

**Investigating safety behavior effectiveness in exposure therapy in the  
reduction of negative feelings: raising commitment by means of a  
contract**

**Master's thesis**

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# Investigating the Controversial Effects of Safety Behaviors in Anxiety Disorder Treatment. Exposure with Response Prevention versus Exposure plus Safety Behaviors and the Role of Commitment to Continue

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Abstract

**Background and objectives:** Traditionally the practice of safety behaviors by clients in in vivo exposure has widely been regarded as impeding treatment. This view has been challenged by Rachman, Radomsky, Shafran and Zysk (2011). Healthy participants repeatedly touched a contaminant in two sessions, in which half of the participants engaged in safety behavior (cleaning hands) while the other half did not. It was found that scores of contamination, fear, danger and disgust decreased in both sessions, and the effects were not impeded by safety behavior. For contamination, safety behaviors even had beneficial effects. This finding was critically replicated by Van den Hout, Engelhard, Toffolo and Van Uijen (2011), who obtained the same results. The current paper explicated on those findings by proposing 'commitment to continue' as a possible underlying condition, which could determine whether safety behaviors have harmful or helpful effects.

**Method:** The Van den Hout et al. (2011) study was replicated with 48 participants. As an additional variable, high or low commitment was implemented by means of verbal emphasis as well as the signing of a contract. A group undergoing exposure with response prevention was added.

**Results:** For contamination, safety behavior plus commitment was superior to mere exposure. Safety behaviors without commitment fell in between. The effects were mainly due to a fast drop for safety behavior plus commitment in the beginning. Towards the end of the trials, groups dropped alike. Significant effects, but no group differences, were found for fear, danger and disgust.

**Limitations:** Findings were obtained from a non-clinical sample and no double blind was used.

**Conclusion:** This study was able to confirm the previous finding that safety behaviors are not always harmful, and may even have beneficial effects. Commitment seems to have an influence, at least for contamination, but the hypothesis that commitment is the determining factor for harmfulness vs. helpfulness of SB's could not be sustained. Clearly, more research in this area is needed.

## 1. Introduction

As often stated in papers on anxiety and fear, anxiety disorders have the highest overall prevalence rate of all psychiatric disorders – 18.1% for 12-month rates, and 28.8% for lifetime rates (Olatunji, Cisler & Deacon; 2010). Anxiety disorders constitute the most common diagnoses in mental health care settings (Kessler, Chiu, Demler & Walters; 2005), are shown to consistently lower quality of life and have an alarmingly high co-morbidity rate of >70% with other disorders (Olatunji, Cisler & Tolin; 2010). It is thus vital that considerable attention is put into the most effective treatment of these often pervasive and paralyzing disorders.

A central pillar of such effective treatment addresses safety behavior (SB) exercised by the client. SBs come into play as following: it is assumed that fear, in line with the behavioral learning theory of conditioning, is learned through the aversive conditioning of an unconditional fearful stimulus (US) to an originally neutral stimulus, which is henceforth referred to as the conditioned stimulus (CS). For example, 'biting' (US) might be associated with 'dogs' (CS) or 'illness' (US) with 'dirty objects' (CS). As a behavioral result, the person takes care to avoid the CS. This is where SBs make their appearance, for in order to avoid the feared outcome of confronting the CS, a person executes a neutralizing behavior to counter-effect the threatening aspect of the situation. As Salkovskis (1991, p. 6) puts it: "safety behavior is defined as overt or covert avoidance of feared outcomes that is carried out within a specific situation." For instance, the person may at all times painstakingly keep a 10-meter distance between him/her and any dog, or wash his/her hands compulsively after touching any dirty object. This way the person avoids an immediate surge in anxiety, yet fails to disconfirm the irrational fear of the conditioned stimuli.

For this reason it is not unreasonable that traditionally the practice of safety behaviors by clients in vivo exposure has widely been regarded by behavioral psychologists as impeding treatment. It is reasoned that while SBs have a calming effect on the client, they effectively prevent disconfirmation of the client's fears and thus undermine the effect of in vivo exposure. This reasoning forms the foundation behind the traditional Exposure + Response Prevention method (ERP) (Wells, Clark, Salkovskis, Ludgate, Hackmann & Gelder, 1995). However, recent researches have challenged this "next to universal assumption" (van den Hout, Engelhard, Toffolo & van Uijen, 2011, p. 364) and shed an alternative light on the use of safety behaviors in therapy. For instance, Rachman, Radomsky & Shafran (2008) proposed that judicious use of SBs may actually have a therapeutic effect, especially in early stages of treatment where SBs may act as a threshold lowering factor for hesitant clients and so facilitate the therapeutic process. Taking the unacceptably high refusal and dropout rates of

ERP into account (Clark, 2004) this hypothesis is well worth delving into.

This is exactly what Rachman, Shafran, Zadomsky & Zysk (2011) did. In their experiment, 80 healthy student volunteers were randomly divided in two groups. Both groups were asked to repeatedly touch a contaminant over the course of two sessions, and report their feelings of contamination, fear, danger, and disgust on a scale from 0 to 100 (referred to as the CFDD-scale). As the independent variable, one group did not engage in SBs after touching (ERP) whereas the other half would clean their hands after each trial (exposure + SB). The research found that the group permitted to execute safety behavior during exposures achieved similar drops in anxiety when compared to a control group who underwent ERP treatment. The follow-up session after 2 weeks showed that the drop achieved in the SB-group was as steady as that in the control group, contrary to popular belief. These findings have been critically replicated by van den Hout et al. (2011), who addressed several weaknesses in the original experiment such as the lacking of a no-treatment control group, the differing stop rules between conditions and unplanned positive expectations induced in the safety behaviors group. However, even after correcting for these points their research showed that the beneficial effects of exposure to contaminants were not hampered by SBs, thus reiterating the findings of Rachman et al.

Such findings argue directly against an unconditional rejection of all SBs in therapy, but in the same sense they do not argue for an unconditional acceptance of SBs either. Mixed results cloud a simple yes or no judgment, and it seems that what constitutes *judicious* use of SBs is where the crux of the issue lies: under which circumstances are SBs beneficiary to treatment? This paper aims at providing a starting point for answering that question by introducing an extra variable into the equation of safety behavior therapy: the explicit increased commitment of the participant engaging in the therapy. It is hypothesized in this paper that the addition of commitment to repeat exposure trials after a trial in which SB were carried out changes the participant's perception of the SB – instead of an escape route preventing the disconfirmation of fears, the SB changes into a mandatory, irrational part of the exposure therapy. Participants may indulge in SBs after each trial, but at the same time realize that after performing said SB they will have to continue with yet another trial, thus rendering the effect of the SB superfluous. As a consequence the SB may no longer serve its purpose of avoidance, and participants will only continue using the SB simply because they were told to do so, which is hypothesized to translate into a more effective exposure treatment. Additionally, the presence of extra commitment by the participant might also serve to decrease drop-out rates, which in the field of such an anxiety arousing therapy as CBT would be a very welcome therapeutic device. In order to critically test this notion, the experiment executed by van den Hout et al. (2011) was repeated in a slightly different format. In addition to the independent variable of allowed safety behaviors (SB+) versus

response prevention (SB-), an extra variable has been introduced into this research: that of the contract. The commitment contract is set up to specifically stress the importance of finishing all the trials, and its content is strengthened by verbal iteration during the procedure as well as the signature of the participant (C+). In order to ensure that it is the actual content of the contract influencing the participant and not merely the act of signing it, a control condition was added which also included a contract, but one explicitly calling attention to the voluntariness of the participant (C-). Combined with SB+ or SB-, 3 relevant conditions were thus formed; SB+C+, SB+C- and SB-C+. Furthermore, this replication excluded a second session. Also, post-test measures were analyzed as well as trial-20 measures, as opposed to only trial-20 measures in van den Hout et al. Finally, as the anti-bacterial swipes used as SBs in the previous experiment occasionally lacked credibility, it was decided to instead opt for a liquid disinfectant.

In accordance with aforementioned reasoning the first hypothesis to be tested was that increased commitment combined with mandatory SBs will operate at least as effectively as commitment without SBs in terms of reducing post-test negative feelings, and will be more effective than allowed SBs minus the commitment. Secondly, not only may one expect a significant drop in post-test scores, but more effective exposure therapy should also be reflected in a quicker –non-linear– drop *during* the trials. For this reason in-between measurements were compared between the 3 conditions, with results expected to be contingent with those of the first hypothesis – the highest drop for the SB+ C+ condition, which is equal to or bigger than the SB- C+ condition and finally followed by the SB+ C- condition.

