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Review

The effects of safety behaviors during exposure therapy for anxiety: Critical analysis from an inhibitory learning perspective

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HIGHLIGHTS

- Inhibitory learning theory of exposure therapy is promising but understudied.
- The role of safety behaviors during exposure therapy is controversial.
- Research on the effects of safety behaviors during exposure is mixed.
- Safety behaviors generally tend to interfere with inhibitory learning and exposure.
- Therapists are advised to fade safety behaviors as soon as patients are willing.

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ABSTRACT

In the context of clinical anxiety, safety behaviors are actions performed to prevent, escape, or minimize feared catastrophes and/or associated distress. Research consistently implicates safety behaviors in the development and maintenance of anxiety disorders; accordingly, safety behaviors are traditionally eliminated during exposure treatments for pathological anxiety. The notion that safety behaviors are ubiquitously deleterious in the context of exposure has recently been challenged, yet findings regarding safety behaviors' effects on exposure outcomes are limited, mixed, and controversial. Furthermore, developments in explanatory models for exposure's effectiveness (e.g., inhibitory learning theory) highlight other possible consequences of safety behaviors performed during exposure. Unfortunately, these theoretical advances are neglected in experimental research. The present review critically examines the literature addressing the role of safety behaviors in exposure therapy from an inhibitory learning perspective. Limitations, future directions, and clinical recommendations are also discussed.

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1. Introduction

Anxiety, broadly defined, is a natural reaction to perceived threat and is manifested cognitively (e.g., racing thoughts), physiologically (e.g., autonomic arousal), and behaviorally (e.g., escape). Although anxiety is evolutionarily adaptive, those with pathological anxiety (e.g., DSM-5 defined anxiety disorders) experience anxiety in the absence of real threat. That is, if "normal anxiety" serves as an alarm system, the 18% of adults and 25% of children in the United States with anxiety disorders experience frequent *false alarms* that cause substantial distress and functional impairment (APA, 2013; Kessler et al., 2005; Merikangas et al., 2010).

In its general form, exposure-based cognitive-behavioral therapy (CBT) for clinical anxiety entails the guided, systematic, and repeated confrontation with feared stimuli (e.g., situations, objects, thoughts). Exposure has demonstrated substantial transdiagnostic efficacy and effectiveness in previous research (Abramowitz, Deacon, & Whiteside, 2011). Accordingly, exposure is considered the first-line intervention for anxiety disorders by international health care bodies (e.g., APA, 2013; NICE, 2005).

Safety behaviors are overt or covert actions performed to prevent, escape, or minimize a feared catastrophe and/or associated distress (Telch & Lancaster, 2012). Safety behaviors are functionally related to anxious beliefs and are logical, if unnecessary. To illustrate, a man with a fear of germs might wear gloves when using public transportation (i.e., prevent contamination), exit a bus after a child sneezes (i.e., escape contamination), or look out the window and tell himself "relax" when on a crowded flight (i.e., minimize his anxiety associated with possibly becoming contaminated). Although topographically similar, safety behaviors are functionally distinct from adaptive coping (e.g., telling oneself "it's okay if I get germs on me") or non-pathological safety maneuvers (e.g., washing hands after handling raw meat; Thwaites & Freeston, 2005). That is, whereas attempts to remain safe when faced with actual threat ensure survival, performing such behaviors in the absence of real threat is unnecessary and even generates and maintains distress (see Helbig-Lang & Petermann, 2010). Other examples of situational safety behaviors commonly endorsed by anxious patients are presented in Table 1.

Research consistently implicates safety behaviors in the maintenance of anxiety disorders; accordingly, safety behaviors are traditionally eliminated from anxious patients' behavioral repertoire over the course of exposure therapy (e.g., Abramowitz et al., 2011; Barlow et al., 2011). Yet recent debate as to whether safety behaviors are unconditionally harmful during exposure has challenged this notion. Although substantial evidence—as well as clinical convention—advocates the elimination of safety behaviors during exposure, Rachman, Radomsky, and Shafran (2008) called for a reconsideration of this axiom. Consequently, the role of safety behaviors during exposure has garnered renewed research attention. Results from these studies, however, are mixed and controversial. For example, in a recent meta-analysis of the effects of safety behaviors on exposure, Meulders, van Daele, Volders, and Vlaeyen (2016) concluded that the aggregate data "was inconclusive and could not provide strong evidence supporting either the removal or addition of [safety behaviors] during exposure" (p. 151).

Meta-analytic studies carry the benefit of pooling data across multiple studies to increase statistical power when testing a specific hypothesis (e.g., "do safety behaviors interfere with exposure therapy on specific outcomes?"). However, if—as in the present paper—the aim is to go beyond testing a discrete statistical hypothesis and instead conduct a rigorous conceptual examination of a specific topic, systematic qualitative reviews are important alongside meta-analyses (e.g., Albarracín, 2015; Garg, Hackam, & Tonelli, 2008). Indeed, the latter allow for more in-depth discussion of theoretical mechanisms underlying improvement (i.e., therapeutic change processes) while still adhering to rigorous review criteria and presenting opposing perspectives in a balanced manner. In light of inconsistent results in the extant literature on safety behaviors, a qualitative systematic review of the literature on the effects of safety behaviors would be helpful for clinicians and researchers working with anxious individuals.

The judicious use of safety behaviors is a controversial thesis; furthermore, clinicians are left without clear direction, given that inconsistent study findings carry contradictory clinical implications. If safety behaviors are not as detrimental as previously assumed, perhaps judiciously incorporating them into exposure therapy will improve treatment retention and outcome (e.g., Rachman et al., 2008). Alternatively, if safety behaviors are deleterious in the long-term, then encouraging anxious patients to rely on these strategies might be iatrogenic. There are also theoretical implications of a systematic review of the safety behavior research. As discussed below, prevailing models of exposure therapy have enhanced our understanding of the treatment of clinical anxiety (e.g., Craske et al., 2008), yet these approaches are limited and fail to address all aspects of long-term treatment gains or failure (i.e., relapse). Therefore, it is important to bridge the gap between advances in theoretical models of exposure therapy and the empirical literature base related to safety behavior use during exposure. In sum, given the growing popularity of newer models of exposure therapy (e.g., inhibitory learning theory) and the possibility for the judicious use of safety behaviors to either augment or diminish exposure's efficacy, a theory-based analysis of this topic is greatly needed. The current review aims to critically examine the extant literature addressing the role of safety behaviors in exposure therapy from an inhibitory learning perspective. Because the effects of distraction have been reviewed elsewhere (e.g., Parrish, Radomsky, & Dugas, 2008; Podină, Koster, Philippot, Dethier, & David, 2013), the present paper will focus on other situational safety behaviors. First, we will explicate current evidence-based theories of the therapeutic mechanisms underlying exposure, emphasizing recent developments in inhibitory learning

Table 1
Example safety behaviors.

Specific concern	In-situation safety behaviors
Panic disorder	
Panic and distress are intolerable	Arousal reduction; reassurance-seeking
Panic sensations signal medical emergency	Arousal reduction (e.g., diaphragmatic breathing) strategies; reliance on "safe person;" body checking; excessive health care utilization
Agoraphobia	
Feeling "trapped" is intolerable	Leave a space that becomes "too crowded"
Feeling "trapped" will cause me to have a panic attack	Stand or sit near exits; maintain close proximity to hospitals; employ arousal reduction strategies at first sign of somatic anxious arousal
Posttraumatic stress	
Distress triggered by traumatic memories is intolerable	Take alcohol or drugs to "block" memory; try to suppress traumatic memory; "keep busy" to avoid having flashbacks
Strangers will attack or harm me	Stand on the perimeter of rooms at parties; reliance on "safe person;" keep self-defense weapon on hand whenever in public; leave a room that becomes "too crowded"
Obsessive compulsive disorder	
I will anger God by thinking a blasphemous thought	Pray for forgiveness and reassurance; wear religious charms; try to "undo," "cancel," or suppress blasphemous thoughts
If a door/window is unlocked, someone will break in and harm my family	Checking rituals; reassurance-seeking
I will stab my husband	Have husband chop vegetables; fidget to keep hands "busy"
Health anxiety	
I must be certain that physical symptoms are not signs of illness	Excessive health care utilization; reassurance-seeking; online checking
I will contract HIV/AIDS or cancer	Use protective barriers (e.g., tissues, clothing) when touching public surfaces (e.g., door knobs, hand rails); excessive health care utilization; reassurance-seeking; online checking
Social anxiety	
I will stutter my words	Mentally rehearse before speaking; keep sentences short
Others will notice and negatively evaluate me for my somatic anxiety symptoms.	Wear clothing that hides "problem areas" (e.g., suit jacket that covers underarm sweat marks; scarf that covers flushed/blotchy chest); keep *anti*-anxiety medication on hand
Others will think I'm a "loner"	Text/use electronic devices in public; walk with others in public; frequently check social media
Specific phobia	
The dog will attack me if I get too close	Insist owner keep dog on tight leash; avoid eye contact with the dog
A spider will bite me and I will die	Wear protective clothing (e.g., long sleeves, close-toed shoes) when outdoors
Anxiety associated with being exposed to heights is intolerable	Resist looking down or out of windows when on high floors; grip railings or stable surfaces when on high floors

theory (Craske, Treanor, Conway, Zbozinek, & Vervliet, 2014; Craske et al., 2008). Second, we critically evaluate the theoretical and empirical evidence for the deleterious effect of safety behaviors during exposure therapy. Third, we examine the theoretical and empirical evidence for the proposed advantages of incorporating safety behaviors during exposure. Fourth, we highlight research limitations and future directions. Finally, we offer clinical recommendations based on the aggregated available research.

