



Contents lists available at ScienceDirect

# Journal of Behavior Therapy and Experimental Psychiatry

journal homepage: [www.elsevier.com/locate/jbtep](http://www.elsevier.com/locate/jbtep)

## The effects of preventive and restorative safety behaviors on a single-session of exposure therapy for contamination fear



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### ARTICLE INFO

#### Article history:

Received 12 June 2014

Received in revised form

8 October 2014

Accepted 8 October 2014

Available online 18 October 2014

#### Keywords:

Safety behaviors

Contamination fear

Disgust

Exposure therapy

Obsessive-compulsive disorder

### ABSTRACT

**Background and objectives:** Recent research suggests that safety behaviors (SB) may not preclude treatment gains in exposure-based therapy for obsessive-compulsive disorder. However, it is relatively unknown *what* specific types of SBs may be detrimental to the therapeutic process, with some arguing that SBs be classified based on their function. The current study sought to examine the extent to which different SBs enhanced or weakened symptoms of contamination fear during a single session of exposure.

**Methods:** Sixty-seven non-clinical students were randomly assigned to one of three conditions: (1) exposure with no SBs (NSB), (2) exposure with preventive SBs (PSB), or (3) exposure with restorative SBs (RSB).

**Results:** Among the primary outcome measures, greater reductions in fear and behavioral avoidance were found for RSB in comparison to PSB, and the gains made by RSB were generalizable to other sources of potential contamination. Furthermore, RSB resulted in more rapid reductions in fear and disgust across repeated exposure trials.

**Limitations:** Limitations include the use of a nonclinical student sample.

**Conclusions:** Overall, the current study suggests that RSB may be beneficial as an adjunct to therapy whereas PSB are potentially detrimental. Results of the study are discussed in terms of exposure theories and the treatment of anxiety disorders.

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### 1. Introduction

Given the sizable number of individuals with obsessive-compulsive disorder (OCD) who refrain from therapy or experience overwhelming distress during exposure treatment (Franklin, Abramowitz, Kozak, Levitt, & Foa, 2000; Kessler et al., 2001; Stanley & Turner, 1995), researchers have sought methods that aid in boosting client retention and acceptability. Furthermore, augmenting exposure to include safety behaviors (SBs) has received some empirical support. Although the entrenched view, and one of the most utilized techniques by cognitive-behavior therapists (Hipol & Deacon, 2012) has been to drop SBs in the context of therapy, growing evidence suggests that SBs may not interfere with cognitive change or fear reduction, prompting Rachman, Radomsky, and Shafran (2008) to call for “a reconsideration” of their use (p. 163).

Benign and beneficial effects of SBs have been demonstrated within snake and spider phobias (Hood, Antony, Koerner, & Monson, 2010; Milosevic & Radomsky, 2008, 2013), agoraphobia (De Silva & Rachman, 1984; Rachman, Craske, Tallman, & Solyom, 1986), claustrophobia (Sy, Dixon, Lickel, Nelson, & Deacon, 2011) and contamination fear (Rachman, Shafran, Radomsky, & Zysk, 2011; van den Hout, Engelhard, Toffolo, & van Uijen, 2011). However, a number of investigations have also found detrimental outcomes for SBs (Deacon & Maack, 2008; Olatunji, Etzel, Tomarken, Ciesielski, & Deacon, 2011; Powers, Smits, & Telch, 2004; Sloan & Telch, 2002; Wells et al., 1995). One reason for these inconsistent findings is that the function of SBs is poorly understood. SBs may include a number of highly idiosyncratic behaviors and mental strategies dependent upon the anxiety disorder. To illustrate, SBs in OCD may include escape, avoidance, mental neutralizing, and overt compulsive rituals. Therefore, it may be informative to classify SBs based on their functional (i.e., preventive or restorative) value (Thwaites & Freeston, 2005). Rachman and colleagues (Rachman, 1976; Rachman & Hodgson, 1980) first implicated the preventive-restorative distinction in the confines of compulsive checking and washing, and Telch and Lancaster (p. 315; 2012) define SBs as

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“unnecessary actions taken to prevent, escape from, or reduce the severity of a perceived threat.” Notably, researchers have not yet examined preventive and restorative SBs, and their associated outcomes.

SBs are typically employed by individuals to prevent the occurrence of a core threat or to restore safety from its occurrence *within a specific threat-potentiating context*. It is important to consider the immediate effect of SBs on the core threat in the current context, rather than their anticipated impact on feared long-term outcomes. *Preventive SBs* are strategies used to attenuate one’s emotional response to an anticipated core threat; they may reduce the strength or intensity of engagement with an experience or situation (e.g., avoiding public restrooms for fear of contamination; Helbig-Lang & Petermann, 2010). In contrast, *restorative SBs* are corrective actions used to “remedy” a distressing situation back to a desired state and restore safety from the occurrence of the core threat (e.g., hand-sanitizer is used to restore cleanliness after fully contacting germs; Helbig-Lang & Petermann, 2010).