Thirdly, it was wondered whether generalization effects take place. As posed by van den Hout et al., “exposure to all instances of a class of feared objects is typically unfeasible, and it is crucial that stimulus generalization takes place.” In the Pre-test 6 contaminants were at first presented randomly to the participant, in order to continue the trials with the contaminant perceived as the dirtiest. In the Post-test all 6 contaminants were presented again, allowing assessment of generalization effects. While the research of van den Hout et al. did not find a significant generalization effect, this might be attributed to considerably low overall CFDD scores. For this research, care was taken to increase perceived dirtiness in the hopes of evoking a significant emotional response for all contaminants. Once again, the results of generalization were expected to be contingent with those of the previous hypotheses.

Fourthly and finally a variable of perceived control was included in the research. Perceived control is the degree to which participants feel they exercise control over their emotional reactions, which participants were asked to rank twice on a 0 to 100 score for each emotion on the DCFD-scale: once after the first trial and once after the last. In accordance with general reasoning of exposure therapy, perceived control rates should increase in the Post-test where participants subjectively feel like they have more control after having gone through 20 trials. It also stands to reason that participants experience higher control when allowed to exercise the SB. It is therefore expected that higher scores of control correlate with the SB+ conditions.

## 2. Methods

### 2.1. Participants

The sample of 48 Participants (*mean age 23,98; SD 6,21*) consisted of student volunteers from the University of Utrecht. 31 were female. Participants were given a choice between payment and course credit for their participation. Initially, 62 students were invited to participate. Participants with a score of less than 50 on contamination at the pre-test (see below) were excluded from the study (n=10). Furthermore, 2 participants did not complete the study and another 2 participants were excluded because they did not believe in the effectiveness of the disinfectant.

### 2.2. Procedure

One 45-minute session was held with each participant, consisting of the introductory sequence (including signing of the contract), the baseline measurement, the experimental trials, the generalization and finally the debriefing.

#### 2.2.1. Introduction & contract

After welcoming the participant, the procedure was explained to the participant verbally. In line with the concordant condition, obligation to continue or freedom to stop was stressed. For the Contract– condition, it was explained that participation was voluntary and completion of the experiment was not required, as the data could be used in any case; this was emphasized both verbally and in the following contract. For the Contract+ condition, it was stressed that although participation was voluntary, the data could not be used when the

experiment would be terminated early, and that as of this reason the participant was asked to do his absolute best to complete the experiment. This was also emphasized both verbally and contractually. Subsequently informed consent was obtained from the participant. The informed consent sheet included a paragraph featuring the following texts, version A being included in the contract+ condition and version B in the contract- condition:

#### A) “Importance completion

*Participation in the experiment is voluntary. It is for this experiment however of great importance that participants do not end the experiment prematurely, as the data will otherwise be unusable for the researchers. By lending his/her consent to the experiment, the participant thus declares to perform his/her utmost best to finish the series of 20 trials.”*

#### B) “Voluntariness

*The participant is completely free in deciding whether or not to continue with the experiment. If the experiment is experienced as unpleasant or annoying, the participant can quit at any moment. Finishing the experiment is not necessary for the usability of the data. By lending his/her consent to the experiment, the participant declares to know that it is voluntary, and that participant is authorized to quit the trials.”*

#### 2.2.2. Baseline measurement

Participants were then presented with the 6 objects in a random order and were asked to touch them and rate their feelings of CFDD (see 2.3.1). In order to increase perceived dirtiness, the experimenter wore rubber gloves while handling the objects. Neither rubber gloves nor soap were offered to the participant. Following the baseline measurement the object with the highest contamination-rating was selected for usage in the experimental trials, with a minimum required contamination score of 50.

#### 2.2.3. Experimental trials

After obtaining expectancy-scores participants were presented with the chosen object. Firstly, participants were asked to report their expected decline in CFDD-emotions (see 2.5.2). Following this, the participant was allowed to commence with the first trial: he/she was asked to touch the object and report their feelings of CFDD on the 0-100 scale (see 2.5.1). In the two conditions allowing for safety behavior, disinfectant was offered after each presentation and participants were asked to rub their hands with it for 30 sec (see 2.3.2). In the condition not allowing for safety behavior, participants were asked to wait for 30 sec. After this, all participants were asked to report their feelings of CFDD. This procedure was repeated 20 times. Finally, after trial 1 and trial 20, perceived control ratings were obtained from participants (see 2.5.3).

#### 2.2.4. Generalization

After the last trial, participants were asked to reduce any persisting feelings of CFDD. Then the 6 contaminants were presented again in the same order as in the pre-test, and participants were asked to touch them and rate their feelings of CFDD without being allowed to use the soap. Finally, 3 manipulation checks were carried out. The first one entailed perceived effectiveness of the contract; participants were asked to answer the following question on a scale from 1 (not at all) to 5 (extremely): *‘The contract I had to sign had a substantial effect on my decision to finish/stop with the experiment.’* The second question was to assess whether participants were considering quitting the experiment at any point during the trials (but continued despite their hesitation): *‘I considered quitting the experiment.’* This question was answered on the same 1 – 5 scale.

The final manipulation check was to ensure that participants believed in the effectiveness of the soap: *‘I had the feeling that my hands were cleaner after using the soap.’* This question was only asked in the SB+ condition, and if answered in the negative the participant’s data set was excluded from the total analysis (N=2). After answering these questions, the participant was told the experiment was over.

#### 2.2.5. Debriefing

Subsequently, participants were debriefed verbally and by letter.

### 2.3. Materials

#### 2.3.1. Objects

In accordance with van den Hout and colleagues, a variety of 6 different ‘contaminants’ (dirty objects) were used:

1) *Shoe*. The sole of the participants’ own shoes, which the participants were

asked to rub three times.

- 2) *Money*. A stained and ripped five Euro bill and some old coins in a plastic bag.
- 3) *Garbage*. A small, old looking garbage can filled with (safe) collected garbage: food wrappers, used coffee cups, straws, tissues and a small empty bottle. To increase dirtiness, a wet tissue was temporarily added to the contents. Also, the opening of the can was rubbed in with a touch of honey.
- 4) *Phone*. An old, dusty, dirty looking phone, whose dial-numbers were also rubbed in with a small amount of honey to make it slightly sticky.
- 5) *Culture sample*. A 50 ml Test tube containing water mixed with make-up to provide a non-transparent brown color. The test tube label read "PATH 194, 01.09.08", and it was contained in a small zipped bag labeled "Biohazard".
- 6) *Lab specimen*. A small biohazard zip bag containing a surgical glove, a disposable oral thermometer, open grimly looking Band-Aid, a 2 ml micro-tube containing a drop of hand sanitizer, a small piece of ripped rolled-up gauze and a cotton stick.

### 2.3.2. Soap

A 500 ml bottle with dispenser of an antibacterial disinfectant with the brand name 'Sterilium' was used as 'disinfectant'. The bottle actually contained only a small amount of the disinfectant (just enough for the solution to remain a blue color and a distinctive odor) which was highly diluted with water, to prevent participants' hands from drying out.

### 2.3.3 Software

For randomization of contaminants, presenting order and condition-assignment, the website <http://www.randomizer.org> was used. To analyze the data, the software: 'Statistical Package for the Social Sciences' SPSS © version 17 by IBM was used.

### 2.4. Design

There were three experimental conditions:

1. **SB + Contract +** (participants were committed to finish the experiment, with soap usage)
2. **SB + Contract -** (participants were under no pressure to finish the experiment, with soap usage)
3. **SB - Contract +** (participants were committed to finish the experiment, no soap usage)

### 2.5. Measures

#### 2.5.1 Feelings

To measure the amount of intensity of feelings the CFDD scale was used, which measures contamination, fear (of contamination), disgust and danger on a scale from 0 to 100. Using contamination as an example, it was explained to each participant that 0 equaled no feelings of contamination whatsoever, whereas 100 equaled the maximum amount of contamination the participant could feel. By comparison, 50 equaled a decent amount of contamination, but manageable nonetheless. In order to subsequently gauge the emotions during Pre-test and Post-test, the following question was continually asked right after touching each object: '*How much contamination/danger/fear of contamination/disgust do you feel now (on a scale from 0-100)?*' The same question was asked right after each touch during the trials, with the addition that it was asked again after a 30-second interval during which the participant either washed their hands (SB+) or waited (SB-).

#### 2.5.2. Perceived control

Degree of perceived control was measured with the question: '*How much control do you feel over your feelings of contamination/fear of contamination/danger/disgust on a scale from 0-100?*' This question was asked twice: the first time after the first trial, and secondly after the twentieth trial, in order to assess whether participants' perceived feelings of control underwent a change during the course of 20 trials.