2. Literature search strategy and inclusion criteria

Studies included in the present review were identified through an electronic literature search (via the PsycINFO and PubMed databases), supplemented by checking reference lists of published studies (Horsley, Dingwall, & Sampson, 2011). Articles were included if they (a) were published or in press before October 2016,[1] (b) were written in English, (c) concerned an anxiety-related condition (i.e., clinical or nonclinical models of anxiety disorders, obsessive-compulsive disorders, posttraumatic stress disorder (PTSD), or health anxiety), (d) involved a manipulation of behavior(s) that met the definition of a safety behavior (Telch & Lancaster, 2012), and (e) included at least one systematic outcome measure (e.g., subjective fear/anxiety, behavioral approach/avoidance, cognitions/threat estimates). Although relevant anxiety induction/conditioning studies were included in this review, clinical studies must have included an exposure-based intervention to be included. Case, single-condition, and multi-condition studies were all eligible for inclusion in the present review if they met the above stipulations.

[1] An exception was the inclusion of a meta-analysis (Meulders et al., 2016) that was not published at the time of initial submission for peer-review, but was accessible during this manuscript's revise and resubmission period.

3. How does exposure work?

Traditionally, the dominant explanatory model for exposure's effectiveness has been emotional processing theory (EPT), initially proposed by Rachman (1980), outlined by Foa and Kozak (1986), and revised by Foa and colleagues (Foa, Huppert, & Cahill, 2006; Foa & McNally, 1996). EPT posits that fear extinction during exposure results from the activation of a fear structure (a fear-based association between a stimulus and its significance; e.g., "dog" and the fear of being attacked by the dog) paired with corrective information that is incompatible with the fear structure (e.g., approaching the dog without being attacked by the dog). Integral to this model are the concepts of within- and between-session habituation. Within-session habituation represents the decline in fear an anxious patient experiences in the presence of feared stimuli (i.e., the gradual decline of peak fear during a single exposure task) and is a prerequisite for between-session habituation (the reduction in peak fear reached between trials over the course of therapy). According to EPT, within- and between-session habituation indicate modification of the fear structure and therapeutic success.

Accumulated research, however, suggests that habituation is not a reliable predictor of fear extinction (for a review, see Craske et al., 2008). Furthermore, EPT does not adequately explain spontaneous recovery (return of fear after the passage of time), renewal (return of fear after a change in context), or reinstatement (partial return of fear after representation of the feared stimulus) that sometimes follows a successful course of exposure therapy in which both within- and between-session habituation reliably occur.

In response to these challenges, inhibitory learning theory (Craske et al., 2008) has been proposed to better explain how exposure works. Inhibitory learning theory posits that during exposure, fearful associations (e.g., dogs are dangerous) are not "unlearned," but are instead forced to compete with newly acquired safety associations (e.g., dogs are not necessarily dangerous). Following inhibitory learning via exposure, a feared stimulus is then associated with both its original excitatory (danger) meaning and its new inhibitory (safety) meaning. Fear extinction is demonstrated by superior recall of the inhibitory association when later encountering a previously feared stimulus. Thus, the aim of exposure therapy from an inhibitory learning perspective is to help patients generate and strengthen inhibitory associations relative to older fearful associations.

Inhibitory learning theory emphasizes three mechanisms of fear extinction: (a) expectancy violation, (b) decontextualization of inhibitory associations, and (c) distress tolerance. Expectancy violation[2] refers to the discrepancy between a patient's anticipated consequence of an exposure (e.g., being attacked by the dog) and the actual consequence (e.g., not being attacked by the dog). Therefore, inhibitory learning may be generated by repeatedly and maximally violating a patient's fear-based predictions for harm. Importantly, inhibitory learning is context-specific; that is, inhibitory associations are inferior in strength and accessibility to excitatory associations after a change of context (e.g., time of day, internal state; Bouton, 2002). Therefore, inhibitory learning theory also emphasizes the need to provide *unconditional* learned safety by violating expectancies repeatedly and in diverse contexts. Finally, distress tolerance refers to an individual's ability to withstand aversive emotional and physical states. Distinct from distress *reduction* (i.e., habituation), distress *tolerance* is an important goal in inhibitory learning theory because patients generate inhibitory associations to the extent that they engage in anxiety-provoking situations during exposure (Abramowitz & Arch, 2014). Additionally, beliefs regarding distress tolerance (e.g., "I cannot bear prolonged and intense panic") may be a patient's primary complaint. As a result, inhibitory learning theory advocates inducing prolonged and intense distress during exposure to facilitate fear extinction. In summary, rather than underscoring the degree of habituation over the course of therapy, inhibitory learning theory emphasizes the superior long-term recall of inhibitory associations at follow-up, regardless of context (Craske et al., 2008, 2014; Laborda & Miller, 2012).

It should be noted that some features of inhibitory learning theory parallel cognitive approaches to anxiety treatment, which emphasize disconfirming maladaptive beliefs (e.g., Craske et al., 2014; Salkovskis, Hackmann, Wells, Gelder, & Clark, 2006). Similarly, the importance of exposing anxious patients to fear cues repeatedly and in multiple contexts has long been understood (e.g., Foa & Kozak, 1986). Accordingly, certain arguments from the inhibitory learning framework are not novel so much as formulated from a different perspective. Nevertheless, the inhibitory learning theory of exposure is an incrementally useful (as well as increasingly popular) approach to understanding the mechanisms of exposure's effectiveness that has not been sufficiently incorporated into the extant literature relating to the judicious use of safety behaviors during exposure (Craske et al., 2008, 2014).

4. Safety behaviors interfere with exposure therapy

As shown in Table 2, safety behaviors have been associated with poorer outcomes in clinical and experimental work. Specifically, research shows that exposure in which safety behaviors are encouraged are associated with poorer treatment outcome relative to exposure in which safety behaviors are systematically prevented. Several mechanisms have been offered to explain this effect, yet inhibitory learning theory proposes additional pathways through which safety behaviors may be deleterious. Evidence for the hypothesized detrimental processes associated with safety behaviors during exposure are discussed next.

[2] "Negative expectancies," as defined in the inhibitory learning literature, are consistent with "cognitive distortions" (i.e., irrational beliefs; Burns, 1989) emphasized in cognitive approaches to understanding emotional problems.

5. Traditional arguments for why safety behaviors interfere with exposure

5.1. Safety behaviors cause misattributions of safety

Acknowledging the apparent failure for anxious patients to improve from naturalistic disconfirmation of fearful beliefs (e.g., a patient fails to overcome panic disorder despite experiencing 25 non-lethal panic attacks), Salkovskis (1991) considered the undermining effect of safety behaviors. In his *misattribution of safety hypothesis*, Salkovskis proposed that anxious individuals whose feared catastrophes did not occur in the context of performing safety behaviors concluded not that the feared situation was in fact safe, but that the situation was instead a *near miss.* In other words, patients credited safe outcomes to their safety behaviors rather than recognizing their feared outcomes are irrational and/or tolerable. Only two studies have directly assessed outcome attributions in relation to safety behaviors and extinction learning, both supporting this hypothesis.

Benzodiazepines are often prescribed to treat panic disorder because they swiftly reduce physiological arousal (Wu, Wang, Katz, & Farley, 2013). Yet research shows that patients who attribute improvement to medications rather than to their ability to manage physiological discomfort are at increased risk of relapse (e.g., Biondi & Picardi, 2003). Powers et al. (2008) tested attributional effects on return of fear following 30 min of exposure. Undergraduate participants endorsing elevated claustrophobic fear received either a waitlist condition, a placebo therapy condition, or one of three pill (inactive vitamin C tablet) conditions: one group was told the pill was a sedative that would make exposure easier, another group was told the pill was a stimulant that would make exposure more difficult, and the third group was told that the pill was a placebo that would not affect exposure's difficulty. Ratings of claustrophobic cognitions, peak behavioral approach task (BAT; i.e., timed claustrophobia chamber trial) fear, and perceived coping self-efficacy (i.e., "confidence in being able to remain in control of your actions while in the chamber") were obtained at pretreatment, posttreatment, and 1-week follow-up. Results showed that participants in the sedative pill condition demonstrated return of fear at follow-up (medium effect size [ES], but participants in the other exposure conditions did not. Furthermore, the negative effects of sedative pill attributions were mediated by reduced coping self-efficacy (large ES). These findings suggest that attributing successful exposure outcomes to external factors (e.g., medication aids) rather than to internal factors (e.g., coping efficacy) interferes with long-term fear extinction. However, this study was limited by its use of a nonclinical sample and lack of idiographic attribution data.

In another study, Telch and Plasencia (2010) experimentally manipulated safety behavior use in a sample of spider-fearful undergraduates. Participants received either measurement only (control condition), exposure without use of safety aids (exposure only condition), exposure using a safety aid that prevented feared spider outcomes (threat disconfirmation blocked condition), or exposure using a safety aid that did not prevent feared spider outcomes (threat disconfirmation not blocked condition). For the threat disconfirmation blocked condition, experimenters positioned a transparent box over the spider so that the spider was visible, but trapped during the exposure. For the threat disconfirmation not blocked condition, the experimenter positioned the same box between the participant and the spider so that the spider could move in any direction except directly toward the participant. At posttreatment, the exposure only condition reported significantly less fear while interacting with a spider than did the threat disconfirmation blocked condition, which was not significantly different from the waitlist control group. This study, however, was limited by its brief exposure period (six 3-minute trials), single session design, and analogue sample.

The most important limitation of the Telch and Plasencia (2010) study, however, is the experimenters' assumption that the threat belief

Table 2
Summarized safety behavior findings in relation to theorized exposure mechanisms.

