

Learning the Futility of the Thought Suppression Enterprise in Normal Experience and in Obsessive Compulsive Disorder

Sadia Najmi

University of California, San Diego/San Diego State University, USA

Hannah Reese

Harvard University, Cambridge, USA

Sabine Wilhelm and Jeanne Fama

Massachusetts General Hospital and Harvard Medical School, USA

Celeste Beck and Daniel M. Wegner

Harvard University, Cambridge, USA

Background: The belief that we can control our thoughts is not inevitably adaptive, particularly when it fuels mental control activities that have ironic unintended consequences. The conviction that the mind can and should be controlled can prompt people to suppress unwanted thoughts, and so can set the stage for the intrusive return of those very thoughts. An important question is whether or not these beliefs about the control of thoughts can be reduced experimentally. One possibility is that behavioral experiments aimed at revealing the ironic return of suppressed thoughts might create a lesson that could reduce unrealistic beliefs about the control of thoughts.

Aims: The present research assessed the influence of the thought suppression demonstration on beliefs about the control of thoughts in a non-clinical sample, and among individuals with obsessive-compulsive disorder (OCD). **Method:** In Study 1, we assessed the effect of the thought suppression demonstration on beliefs about the control of thoughts among low and high obsessive individuals in the non-clinical population ($N = 62$). In Study 2, we conducted a similar study with individuals with OCD ($N = 29$). **Results:** Results suggest that high obsessive individuals in the non-clinical population are able to learn the futility of suppression through the thought suppression demonstration and to alter their faulty beliefs about the control of thoughts; however, for individuals with OCD, the demonstration may be insufficient for altering underlying beliefs. **Conclusions:** For individuals with OCD, the connection between

Reprint requests to Sadia Najmi, Joint Doctoral Program at University of California, San Diego/San Diego State University, Center for Understanding and Treating Anxiety, 6386 Alvarado Ct., Suite 301, San Diego, CA 92120, USA. E-mail: najmi.sadia@gmail.com

© British Association for Behavioural and Cognitive Psychotherapies 2009

suppressing a neutral thought in the suppression demonstration and suppressing a personally relevant obsession may need to be stated explicitly in order to affect their obsessive beliefs.

Keywords: Suppression, obsessive-compulsive disorder, beliefs, intrusive thoughts.

The happiness of your life depends upon the quality of your thoughts, therefore guard accordingly; and take care that you entertain no notions unsuitable to virtue, and reasonable nature.

Marcus Aurelius Antoninus (121 AD – 180 AD)

The motivation to rid one's mind of unwanted thoughts is an intuitive one. After all, unpleasant thoughts are accompanied by unpleasant emotions. It turns out, however, in two decades since the first empirical investigation of the phenomenon (Wegner, Schneider, Carter and White, 1987) that the stoic prescription above does not work. Quite to the contrary, the salience attributed to unwanted thoughts and the drive to eliminate them from consciousness might create the precise formula for turning the ordinary experience of unwanted thoughts into the painful experience of obsessions.

There exists a large body of evidence to suggest that the management of intrusive thoughts is a tricky enterprise. According to Wegner's (1994) ironic process theory, suppression is at best unsustainable and at worst counterproductive, and this "rebound" of unwanted thoughts occurs both in normal experience as well in many forms of psychopathology (see reviews by Abramowitz, Tolin and Street, 2001; Clark, 2005; Najmi and Wegner, 2008; Rassin, 2005; Wenzlaff and Wegner, 2000), such as posttraumatic stress disorder (PTSD) (Shipherd and Beck, 1999), acute stress disorder (Guthrie and Bryant, 2000; Harvey and Bryant, 1998) and depression (Dalgleish and Yiend, 2006; Wenzlaff and Bates, 1998; Wenzlaff and Eisenberg, 2001; Wenzlaff, Meir and Salas, 2002; Wenzlaff, Wegner and Roper, 1988).

Obsessive-compulsive disorder (OCD) is *defined* by the persistence of unwanted thoughts and active resistance of these thoughts, and so the fact that thought suppression may have a role to play in the maintenance of OCD is not surprising, although the precise nature of this role is not straightforward. According to the cognitive-behavioral perspective on OCD (Salkovskis, 1985; Rachman, 1997), the unwanted, intrusive thoughts that characterize OCD may persist because of two processes in addition to suppression: pre-existing beliefs about intrusive thoughts and faulty interpretations of intrusions (Clark, 2001). In other words, dysfunctional appraisals of the thoughts – for instance, that unwanted thoughts should be controlled and that their occurrence is a sign of impending danger or of immorality of the person having the thought – and unsuccessful attempts to neutralize and suppress these thoughts may cause normal unwanted thoughts to escalate into clinical obsessions. Thus, according to this model, thought suppression alone is not the primary factor implicated in the pathogenesis of obsessions, but rather it is suppression motivated by the need to control unwanted thoughts in order to prevent harm.