Taken together, it is important to determine the functional nature of SBs in reference to the immediate threatening context rather than anticipatory long-term outcomes given that SBs are used to remedy or prevent immediate threat. In line with Rachman (1985), one might argue that *all* SBs are ultimately preventive given they are perceived to prevent future negative outcomes, but this approach does not help us to adequately understand the threat-specific contextual function of SBs, and their impact on fear reduction. In considering this functional distinction, one must also note their time-course variation. Preventive SBs are likely performed *prior to* the occurrence of the core threat (for prevention), whereas restorative SBs are performed *following* the threat (for restoration). Addressing the functional meaning of SBs in the immediate context is expected to aid researchers in understanding how SBs impede or facilitate direct confrontation with threat over the course of exposure. In general, examining the functional significance of SBs is an important step towards furthering our knowledge of their purported mechanisms of action and how they influence processing of threat in exposure.

Two important theoretical accounts exist which may be relevant for understanding the influence of SBs in exposure therapy. Emotional processing theory implies that preventive SBs may interfere with initial fear activation (as detailed by Foa & Kozak, 1986) as individuals are unlikely to adequately engage with feared objects/situations. However, restorative SBs may allow for fear activation given contact with a situation will occur and fear will likely be activated to the same degree as exposure with no SBs. Furthermore, in inhibitory learning theory (Craske et al., 2008), the use of SBs may prevent an individual from acquiring inhibitory safety signals of the conditioned fear stimuli. Inhibitory learning suggests that the original pairing of conditioned stimulus and unconditioned stimulus during fear conditioning is not simply “erased” during extinction; instead, it remains relatively intact and a new inhibitory association is formed. In other words, during repeated exposure to a feared situation, the individual associates the feared stimulus with relative safety and learns that the fear is tolerable (Craske et al., 2008). Exposure learning is thus strengthened when one learns that the feared outcome from the initial excitatory association is less likely or severe than previously expected. From this perspective, SBs may be an obstacle for the formation of inhibitory learning, though this may be more applicable for certain SBs. Although the current study did not seek to explicitly test these theories, both aid in our conceptualization of why some SBs may be harmful vs helpful.

The current investigation used a non-clinical sample to examine the relative effects of exposure with preventive or restorative SBs, as compared to an exposure-only control condition. Although the

use of a non-clinical sample may limit the generalizability and clinical relevance of our findings, symptoms and cognitions are comparable between OCD and non-clinical samples (Abramowitz et al., 2014; Gibbs, 1996). Participants were randomly assigned to one of three groups during a single-session of exposure which consisted of repeated trials using an ideographic exposure stimulus: (1) exposure with no SBs (NSB), (2) exposure with preventive SBs (PSB), or (3) exposure with restorative SBs (RSB). Overall, our main predictions were as follows:

- (1) NSB and RSB would produce significantly greater reductions in fear, disgust, and behavioral avoidance, and more rapid decreases in fear and disgust across the repeated exposure trials, compared to PSB. RSB would produce equivalent reductions in these outcomes, compared to NSB.
- (2) Generalizability of treatment outcomes will be disrupted in PSB: fear towards other contaminants (i.e., those not used during repeated exposure trials) would not decrease as a result of exposure treatment, relative to NSB and RSB. RSB and NSB would demonstrate equivalent decreases in fear towards other contaminants.

## 2. Method

### 2.1. Participants

Sixty-seven non-clinical students at a large, mid-western university participated in the current study in exchange for course credit. The mean age of participants was 23.27 years ( $SD = 7.30$ ) and participants were predominately female ( $=71.6\%$ ). Participants had mean ages of 25.75 ( $SD = 9.59$ ), 21.96 ( $SD = 6.76$ ), and 21.75 ( $SD = 2.85$ ) for NSB, PSB, and RSB conditions, respectively. There were 17 females each in NSB and PSB, and 14 females in RSB. The overall sample reported the following ethnic and racial characteristics, with multiple selections allowed: 74.6% Caucasian, 19.4% African American, 7.5% Hispanic, 9.0% Asian or Pacific Islander, and 4.5% Native American.

### 2.2. Measures

Several self-report measures were administered to participants including the *Depression Anxiety and Stress Scale* (DASS; Lovibond & Lovibond, 1995), *Obsessive-Compulsive Inventory-Revised* (OCI-R; Foa et al., 2002), and *Disgust Propensity and Sensitivity Scale-Revised* (DPSS-R; Fergus & Valentiner, 2009). The DASS is composed of 21 items assessing state depressive, anxiety, and stress symptoms, and was utilized to index general emotional distress. The OCI-R is an 18-item measure of OCD symptoms wherein participants rate the degree to which they have been bothered by symptoms in the past month. The measure assesses six types of symptoms including: washing, checking, obsessing, mental neutralizing, ordering, and hoarding. The current study utilized the washing subscale. The DPSS-R contains 12-items assessing the tendency to respond with disgust (i.e., Disgust Propensity) and the negative impact of having experienced disgust. (i.e., Disgust Sensitivity).

### 2.3. Exposure task

#### 2.3.1. Ideographic exposure stimulus selection

Participants were presented with four contaminated exposure stimuli including: (1) a dirty toilet, (2) a basket of soiled laundry that “may or may not have been touched with bodily fluids,” (3) a mixture of dirt, dead insects, and dog hair, and (4) a dirty wastebasket. These stimuli have been used in previous work (Cogle,

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