Study	Fear domain	*N*	Safety behaviors examined	Findings	Relevant theories
Clinical treatment studies					
Beesdo-Baum et al. (2012)	GAD	56	Idiosyncratic worry control strategies (overt and covert)	Residual safety behaviors following treatment associated with poorer long-term outcome	–
Chu et al. (2015)	OCD	43	Idiosyncratic rituals, escape, avoidance/procrastination	Safety behaviors associated with lower anxiety during exposure, but greater long-term anxiety and avoidance	–
de Silva and Rachman (1984)	Agoraphobia	18	Escape	Escape did not interfere with exposure	–
Garcia-Palacios and Botella (2003)	Social anxiety	1	Idiosyncratic safety behaviors	Eliminating safety behaviors enhanced outcomes	–
Hedtke, Kendall, and Tiwari (2009)	Youth anxiety disorders	87	Idiosyncratic safety behaviors (e.g., rituals)	Safety behaviors (but not coping) associated with higher posttreatment symptoms	–
Helbig-Lang et al. (2014)	Panic with agoraphobia	268	Idiosyncratic panic-related safety behaviors (e.g., relaxation, escape)	Safety behaviors during exposure (but not at baseline) associated with poorer outcomes	–
Kim (2005)	Social anxiety	45	Idiosyncratic (self-focused attention)	Eliminating safety behaviors enhanced outcomes	–
McManus, Sacadura, and Clark (2008)	Social anxiety	40	Idiosyncratic (e.g., self-focused attention and impression management)	Safety behaviors interfered with exposure	Disrupts information processing[Y]
Morgan and Raffle (1999)	Social anxiety	30	Idiosyncratic (safety behaviors not specified)	Eliminating safety behaviors enhanced outcomes	–
Plasencia, Alden, and Taylor (2011)	Social anxiety	93	Idiosyncratic (avoidance and impression management)	Safety behaviors interfered with exposure	Disrupts information processing[Y] Promotes distress tolerance[N]
Rachman, Craske, Tallman, and Solyon (1986)	Agoraphobia	14	Escape	Escape did not interfere with exposure	Disrupts information processing[N] Promotes self-efficacy*
Salkovskis, Clark, Hackmann, Wells, and Gelder (1999)	Panic with agoraphobia	18	Idiosyncratic safety behaviors	Eliminating safety behaviors enhanced outcomes	–
Salkovskis et al. (2006)	Panic with agoraphobia	16	Idiosyncratic safety behaviors	Eliminating safety behaviors enhanced outcomes	–
Sartory, Master, and Rachman (1989)	Agoraphobia	19	Presence of therapist	Traveling toward safety associated with better outcomes relative to traveling with “safe person” (i.e., therapist)	Facilitates approach* Contextualizes IL*
Taylor and Alden (2010)	Social anxiety	80[n]	Idiosyncratic safety behaviors (e.g., impression management)	Eliminating safety behaviors enhanced outcomes	–
Taylor and Alden (2011)	Social anxiety	80[n]	Idiosyncratic safety behaviors (e.g., impression management)	Safety behaviors associated with poorer perceived and actual social performance; however, safety behaviors promoted social approach	Facilitates approach[Y]
Wells et al. (1995)	Social anxiety	8	Idiosyncratic safety behaviors (e.g., avoidance, arousal reduction, anxiety reduction)	Eliminating safety behaviors enhanced outcomes	–
Wells and Papageorgiou (1998)	Social anxiety	40	Self-focused attention	Reducing self-focus enhanced outcomes	Disrupts information processing[Y]
Experiments utilizing analogue or unselected samples					
Bandura, Jeffrey, and Wright (1974)	Snake fear	36	Therapist modeling, physically restricting snake	Moderate and high levels of safety aid use associated with greater outcome than low safety aid use	Facilitates approach[Y] Promotes self-efficacy[Y]
Deacon and Maack (2008)	Contamination fear	56	Prevent contamination (e.g., avoid touching money), wash, carry safety aids	Safety behaviors generated threat beliefs and hypervigilance toward potential contaminants	Disrupts information processing[Y]
Deacon, Sy, Lickel, and Nelson (2010)	Claustrophobic fear	33	Open window, speak with experimenter through 2-way radio, leave door unlatched	Safety behaviors interfered with exposure	Promotes self-efficacy[N] Tolerability and acceptability[N]
Deacon et al. (2012)	Anxiety sensitivity	58	Diaphragmatic breathing	Diaphragmatic breathing did not enhance exposure	Tolerability and acceptability[N]
Deacon et al. (2013)	Anxiety sensitivity	120	Diaphragmatic breathing, long rest periods	Safety behaviors interfered with exposure	Tolerability and acceptability[N] Obstructs expectancy violation[Y] Contextualizes IL[Y] Promotes distress tolerance[N]
Engelhard, van Uijen, van Seters, and Velu (2015)	–	101	Escape	Safety behaviors increased threat perceptions	Disrupts information processing[Y]
Gangemi, Mancini, and van den Hout (2012)	Contamination, social anxiety, and anxiety sensitivity	101	Scripted disorder-relevant safety behaviors (e.g., wash, avoid eye contact)	Safety behaviors increased threat perceptions	Disrupts information processing[Y]
Goetz and Lee (2015)	Contamination fear	67	Preventative (use tissue barrier) or restorative safety behaviors (use sanitizer)	Preventative safety behaviors but not restorative safety behaviors interfered with exposure	Facilitates approach[Y] Contextualizes IL*

(continued on next page)

Table 2 (*continued*)

Study	Fear domain	*N*	Safety behaviors examined	Findings	Relevant theories
Experiments utilizing analogue or unselected samples					
Hood, Antony, Koerner, and Monson (2010)	Snake fear	43	Any from list of stipulated safety behaviors (e.g., wear protective clothing, mental neutralization)	Findings overall comparable; although safety behaviors was associated with swifter approach, safety behaviors were associated with decreased approach at follow-up	Facilitates approach* Promotes self-efficacy[N] Contextualizes IL[N]
Kamphuis and Telch (2000)	Claustrophobic fear	58	Cognitive load task	Cognitive load task interfered with exposure	Disrupts information processing[Y] Contextualizes IL[Y]
Levy and Radomsky (2014)	Contamination fear	70	Wearing latex gloves	Exposure with safety gear rated as more acceptable and associated with greater behavioral approach	Facilitates approach[Y] Tolerability and acceptability[Y]
Levy, Senn, and Radomsky (2014)	–	526	Unspecified ("strategies or tools that might make you feel safer or less anxious")	Exposure therapy vignettes advocating the judicious use of safety behaviors rated as more acceptable than exposure with immediate response prevention	Tolerability and acceptability[Y]
Lovibond, Mitchell, Minard, Brady, and Menzies (2009)	–	65	Escape	Safety behaviors interfered with extinction	Obstructs expectancy violation[Y]
Milosevic and Radomsky (2008)	Snake fear	62	Wear any specified safety gear (e.g., gloves, goggles, beekeeper hat)	Safety gear did not interfere with exposure	Facilitates approach*
Milosevic and Radomsky (2013a)	Spider fear	126	Use at least one specified safety gear (e.g., gloves, goggles, beekeeper hat)	Safety gear facilitated approach behavior, but was associated with less perceived control	Facilitates approach* Self-efficacy[N] Tolerability and acceptability*
Milosevic and Radomsky (2013b)	–	469	Unspecified ("strategies or tools that might make you feel safer or less anxious")	Exposure therapy vignettes advocating the judicious use of safety behaviors rated as more acceptable than exposure with immediate response prevention	Tolerability and acceptability[Y]
Olatunji, Etzel, Tomarken, Ciesielski, and Deacon (2011)	Health anxiety	60	Prevent contamination, wash, body checking, check (ask doctors, search online)	Safety behaviors generated threat beliefs and health anxiety symptoms	Disrupts information processing[Y]
Powers, Smits, and Telch (2004)	Claustrophobic fear	72	Open window, unlock chamber door, speak with experimenter	Safety aid availability and use interfered with exposure	–
Powers, Smits, Whitley, Bystritsky, and Telch (2008)	Claustrophobic fear	95	Take pill assumed to "make exposure easier"	External (pill) safety misattributions associated with poorer long-term outcomes	Misattribution of safety[Y] Contextualizes IL[Y]
Rachman, Shafran, Radomsky, and Zysk (2011)	Contamination fear	80	Decontaminate with wet wipe after each contact with contaminated stimulus	Safety behavior did not interfere with exposure; safety behavior associated with feeling less contaminated, but also return of fear at follow-up	Contextualizes IL[Y]
Rentz, Powers, Smits, Cougle, and Telch (2003)	Dog fear	82	Idiosyncratic safety behaviors (e.g., relaxation, scan for exits, avoid eye contact)	Safety behaviors facilitated approach during traditional imaginal exposure, but impeded approach during in-vivo exposure or "active imaginal exposure"	Facilitates approach*
Sloan and Telch (2002)	Claustrophobic fear	46	Open window, stand near exit, check door was unlocked, speak with experimenter	Safety behaviors interfered with exposure	Disrupts information processing[Y] Contextualizes IL[Y]
Sy, Dixon, Lickel, Nelson, and Deacon (2011)	Claustrophobic fear	58	Open window, speak with experimenter through 2-way radio, leave door unlatched	Safety aid availability but not use interfered with exposure	Misattribution of safety[N] Disrupts information processing[Y] Contextualizes IL[N]
Thorpe and Salkovskis (1998)	Spider fear	79	Exposure stimulus (spider) placed near exit door	Spider fearful individuals show biased attention to paired danger/safety stimuli relative to danger stimuli alone	Disrupts information processing[Y]
van den Hout, Engelhard, Toffolo, and van Uijen (2011)	Contamination fear	44	Unlimited cleansing after touching contaminant	Safety behavior associated with decreased sense of contamination	Promotes self-efficacy* Contextualizes IL[N]
van den Hout, Reininghaus, van der Stap, and Engelhard (2012)	Contamination fear	48	Cleanse after touching contaminant	Safety behavior associated with decreased sense of contamination	Promotes self-efficacy* Contextualizes IL[N]
van den Hout et al. (2014)	Contamination, social anxiety, and anxiety sensitivity		Scripted disorder-relevant safety behaviors (e.g., wash, avoid eye contact)	Safety behaviors increased threat perceptions	Disrupts information processing[Y]
van Uijen and Toffolo (2015)	Responsibility for harm	90	Checking	Safety behaviors increase threat perceptions	Disrupts information processing[Y]
Wolitzky and Telch (2009)	Fear of heights	88	–	Exposure with fear antagonistic actions associated with greater outcomes	Obstructs expectancy violation*