## 3. Results

### 3.1 Pre-post changes of CFDD

Pre-post changes were evaluated twice, with two different moments in time as post-measurement : between pre-test and post-test and between pretest and trial 20-pre-measurement, with 8 3x2 split plot ANOVA's, for all CFDD separately. In all ANOVA's, condition (SB+C+, SB+C-, SB-C+) was the between-group factor and time (pretest vs. posttest) the within-group factor. An overall reduction in scores, as well as a difference in reduction between conditions were expected. It was hypothesized that the decrease in scores would be greater or equal for the SB+C+ compared to the SB-C+ condition and that the decrease for the SB+C- condition would be smaller compared to the other two conditions. Additionally, it was of interest whether the results would differ contingent on the use of either posttest or trial 20 as post-rating. The results showed significant main effects for time for all CFDD and both post-measures, indicating an overall reduction in scores, irrespective of condition, as expected: For Pre-test – trial20 (see also figure 1): Disgust:  $F(1, 45) = 92.33, p < .001, \eta^2 = .672$ . Contamination:  $F(1,45) = 151.15, p < .001, \eta^2 = .771$ . Fear:  $F(1,45) = 65.89, p < .001, \eta^2 = .594$ . Danger:  $F(1,45) = 35.10, p < .001, \eta^2 = .438$ . For pretest – posttest (see also figure 2): Disgust:  $F(1,45) = 76.37, p < .001, \eta^2 = .629$ . Contamination:  $F(1,45) = 144.36, p < .001, \eta^2 = .762$ . Fear:  $F(1,45) = 63.00, p < .001, \eta^2 = .583$ . Danger:  $F(1,45) = 33.31, p < .001, \eta^2 = .425$ .

However, in contrast to the hypothesis, there were no differences between conditions for the decrease of scores, for three out of four CFDD measures. The exception was contamination, as indicated by an interaction effect between time and condition. For pretest – trial20:  $F(2,45) = 3.30, p = .046, \eta^2 = .128$ . For pretest – posttest:  $F(2,45) = .95, p = .021, \eta^2 = .157$ . All other time x condition interactions  $F_s(2,45), p_s > .076$ . To examine which conditions differed for contamination, pair-wise comparisons were made for pre - post and pre - trial20 difference scores, using t-tests. The results showed that the decrease for SB+C+ was superior to SB-C+: For pre - trial20:  $t(30) = -2.289, p = 0.29, d = .81$ . For pre - post:  $t(30) = -2.861, p = .12, d = .95$ . The decrease for SB+C- lay in between SB+C+ and SB-C+ and did not differ from either condition. For pre - trial20: SB+C- - SB-C+  $t(24.4) = -1.312, p = .202, d = .46$ , SB+C- - SB-C+ (equal variances not assumed)  $t(25.81) = -1.445, p = .160, d = .51$ . For pre - post: SB+C- - SB-C+  $t(30) = -1.656, p = .108, d = .59$  SB+C- - SB-C+  $t(30) = -1.356, p = .185, d = .48$ .

Lastly, there were no significant main effects for condition. All  $F_s(2,45) < .596, p_s > .556$ .

### 3.2 Time course of effects

To evaluate the time course of effects per condition, quadratic trends were analyzed with a 3x22 MANOVA with condition as between-subject -factor (SB+C-, SB+C+, SB-C-) and time as within subject factor (pretest, trial 1-20, posttest) was carried out for CFDD separately. The quadratic trends for time were significant for alle measures :Disgust:  $F(1,45) = 47.469, p < .001, \eta^2 = .513$  Contamination:  $F(1,45) = 70.061, p < .001, \eta^2 = .609$ . Fear  $F(1,45) = 34.758, p < .001, \eta^2 = .436$ . Danger:  $F(1,45) = 29.452, p < .001, \eta^2 = .396$ , indicating a non-linear reduction in scores (see also figure 3). However, there was only one significant time x condition interaction, namely for contamination, indicating differences in the time course of score-reduction between conditions:  $F(2,45) = 3.211, p = .050, \eta^2 = .125$ . All other time x condition interactions:  $F_s(2,45) < 2.554, p_s > .084$ . In separate trend analyses, the quadratic trend was significant for each condition, indicating that score-reduction in all conditions follow a nonlinear curve. SB+C+:  $F(1,45) = 31.620, p < .001, \eta^2 = .678$ . SB+C-:  $F(1,45) = 29.238, p < .001, \eta^2 = .661$ . SB-C+:  $F(1,45) = 13.078, p = .003, \eta^2 = .466$ . To investigate in which condition scores dropped fastest, two separate ANOVAS (trial 1-10, 10-20) with the same design as used for the pre - post changes of effects were carried out. The results of the trial1-10-ANOVA mirrored the overall pre - post effects. There was a main effect for time  $F(1,45) = 59.431, p < .001, \eta^2 = .569$  and a significant interaction effect  $F(2,45) = 3.505, p = .038, \eta^2 = .135$  and the conditions differed from each other in the same way: SB+C- - SB+C+ (equal variances not assumed)  $t(24.9) = -1.378, p = .180, d = .49$ . SB+C- - SB-C+  $t(30) = -1.436, p = .161, d = .85$ . SB+C+ - SB-C+:  $t(30) = -2.402, p = .023, d = .51$ . However, for the second ANOVA, covering trial 10-20, the results were different. Scores dropped significantly, indicated by a main effect of time,  $F(1,45) = 12.533, p = .001, \eta^2 = .218$ , but there was no longer a difference between conditions, indicated by no significant interaction effect between time x condition  $F(2,45) = .920, p = .406$ . Taken together, the effects indicated that scores dropped faster for the SB+C+ condition than for the SB-C+ condition during the first half of the intervention, with the SB+C- condition laying in between, but all conditions decreased to the same degree in the second half.

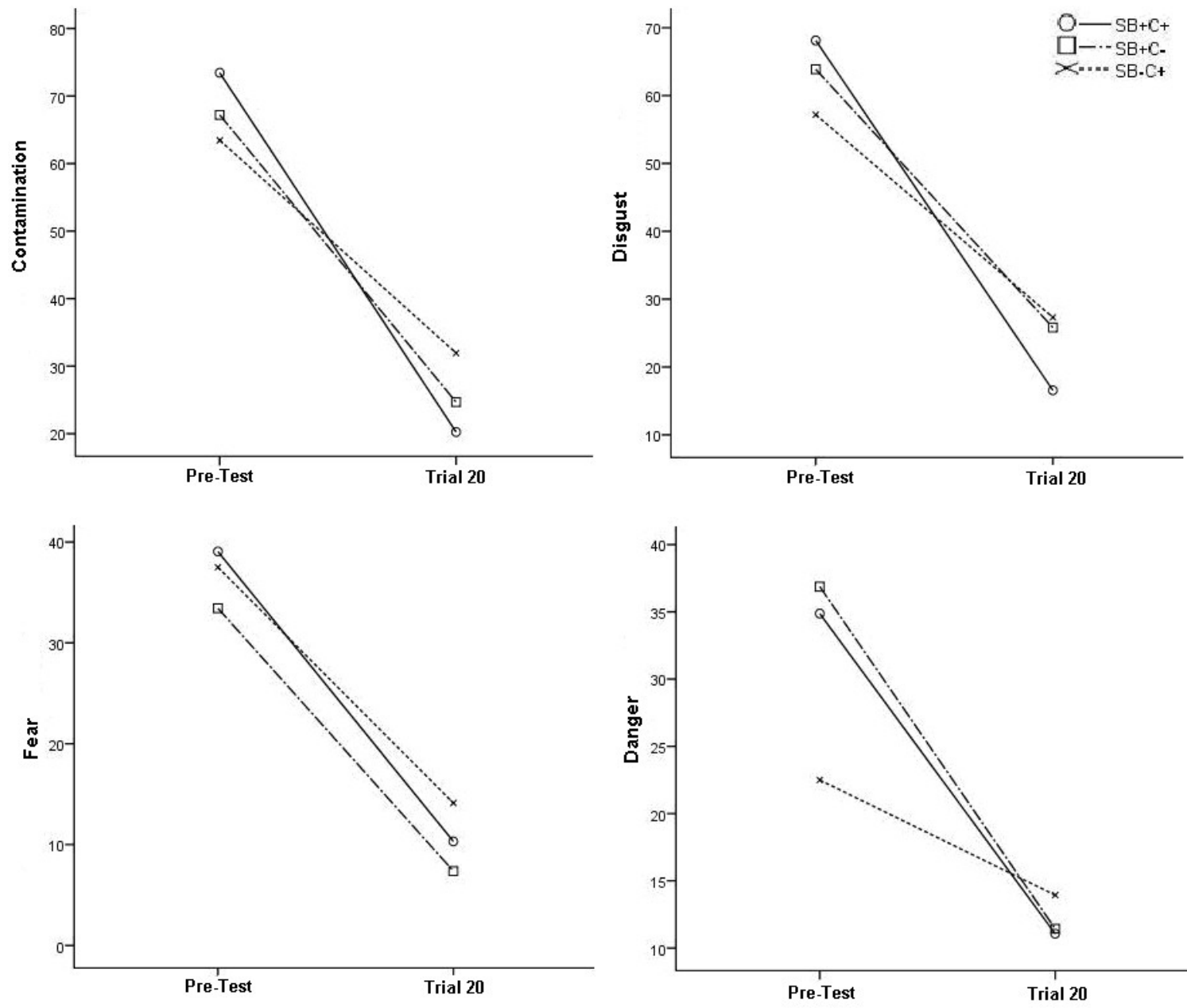


Figure 1. Reported feelings of contamination, disgust, danger and fear respectively at pre-test and trial 20

