



## Exposure plus response prevention versus exposure plus safety behaviours in reducing feelings of contamination, fear, danger and disgust. An extended replication of Rachman, Shafran, Radomsky & Zysk (2011)

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### ABSTRACT

**Background and objectives:** Safety behaviours are widely held to impede the beneficial effects of exposure, certainly in OCD. Recently, Rachman, Radomsky, Shafran, and Zysk (2011) challenged this view. Healthy volunteers repeatedly touched a contaminant in two sessions. Half of the participants did not engage in safety behaviours after touching (exposure + response prevention), while the other half did (exposure + safety behaviours, i.e., cleaning hands with a hygienic wipe). Scores of contamination, fear, danger, and disgust decreased in both sessions and the effects were not impeded by safety behaviours. Three potential artefacts were identified in the Rachman et al. study: a no-treatment control group was lacking, the stop rules for ending exposure differed between conditions, and positive expectations may have been induced in the safety behaviours group. We tried to critically replicate the main findings.

**Method:** The Rachman et al. (2011) study was replicated, with 44 volunteers but stop rules and expectations were similar between treatments, and effects were also assessed in a no-intervention control group.

**Results:** Relative to the control condition, both exposure interventions induced reliable decreases in feelings of contamination, fear, danger, and disgust. The decline followed an exponential curve with the largest gains at the first trials of each session.

**Limitations:** Findings were obtained from a non-clinical sample.

**Conclusion:** The findings attest to the robustness of the Rachman et al. findings, and challenge the notion that safety behaviours should be dismissed categorically in exposure treatments.

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### 1. Introduction

Current cognitive models of the maintenance of OCD assign a crucial role to Safety Behaviours (SBs). Fears of, for instance, contamination are held to persist because SBs, like washing, prevent disconfirmation of the irrationality of the fear (Salkovskis, 1991). In line with this contention, encouraging the patient to confront feared objects while abstaining from any SB is crucial to exposure and response prevention, the most recommended treatment for OCD (e.g., National Institute of Mental Health, 2009).

Clinically and theoretically, it seems plausible that SBs maintain OCD and other anxiety disorders, but this is an empirical issue.

Earlier studies found that if SBs remain intact during exposure, the therapeutic effects are less (Kim, 2005), while even the perceived availability of safety aids has negative effects on fear reduction (Powers, Smits, & Telch, 2004). Alternatively, experimental work on agoraphobia (Rachman, Craske, Tallman, & Solymon, 1986) and snake phobia (Milosevic & Radomsky, 2008) has shown that the availability of safety strategies during exposure therapy may have no negative effects and even increase the benefits of exposure. Building on these studies and referring to the treatment of OCD, Rachman, Shafran, Radomsky, and Zysk (2011) recently challenged the next to universal assumption that the beneficial effects of in vivo exposure on situational contamination, fear, danger, and disgust (CFDD), is impeded by SB. Out of six potential contaminants, 80 healthy volunteers each selected the object that he/she found the most contaminating. In two sessions of approximately 40 min each, separated by 2 weeks, participants touched the object 20 times (session 1) and 16 times (session 2). Half of the participants complied with the Response Prevention instruction and did not

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carry out SB after contamination, thus modelling the common practice of Exposure plus Response prevention (E + RP). Crucially, the other half was urged to engage in SB by using hygienic wipes that “are anti-bacterial and remove 99.9% of germs” (Exposure plus Safety behaviours; E + SBs). Before and after the two sessions, participants in the E + RP and E + SB groups rated their feelings of CFDD. The notion that prevention of SB is necessary for beneficial exposure effects clashed with the data. That is, regarding fear, danger, and disgust scores, both interventions were equally effective. Regarding contamination, E + SB was more effective than E + RP. Between session 1 and 2, there was a (mild and transient) return on all measures that was larger in the E + SB group.

For several reasons we decided to try and critically replicate the [Rachman et al. \(2011\)](#) study. First, although CBT, including E + RP, is the treatment-of-first-choice for OCD, recovery is rare, and there is substantial room for improvement ([Eddy, Dutra, Bradley, & Western, 2004](#)). E + RP and “behavioural experiments” in the absence of SB can be highly demanding and aversive for patients. If treatment may become more acceptable to patients by introducing SBs, that would represent important clinical progress. Given the important clinical implications, the first reason for trying to replicate [Rachman et al. \(2011\)](#) was to test the reproducibility and robustness of the data.

Second, there are alternative explanations for the findings. The central hypothesis of [Rachman et al. \(2011\)](#) is that E + RP and E + SB induce stable pre-test to post-test changes, while no hypotheses were formulated about the relative efficacy of the two treatments. However, to conclude that the treatments have any effects to begin with, changes after E + RP and E + SB should be larger than changes after merely completing the assessments. Therefore, we added a third ‘non-exposure’ condition.