Note. IL = inhibitory learning; [Y] = study supported theory; [N] = study did not support theory; * = study provided mixed evidence for theory; [n] = Taylor and Alden (2010, 2011) used the identical sample for two research studies published separately.

to be disconfirmed was related to the spider's forward movements (i.e., experimenters assumed belief testing *was* effectively blocked by the plastic box trapping the spider, but not blocked by the plastic box preventing forward movement). Because spider phobic beliefs extend beyond spider movements (e.g., "I will become crazy because of anxiety;" Arntz, Lavy, van den Berg, & van Rijsoort, 1993), misattributional effects may have been suboptimally assessed in this study. Similarly, it is possible that participants in the threat disconfirmation not blocked condition were blocked from belief testing. That is, by preventing the spider's forward movement, certain feared outcomes (e.g., "the spider will come towards me;" Arntz et al., 1993) may have in fact been prevented.

Not all research supports the misattribution of safety hypothesis. For example, Sy et al. (2011) compared effects of safety behavior availability, utilization, and prevention on exposure therapy for claustrophobia. They found that safety attributions were unrelated to safety behavior use or exposure outcomes. However, use of a nonclinical sample limits these findings. Furthermore, institutional review board requirements that participants be reminded they could stop the experiment at any time may have influenced danger and safety perceptions. Clearly, more research directly testing Salkovskis's (1991) hypothesis is needed.

5.2. Safety behaviors disrupt therapeutic information processing

Information processing theories, which emphasize attention and memory biases in the context of anxiety-provoking stimuli (e.g., Richards, Benson, Donnelly, & Hadwin, 2014), implicate three additional ways safety behaviors may detract from exposure's effectiveness. Specifically, safety behaviors (a) insinuate that a safe situation is actually dangerous, (b) increase (mis)perception of threatening stimuli, and (c) direct cognitive resources away disconfirmatory information. Each of these possibilities is discussed next.[3]

5.2.1. Safety behaviors communicate threat

The most obvious source of distress for people with anxiety disorders is a fear-evoking stimulus (i.e., a "trigger"). Yet research shows that anxious individuals also look to their own behavioral and emotional responses for information regarding the dangerousness of a situation (e.g., Arntz, Rauner, & van den Hout, 1995; Gangemi et al., 2012).

Engelhard et al. (2015) tested whether avoidance responses (pushing a button to cancel an impending shock) generate threat beliefs (i.e., shock expectancies, danger inferences) related to objectively safe stimuli (lights that are never paired with shock) using a four-stage paradigm. In the Pavlovian acquisition phase, visual stimulus A (danger signal) was paired with shock, but visual stimuli B and C (objectively safe stimuli) were not. The safety behavior acquisition phase afforded undergraduate participants with the opportunity to press a button during stimulus A presentation trials in order to cancel impending shock (safety behavior). In the third phase, the researchers executed a "safety behavior shift," in that the experimental—but not control—participants were allowed to press the shock cancellation button during C (safe) stimulus trials as well. During the final test phase, the A, B, and C stimuli were each presented once, followed by a delay during which participants provided ratings of shock expectancy on a 0 ("certain no shock") to 100 ("certain shock") scale. Results showed that shock expectancy was higher for safe stimulus C in the experimental group than in the control group (large ES), suggesting that danger is inferred from safety behaviors even in the absence of negative consequences.

Deacon and Maack (2008) also found that safety behaviors (a) bias information processing and (b) signal danger. In their study, undergraduates with low and high levels of contamination fear engaged in safety behaviors (e.g., disinfecting hands after touching a door handle) daily for one week. After one week, both groups demonstrated significantly greater threat estimates, contamination fear, and avoidance (small to medium ESs). Similar results using Deacon and Maack's paradigm were obtained in the context of health anxiety (Olatunji et al., 2011) and checking-related doubts (van Uijen & Toffolo, 2015; large ES). However, the use of nonclinical samples, reliance on self-report, and imperfect control of safety behaviors during the study intervals limit the generalizability of findings to models of clinical anxiety.

Gangemi et al. (2012) offered further support for the hypothesis that safety behaviors communicate threat. OCD, panic disorder, and social anxiety patients, and healthy participants were presented with four vignettes. Each disorder-relevant script was experimentally manipulated to vary in objective threat (dangerous versus safe situation) and safety behavior use (used or not used). As predicted, patients inferred danger from safety behavior use in both the objective danger and safety information conditions, whereas non-anxious participants inferred danger on the basis of objective danger information only. van den Hout et al. (2014) replicated this study, further indicating that safety behaviors maintain and exacerbate fear-related concerns. Although these studies relied on self-report responses to hypothetical vignettes, they suggest that incorporating safety behaviors into exposure therapy leads to overestimating the dangerousness of exposure tasks.

Sy et al. (2011) also found that ratings of perceived danger inferred from the availability of safety aids were associated with poorer treatment outcomes among claustrophobic participants conducting a 30-minute exposure (medium to large ESs). Together, research indicates that inferring danger from safety behaviors is a transdiagnostic process. Additional information processing theory (discussed later) suggests that anxious individuals who infer danger from safety behaviors may not maximize inhibitory learning as a consequence.

5.2.2. Safety behaviors increase perception of threatening stimuli

Hypervigilance refers to a state of perceptive readiness that facilitates detection of dangerous stimuli. Selective attention, on the other hand, is the tendency for anxious individuals to quickly engage with—and latently disengage from—threatening stimuli (e.g., Posner, 2012). Despite their evolutionary advantages, in the absence of actual danger, hypervigilance and selective attention may maintain threat overestimates by making threat cues more noticeable and accessible in memory (Saunders, 2013). Specifically, scanning for dangers prompts individuals to become more aware of threatening stimuli and notice more feared triggers (or misperceive ambiguous stimuli as feared triggers) as a result (Lavy & van den Hout, 1994; Schmidt, Lerew, & Trakowski, 1997).

Consistent with the theory that safety behaviors dysregulate information processing and consequently increase perception of feared stimuli, Stewart, Westra, Thompson, and Conrad (2000) found that panic disorder patients who took benzodiazepines on an "as needed" basis (considered a form of safety behavior; Westra & Stewart, 1998) showed selective attention toward feared somatic cues (small to medium ESs). Additionally, participants in Deacon and Maack's (2008) study reported heightened efforts to detect potential contaminants in their environment when performing contamination-related safety behaviors. As a consequence of seemingly omnipresent dangers, an anxious individual's memory becomes biased, such that distressing situations become more salient and accessible (see Coles & Heimberg, 2002, for a review). In the context of exposure therapy, safety behaviors may therefore be counterproductive if they promote attentional biases and inflate the threat estimates that fuel pathological anxiety.

5.2.3. Safety behaviors direct attentional resources away from disconfirmatory information

A third way safety behaviors may interfere with therapeutic information processing during exposure relates to the direction of cognitive resources away from disconfirmatory information (e.g., the non-

[3] Readers are reminded that the effects of distraction on exposure are discussed elsewhere (see Parrish et al., 2008; Podină et al., 2013). There is currently no outright consensus regarding the effects of distraction on short- and long-term exposure outcomes.

occurrence of feared catastrophes, evidence of one's own ability to effectively cope with distress). That is, if attentional resources are biased toward monitoring for threat and/or executing a safety behavior, a patient may be unable to process evidence that his or her fears are exaggerated (e.g., Richards et al., 2014; Wells & Papageorgiou, 1998).

Self-focused attention—the tendency for social anxiety patients to focus on internal stimuli (e.g., thoughts, blushing) during social situations—has been conceptualized as a form of safety behavior because it is performed to prevent negative evaluation and embarrassment (Clark & Wells, 1995). A unique aspect of self-focused attention is that by shifting attention inward, patients compromise social performance (e.g., appropriate eye contact; Spurr & Stopa, 2002). To test this theory, Wells and Papageorgiou (1998) examined the effects of modifying attention during exposure. Socially anxious patients conducted one session each of exposure according to one of two conditions: continue exposure until anxiety subsided or conduct exposure while focusing on whether their fearful beliefs were accurate. Results showed that testing beliefs instead of self-monitoring during exposure produced greater decrements in fearful beliefs. However, this study was limited by small sample size ($N = 8$).