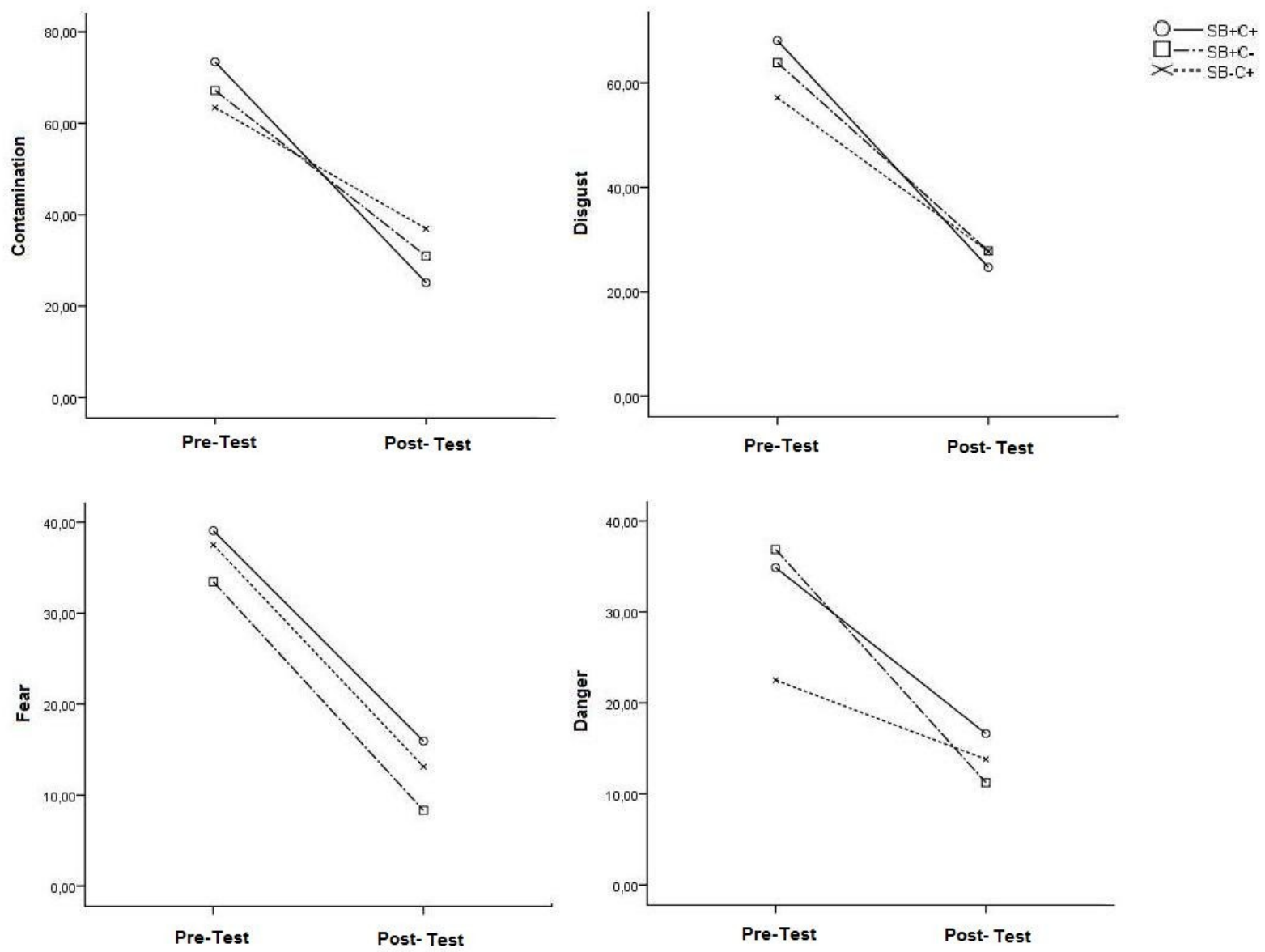
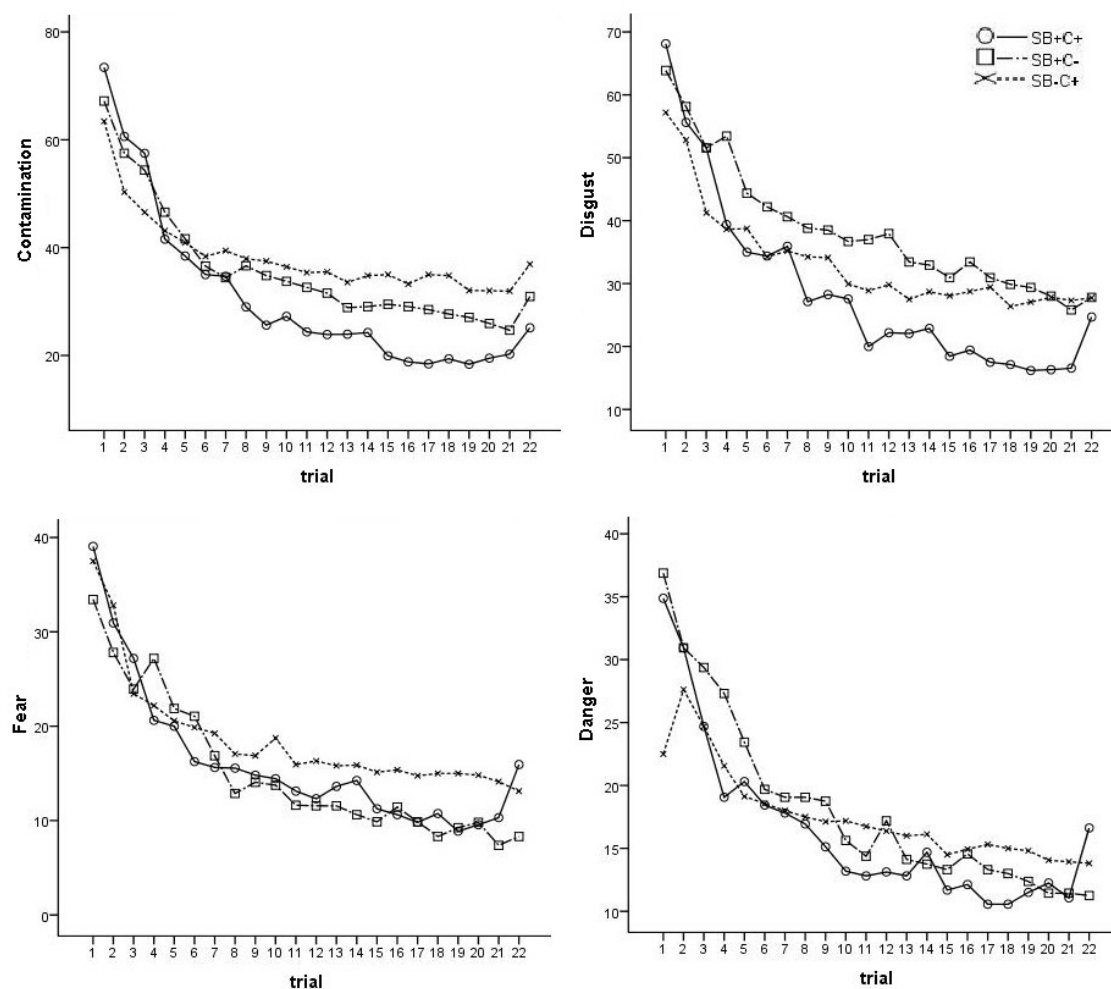


Figure 2. Reported feelings of contamination, disgust, danger and fear respectively, at pre-test and post-test



**Figure 3.** Trend analysis measuring scores of contamination, disgust, danger and fear respectively. Trial 1 indicates pre-test, trial 22 indicates Post-test. disgust, pair-wise comparisons were conducted for pre-post control mean scores,

### 3.3 Generalization

To test whether the effects of the interventions would generalize from the target item to the unselected items, scores on all items from the pre-test, with exclusion of items scoring <20, (to prevent a floor effect), were averaged for each participant. The same was done for the post-test. The resulting mean-generalization scores were analyzed with a 3x2 split plot ANOVA with condition (SB+C+, SB+C-, SB-C+) as between-group factor and time (pretest vs. posttest) as within-group factor. This procedure was only carried out for contamination, the most central measure. One participant was excluded from the analysis, as he had no scores  $\geq 20$ , other than the target item. It was expected that scores would overall be lower at the post-test. Besides that, it was also of interest whether the effects would differ for the conditions. This was not the case. There was neither an interaction effect between condition and time,  $F(2,44) = 1.50$ ,  $p = .235$ ,  $\eta^2 = .064$ , nor a main effect for condition,  $F(2,44) = .717$ ,  $p = .494$ ,  $\eta^2 = .032$ .

