis of claustrophobia. Each participant engaged in six 30-minute sessions of exposure to small spaces. Throughout the exposure sessions, each participant rated his or her subjective measure of fear which was compared to the reading of the
heart-rate monitor. Results showed both measures were useful measures of treatment efficacy. In addition, the participants who had a higher rate at the beginning of the first exposure session had better treatment outcome and less return of fear.

Table 2: Return of Fear Research Studies

<table>
<thead>
<tr>
<th>Author(s) and Year</th>
<th>Method of Tx</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rachman &amp; Lopatka (1987)</td>
<td>Compared length of exposure treatment between groups of snake and spider phobic patients</td>
<td>The longer patients exposed, the greater return of fear</td>
</tr>
<tr>
<td>Kamphuis &amp; Telch (2000)</td>
<td>Compared exposure treatment for claustrophobia with and without cognitive distraction</td>
<td>Patients who engaged in cognitive distraction had less fear reduction</td>
</tr>
<tr>
<td>Dugas, Radomsky &amp; Brilliant (2003)</td>
<td>Lit review of different interventions to treat anxiety disorders</td>
<td>Return of Fear diminished when behavioral interventions were used</td>
</tr>
<tr>
<td>Powers, Whitley, Smits, Bystrisky &amp; Telch (2008)</td>
<td>Compared perceived effect of taking anti-anxiety medication (placebo) and no medication during exposure treatment for claustrophobia</td>
<td>Return of Fear higher in patients who attributed their fear reduction to medication versus only exposure</td>
</tr>
<tr>
<td>Shafran, Booth &amp; Rachman (1993)</td>
<td>Explored relationship between cognitive variables and reduction of claustrophobia</td>
<td>Negative cognitions (panic, becoming trapped, embarrassed) had increased return of fear</td>
</tr>
<tr>
<td>Rachman, Robinson &amp; Lopatka (1987)</td>
<td>Snake-phobic participants randomly assigned to one of two tx conditions, 50% or 100% fear reduction during exposure tx</td>
<td>Patients who received a higher amount of exposure had a higher rate in return of fear</td>
</tr>
<tr>
<td>Craske, Moholman, Yi, Glover &amp; Valeri (1993)</td>
<td>Claustrophobic patients assigned to exposure group with relaxation and without</td>
<td>Exposure plus relaxation group experienced greater return of fear</td>
</tr>
<tr>
<td>Grey, Sartory &amp; Rachman (1979)</td>
<td>Compared high demand exposure to low demand</td>
<td>High demand exposure group had less</td>
</tr>
</tbody>
</table>
exposure for specific phobia

Alpers & Sell (2008) Compared two exposure groups of claustrophobic patients using heart rate monitors to measure fear

return of fear compared to low demand

participants with a higher heart rate at the beginning of exposure had less return of fear

METHOD

Aims and Objectives

The purpose of this study was to evaluate the existing literature to investigate what extent safety behaviors interfere with the outcome of exposure therapy for the treatment of claustrophobia. Specifically, to what degree return of fear is related to use of- or availability of- safety aids during exposure.

Searching the Literature

Several search engines (e.g., Medline, PsychInfo, Psychiatry Online, and Annual Review of Psychology) were used to find relevant literature. In articles reviewed, related research referenced in the article was also obtained. Terms used in the search included claustrophobia, suffocation, judicious use, safety behaviors, exposure, anxiety disorders, restriction of space, habituation, extinction, and escape. The articles were read and reviewed specifically focusing on judicious use of safety behaviors during exposure.
therapy and the return of fear. Reference lists of articles retrieved were reviewed and related articles were obtained to include in the literature review.

*Inclusion Criteria*

Systematic review of the literature, qualitative studies, controlled and uncontrolled clinical trials, and theoretical articles were considered for inclusion in this literature review. Restrictions were set to include only articles in peer reviewed journals and only English-language articles. Research studies were included in the literature review if they were (a) specific to claustrophobia and exposure, and (b) identified the extent of safety behaviors used and whether safety mechanisms were used during exposure therapy. The limitations of including only peer-reviewed and English-language journal articles may have restricted this study to a specific body of academic knowledge, and excluded international research. It was not possible to include a broader body of knowledge for this literature review and it is possible other information may be available on this topic.
RESULTS

This literature review examined the impact of safety behaviors on treatment outcome for claustrophobia, specifically investigating the judicious use- as well as more conventional use- of safety mechanisms during exposure therapy for claustrophobia and the return of fear. The goal was to identify trends and patterns in the existing literature about claustrophobia, explore the use of safety behaviors during exposure treatments, and examine whether the judicious use of safety mechanisms diminished presumed therapeutic outcomes.