Kamphuis and Telch (2000) later examined the independent and joint effects of attentional redirection with threat disconfirmation on fear reduction during exposure. In their study, claustrophobic undergraduates completed six 5-minute trials in an exposure chamber under one of four conditions. (a) exposure with guided threat reappraisal (focus on an identified core threat belief and test the extent to which the feared outcome occurs), (b) exposure with cognitive load distraction task (i.e., press a button each time three consecutive even or odd numbers were played through headphones), (c) exposure with guided threat reappraisal and cognitive load distraction task condition, and (d) control (neither attentional focus nor cognitive load). The greatest change at post-test and 2-week follow-up occurred in the first condition. Further, this condition had the lowest return of fear at follow-up. Although the cognitive load task used in this study was not ecologically valid, this study offered preliminary evidence that safety behaviors hamper exposure therapy by depleting available cognitive resources.

In a follow-up study, Sloan and Telch (2002) compared the effects of threat-related safety behaviors, guided threat reappraisal, and no attention instructions on the efficacy of a 30-minute claustrophobia exposure. Some participants were given the option to use a number of safety strategies (e.g., open a small window in the chamber to allow fresh air) during each trial, others were instructed to focus on evidence that challenged their threat beliefs (guided threat reappraisal), and some received neither of these instructions (control). Consistent with the hypothesis that safety behaviors interfere with exposure by reducing cognitive resources available to process disconfirmatory information, participants in the guided threat reappraisal condition evidenced the greatest changes in threat estimates at follow-up.

6. Inhibitory learning theories of how safety behaviors interfere with exposure

Inhibitory learning theory suggests additional mechanisms through which safety behaviors might interfere with exposure. Specifically, safety behaviors may prevent the (a) maximal violation of negative expectancies, (b) generalization of inhibitory associations across contexts, and (c) development of distress tolerance critical for exposure therapy. Each of these possibilities is discussed next.

6.1. Safety behaviors prevent maximal violation of negative expectancies

Inhibitory learning theory posits that for extinction learning to occur, negative expectancies (i.e., predictions regarding the likelihood and/or severity of a feared outcome) must be violated (Bouton, 2004; Rescorla & Wagner, 1972). It is this "mismatch" between negative expectancies and actual outcomes that allows for the generation of inhibitory associations. Research shows that the greater the expectancy violation (i.e., the more "surprise" during extinction), the greater the inhibitory learning (Baker et al., 2010). It follows that actions attenuating the discrepancy between anticipated and actual exposure outcomes temper the inhibitory learning possible. Accordingly, if safety behaviors minimize the perceived probability or cost of anticipated outcomes, exposure's efficacy may be compromised.

Consider a woman with OCD with unwanted, intrusive urges to push her husband off a cliff while hiking. If she engages in safety behaviors while conducting a hiking exposure that minimize the chance she will act violently (e.g., keep her hands in her pockets), she is unlikely to be truly surprised by her husband's safety at the end of the hike. Consequently, her inhibitory association (e.g., "violent thoughts do not result in violent acts") may be inferior to her excitatory association (e.g., "having violent thoughts means I will commit violent acts") after exposure.

Another important consideration is that expectancies may only be violated to the extent that fear cues are salient during exposure; that is, remaining engaged with exposure stimuli is critical for new learning. If safety behaviors diminish engagement with feared stimuli, a patient may not recognize that negative expectancies were violated; consequently, strong inhibitory associations may not be formed (Waters & Kershaw, 2015). This is one possible reason safety behaviors are deleterious in exposure therapy: they reduce the awareness of the nonoccurrence of feared outcomes (i.e., they prevent generation of inhibitory associations[4]).

In a fear conditioning paradigm, Lovibond et al. (2009) used three distinct visual stimuli (A, B, and C) over the course of four study phases. In the conditioning phase, the A and C stimuli were followed by shock, yet stimulus B was not, resulting in the formation of $A = danger$, $B = safety$, and $C = danger$ associations. In the avoidance acquisition phase, participants could press a button after presentation of stimulus A (analogous to a safety behavior) to cancel the shock that would otherwise follow. In the extinction phase, stimulus C was presented six times, never once followed by shock; one group of participants could press the button after seeing stimulus C, but the other group could not. In the final test phase, participants provided shock expectancy ratings on a 0 ("certain no shock") to 100 ("certain shock") scale after individual presentations of stimuli A, B, and C. Results showed that stimulus C shock expectancies were higher for the group that could perform safety behavior during the stimulus C extinction phase. The authors concluded that extinction was compromised because safety behaviors "cancel the expectancy of [aversive outcomes] generated by the target excitatory stimulus, such that there is no discrepancy between what is expected (nothing) and what actually occurs (nothing)," thereby precluding durable fear extinction (Lovibond et al., 2009, p. 716).

In the only randomized-controlled trial explicitly guided by inhibitory learning theory, Deacon et al. (2013) examined the efficacy of three forms of interoceptive exposure (IE) for anxiety sensitivity (i.e., the fear of anxious arousal). Participants in the *standard IE* condition received IE trials delivered in three 60-second trials of hyperventilation each followed by 10 diaphragmatic breaths (i.e., arousal-reduction breathing techniques that may function as safety behaviors; Arch & Craske, 2011) while thinking "relax" during a prolonged rest period. Participants in the *basic IE* condition received three 60-second hyperventilation trials without diaphragmatic breathing and prolonged rest between trials. Participants in the *intensive IE* condition continued hyperventilation trials without rest or diaphragmatic breathing until their threat likelihood expectancies fell to 5%. An expressive writing control condition was also included. Intensive IE resulted in the most improvement in cognitive, behavioral, and affective measures at post-treatment and 1-week follow-up (large ES). Moreover, the superior

[4] Here, inhibitory learning theory is consistent with information processing models (e.g., Sloan & Telch, 2002).

efficacy of intensive IE over standard IE on was fully mediated by greater improvement in negative expectancies and self-efficacy in fear toleration during exposure trials (medium ES). While this study included a large sample, multi-method outcome assessment, direct assessment of inhibitory learning processes, and ecologically valid homework assignments, the authors did not assess covert safety behaviors during the study, nor did they use a treatment-seeking sample.

6.2. Safety behaviors prevent generalization of inhibitory learning

From the lens of inhibitory learning theory, safety behaviors also interfere with exposure by contextualizing inhibitory associations. That is, safety behaviors may qualify extinction learning because inhibitory associations are not optimally accessible or retrievable across novel contexts. Not only is fear extinction less generalizable than fear conditioning, but research shows that extinction is especially vulnerable to context changes (e.g., Bouton, 2002, 2004). The goal of exposure therapy is to provide patients with unconditional learned safety; therefore, if safety behaviors restrict inhibitory learning to certain contexts, they should be discouraged.

Inhibitory learning-oriented research on exposure is limited; however, studies examining return of fear provide indirect support for the notion that safety behaviors contextualize inhibitory learning. For instance, Deacon et al. (2013) reported that only 10% of participants receiving intensive IE in their study experienced decreased fear toleration during a 1-week follow-up BAT, whereas two thirds of participants implementing physiological and mental relaxation between trials experienced worsening of peak fear, fear toleration, and negative expectancies. Poorer follow-up BAT performance suggests that concurrent safety behaviors contextualized inhibitory associations formed during treatment. Other researchers also reported safety behavior-related return of fear in the context of claustrophobia (Kamphuis & Telch, 2000; Powers et al., 2004; Sloan & Telch, 2002) and contamination (Goetz & Lee, 2015; Rachman et al., 2011). In contrast, some studies have found that participants who performed safety behaviors during exposure maintained their gains (Hood et al., 2010) and generalized extinction to novel BATs (van den Hout et al., 2012). Although the notion that safety behaviors contextualize inhibitory learning is consistent with learning theories (e.g., Bouton, 2002; Craske et al., 2008), this assertion is tenuous and deserves additional research.

6.3. Safety behaviors prevent the development of distress tolerance

Theory suggests that safety behaviors interfere with long term exposure outcomes by preventing anxious patients from learning that distress is safe and tolerable (Craske et al., 2014). However, there is a dearth of empirical evidence speaking to this possibility. Distress tolerance refers to one's ability to experience and withstand unpleasant psychological states (e.g., Simons & Gaher, 2005). Yet the effectiveness of exposure therapy is contingent upon a patient's willingness to engage in exercises that temporarily *elicit* aversive psychological states (Abramowitz & Arch, 2014; Arch & Craske, 2011). Furthermore, augmenting distress tolerance reduces the risk that patients will return to avoidance, escape, and other behaviors that maintain anxiety or promote relapse. It is therefore critical that patients learn that distress, anxious arousal, and uncertainty are not only inevitable life experiences, but are also tolerable.[5]

Several treatment manuals prescribe arousal reduction strategies (e.g., diaphragmatic breathing; Barlow & Craske, 2007), yet such maneuvers may not promote distress tolerance. In fact, some argue that framing anxiety as an experience patients must neutralize communicates that anxiety is dangerous, intolerable, or indicative of treatment failure (Abramowitz & Arch, 2014; Arch & Craske, 2011). Rather than promoting safety behaviors to ameliorate distress, it might be more productive to emphasize a patient's ability to conduct exposure tasks *despite* their distress. For example, instead of encouraging a patient with driving phobia who experiences a panic attack while driving to employ a safety behavior, a clinician might instead say, “wow, you're still driving even though you're experiencing intense anxiety. Great job—keep it up!” Limited evidence suggests that safety behaviors injure distress tolerance during exposures. For example, in Deacon et al.'s (2013) study, the superior efficacy of intensive IE was fully mediated by improvements in fear tolerance (medium ES).

[5] Distress tolerance is also consistent with acceptance-based models of anxiety (e.g., Hayes, Wilson, Gifford, Follette, & Strosahl, 1996).