However, the results did show a drop in mean-contamination scores from the pre- to the posttest, indicated by a main effect for time:  $F(2,44) = 8.07$ ,  $p = .007$ ,  $\eta^2 = .155$  (see also table 1).

**Table 1**  
*Mean (SD) generalization scores for contamination at pre-test and post-test*

	Object Generalization	
	Pre-Test	Post-Test
SB+C+	45.5 (14.3)	32.9 (18.1)
SB+C-	44.1 (12.4)	42.0 (20.0)
SB-C+	39.9 (14.8)	33.6 (20.7)

### 3.4 Subjective feelings of control

Participants feelings of control over CFDD feelings were compared pre- to posttest, with an ANOVA using the same design as before. It was expected that control would increase inversely proportional to the decrease in scores and would mirror the differences in conditions found for the decrease of scores. However, in contrast to this hypothesis there were no changes over time whatsoever, indicated by no main effects for time for all CFDD. All  $F_s(1,45) < 3.102$ ,  $ps > .085$ . Accordingly, there were also no interaction effects between time and condition. All  $F_s(2,45) < 2.006$ ,  $ps > .146$ . However, differences emerged between the conditions in feelings of control over disgust (irrespective of time),  $F(2,45) = 3.485$ ,  $p = .039$ ,  $\eta^2 = .134$ . All other CFDD:  $F_s(2,45) < 1.897$ ,  $ps > .162$ . For

using t-tests, to evaluate which conditions differed. The results showed that both SB+ conditions had significantly higher control-scores than the SB- condition. SB-C+ - SB+C+:  $t(30) = 2.367$ ,  $p = .025$ ,  $d = .84$ , SB-C+ - SB+C-:  $t(30) = 2.176$ ,  $p = .038$ ,  $d = .80$ . The SB+ conditions did not differ from each other:  $t(30) = -.156$ ,  $p = .877$ ,  $d = .06$  (see also table 2).

**Table 2**  
*Mean (SD) feelings of control over disgust at Trial 1 and Trial 20*

	Feelings of Control (Disgust)	
	Trial 1	Trial 20
SB+C+	65.9 (19.6)	63.1 (24.1)
SB+C-	65.9 (26.8)	65.6 (29.6)
SB-C+	40.6 (25.2)	52.3 (27.2)

## 4. Discussion

This research aimed at clarifying the ambivalent role of safety behaviors in exposure therapy by investigating conditions under which safety behavior adds a beneficial effect as opposed to a negative influence. The condition added in this experiment was 'commitment' by means of signing a contract, leading to the main hypothesis stating that safety behaviors and commitment are a more or equally effective alternative to the traditional exposure + response prevention.

Before conclusions can be drawn, it is important to note that mixed results dictate a careful discussion of the hypotheses. Neither feelings of 'disgust', nor 'fear' nor 'danger' were influenced by the presence of safety behavior or by the content of the signed contract. The difference in drop between SB+C+ and SB-C+ is however significant in ratings of 'contamination'. This makes for an important consideration: conclusions put forth here must be treated with wariness as they are drawn from the variable contamination, which despite being the central dependent variable of the experiment is only 1 out of for 4 variables nonetheless. In its defense however, participants often stated that they did not believe the experiment would require them to touch any real dangerous objects, which might thus have likely led to a floor effect for fear and danger.

For contamination ratings it seems that positive influence was exerted by the presence of SB: the SB+ condition dropped to significantly lower point of contamination than its control condition. Besides the significant overall drop, this effect is carried over in the time course of effects: during the first half of exposure quadratic rates of contamination dropped significantly faster in the SB+C+

condition when compared to the SB-C+ condition. Of additional interest is the finding that these results hold true for both pre-test/trial20 and pre-test/post-test measures. This indicates that despite a fluke in van den Hout et al., this apparently was of no influence on the experimental results. All in all, while the different outcomes in drop point as well as in drop rate lend credibility to the theory of useful SBs in exposure therapy, it unfortunately does not reveal anything about the addition of the contracts as no statistically significant difference can be observed between C- and C+ condition.

It seems that the presence of a contract did not change the interpretation of the SB in the participants' eyes, or at least not sufficiently so in order to induce statistically relevant differences. Why not? An explanation might be that the contract was not implemented forcefully enough; participants might have signed it without taking too much notice to the content. However, both contracts' contents were stressed explicitly both verbally and in strong wording. If implementation really has to be even more forceful, one may wonder how – perhaps by informing the participant that everything in their life hinges on the completion of this task? Not only is this line of reasoning liable to trespass ethical guidelines, it also bypasses the effectiveness of the therapist-client relationship.

A perhaps more plausible explanation can be found in analyzing the meaning behind the contract. In essence, it is not the contract which is meant to instigate more effective treatment; it is the effect the contract is hypothesized to have, which is to heighten the participant's dedication to finish the experiment. It may be the case that this variable has already inadvertently been introduced into the research in two ways, namely through the social role of the participant and extrinsic motivation. Firstly, on the matter of social roles. The social roles of partakers in an experiment have been extensively discussed in Aronson, Akert & Wilson (2010) mainly in the doomsday telling of Stanley Milgram's research. Milgram's experiment tested how far participants were willing to go in administering electrical shocks to another human being. As it turned out, pretty far – even though participants felt uncomfortable, the perceived social roles of an authority figure (the researcher) and the self as a 'participant' made that 65% of the participants were willing to administer the lethal dose of 450V (Aronson et al., 2010). Naturally, it stands to reason that in everyday life a dedication to finish what you have pledged others to start is rarely problematic, and can be in fact very fruitful. For instance, it encouraged participants signing up for this experiment to sit patiently through 45 minutes of repetitively touching objects. It however may well be that their dedication as a participant outweighed any contract they were posed with. Secondly, on the matter of extrinsic motivation. This mode of motivation was present in the form of compensation. Participants received either 5 Euros or a credit hour for their co-operation, which may also

have served to externally heighten their dedication to finish the experiment.

Overall, these 2 factors might have served to outweigh both contract conditions. In order to decisively conclude whether contracts are a helpful part of exposure therapy, an option might be to repeat this study in a clinical setting, where both social roles and extrinsic motivation are reduced and can be observed participants are driven by their desire to conquer their fear, as opposed to the dutiful finishing of yet another student-experiment.

A generalization effect for time did occur for the measured variable of contamination, regardless of condition. This is of great importance for the practical implementation of SBs and adds to the increasing notion that the use of SBs in exposure therapy does not necessarily hinder its overall effectiveness. Once again, the alternate factors fear, disgust and danger did not yield similar results, which might be attributed to aforementioned floor effects.

The variable perceived control did alter between conditions, but in a different way than was expected. No significant time effect was found in any condition, arguing that although negative feelings lower over the course of 20 trials, participants did not feel they had heightened control over their emotions (yet). What is particularly interesting though is that a significant difference in overall perceived control was observed between SB+ and SB- condition(s), irrespective of contract. Participants who were allowed their SB reported significantly higher amounts of perceived control, an effect which remained constant over time. This highlights the beneficial effect of safety behavior as a threshold lowering factor, as a higher sense of control might well serve to increase participant motivation for therapy.

In conclusion this research did not find a decisive link between the combination of safety behaviors, contracts and therapeutic effects in exposure therapy. It has been argued that this might be a consequence of other inadvertent motivational factors creeping into the research which overrule the possible effectiveness of the contract. Therefore further –preferably clinical– research is in order to give a decisive verdict on the matter of safety behaviors & contracts. This research did however find some indications for the inclusion of SBs in therapy: emotional drops in SB+ conditions were on par with those in SB- conditions in pre-test / post-test measurements, SB+ condition for contamination dropped significantly faster than the SB- condition, and finally perceived control was higher in SB+ condition than in non-SB condition. Safety behaviors may serve a beneficial effect when used judiciously. Although this research sets a step in exploring the uncharted territory of SBs in exposure therapy, a precise definition of its judicious use still eludes researchers. Hopefully, future research may narrow it down even further.



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## Appendix A

### Informatie voorafgaand aan het onderzoek

#### **Titel onderzoek: Oordelen over alledaagse objecten**

##### **Doel van het onderzoek**

Dit onderzoek wordt uitgevoerd om gevoelens van besmetting te onderzoeken die voortkomen uit het aanraken van vieze objecten.