The results provided mixed support of the potential benefit of the judicious use of safety aids during exposure treatments. Some studies found no difference in treatment outcomes between patients who were and were not “allowed” to escape or have safety aids available during exposure based treatments (de Silva & Rachman, 1984). Other studies found that exposure therapy in which safety behaviors are prohibited were more effective compared to exposure treatment in which patients are allowed to use safety behaviors (Parrish, Radomsky, & Dugas, 2008). Some studies suggest the most effective treatment is when safety behaviors are completely eliminated or minimized (Valentiner, Telch, Petruzzi, & Bolte, 1996). In addition constant access to safety behaviors during exposure based treatments may result in less anxiety and prevent the patient from reaching habituation (Salkovoskis et al., 1999). Safety-seeking behaviors can play a key role in the maintenance of claustrophobic fear. Making safety aids available may actually undermine the efficacy of exposure-based treatments; however short term relief may be achieved due to lower fear activation, however this short-term relief may be at the expense of disrupting the ability of the patient to reach habituation. If the patient uses
safety aids to feel less anxious during exposure, and habituation is not reached, extinction will not occur and the patient will continue to fear the stimuli.

Other available clinical research suggests that the judicious use of safety behaviors do not necessarily decrease the effectiveness of exposure treatments (Rachman, Radomsky, & Shafran, 2008). The judicious use of safety behaviors may actually assist patients in completing exposure treatments in respect to both fear reduction and cognitive change. Clinicians and researchers are still in early stages of understanding the role of safety behaviors in the current treatment of claustrophobic fear. The judicious use of safety behaviors can help patients and improve the tolerability of exposure without reducing its efficacy (Rachman, Radomsky & Shafron, 2008). Snake phobic patients experienced greater fear reduction when they were able to use safety aids, gloves, during exposure exercises (Bandura, Jeffery & Wright, 1974). Several studies found that even when patients were given access to safety aids, which were planfully and deliberately used, including gloves to approach a snake, an open window in a chamber, talking with the experimenter and standing near an exit door during exposure exercises, treatment outcome was as efficacious compared to exposure treatments where safety behaviors were prohibited (Parrish, Radomsky & Dugas 2008; Slone & Telch, 2002.)

Harmful effects of safety behaviors on treatment outcome may depend on how safety behaviors are used, specifically if they are decreased during the duration of treatment. Patients who had access to safety aids throughout treatment, and the use of safety aids were not decreased throughout the duration of exposure treatment, improved significantly less compared to exposure treatment where safety aids were prohibited (Powers, Smits & Telch, 2004). If patients always have access to safety aids, it will
interfere with habituation, extinction will not be reached and exposure won’t work. It is imperative that patients repeatedly reach habituation within session and clinicians should see evidence of progress as treatment progresses. If the availability of safety aids is deliberately formatted, and used in the beginning of exposure treatment, their use may not have long lasting harmful effects. The judicious use of safety behaviors may be associated with more favorable perceptions of exposure treatments and improved tolerability and compliance.

There is lack of specific research related to claustrophobia, safety behaviors and return of fear. The treatment of claustrophobic fear is different than other anxiety disorders in that claustrophobia is compromised of two distinct components, fear of suffocation and fear of confinement (Harris, Robinson, & Menzies, 1999; McGlynn et al., 2007; Radomsky et al., 2006). The symptoms of claustrophobic fear will only partially be reduced if one of the two components, fear of suffocation or fear of confinement, are targeted. It is essential to target both components of fear in the treatment of claustrophobia using exposure based treatments.
DISCUSSION

The proposal that the judicious use of safety behaviors during exposure treatments for claustrophobic feared patients may actually improve the treatment process and outcome when compared to the traditional exposure methods (with no access to safety behaviors) has important and relevant clinical implications. Clinicians often prevent access to safety aids prior to exposure exercises and patients are typically directed to eliminate safety behaviors during exposure treatments. Practitioners are increasingly being asked to integrate science into practice to form a more science-based practice of psychology. Exposure-based CBT for claustrophobic fear is a well-established and effective treatment. If modifications to exposure treatments, such as implementing the judicious use of safety behaviors, decrease the aversiveness of exposure and increase the treatment efficacy, it could potentially improve the percentage of patients who tolerate and benefit from exposure treatments. Clinicians will need to distinguish between safety-seeking behaviors and adaptive coping strategies or aids. Each is utilized to control or neutralize anxiety. The impact safety behaviors have on the outcome of treatment may not necessarily be determined by what safety behavior is used, but how it is used. The use of adaptive aids and the judicious use of safety behaviors to facilitate exposure treatments including staying in the room the first time a patient pets a dog, receiving self-instructional training and guidance through the steps of exposure, or modeling an exercise, will likely benefit patients in completing exposure treatments successfully. Safety strategies which may inhibit emotional processing or extinction learning such as thought suppression or distraction should be avoided. Clinicians should take the time to understand the individual function of each patient’s behaviors to distinguish between
helpful and harmless safety behaviors during exposure treatments. Knowing in advance at the onset of treatment that safety behaviors and access to safety aids is short-termed and judiciously used may actually help patients complete, otherwise thought intolerable exposure based interventions. However, being uncomfortable isn’t necessarily a bad thing.

