



## The continuous vs discontinuous use of restorative safety behaviors on symptoms of contamination fear: An experimental investigation

Amy R. Goetz, Han-Joo Lee\*

University of Wisconsin-Milwaukee, 2441 E. Hartford Avenue, Milwaukee, WI 53211, United States



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### ABSTRACT

**Background and objectives:** Cognitive-behavioral theorists posit that safety behaviors (SBs) interfere with important exposure processes and should be removed from therapy. However, there is growing evidence to suggest that restorative SBs (RSB; those that allow for full confrontation with a core threat) do not adversely affect exposure outcomes, and their implementation during exposure should be further examined.

**Methods:** The current study evaluated exposure with the continuous use of RSB (E + CONT) versus discontinuation of RSB (E + DISC), in comparison to exposure with no RSB (ERP). Sixty-seven nonclinical participants completed 15 trials of exposure in which they touched a potentially contaminated stimulus with or without RSB. Behavioral approach tasks were completed at pretreatment, post-treatment, and two-week follow-up to examine changes in subjective distress and degree of behavioral approach.

**Results:** The three conditions were not different on clinical symptoms and behavioral approach at post-treatment and follow-up, indicating that the hypothesized superiority effect of E + DISC was not supported. However, ratings obtained during repeated exposure trials indicated that E + DISC evidenced greater symptom reduction following the removal of RSB.

**Limitations:** The use of a healthy undergraduate sample and standardization of the exposure procedure.

**Conclusions:** Although findings were contrary to hypotheses, these data provide added support for the benign role of RSB as compared to conventional exposure. Furthermore, the removal of RSB may lead to more favorable process outcomes during exposure. The theoretical and clinical implications of these findings are discussed, and future directions are provided.

### 1. Introduction

Safety behaviors (SBs) are “unnecessary actions taken to prevent, escape from, or reduce the severity of a perceived threat” (Telch & Lancaster, 2012, p. 315). A functional distinction has been made between *preventive* SBs (PSB; i.e., used to reduce the intensity of contact with a core threat) and *restorative* SBs (RSB; i.e., used to restore safety from the occurrence of a core threat; Goetz & Lee, 2015; Helbig-Lang & Petermann, 2010). Furthermore, research has examined their differential impact (Goetz & Lee, 2015) and demonstrated that exposure + RSB evidenced greater improvement on outcome measures in comparison to exposure + PSB and an exposure-only control condition (Goetz & Lee, 2015). A recent review additionally examined studies that incorporated PSB and RSB into exposure (Goetz, Davine, Siwiec, & Lee, 2016). Just under half of the exposure + PSB studies ( $n = 23$ ) resulted in negative outcomes whereas all investigations using RSB ( $n = 9$ ) demonstrated a benign or facilitative effect. Indeed, the efficacy of RSB has been reported across a wide array of presenting concerns, treatment

protocols, and diverse samples (Abramowitz & Moore, 2007; de Silva & Rachman, 1984; Goetz & Lee, 2015; Goetz et al., 2016; Lickel, Carruthers, Dixon, & Deacon, 2013; Rachman, Craske, Tallman, & Solyom, 1986; Rachman, Shafran, Radomsky, & Zysk, 2011; van den Hout, van Pol, & Peters, 2001; van den Hout, Kindt, Weiland, & Peters, 2002; van den Hout, Engelhard, Toffolo, & van Uijen, 2011; van den Hout, Reininghaus, van der Stap, & Engelhard, 2012; van Uijen, van den Hout, Schiphorst, Knol, & Engelhard, 2017). Together, the absence of negative findings for RSB is consistent across these investigations, and the nature of exposure + RSB warrants further consideration.

It is likely that PSB undermines specific mechanisms of exposure. Because PSB is used prior to and during confrontation with a core threat, a dampened and restricted range of fear and arousal may be experienced during exposure. PSB may additionally prevent the generation of new, nonthreatening associative learning (e.g., learning that a contaminant is not as dangerous as previously expected) by precluding, for example, the violation of negative expectancies as well as hindering distress tolerance. Therefore, the use of PSB may reduce the

\* Corresponding author. Department of Psychology, University of Wisconsin-Milwaukee, PO Box 413, University of Wisconsin-Milwaukee, Milwaukee, WI 53201, United States.  
E-mail address: [leehj@uwm.edu](mailto:leehj@uwm.edu) (H.-J. Lee).

potency of exposure trials, instill a more restrictive exposure context, and promote safety misattributions (Craske et al., 2008; Goetz et al., 2016).

Alternatively, RSB may provide an opportunity to form inhibitory associations. Because RSB allows for complete confrontation of a core threat, it may provide a more diversified and variable context for new learning (Kircanski et al., 2012; Lang & Craske, 2000). Furthermore, the discontinuation of RSB may amplify the threatening context, encourage temporary distress, and lead to shifts in internal psychological experience thereby enhancing learning and retrieval of the nonthreatening association. Whereas the continued use of RSB is likely to remove the opportunity to adequately disconfirm anticipated negative consequences (Goetz & Lee, 2015), the results of a recent study found that exposure only and exposure + RSB resulted in similar reductions in threat beliefs (van Uijen et al., 2017). This claim notwithstanding, their removal may provide the opportunity to observe the benign consequences of confrontation with the core threat.

Approaches to enhance treatment for anxiety-based disorders and obsessive-compulsive disorder are important, and utilization of RSB is promising; however, questions remain regarding how best to incorporate them (Blakey & Abramowitz, 2016). Despite the need for further experimental examination on their ‘judicious use,’ the results of several studies are encouraging although they have largely utilized PSB and did not incorporate follow-up or generalizability assessments (e.g., Deacon, Sy, Lickel, & Nelson, 2010; Grayson, Foa, & Steketee, 1986; Levy & Radomsky, 2016).<sup>1</sup> Examination of RSB use and later removal is important given their previously established benign/beneficial impact, and the inclusion of follow-up and generalizability assessments provide important data to examine the durable effects of RSB across time and context.