##### **Opzet van het onderzoek**

Dit onderzoek bestaat uit 1 sessie van +/- 45 minuten.

De sessie bestaat uit de volgende onderdelen:

1. U wordt gevraagd een aantal vieze objecten aan te raken. Vervolgens wordt u gevraagd om aan te geven hoe besmet en angstig u zich voelt, en om aan te geven hoeveel walging en gevaar u ervaart.
2. Hierna wordt u gevraagd om 20 keer eenzelfde object aan te raken, en na elke aanraking wederom aan te geven hoe besmet, angstig enz. u zich voelt. Daarnaast zal u gevraagd worden om een aantal keer aan te geven hoeveel controle u ervaart en wat uw verwachting is.
3. Tot slot wordt u nogmaals gevraagd om alle objecten met beide handen aan te raken, en opnieuw scores van besmetting, angst, walging, en gevaar te geven.

##### **Vertrouwelijkheid en anonimiteit**

De van u verkregen informatie wordt anoniem bewaard en geïdentificeerd met een code-nummer. De codenummer-naam combinatie bewaren we op een aparte, beveiligde locatie. Alle verzamelde gegevens worden tot 7 jaar na de laatste publicatie bewaard. Alleen de onderzoekers die onderaan deze brief worden genoemd hebben toegang tot deze informatie. Er worden geen individuele resultaten berekend.

##### **Wat van u gevraagd wordt (belasting)**

Het aanraken van de vieze objecten kan als belastend worden ervaren, maar wij kunnen u verzekeren dat dit niet bedreigend voor u is. Het geven van de scores vereist verder enige concentratie. Er kan enig ongemak worden ervaren door het aanraken van de vieze objecten. Het aanraken van de objecten is echter niet schadelijk voor uw gezondheid. Als u spanningen of angst ervaart door deelname aan dit onderzoek en daarover wilt praten, kunt u contact opnemen met de proefleiders.

##### **Vragen**

U heeft het recht om op ieder moment voor, tijdens en na het onderzoek vragen te stellen. Als u na het onderzoek vragen heeft, kunt u contact opnemen met Juliane Reininghaus of Diederik van der Stap.

**Vrijwilligheid**

De participant is volledig vrij om te kiezen om wel of niet door te gaan met het experiment. Als het experiment als onaangenaam of vervelend wordt ervaren kan de participant op elk gewenst moment ophouden. Het afmaken van het experiment is ook niet noodzakelijk voor de bruikbaarheid van de data. Door toestemming voor het onderzoek te verlenen verklaart de participant te weten dat dit experiment vrijwillig is, en dat de participant elk moment gemachtigd is om te stoppen met de trials.

Ik stem toe met deelname aan het onderzoek. Ik weet dat ik het onderzoek voortijdig mag afbreken wanneer ik dat wil.

Naam + voorletter(s): .....

Handtekening: .....

Datum: .....

Leeftijd: .....

Geslacht: m / v

**Onderzoekers**

Prof. Dr. Marcel A. van den Hout, hoofdonderzoeker

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**Belang voltooiing**

Deelname aan het onderzoek is vrijwillig. Het is voor dit experiment echter uitermate belangrijk, dat de proefpersonen het experiment niet voortijdig beëindigen, daar de data anders onbruikbaar is voor de onderzoekers. Door zijn/haar toestemming voor het onderzoek te verlenen verklaart de participant dan ook zijn/haar absolute best te doen om de serie van 20 trials af te maken.

Ik stem toe met deelname aan het onderzoek. Ik weet dat het belangrijk is dat ik het onderzoek niet voortijdig afbreek en verklaar mij in principe bereid de 20 trial af te maken.

Naam + voorletter(s): .....

Handtekening: .....

Datum: .....

Leeftijd: .....

Geslacht: m / v

**Onderzoekers**

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## Appendix B

### Protocol

- 1 De Sessie bestaat uit de Introductie, Uitleg onderzoek, Voormeting, Experimentele Trials, Generalisatie en Vragen en debriefing.

Er zijn drie condities:

- 2 Exposure + SB + Contract
- 3 Exposure + SB – Contract
- 4 Exposure – SB + Contract

### **Introductie**

“Hoi, ik ben .... en ik zal het onderzoek bij je uitvoeren. Het enige dat ik van tevoren aan je wil vragen is of je ooit een psychiatrische stoornis hebt gehad?” Zo ja, uitvragen en beslissen of de participant mee kan doen. Niet mee laten doen in geval van OCD-achtige klachten.

### **Uitleg onderzoek**

*“Dit onderzoek gaat dus over gevoelens van **besmetting, angst, gevaar en walging**. Je zult in dit onderzoek herhaaldelijk gevraagd worden een object aan te raken en dan deze gevoelens te rapporteren. Het onderzoek duurt ongeveer 45 minuten. Na afloop kun je kiezen voor 1 proefpersoonuur of 5 euro. De verkregen gegevens zullen **anoniem** verwerkt worden.*

*CONTRACT +: Het onderzoek is vrijwillig. We kunnen de data echter niet gebruiken als je het experiment niet afmaakt. Daarom is het voor dit onderzoek **heel belangrijk** dat je **niet vroegtijdig stopt** met het experiment*

*CONTRACT -: Als je het aanraken vervelend vindt worden kan je er gewoon mee ophouden. Voor het onderzoek maakt het niet veel uit of je alle trials afmaakt. Je mag dan weliswaar niet eerder weg, maar we hebben tijdschriften die je kan lezen of je kan studeren, en dan werk ik gewoon verder.*

*Heb je hier nog **vragen** over? Als je zeker weet dat je mee wilt doen, dan heb ik je toestemming nodig door je naam en handtekening op dit formulier te schrijven.”*

-----PROEFPERSOONINFORMATIE GEVEN-----

-----CONTRACT + of CONTRACT – laten tekenen-----

*“Zou je je mobieltje uit willen zetten voor we beginnen?”*

### **Voormeting items**

*“Ik zal je zometeen vragen zes objecten aan te raken en je gevoelens van besmetting, angst, gevaar en walging te rapporteren. Rapporteer deze gevoelens door een waarde tussen 0 en 100 te zeggen, waarbij 0 staat voor ‘helemaal niet’, bijvoorbeeld ‘helemaal niet besmet’, en 100 staat voor ‘extreem’, bijvoorbeeld ‘extreem besmet’. Een waarde van 50 is dan dus gemiddeld. Ik zal je dus steeds om vier waardes vragen. Vertel me dan de waarde die op dat moment het beste jouw gevoel beschrijft. Je kan hiervoor de hele schaal van 0 tot 100 gebruiken. “*

De onderzoeker doet hier de rubberen handschoenen aan. De zes items worden in willekeurige volgorde aangeboden aan de participant. Als maar één hand gebruikt is om het item aan te raken wordt de participant gevraagd zijn/haar handen tegen elkaar aan te wrijven. Na aanraking worden steeds de volgende vragen gesteld:

*“Hoeveel besmetting voel je nu?”*

*“Hoeveel angst voor besmetting voel je nu?”*

*“Hoeveel gevaar voel je nu?”*

*“Hoeveel walging voel je nu?”*

De waardes die de participant rapporteert worden door de proefleider genoteerd op het scoreformulier. Na iedere aanraking wordt de participant gevraagd de CFDD gevoelens kwijt te raken op de volgende manier:

*“Neem nu een momentje om van deze gevoelens af te komen. Laat me weten als dit gelukt is, zodat we door kunnen gaan met het volgende object, zonder dat er nog gevoelens overblijven die dit door dit object veroorzaakt zijn.”*

*“Is de score van ... nu afgenomen tot 0?”*

Als de participant niet in staat is om van de gevoelens af te komen, wordt hij/zij wat meer tijd gegeven om de gevoelens zo laag te krijgen als mogelijk is. Voordat verder gegaan kan worden met het volgende item, moeten de waardes gedaald zijn tot 20 of lager.