7. Summary

In summary, theory suggests that safety behaviors interfere with exposure by promoting safety misattributions, disrupting therapeutic information processing, attenuating negative expectancy violation, contextualizing inhibitory learning, and dampening distress tolerance. Although clinical and analogue research supports the notion that safety behaviors should be eliminated during exposure, studies are methodologically limited and results are mixed. Indeed, occasional null findings lend merit to the argument that safety behaviors do not ubiquitously interfere with exposure therapy, as discussed next.

8. Safety behaviors do not necessarily interfere with exposure therapy

As mentioned, not all research supports recommendations to eliminate safety behaviors at the start of exposure (see Table 2). Rachman et al. (2008) recently proposed the “judicious use” of safety behaviors: the careful and strategic implementation of safety behaviors in the early and/or most challenging stages of treatment. Advocates of this method highlight positive consequences, such as enhanced treatment acceptability and approach behavior (e.g., Levy & Radomsky, 2014). Research on the judicious use of safety behaviors from an inhibitory learning perspective is scant, yet safety behaviors may offer inhibitory learning advantages in addition to traditionally touted benefits. Conventional and inhibitory learning justifications for incorporating safety behaviors during exposure are discussed next.

9. Traditional arguments for why safety behaviors enhance exposure

9.1. Safety behaviors enhance exposure's acceptability and tolerability

Citing high treatment refusal and dropout rates in exposure therapy, Radomsky and colleagues have called for research exploring how this treatment may be modified to enhance its tolerability and acceptability without diminishing its efficacy. Safety behavior proponents have argued that exposure might be perceived as more tolerable and acceptable if safety behaviors are strategically incorporated. That is, if patients feel safer knowing they may perform safety behaviors, they might be more willing to initiate and complete exposure therapy.

To this end, Milosevic and Radomsky (2013b) compared perceptions of exposure therapy descriptions among a CBT-naïve sample. Participants read one of four vignettes: (a) exposure therapy with a cognitive rationale with the permission of safety behaviors early in treatment but eventual fading; (b) exposure with a cognitive rationale and discouragement of safety behaviors throughout treatment, (c) exposure with a habituation rationale with the permission of safety behaviors early in treatment but eventual fading, or (d) exposure with a habituation rationale and discouragement of safety behaviors throughout treatment. Results showed that vignettes including safety behaviors early in treatment and a cognitive rationale received the highest endorsement, acceptability, and predicted adherence ratings and lower ratings of anticipated discomfort (medium to large ESs). Levy et al. (2014) replicated these findings using the same vignettes in another undergraduate sample.

Although these two studies highlight the importance of safety behavior elimination goals in treatment perceptions, they are limited by their vignette designs and use of non-treatment-seeking samples. Most exposure protocols prescribe at least one session devoted to psychoeducation, providing a persuasive treatment rationale, and motivational interviewing before initiating exposure and response prevention (e.g., Abramowitz et al., 2011; Barlow et al., 2011). Therefore, it is unclear whether brief, printed descriptions used in this study elicited valid treatment perceptions generalizable to clinical practice.

To address some of the above limitations, Levy and Radomsky (2014) examined unselected participants' responses to conducting two contamination exposures either with or without rubber gloves. Results showed that relative to the participants who were not wearing gloves, those wearing gloves during exposure found the treatment more acceptable and reported greater anticipated adherence. Furthermore, the gloved participants reported lower anxiety and completed significantly more steps during the exposures. However, because no rationale was offered regarding the use of safety aids—and unselected participants provided ratings after a single exposure session—this study cannot fully speak to whether discouraging safety behaviors in exposure therapy results in compromised treatment acceptability, adherence, or outcomes.

Not all studies demonstrate that safety behaviors enhance treatment acceptability and tolerability. Deacon et al. (2010) found no group differences between claustrophobic undergraduates randomized to exposure with or without safety behaviors on treatment acceptability, treatment aversiveness, or desire to stop treatment. Nor did Deacon and colleagues report group differences in acceptability or likability ratings between groups receiving IE with or without diaphragmatic breathing (Deacon et al., 2012, 2013). Finally, Milosevic and Radomsky (2013a) reported that spider fearful undergraduates who completed a spider exposure with or without safety gear rated interventions to be equally acceptable. Caution should be used when interpreting findings regarding treatment acceptability, however, given these studies' single-session designs and use of non-treatment-seeking samples.

9.2. Safety behaviors facilitate approach behavior

Proponents of the judicious use of safety behaviors assert that safety behaviors (a) accelerate the rate at which patients approach exposure stimuli and (b) encourage closer distance to exposure stimuli (e.g., Hood et al., 2010). Indeed, findings that safety behaviors facilitate approach counter the assumption that safety behaviors unequivocally interfere with exposure therapy.

Bandura et al. (1974) provided preliminary evidence that safety behaviors offer advantages during exposure. Snake fearful participants were randomized to exposure with low, moderate, or high "response induction aids" (e.g., gloves). Results showed that participants conducting exposure with safety aids completed more challenging steps during exposure than did participants without aids. Unfortunately, methodological limitations prevent strong conclusions regarding whether safety behaviors facilitate greater *distance* or *rate* of approach.

Milosevic and Radomsky (2008) studied snake fearful undergraduates randomized to a 45-minute exposure session with or without safety gear (e.g., gloves, goggles). Results showed that although there were no significant group differences in BAT distance at the end of treatment or at 10 minutes posttreatment, participants using safety gear more closely approached the snake during the first 15 min of the exposure. This pattern of findings was replicated by Milosevic and Radomsky (2013a) in the context of spider fear. However, although safety gear was associated with faster behavioral approach, participants conducting exposure without safety aids achieved equivalent behavioral gains by the exposure's end.

Hood et al. (2010) also examined whether changes in behavioral approach from pre- to posttreatment and follow-up differed between spider fearful undergraduates randomized to a 30-minute exposure with or without safety behaviors. They found that although participants assigned to exposure with safety behaviors approached the spider more quickly than those in the exposure only group, both groups achieved equivalent approach distance by the end of the exposure. Notably, participants who received exposure without safety behaviors maintained their gains at the 1-week follow-up assessment, whereas those who used safety behaviors evidenced *decreased* approach at follow-up. These mixed findings suggest that although safety behaviors facilitate faster approach toward feared stimuli, they are not required to complete exposures and may even result in less durable improvement.

Two studies examined safety behaviors' effects on behavioral approach in a contamination context. Levy and Radomsky (2014) showed that unselected undergraduates completed significantly more contamination BAT steps when wearing gloves during exposure compared to those not wearing gloves (large ES). Delineating safety behaviors based on function, Goetz and Lee (2015) examined the differential effects of preventative safety behaviors ("strategies used to attenuate one's emotional response to an anticipated core threat;" e.g., using a tissue as a barrier between skin and contaminants) and restorative safety behaviors ("corrective actions used to remedy a distressing situation back to a desired state and restore safety;" e.g., using hand sanitizer after each touching a contaminant). Unselected participants underwent 15 trials of touching a contaminated stimulus either using a tissue barrier (preventative safety behavior condition), using hand sanitizer after each touch (restorative safety behavior condition), or without performing safety behaviors. Results showed that the restorative safety behavior group completed more posttreatment BAT steps than the no safety behavior and preventative safety behavior groups (medium to large ESs), who did not significantly differ from each other. However, the use of unselected samples, identical BAT and treatment stimuli, and lack of follow-up assessments limit the strength of conclusions that can be drawn from these studies.

Taylor and Alden (2011) reported an interesting relationship between safety behaviors, social approach, and social performance. Although perceived and actual performance was improved among social anxiety patients conducting exposure with or without safety behaviors, comparable outcomes were explained by different psychological processes. That is, although safety behavior prevention's positive effects were mediated by reductions in anxiety sensitivity, the positive effects of safety behavior use were mediated by greater social approach behavior.

Research does not consistently demonstrate that safety behaviors facilitate approach toward feared stimuli. For example, de Silva and Rachman (1984) found no differences in posttreatment behavioral approach among agoraphobics who either escaped (i.e., left the exposure when their subjective distress reached 70%) or "endured" (i.e., remained in the exposure regardless of their distress level) during treatment. Nor did Deacon et al. (2010) report differential 1-week follow-up BAT performance in their analogue claustrophobic sample randomized to exposure with or without safety behaviors. Examining safety behavior effects on imaginal exposure, Rentz et al. (2003) found that greater safety behavior use during dog phobia exposure was associated with greater behavioral approach following traditional imaginal exposure, but poorer behavioral approach following in-vivo exposure or "active imaginal exposure" (acting out physical movements while imagining a dog). Furthermore, abstaining from safety behaviors fostered greater ultimate behavioral approach in other studies of snake fear (Milosevic & Radomsky, 2008) and spider fear (Hood et al., 2010; Milosevic & Radomsky, 2013a).

9.3. Safety behaviors promote patients' self-efficacy and sense of control

Bandura (1977, 1986) argued that one's perceived ability to successfully complete a behavior (i.e., self-efficacy) is enhanced by a sense of perceived control and personal mastery. Similarly, Bandura posited that accumulating successful experiences maximizes anxious patients' sense of mastery. Accordingly, Rachman et al. (2008) have conjectured that safety behaviors augment exposure by promoting patients' sense of mastery and self-efficacy. To test this hypothesis, Bandura et al. (1974) compared outcomes of snake phobics conducting exposure with various levels of induction aids. Findings indicated that participants using high and moderate levels of induction aids outperformed those using fewer aids on a post-exposure snake BAT. Unfortunately, perceived control and self-efficacy were not assessed; moreover, lack of follow-up prevents conclusions regarding whether safety behaviors enhance self-efficacy long-term.