With a few exceptions (Kelly and Kahn, 1994; Purdon and Clark, 2001), the paradoxical effects of suppressing obsessional thoughts in non-clinical samples have been observed fairly consistently (McNally and Ricciardi, 1996; Salkovskis and Campbell, 1994; Salkovskis and Reynolds, 1994; Trinder and Salkovskis, 1994). For instance, in a series of studies, Salkovskis and colleagues observed a suppression-related increase in intrusive thoughts both in the lab and over a 4-day naturalistic follow-up. Studies examining the suppression of neutral targets with OCD patients have found evidence for the counterproductive effects of suppression (e.g.

Tolin, Abramowitz, Przeworski and Foa, 2002a). However, to date, the three studies with OCD patients that have explored the effects of suppressing obsessional thoughts revealed no evidence for an increase in thought frequency (Janeck and Calamari, 1999; Najmi, Riemann and Wegner, in press; Purdon, Rowa and Antony, 2005).

This raises the question: if OCD patients are no worse than healthy individuals at suppressing their unwanted thoughts, why do they report heightened inadequacy in controlling these thoughts? Purdon and Clark (2000) have argued that certain individuals hold preexisting metacognitive beliefs (Flavell, 1979) about the control of thoughts, namely that unwanted thoughts can and should be controlled and that intrusive thoughts are the product of an unhealthy mind. These include beliefs about the need to control unwanted thoughts in order to prevent negative consequences (e.g. "If I don't control my unwanted thoughts, something bad is bound to happen.") and beliefs about the controllability of unwanted thoughts (e.g. "If I exercise enough will-power, I should be able to gain complete control over my mind.") (OCCWG, 1997). These beliefs may sensitize OCD patients to their inability to suppress their thoughts perfectly, and they may judge their ability against their unrealistic beliefs about the controllability of thoughts. For example, Tolin, Abramowitz, Hamlin, Foa and Synodi (2002a) observed that OCD patients are more likely than anxious and non-anxious controls to attribute a failure of thought suppression to internal, negative reasons (e.g. "I am mentally weak.")

These faulty, preexisting beliefs about the control of thoughts – that unwanted thoughts can and should be controlled – are the focus of the present research. More specifically, we examined the question of whether or not these faulty beliefs may be reduced by means of a behavioral experiment, the original thought suppression demonstration with a neutral suppression target (Wegner et al., 1987). The rationale is that if we were to instruct OCD patients to suppress an obsessional thought, subsequent failures of suppression would enhance their negative appraisal of the thought, which would lead to escalating suppression effort. On the other hand, if we instruct OCD patients to suppress a neutral thought, we would not expect subsequent failures of suppression to lead to negative appraisal of the thought itself since the thought is neutral, and hence we might expect that the exercise gives the OCD patient the opportunity to learn that suppression is futile. This idea is not new; since the original white bear experiment (Wegner et al., 1987), the thought suppression demonstration has been used as a behavioral experiment in the treatment of OCD (e.g. Wilhelm and Steketee, 2006). Patients are invited to suppress thoughts of a neutral target, e.g. a white bear or some equivalent, and subsequent occurrences of white bear images are then used as the basis for a psychoeducational discussion about how thoughts cannot and hence should not be suppressed (Salkovskis and Campbell, 1994; Wilhelm, as cited in Baer, 2001). In the present research, we are interested in exploring whether learning the futility of suppression occurs with the suppression demonstration alone or if the psychoeducational discussion is necessary to effect a change in thoughts and underlying beliefs.

The choice of a neutral target of suppression rather than a personally relevant negative thought has been well articulated by Tolin, Abramowitz, Przeworski and Foa (2002b). They note that instructing individuals with OCD to suppress an obsessional thought is essentially a "non-intervention" since individuals in the non-suppression control group are being asked to act against what they would naturally do. Based on the results of their study, Tolin et al. (2002b) concluded that individuals with OCD appear to have a general deficit in their ability to control thoughts, and this will be manifested in their ability to control neutral thoughts. This design also overcomes the problem of spontaneous suppression as presumably people are not naturally motivated to suppress emotionally neutral thoughts.