De volgende items worden aangeboden:

1. Schoen. Participanten worden gevraagd om met één hand langs de onderkant van hun schoen te wrijven. *“Wrijf alsjeblieft met één hand over de onderkant van je schoen.”*
2. Geld. Een vuil uitzierend briefje en wat munten worden aan de participant gegeven in een doorzichtig plastic tasje. *“Hier is wat oud geld. Haal het briefje alsjeblieft uit het zakje, en wrijf het tussen je handen. Neem ook het muntgeld dat in het zakje zit even in je handen.”*
3. Vuilnis. Een kleine vuilnisbak wordt aangeboden aan de participant. Hierin zit veilig afval verzameld door de proefleider, zoals verpakkingen van koek en snoep, een gebruikt koffiekopje, een rietje, wat verfrommelde tissues met koffievlekken, etc. *“Het volgende item is een vuilnisbak. Stop alsjeblieft je hand er in en raak de spullen die erin zitten aan. Raak ook de zijkant en onderkant aan. Er zit niets scherp in.”*
4. Telefoon. Een oude telefoon wordt aan de participant gegeven. Deze ziet er verkleurd, oud en vies uit. *“Pak alsjeblieft de hoorn op en raak het mond- en oorstuk aan met je hand. Raak ook een aantal toetsen van de telefoon aan.”*
5. Kweek monster. Een reageerbuisje met 50 ml desinfecterende handgel (oid) wordt aan de participant gegeven in een kleine, gesealde biohazard tas. Op het label staat PATH 194, 01.09.08. *“Dit is een kweek monster van de biologie afdeling. Neem alsjeblieft de reageerbuis uit het tasje en rol het tussen je handen. Raak ook het dopje aan.”* Voor participanten die dit niet naar lijken te vinden: *“..maar maak de reageerbuis niet open!”*
6. Labspullen. Een tweede kleine biohazard tas met de volgende items wordt aan de participant gegeven: Een operatiehandschoen, een wegwerp orale thermometer, een open pleister, een 2 ml microbuisje met een druppel desinfecterende handgel en een klein stukje opgerold gaas. *“Dit zijn wat labspullen van een immunologielab boven in het van Unnik. Steek alsjeblieft je hand in het zakje en raak de meeste items die erin zitten aan.”*

Het item waaraan de hoogste waarde van **besmetting** is gegeven wordt gekozen voor de experimentele trials. Als deze waarde voor geen van de items 50 of hoger is kan de participant **niet deelnemen** aan het experiment. **De andere items worden uit het zicht gezet!!**

**Experimentele trials**

**Conditie 1: Exposure + SB + Contract**

**Conditie 2: Exposure + SB – Contract**

*“Voor het volgende gedeelte van het onderzoek zullen we gaan werken met één van deze objecten. Dat zal .... zijn. Ik zal je een aantal keer vragen dit object aan te raken. Iedere keer nadat je het object aanraakt zal ik je vragen je gevoelens van besmetting, angst, gevaar en walging te rapporteren op de 0 tot 100 schaal. We weten dat met herhaling van deze oefeningen deze gevoelens geleidelijk verminderen. Gebruik dan deze desinfectant om je handen te wassen. Dit is speciale zeep die normaal gesproken wordt gebruikt in ziekenhuizen. De makers van deze zeep zeggen dat de zeep antibacterieel is en 99.9% van de bacteriën verwijderd. Je hoeft niet bang te zijn dat je handen uitdrogen – sterilium is extra huidvriendelijk en wordt door artsen ook vele keren op een dag gebruikt. Gebruik zoveel desinfectant als je wilt totdat je handen schoon aanvoelen. Je kan deze tissues gebruiken om je handen droog te maken. Ik zal daarna je gevoelens van besmetting, angst, gevaar en walging weer vragen.*

Dan wordt er gevraagd:

*We willen graag weten wat je verwacht:*

*“Hoe overtuigd ben je dat het doen van deze herhaalde oefeningen je gevoelens van besmetting zullen verminderen? Geef weer aan op een schaal van 0 tot 100.”*

*“Hoe overtuigd ben je dat deze oefeningen je angst voor besmetting zullen verminderen?”*

*“Hoe overtuigd ben je dat deze oefeningen je gevoel van gevaar zullen verminderen?”*

*“Hoe overtuigd ben je dat deze oefeningen je gevoel van walging zullen verminderen?”*

*Dankje. Dan zullen we nu beginnen met het experiment.*

Na iedere aanraking biedt de proefleider de zeep aan aan de participant.

**Aanraken – score geven – 30 sec. wassen – score geven. (20 keer herhalen.)**

*“Hoeveel besmetting voel je nu? Geef weer aan op een schaal van 100.”*

*“Hoeveel gevaar voel je nu?”*

*“Hoeveel walging voel je nu?”*

*“Hoeveel angst voel je nu?”*

Na trial 1 en trial 20 wordt ook nog naar het gevoel van controle gevraagd.

*“Hoe overtuigd ben je dat je je gevoelens van besmetting onder controle hebt? Geef weer aan op een schaal van 0 tot 100”*

*“Hoe overtuigd ben je dan je je angst voor besmetting onder controle hebt?”*

*“Hoe overtuigd ben je dat je je gevoel van gevaar onder controle hebt?”*

*“Hoe overtuigd ben je dat je je gevoel van walging onder controle hebt?”*

### **Experimentele trials**

#### **Conditie 3: Exposure – SB + Contract**

*“Voor het volgende gedeelte van het onderzoek zullen we gaan werken met één van deze objecten. Dat zal .... zijn. Ik zal je een aantal keer vragen dit object aan te raken. Iedere keer nadat je het object aanraakt zal ik je vragen je gevoelens van besmetting, angst, gevaar en walging te rapporteren op de 0 tot 100 schaal. Ik zal je dan je gevoelens van besmetting, angst, gevaar en walging weer vragen. We weten dat met herhaling van deze oefeningen deze gevoelens geleidelijk verminderen”.*

Dan wordt er gevraagd:

*“Hoe overtuigd ben je dat het doen van deze herhaalde oefeningen je gevoelens van besmetting zullen verminderen? Geef weer aan op een schaal van 0 tot 100.”*

*“Hoe overtuigd ben je dat deze oefeningen je angst voor besmetting zullen verminderen?”*

*“Hoe overtuigd ben je dat deze oefeningen je gevoel van gevaar zullen verminderen?”*

*“Hoe overtuigd ben je dat deze oefeningen je gevoel van walging zullen verminderen?”*

#### **Aanraken – score geven – - ±30 seconden delay + small talk – score geven. (20 keer herhalen.)**

*“Hoeveel besmetting voel je nu? Geef weer aan op een schaal van 100.”*

*“Hoeveel gevaar voel je nu?”*

*“Hoeveel walging voel je nu?”*

*“Hoeveel angst voel je nu?”*

Na trial 1 en trial 20 wordt ook nog naar het gevoel van controle gevraagd.

*“Hoe overtuigd ben je dat je je gevoelens van besmetting onder controle hebt? Geef weer aan op een schaal van 0 tot 100”*

*“Hoe overtuigd ben je dan je je angst voor besmetting onder controle hebt?”*

*“Hoe overtuigd ben je dat je je gevoel van gevaar onder controle hebt?”*

*“Hoe overtuigd ben je dat je je gevoel van walging onder controle hebt?”*

### **Generalisatie**

Na de laatste trial wordt de participant gevraagd om mogelijke overgebleven gevoelens van besmetting, angst, gevaar en walging af te laten nemen. Hierna worden de zes items van de voormeting in dezelfde volgorde als in de voormeting weer aangeboden aan de participant. De voormeting wordt dus nog een keer op precies dezelfde manier uitgevoerd. Er wordt **geen zeep** aangeboden aan de participant.

Daarna wordt een formulier met vragen aan de participant gegeven. *“Mag ik jou nog vragen, om nog even deze vragen te beantwoorden?”*



Score formulier: PART 1 pre-test

**Conditie: SB - (RP) Contract +**

PPnr: .....

Leeftijd:.....jaar

Geslacht: m / v

Datum:.....

	Subjectieve score van 0-100			
CTN item	Besmetting	Angst	Gevaar	Walging
Shoe				
Money				
Garbage				
Phone				
Culture Sample				
Lab Specimen				

Gekozen item: .....

Score : PART 2 exposure

**Conditie: SB - (RP) Contract +**

PPnr: .....

Datum:.....

Item:.....

(Score van 0-100 direct na instructies)

	<b>Besmetting</b>	<b>Angst</b>	<b>Gevaar</b>	<b>Walging</b>
<b>Verwachting</b>				

(Score 0-100 per item direct na aanraken)

(Score 0-100 na wassen)

Trial	Besmet	Angst	Gevaar	Walging		Besmet	Angst	Gevaar	Walging
					30 sec Wachten				
					30 sec Wachten				
					30 sec Wachten				
					30 sec Wachten				
1	<b>Control</b>	<b>Control</b>	<b>Control</b>	<b>Control</b>		<b>Control</b>	<b>Control</b>	<b>Control</b>	<b>Control</b>
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20	<b>Control</b>	<b>Control</b>	<b>Control</b>	<b>Control</b>		<b>Control</b>	<b>Control</b>	<b>Control</b>	<b>Control:</b>

Score formulier: PART 3 generalisatie

**Conditie: SB - (RP) Contract +**

PPnr: .....

Datum:.....

	Subjectieve score van 0-100			
CTN item	Besmetting	Angst	Gevaar	Walging
Shoe				
Money				
Garbage				
Phone				
Culture Sample				
Lab Specimen				

**Het contract dat ik ondertekend heb heeft een duidelijke invloed gehad op mijn beslissing wel of niet het experiment af te maken.**

1. Heel sterk
2. Sterk
3. Redelijk
4. Een beetje
5. Niet

**Ik heb overwogen eerder te stoppen met het onderzoek**

1. Heel sterk
2. Sterk
3. Redelijk
4. Een beetje
5. Niet

Score formulier experiment: PART 1 pre-test      Conditie: SB + Contract - / SB + Contract +

PPnr: .....