Some research supports the assertion that safety behaviors enhance patients' sense of control during distressing tasks. Rachman et al. (1986) found that agoraphobic patients told that they could stop an exposure if their anxiety reached 75% had higher ratings of perceived control relative to those instructed to continue no matter their anxiety level. Additionally, van den Hout et al. (2011, 2012) found that participants conducting contamination exposures with safety behaviors (a hygienic wipe) reported greater perceived control over disgust in the first of two exposure tasks relative to those not using safety behaviors (but no group differences were found on measures of perceived contamination or danger).

Other research has failed to detect enhanced self-efficacy or perceived control as a function of safety behavior use. For example, Milosevic and Radomsky (2013a) noted that safety gear was associated with less improvement in perceived control during exposure for snake fear. Additionally, Deacon et al. (2010) reported comparable improvements in perceived control among participants randomized to exposure only or exposure plus safety behavior. Finally, Hood et al. (2010) failed to detect significant posttest or follow-up differences in spider self-efficacy as a function of safety behavior use.

10. Inhibitory learning theories of how safety behaviors enhance exposure

There is a dearth of research on the potential for safety behaviors to optimize exposure therapy through mechanisms critical to inhibitory learning theory, yet it is possible that safety behaviors optimize inhibitory learning processes. Specifically, the inclusion of safety behaviors during exposure may allow for the (a) violation of negative expectances, (b) generalization of inhibitory associations to other contexts, and (c) development of distress tolerance. These theoretical advantages of incorporating safety behaviors during exposure are discussed next.

10.1. Safety behaviors allow for the generation of nonthreat associations

It has been argued that safety behaviors stimulate patients to engage in exposure tasks they would otherwise be unwilling to attempt (van den Hout et al., 2012). From the lens of inhibitory learning, it follows that such behaviors allow for opportunities to generate nonthreat associations. In other words, safety behaviors may carry the advantage of prompting patients to conduct exposures they are hesitant to try, allowing them to violate negative expectancies.

An important consideration is that if a safety behavior attenuates the discrepancy between feared and actual consequences, then it will likely curtail exposure outcomes (Craske et al., 2014). In contrast, if a behavior directly allows for patients to test an *unrelated* expectancy, then that strategy may indeed optimize exposure. To illustrate, consider a spider phobic who fears that spiders will jump on her head and lay eggs in her hair. If this woman conducts in-vivo spider exposures exclusively when permitted to wear gloves, she would still be able to test her fearful predictions. Yet it is important to determine whether wearing gloves in this context is truly a safety behavior. That is, if gloves block the “disgusting” texture of the tarantula, but are not perceived by the patient to prevent her feared outcome or reduce associated fear, then wearing gloves may best be classified as an adaptive coping strategy (Thwaites & Freeston, 2005).

A second way safety behaviors may engender inhibitory associations is by strategically guaranteeing positive exposure outcomes. Specifically, if a feared situation (e.g., being laughed at in public) is impossible in the context of concurrent safety behaviors (e.g., pretending to read text messages to avoid social conversation), then certain inhibitory associations (e.g., “strangers do not laugh at me”) can be made. Indeed, Bandura and colleagues (1974, p. 57) noted that the “arrangement of protective conditions that reduce the likelihood of feared consequences” may expedite behavioral change. However, practical considerations limit the merit of this argument.

Occasionally, *tolerable* negative outcomes do follow exposure tasks: dogs sometimes bite. People are sometimes laughed at. As in “real life,” there are never absolute guarantees of safety during exposure. However, it has been argued elsewhere that the goal of exposure therapy is not to shield patients from danger, but help them recalibrate estimates of the likelihood and cost of feared outcomes (e.g., Abramowitz et al., 2011). The pain of a dog bite is bearable. Similarly, embarrassment is unpleasant but transient. If safety behaviors ensure artificially positive outcomes, patients may not learn that they can manage feared outcomes better than anticipated. Furthermore, research indicates that occasional aversive outcomes actually *strengthen* long-term inhibitory learning (Craske et al., 2014). Finally, shielding patients from mild and temporary negative consequences (e.g., using benzodiazepines to prevent panic attacks) may set patients up for future failures due to their unrealistic expectations in the “real world” (e.g., “I should always be able to control my anxiety”; Arch & Craske, 2011).

10.2. Safety behaviors promote generalization of inhibitory learning

It is understood that exposures should be performed in various contexts to generalize learning (e.g., Bouton, 2002, 2004); it follows that if a patient is unwilling to perform exposures in novel contexts without safety behaviors, inhibitory learning cannot generalize. Hence, safety behaviors may help generalize inhibitory learning by allowing for exposures to be conducted in diverse contexts.

Rachman et al. (2008, p. 171) suggested that “when problems are encountered in transferring the reduction of fear from the clinic to the patient's home, generalization can be facilitated by the use of safety behavior.” For example, if a patient with contamination fears will touch door handles in his apartment building without washing afterward, but is reluctant to touch mall door handles, he could be encouraged to wash his hands after touching mall door handles in exchange for becoming contaminated in a new context. In this way, safety behavior might allow for decontextualization of inhibitory associations by making novel contexts less threatening. To fully decontextualize inhibitory associations, however, exposure variations should eventually be completed without safety behaviors (Craske et al., 2014; Rachman et al., 2008).

Despite the lack of research formally testing this hypothesis, experimental studies using novel posttreatment and/or follow-up BATs do speak to this possibility. For instance, Goetz and Lee (2015) found that unselected participants who used hand sanitizer after contamination exposures evidenced greater reductions in anticipated fear toward novel contaminants relative to those who did not perform such safety behaviors (medium ES). However, interpretations should be made cautiously, as participants provided self-reported *anticipated* fear. Sy et al. (2011) also found no differences in posttreatment BAT fear regardless of safety behavior use or availability, yet these findings are limited by lack of behavioral outcome data.

10.3. Safety behaviors promote greater distress tolerance

Less clear is whether safety behaviors promote distress tolerance during exposure. According to Bandura's (1977, 1986) theory of self-efficacy, safety behaviors enable patients to endure distress-provoking exposures. Yet, if distress tolerance is conceptualized as the extent to which one withstands unpleasant internal states in the pursuit of goal-directed behavior (Simons & Gaher, 2005), safety behaviors are incompatible with inhibitory learning models. Consider a woman with postpartum OCD who fears she will molest her newborn. If she requires her husband's supervision during bath time (safety behavior), she is no longer engaging in "one-on-one time" with her infant. Rather, she has allowed obsessional fear to dictate her originally intended behavior (i.e., she is having "safe play time" instead of "individual play time" with her baby).

As previously discussed, discriminating maladaptive safety behaviors and adaptive coping strategies is critical (Thwaites & Freeston, 2005). If a maneuver helps a patient cope with anxiety, but is not perceived to prevent feared outcomes and/or minimize distress, then distress tolerance may be uninjured. However, if a patient's behavior interferes with pursuing the original action or artificially neutralizes anxiety, distress tolerance may not be augmented. The argument that safety behaviors obstruct distress tolerance by preventing the pursuit of valued actions is also consistent with acceptance-based anxiety treatments (e.g., Hayes et al., 1996).

Exposure therapy reduces anxiety long-term, yet temporary distress is an inherent part of treatment. To overcome anxiety disorders, patients must be willing to experience distress. The extant literature overlooks the relationship between safety behaviors and inhibitory models of distress tolerance; as such, conclusions here speculative. Research examining the effects of safety behavior use on distress tolerance during exposure is needed.

11. Summary

Proponents of incorporating safety behaviors into exposure highlight positive consequences such as enhanced treatment acceptability and tolerability, approach behavior, and self-efficacy. Consistent with the theory of judicious use of safety behaviors (Rachman et al., 2008), some research shows that safety behaviors are benign or beneficial during exposure. Findings, however, are inconsistent—especially at follow-up. Moreover, evidence for the advantages of safety behaviors on inhibitory learning during exposure is minimal, given the absence of inhibitory learning-guided research in this area. Given the dearth of research providing evidence for the judicious use of safety behaviors during exposure from an inhibitory learning perspective, it cannot be determined whether the systematic incorporation of safety behaviors during exposure enhances (or interferes with) inhibitory learning mechanisms hypothesized to mediate exposure's effectiveness. Therefore, although inhibitory learning models posit interesting hypotheses for how safety behaviors may enhance exposure therapy, such hypotheses require additional empirical investigation.

12. Limitations and methodological considerations

A number of limitations associated with the literature reviewed here dampen the generalizability of study findings and qualify the conclusions reached by investigators. One notable shortcoming concerns the ecological validity of how exposure was delivered in these studies. Specifically, many of the experiments discussed in this review utilized brief (3- to 30-min) exposures, whereas most exposure therapy manuals used in clinical settings recommend longer durations (e.g., 30 to 90 min; Abramowitz et al., 2011). Similarly, whereas exposure manuals prescribe 12 to 20 sessions, many experimental studies discussed here relied on single-session interventions, thereby restricting the range of potentially relevant data.

A second category of limitations pertains to the samples used in studies. Although anxiety-related processes are conceptualized as dimensional rather than categorical, justifying the use of nonclinical analogue samples in many cases (e.g., Abramowitz et al., 2014), the measurement of variables such as treatment tolerability and acceptability is not relevant for non-treatment-seeking individuals. Additionally, small sample sizes leave some studies underpowered to detect the effects of safety behaviors, be they positive or negative. We suggest that researchers conduct power analyses before beginning studies to determine the appropriate sample size needed to detect hypothesized effects (e.g., Beck, 2013; Faul, Erdfelder, Lang, & Buchner, 2007).