In the E + SB condition, participants were told “Please clean your hands as much and as long as you like until they feel clean”. Then participants rated CFDD. In the E + RP condition, however, participants were not encouraged to continue exposure until they felt their hands were clean; the ratings were obtained after contamination. This may have created a confound. Relatively good effects of E + SB may have been due to the fact that its duration was longer and was based on this affective criterion. Therefore, we decided to use a constant duration for E + SB and E + RP.

From the laboratory protocol, which was kindly provided by [Rachman](#), it seemed that a more positive expectation may have been created in the E + SB condition. Participants were told “These wipes are cleansing, so they can be used to remove any dirtiness”. Therefore, the E + SB group knew the wipes could reduce contamination, whereas the E + RP group was not informed about potential positive effects of the intervention. We tried to create an equally positive expectation in all three groups, and examined the nature of the expectations.

Finally, we took the opportunity to make some additions and alterations. In the study of [Rachman et al. \(2011\)](#), session 1 included 20 trials and session 2 included 16 trials. To enhance the comparability of the two sessions, we included 20 trials in each.

Note that ratings of CFDD were obtained after each of the 20 + 16 = 36 trials. Understandably, [Rachman et al. \(2011\)](#) only used the first and last rating per session. As the time course of the effects might be interesting, we decided to analyse the within-session time course of E + RP and E + SB.

Broadly speaking, the aim of CBT for anxiety disorders is that patients learn that feared situations or objects are not followed by catastrophes. Exposure to all instances of a class of feared objects is typically unfeasible, and it is crucial that stimulus generalisation takes place. While the [Rachman et al. \(2011\)](#) data suggest that E + SB and E + RP reduce feelings of CFDD for the object involved in exposure, the data are silent about stimulus generalization. Note that in the protocol 6 potential contaminants are presented before the experiment. We

decided to ask participants to score each of these in terms of CFDD before session 1 and after session 2. This would allow testing whether E + SB and E + RP differ in the degree to which induced decreases in these ratings generalise to other contaminants.

Referring to the vast literature on the beneficial effects of ‘perceived control’ on fear, [Rachman et al. \(2011\)](#) argue that the deliberate introduction of SBs in exposure therapy may promote a sense of control. We took the opportunity to assess feelings of control at various time points.

In sum, an attempt was made to replicate the [Rachman et al. \(2011\)](#) study. To critically test whether the interventions had any effects above the passing of time and the assessments, a no-intervention control group was added. To rule out that the lack of differences (and superior effects of E + SB on contamination) were due to differences in the termination of E + SB and E + RP, both now had a fixed duration of 30 -s per trial. To test whether the results may have been explained by differences in induced expectations, we tried to induce a positive expectation in all three groups. Finally, we analysed the time course of E + SB and E + RP, and potential treatment-differences in generalization and perceived control. Based on [Rachman et al.](#), we expected that E + RP and E + SB would outperform the new control condition, and that both exposure conditions would result in a return of CFDD between session 1 and 2, with a larger return in the E + SB group. We also expected that the effects would survive the standardization of treatment duration and induced expectations. As to perceived control, we expected E + SB to be superior. No predictions were made about treatment differences in generalisation or the time course.

## 2. Method

### 2.1. Participants

Sixty-five student volunteers were invited to participate. During baseline measurement, each person touched 6 potentially dirty objects (cf. [Rachman et al., 2011](#)) and rated the amount of ‘contamination’ for each on a 0–100 scale (see below). An average score of 50 (‘moderate’) or more served as inclusion criterion. Nineteen persons did not meet this criterion and were excluded. One participant was excluded because she did not believe that the wipes were anti-bacterial, and one did not show up for session 2. The final analysis involved 44 participants ( $M$  age = 24.0,  $SD$  = 2.56), who were randomly assigned to one of the three groups: 15 to E + RP (12 females), 14 to E + SB (11 females), and 15 to Control (13 females). Participants were given a financial remuneration or course credit for their cooperation.

### 2.2. Procedure

The two sessions were separated by about two weeks ( $M$  = 13.8 days,  $SD$  = 1.3). In session 1, participants were given information about the study and written informed consent was obtained.

#### 2.2.1. Baseline measurement

Participants were asked to touch each of the 6 contaminating items, presented in random order, one at the time (and to rub their hands together if only one hand was used). After touching each item, they were asked to verbally rate their feelings of CFDD at that moment using a 0–100 scale, ranging from 0 (not at all) to 100 (extremely). The experimenter wrote down the scores. Before the next item was presented, participants were asked to get rid of their feelings of contamination, if they reported any, and reduce them to zero or as close to zero as possible. All participants easily complied. The item that evoked the highest level of contamination was used as the stimulus for the experimental trials.

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