Leeftijd:.....jaar

Geslacht:    m / v

Datum:.....

	Subjectieve score van 0-100			
CTN item	Besmetting	Angst	Gevaar	Walging
Shoe				
Money				
Garbage				
Phone				
Culture Sample				
Lab Specimen				

Gekozen item: .....

Score formulier experiment: PART 2 exposure      Conditie: SB + Contract - / SB + Contract +

PPnr: .....

Datum:.....

Item:.....

(Score van 0-100 direct na instructies)

Verwachting		Besmetting		Angst		Gevaar		Walging	
Trial	Besmet	Angst	Gevaar	Walging		Besmet	Angst	Gevaar	Walging
					30 sec Wassen				
					30 sec Wassen				
					30 sec Wassen				

					30 sec Wassen				
1	Control	Control	Control	Control		Control	Control	Control	Control
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20	Control	Control	Control	Control		Control	Control	Control	Control

Score formulier experiment: PART 3 generalisatie **Conditie: SB + Contract -** / **SB + Contract +**

PPnr: .....

Datum:.....

CTN item	Subjectieve score van 0-100			
	Besmetting	Angst	Gevaar	Walging

Het contract dat ik ondertekend heb heeft een duidelijke invloed gehad op mijn beslissing wel of niet het experiment af te maken.

1. Heel sterk
2. Sterk
3. Redelijk
4. Een beetje
5. Niet

Ik had het gevoel dat mijn handen schoner waren na het gebruik van de zeep.

1. Ja
2. Nee

Ik heb overwogen eerder te stoppen met het onderzoek

1. Heel sterk
2. Sterk
3. Redelijk
4. Een beetje
5. Niet

**Onderzoek: Oordelen over alledaagse objecten**

**DEBRIEFING**

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0611731957 / 491716836076

Bedankt voor je deelname aan onze studie. Het doel van deze studie is het onderzoeken van gevoelens van besmetting die voort kunnen komen uit het aanraken van vieze objecten.

In deze studie werd je gevraagd om herhaaldelijk een aantal vieze objecten aan te raken en aan te geven hoe angstig en besmet je je voelde. Als je in 1 van de 2 sterillium-condities zat werd je gevraagd om een aantal objecten aan te raken en tussendoor je handen te wassen. Er werd in dit onderzoek gekeken naar het mogelijk positieve effect van de combinatie tussen handen schoonmaken en het ondertekenen van een contract dat je óf aanspoorde het experiment af te maken, óf je eraan herinnerde dat je op elk moment kon stoppen. In de controle conditie werd je gevraagd het herhaaldelijk aanraken van de objecten te tolereren en je handen naderhand niet schoon te maken. Wij willen graag meer te weten komen over het verschil in gevoelens en reacties van mensen in respons op het schoonmaken na het aanraken van vieze objecten. Als je nog vragen hebt over het onderzoek of wanneer je meer informatie zou willen kun je contact opnemen met Prof. Van den Hout.

Wanneer je meer wilt weten over besmetting dan geeft het volgende artikel een goed overzicht van het onderwerp: Rachman, S. (2004) Fear of contamination. *Behaviour Research and Therapy*, 42(11), 1227-1255

Bedankt voor je deelname.

## Additional statistical information

**Table 1***Means (SD) of contingent feeling and its condition, both trial 20 measurements and post-test measurements taken into account*

		Results #1		Results #2
		Pre-Test	Trial 20	Post-Test
Contamination	SB+C+	73.4 (16.6)	20.3 (23.6)	25.1 (24.3)
	SB+C-	67.2 (14.4)	24.7 (20.0)	30.9 (24.5)
	SB- C+	63.4 (16.4)	31.9 (29.9)	36.9 (27.4)
Fear	SB+C+	39.1 (28.4)	10.3 (19.9)	15.9 (22.0)
	SB+C-	33.4 (21.4)	7.4 (10.4)	8.3 (10.8)
	SB- C+	37.5 (25.0)	14.1 (25.7)	13.1 (24.3)
Danger	SB+C+	34.9 (25.8)	11.1 (21.7)	16.6 (22.9)
	SB+C-	36.9 (25.5)	11.4 (15.6)	11.3 (14.0)
	SB- C+	22.5 (22.7)	13.9 (26.0)	13.8 (26.1)
Disgust	SB+C+	68.1 (24.5)	16.6 (25.9)	24.7 (25.5)
	SB+C-	63.9 (21.6)	25.8 (23.2)	27.8 (22.4)
	SB- C+	57.2 (24.4)	27.3 (30.0)	27.8 (28.7)

**Table 2***Outcomes of Overall-effect-ANOVA's of contingent feeling, both trial 20 measurements and post-test measurements taken into account*

		Pre-Trial 20			Pre-Post		
		F	p	$\eta^2$	F	p	$\eta^2$
Contamination	Main Effect: Time	(1,45) 151.15	< .001***	.771	(1,45) 144.36	< .001***	.762
	Main-Effect: Condition	(2,45) .04	.96	.002	(2,45) .17	.983	.001
	Interaction-Effect: Time x Condition	(2,45) 3.30	.046**	.128	(2,45) .95	.021**	.157
Fear	Main Effect: Time	(1,45) 65.89	< .001***	.594	(1,45) 63.00	< .001***	.583
	Main-Effect: Condition	(2,45) .34	.714	.015	(2,45) .46	.637	.020
	Interaction-Effect: Time x Condition	(2,45) .23	.793	.010	(2,45) .037	.964	.002
Danger	Main Effect: Time	(1,45) 35.10	< .001***	.438	(1,45) 33.31	< .001***	.425
	Main-Effect: Condition	(2,45) .39	.682	.017	(2,45) .60	.556	.026
	Interaction-Effect: Time x Condition	(2,45) 2.73	.076	.108	(2,45) 2.61	.085	.104
Disgust	Main Effect: Time	(1,45) 92.33	< .001***	.672	(1,45) 76.37	< .001***	.629
	Main-Effect: Condition	(2,45) .08	.921	.004	(2,45) .18	.834	.008
	Interaction-Effect: Time x Condition	(2,45) 2.326	.109	.094	(2,45) .95	.396	.040

## Time course of effects

**Table 3***Outcomes of Time-course-ANOVA's of contingent feeling.*

		ANOVA-Results		
		F	p	$\eta^2$
Contamination	Quadratic-Effect: Time	(1,45) 70.06	< .001***	.609
	Quadratic- Interaction-Effect: Time x Condition	(2,45) 3.21	.050**	.125
Fear	Quadratic-Effect: Time	(1,45) 34.76	< .001***	.436
	Quadratic- Interaction-Effect: Time x Condition	(2,45) .49	.613	.021

Danger	Quadratic-Effect: Time	(1,45) 29.452	< .001***	.396
	Quadratic- Interaction-Effect: Time x Condition	(2,45) 2.30	.112	.093
Disgust	Quadratic-Effect: Time	(1,45) 47.47	< .001***	.513
	Quadratic- Interaction-Effect: Time x Condition	(2,45) 2.55	.089	.102

## Generalization

**Table 5**  
*Outcome of Generalization-ANOVA for contamination*

		ANOVA-Results		
		<i>F</i>	<i>p</i>	$\eta p^2$
Contamination	Main-Effect: Time	(2,44) 8.07	.007**	.155
	Main-Effect: Condition	(2,44) .717	.494	.032
	Interaction-Effect: Time x Condition	(2,44) 1.50	.235	.064

## Subjective feelings of control

**Table 4**  
*Outcomes of ANOVA's of contingent feeling for feelings of control*

		ANOVA-Results		
		<i>F</i>	<i>p</i>	$\eta p^2$
Contamination	Main Effect: Time	(1,45) .13	.717	.003
	Main-Effect: Condition	(2,45) 1.90	.162	.078
	Interaction-Effect: Time x Condition	(2,45) .25	.783	.011
Fear	Main Effect: Time	(1,45) 3.10	.085	.064
	Main-Effect: Condition	(2,45) .50	.608	.022
	Interaction-Effect: Time x Condition	(2,45) .86	.432	.037
Danger	Main Effect: Time	(1,45) .37	.547	.008
	Main-Effect: Condition	(2,45) .42	.659	.018
	Interaction-Effect: Time x Condition	(2,45) .437	.649	.019
Disgust	Main Effect: Time	(1,45) .82	.371	.018
	Main-Effect: Condition	(2,45) 3.49	.039**	.134
	Interaction-Effect: Time x Condition	(2,45) 2.01	.146	.082