People are well known hedonists by nature (Rosqvist, 2005), avoid discomfort and pain and maximize what feels good. Behavioral therapy, especially exposure therapy, may appear difficult, demanding, and even at times cruel for both patients and practitioners who do not have insight into why purposely facing fears is good. It is quite well known and readily accepted by behavioral and exposure therapists that during the initial phase of treatment clinical symptoms will worsen at first. This may appear to some as a violation of the first guiding principal of the American Psychological Associations 2002 Ethic Principals of Psychologists and Code of Conduct; Principal A, Beneficence and Nonmaleficence or “do no harm”. In fact, it is necessary for people to feel uncomfortable, if behavioral and exposure techniques are being applied correctly. It is this “facing of fears” that ultimately allows the sufferer to end their maladaptive avoidance and escape strategies.

Further research is necessary to investigate situations in which specific types of safety behaviors are used to foster therapeutic change in the exposure treatment of claustrophobic feared patients, instead of investigating how safety behaviors hinder therapeutic change. This will assist clinicians in deliberately implementing and guiding patients in the use of specific safety aids and behaviors during exposure based treatment interventions. Clarity is necessary into the benefit and risk of the judicious use of safety
aids in order to generate guidelines for clinical practice, which will undoubtedly lead to improvements in the tolerability and efficacy of exposure treatments for claustrophobia.

We know conditioned fear responses are subject to extinction with repeated and prolonged exposure to feared stimuli. It is necessary for the arousal of physiological systems, the core anxiety response including respiration, circulation, digestion, muscles, and the central nervous system to reach a high enough arousal state that habituation can be achieved. Through habituation, patients reverse the effects of avoidance and become used to feared stimuli and eventually reach extinction, and the automatic activation of anxious arousal decreases to a normal, non-pathological level. Events or behaviors that interfere with this process compromises the amount of fear reduction, and the likelihood the patient will experience return of fear between sessions or post treatment increases. If we accept that discomfort is necessary for people to reach habituation (shallow breathing, racing heart, constricted throat, tingling skin, nausea, tension, narrowed awareness) and that the judicious use of some safety aids might actually help facilitate within session fear reduction, we can speculate which safety behaviors may be helpful if judiciously used. For example, modeling, relaxation training, guidance during exposure experiments, standing near an exit door, talking with the experimenter may be helpful in completing exposure treatments.

The use of safety aids in the treatment of claustrophobia is different compared to safety aid use with other specific phobias. For example, people who are afraid of dogs, snakes or cars may have legitimate safety concerns (getting bit by a dog, poisoned by a snake, hurt by a car are real threats) and judicious use of safety aids with gradual removal such as gloves and safety goggles may help patients complete exposure exercises without
compromising treatment outcome and return of fear. However, claustrophobic fear is
different because it is a condition that feels bad, and in reality, only feels that way. It is
not actually dangerous. Scientifically, however, feeling bad cannot be justifiably equated
to necessarily being bad, harmful or dangerous. “If there is danger, I feel anxious’ implies
‘If I feel anxious, there must be danger’ is as fallacious as believing in the proposition ‘If
I see a cow, it has four legs’ implies ‘If I see four legs, it must be a cow’ (Arntz et al.,
1995, p. 917). While most people would not endorse such erroneous reasoning, some
individuals still understand danger on the basis of an anxiety response, and not on the
basis of identified danger. The use of safety aids in treating claustrophobic fear should be
cautiously used and judiciously planned. It may be that simply teaching patients how to
be comfortable with discomfort during exposure, thoroughly teaching the science of
exposure, habituation, and extinction, and facilitating patients in facing their fears
without safety aids may produce better treatment outcomes. According to Lex
Parsimoniae all other things being equal, the simplest solution is the best. That is to say,
when multiple competing theories are equal in most aspects, this principle demands
selecting the theory that introduces the fewest assumptions and the fewest postulates.
Facing and confronting fear ends the insidious and inevitable worsening of fear. Further,
this worsening of symptoms during exposure treatment informs the clinician that the
client is no longer relying on the ineffective avoidance and escape strategies; this
becomes a barometer, of sorts, for the effectiveness of the treatment modality, the
commitment of the client, and the competence of the clinician.
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