Issues with executing condition manipulations is a third concern among some of studies we have reviewed. Some investigations confounded the effects of safety behavior use and treatment rationale by providing inconsistent rationales across exposure conditions (e.g., Wells & Papageorgiou, 1998). Additionally, manipulations failed in some studies and others failed to account for covert safety behavior use (e.g., praying) in participants. Considering that some participants randomized to "no safety behavior" conditions nevertheless performed safety behaviors (e.g., Morgan & Raffle, 1999), and others randomized to "with safety behavior" conditions did not always utilize safety behaviors (e.g., Rachman et al., 1986), future research should measure and ensure (or statistically correct for) instruction compliance.

Inhibitory learning theory advocates assessing extinction at follow-up rather than immediately posttreatment (Craske et al., 2008). Accordingly, a fourth concern is that many studies failed to include follow-up assessments (e.g., Deacon et al., 2013) or relied on exceptionally brief follow-up periods (e.g., 10 min; Milosevic & Radomsky, 2008). Although practical constraints (e.g., financial resources) are valid considerations, lack of long-term assessment limits conclusions regarding the effect of safety behaviors during exposure. To enhance the validity and clinical utility of safety behavior research, studies including follow-up assessment at least four weeks posttreatment would be helpful (e.g., Maruish, 2004).

A final issue regards the degree to which safety behaviors are "judiciously used" in research. The judicious use of safety behaviors refers to the careful and strategic use of safety behavior applied "in a limited manner and only for a limited period, especially in the early stages of treatment" (Rachman et al., 2008, pp. 171). Several clinical treatment studies showed superior effects of safety behavior fading (see Table 2); however, most experimental studies either promoted ("yes") or prevented ("no") safety behavior use. In this sense, dichotomized "with or without" studies may be poor tests of the judicious use of safety behaviors. Future research should compare the effects of consistent safety behavior prevention (e.g., an entire course of treatment in which safety behaviors are prevented) and "judiciously used" safety behaviors (e.g., a course of treatment in which safety behaviors are used during the first third of treatment, used sparingly during the second third of treatment, and eliminated altogether during the final third of treatment). Longitudinal studies should systematically manipulate the point and rate at which judiciously used safety behaviors should be faded during exposure-based treatments.

13. Conceptual issues and future research directions

Rachman et al. (2008) stated that although safety behaviors may be useful early in treatment, they should ultimately be eliminated from patients' behavioral repertoire. Yet it is unclear what the "judicious use" of safety behaviors looks like. Which safety behaviors should be strategically implemented, and at what dose? At what point and rate should safety behaviors be incrementally eliminated? Should safety behaviors be differentially eliminated as a function of the exposure context (e.g., in-session or out-of-session)? Clearly, additional research investigating the timing and rate of safety behavior elimination would be helpful.

It is possible that a safety behavior's *function* moderates its effects on exposure. For example, some researchers highlight that although efforts to prevent feared consequences during exposure attenuate outcomes, actions that reduce distress following exposure tasks may not be detrimental (Goetz & Lee, 2015). A behavior's naturalistic relevance might also be important. Most studies reviewed above assigned participants to perform a specific behavior (e.g., Rachman et al., 2011). Considering the idiosyncratic nature of clinical safety behaviors, external validity may have been compromised in these studies. Future research should tailor manipulated behaviors to each participant to ensure that the strategies tested are, in fact, safety behaviors (i.e., actions performed to prevent feared outcomes and/or reduce associated distress; Telch & Lancaster, 2012). For example, panic disorder patients assigned to a safety behavior use condition may be asked to bring a personal item to an experimental study that they most often use to perform a safety behavior in everyday life (e.g., a water bottle, a cell phone to call a "safe person"). Research investigating the degree to which these qualities of safety behaviors influence inhibitory learning during exposure is warranted.

To date, no experimental studies addressing safety behavior use have used samples of anxious youth; however, safety behaviors were associated with poorer outcomes in clinical trials of youth with OCD (Chu et al., 2015) and anxiety disorders (Hedtke et al., 2009). Future research should examine the effects of eliminating versus incorporating safety behaviors into exposure by replicating safety behavior experiments in samples of anxious youth.

It is also possible that safety behaviors are only detrimental within certain fear domains. The majority of studies demonstrating safety behaviors' benign or positive effects were conducted in the context of specific fears; perhaps safety-seeking maneuvers are more adaptive in treatments for biologically prepared phobias (e.g., spider phobia) than other fears (e.g., social anxiety). However, other anxiety-related conditions have been largely ignored in the safety behavior literature. For example, research shows that individuals who meet diagnostic criteria for motor vehicle accident-related PTSD frequently avoid being close to other cars on the road and drive excessively below the speed limit in order to prevent another car accident and/or minimize trauma-related distress. (e.g., Clapp et al., 2011). Anecdotally, sexual and physical assault victims in our clinic have reported engaging in other safety behaviors, such as requiring the presence of a "safe person" when in public places and using alcohol and/or recreational drugs to neutralize trauma-related distress. Future research should examine the effects of safety behaviors during exposure on treatment outcome for complex anxiety conditions, such as PTSD.

The safety behavior research highlights an understudied yet critical hypothesis: do safety aids disrupt inhibitory learning, even if those safety aids are not used? Preliminary evidence suggests that fear cue-related safety aids paradoxically generate danger inferences and anxiety (Blakey & Deacon, 2015). Additionally, safety behavior availability and utilization differentially affect exposure outcomes (Sy et al., 2011). Future research should consider the unique influences of safety aids and behaviors on inhibitory learning during exposure. For example, a snake phobia treatment study might compare the effects of handling a live snake without gloves and goggles, handling a live snake while wearing gloves and goggles, and handling a live snake without wearing gloves and goggles but with gloves and goggles nearby "just in case" the patient would like to put them during the exposure. Similarly, participants conducting exposure without safety behaviors encouraged or used, with safety behaviors encouraged and used, and with safety behaviors *encouraged but not used* should be treated as distinct groups in statistical analyses.

Studies should strive for multi-method assessment incorporating behavioral, self-report, and psychophysiological (e.g., heart rate and skin conductance) measures. Additionally, studies should include long-term follow-up assessments given that some interval for consolidation is necessary for new associations to be transferred into long-term memory (Moscovitch, Antony, & Swinson, 2009). However, the ideal follow-up period is undetermined, and intervals used in previous studies are inconsistent, ranging from 10 min (Milosevic & Radomsky, 2008) to three months (Rachman et al., 1986). Accordingly, incorporating sufficient follow-up intervals (at least four weeks posttreatment; Maruish, 2004) may help explicate the long-term effects of safety behaviors on exposure outcomes. Finally, there is a need to advance beyond "horse race" comparison studies (e.g., "do or don't safety behaviors interfere with exposure?") and instead assess theoretically important mechanisms and processes (e.g., distress tolerance, self-efficacy).

14. Conclusions and clinical recommendations

Our review of the literature indicates that although safety behaviors are not unconditionally deleterious, they tend to interfere with exposure outcomes, possibly by promoting safety misattributions, preventing therapeutic information processing, or interfering with other mechanisms central to inhibitory learning theory. Therefore, clinicians are recommended to eliminate safety behaviors as quickly as anxious patients are willing, as there is not sufficient empirical support to recommend the judicious use of safety behaviors during exposure. Although the literature on safety behaviors' effects on exposure has grown since Rachman et al.' (2008) scientific call to arms, experimental research remains relatively scarce. As such, it is still the case that "attempts to deliberately use safety behavior as an adjunct of treatment are at the exploratory stage of development and a premature introduction of this component is not recommended" (Rachman et al., 2008, p. 169).

It is important to identify the contexts in which safety behaviors may be benign or beneficial. The majority of research offering support for the judicious use of safety behaviors is circumscribed to specific phobias. In contrast, safety behaviors are often labeled as harmful in other exposure contexts (e.g., social phobia) or altogether unstudied (e.g., PTSD). Interestingly, Wolitzky and Telch (2009) found that exposure with *fear antagonistic actions* (i.e., actions that are directly opposite to safety behaviors) enhanced outcomes at posttreatment and 4-week follow-up compared to exposure alone. Therefore, more research is necessary to identify the circumstances in which the judicious use of safety behaviors might be helpful long-term, if at all.

From the lens of inhibitory learning theory, it is critical that clinicians comprehensively assess a patient's negative expectancies prior to exposure. Thorough functional assessment helps a clinician understand contexts and stimuli that trigger distress, negative outcomes a patient anticipates, and safety behaviors a patient performs to prevent feared outcomes and/or alleviate associated distress (e.g., Abramowitz et al., 2011. When this conceptual model is developed, clinicians can determine the inhibitory associations that must be generated during exposure, which directly informs treatment planning. If a patient's safety behaviors limit fear extinction by attenuating the discrepancy between anticipated and actual outcomes, contextualizing safety learning, or dampening distress tolerance, exposure's effectiveness is likely to be compromised. Accordingly, clinicians should strive to eliminate this safety behavior as soon as possible.

We recommend clinicians use tact when introducing the notion of safety behavior elimination, given the importance of providing a clear rationale for exposure *plus* response prevention (e.g., Kim, 2005). Although exposure is challenging, it is important to demonstrate confidence in a patient's ability to tolerate distress. Similarly, clinicians may utilize Socratic questioning and other clinical skills to elicit internal attributions for positive exposure outcomes.

The question of "judicious use" remains: does the strategic incorporation of safety behaviors in the early stages of exposure therapy—but ultimate elimination—enhance long-term outcomes? If so, what are the mechanisms through which safety behaviors exert their beneficial effect(s)? It is clear that safety behaviors are not ubiquitously harmful, but reliable long-term benefits have yet to be demonstrated. Therefore, rather than promoting safety behaviors during treatment, clinicians are advised to maximize exposure through optimizing inhibitory learning.

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