The current investigation examined the differential impact of continuous versus discontinued use of RSB compared to exposure-only. Participants were randomly assigned to one of three groups during a single session of exposure: (a) no RSB (ERP), (b) continuous use of RSB (E + CONT), or (c) discontinuation of RSB (E + DISC). Participants completed behavioral approach tasks (BAT) at pretreatment, post-treatment, and two-week follow-up as well as on an independent set of contaminants (generalizability test). Hypotheses were based on our guiding framework that E + DISC would allow for optimized inhibitory learning and therefore outperform ERP and E + CONT. Although tenets of inhibitory learning or other cognitive theories were not directly tested, it was expected that the greater procedural and emotional variability inherent within E + DISC would lead to improved outcomes. As well, the withdrawal of RSB would permit disconfirmatory learning of the benign consequences of exposure; the continued use of RSB may block this opportunity although recent research runs counter to this claim (van Uijen et al., 2017). Furthermore, it was assumed that the withdrawal of RSB would amplify the threatening context and likely impact distress ratings. First, it was hypothesized that E + DISC would demonstrate greater reductions in subjective distress (fear, disgust, illness likelihood, and illness severity) and behavioral avoidance at post-treatment, follow-up, and generalizability assessment, compared to ERP and E + CONT. Second, it was predicted that E + CONT and E + DISC would show similar patterns of overall symptom reduction prior to the removal of RSB. Following RSB removal and relative to E + DISC, it was hypothesized that E + CONT would show greater overall reductions in peak distress (fear, disgust) and improved confidence due to the lack of increased threat salience.

<sup>1</sup> The term ‘fading’ is frequently applied to describe the use and subsequent removal of SBs. These studies, however, did not encompass a *gradual* removal of aids. Given that the current study did not examine gradual removal of SBs, this construct is referred to as ‘discontinuation,’ ‘withdrawal,’ or ‘removal.’

## 2. Method

### 2.1. Participants

Participants were from a large, mid-western university who met at least one of two criteria: (a) OCI-R Washing subscale  $\geq 1$  or (b) Overall mean fear on pretreatment BAT  $\geq 20$ . Close to 80% of the current sample ( $n = 53$ ) met both criteria. Of note, after having met eligibility criteria, fourteen participants were excluded due to Trial 1 peak fear  $< 10$ . Participants had a mean age of 20.90 years ( $SD = 4.67$ ) and were predominately female (83.6%). They reported a variety of ethnic and racial characteristics: 47.8% White, 17.9% Black, 7.5% Asian, and 26.8% as multiracial. Approximately 18% of participants self-identified as Hispanic.

### 2.2. Exposure tasks

#### 2.2.1. Ideographic exposure stimulus selection

Participants were presented with three contaminated stimuli that have been used in previous work (Cogle, Wolitzky-Taylor, Lee, & Telch, 2007; Najmi, Tobin, & Amir, 2012): (a) dirty toilet, (b) soiled laundry, and (c) mixture of dirt, dead insects, and dog hair. Participants were asked to verbally rate their anticipated fear in response to each of the three items on a scale from 0 “No fear at all” to 100 “Extreme fear.” The stimulus with the highest ratings served as the exposure stimulus and was used for assessment and exposure tasks. If all items were rated similarly, the participant was asked to identify the stimulus that provoked the most discomfort.

#### 2.2.2. Pretreatment, post-treatment, and follow-up BAT

The BAT was composed of 16-steps that increased in contact intensity with the target exposure stimulus. BAT steps ranged from “touch with one finger” to “touch with both hands, and then lick one hand.” In each step, the participant was asked to touch the stimulus and then verbally rate their current level of fear and disgust on 0–100 scales. Participants additionally rated the extent to which they feared the likelihood of contracting an illness from 0 “Not at all likely” to 100 “Very likely-illness certain” and the perceived severity of the acquired illness from 0 “Not ill at all” to 100 “Extremely ill.” The experimenter then recorded these values. The final hierarchical step that the participant completed on the pretreatment BAT served as the exposure step and was the sole behavior used for exposure trials. The BAT was terminated once the participant could no longer complete a hierarchical step. The pretreatment, post-treatment, and follow-up BATs provided the primary outcome indices: fear, disgust, illness likelihood, illness severity, and behavioral approach (i.e., total steps completed).

#### 2.2.3. Exposure condition

Participants were randomly assigned to one of three groups: (a) ERP, (b) E + CONT, or (c) E + DISC. At the onset of each exposure trial, participants first rated their estimated level of confidence (i.e., “Estimate your confidence in being able to reduce your fear to a manageable level while touching the object”) for touching the stimulus on a 0 “No confidence” to 100 “Extremely confident” scale. This single item was adapted and modified from a measure of coping self-efficacy (Valentiner, Telch, Petrucci, & Bolte, 1996). They were instructed to touch the target exposure stimulus with the target exposure step across 15 repeated trials. During the trials, participants touched the stimulus for 20-sec and rated their peak fear and disgust. Following the 20-sec of direct contact with the contaminant, participants in E + CONT and E + DISC were permitted to use RSBs.

Because it was important for those in E + DISC to experience a potent dose of exposure with and without RSB, a two-fold approach was used for discontinuation of RSB. As it was important to ensure that all participants received additional instructions to standardize timing and delivery, following a 50% reduction in Trial 1 peak fear (e.g., Levy &

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