The question we are examining in the current research is: Can individuals learn from the behavioral experiment – suppression of a neutral target – to alter their faulty beliefs about the control of thoughts? Since we know from previous research (Purdon and Clark, 1993; Rachman and de Silva, 1978; Salkovskis and Harrison, 1984) that obsessions lie on a continuum with normal thoughts, we first examined this question using a non-clinical sample (Study 1) and then with a sample of OCD patients (Study 2). We hypothesized that participants in the suppression condition, but not in the control condition, would report learning that suppression is futile and will report a reduction in obsessive beliefs about the control of thoughts.

Study 1: Method

Overview

Prior to the laboratory session, participants were sent a questionnaire to assess severity of obsessive symptoms via e-mail, and were asked to bring the completed questionnaire to the session. On arrival at the laboratory, participants were told that the experiment was concerned with “thoughts about thoughts” and that they would be asked to do a thought task that involves speaking out loud into an audio recorder. Informed consent was obtained from the participants. Participants were randomly assigned to either the experimental condition or the control condition. Next, in the experimental condition (i.e., suppression condition) only, participants were asked to report their stream of consciousness while trying to *not* think of a penguin, and to indicate any intrusions of the thought of a penguin by pressing a hand-held counter. In the control condition, participants were asked simply to report their stream of consciousness. Each participant was asked to perform the thought task three times. Finally, participants were administered additional questionnaires and were debriefed about the study.

Participants

Participants (37 women, 25 men) were undergraduates in psychology courses who received course credit for participation and members of the community who responded to advertisements and were paid \$10 for their participation. Mean age of the participants was 20.9 years ($SD = 6.5$).

Procedure

Participants were randomly assigned to the suppression or control condition. In the control condition, participants were given the following instructions to report on their stream of consciousness for 5 minutes:

“I would like you simply to say everything that comes to your mind while you are doing the thinking task. Your report might include, but is not limited to, your images, ideas, memories, feelings, plans, sensations, observations, daydreams, objects that catch your attention, or efforts to solve a problem. There are no restrictions, qualifications, conventions, or expectations. There are some things you may not want to say, and that is fine. Just mention whatever you can. Simply report on whatever is going on in your mind, whatever you are conscious or aware of.”

In the suppression condition, participants were first given the following instructions:

“I would like you to think about a penguin. Can you describe a penguin to me? [Participant describes penguin]. Good. We just have to make sure everyone knows what a penguin is. Then, I will ask you to suppress the thought of a penguin while you report your stream of consciousness – whatever is in your mind at the moment, you can report verbally into this audio recorder. Your job, then, is to try not to think about a penguin.”

Participants were then given the same stream of consciousness instructions as in the control condition. Furthermore, they were instructed to press a hand-held counter any time they had a thought about a penguin. Each participant repeated the 5-minute thought task three times.

Self-report measures

Yale-Brown Obsessive Compulsive Scale (Y-BOCS; Goodman et al., 1989a, 1989b) is a 10-item scale for rating obsessions and compulsions separately on five items (0–4) for a total score that varies from 0–40. The Y-BOCS is a reliable and valid measure and is available in both clinician-rated and self-rated versions (Taylor, 1995). The self-report version was used in this study. Participants completed the obsessions questions on the Y-BOCS questionnaire prior to the laboratory session and the full Y-BOCS (obsessions and compulsions questions) at the end of the laboratory session.

Obsessive Beliefs Questionnaire (OBQ-87) consists of 87 items reflecting beliefs considered characteristic of obsessive thinking (OCCWG, 1997, 2001). Items on the questionnaire represent six subscales that reflect the six key belief domains of OCD. The subscales are beliefs about the Control of Thoughts (14 items) and five others that assess beliefs about the importance of thoughts, responsibility, intolerance of uncertainty, overestimation of threat, and perfectionism. Item responses are made on a 7-point rating scale that ranges from (1) “disagree very much” to (4) “neutral” to (7) “agree very much”. Subscales scores were calculated by summing across their respective items to compute a mean score. The OBQ-87 has been shown to be a reliable and valid measure (OCCWG, 2003). Participants completed the OBQ-87 at the end of the laboratory session.

Follow-up survey is a self-report questionnaire designed for this study in which participants were asked to report on their response to the thought exercises in the experiment. The questionnaire included the following manipulation check question: “How often, during the exercise, did you try not to think this thought?” (on a 1–9 scale), and a question regarding learning, “Did you learn anything from these thought exercises?” (free-form text). Participants completed the Follow-up survey at the end of the laboratory session.

Data analysis plan

Those scoring at or above a score of 6 on the Obsessions subscale of the Y-BOCS questionnaire completed prior to the laboratory session and those scoring at or below 5 were classified as high and low obsessive participants, respectively. The cut-off was chosen based on a median split for the sample. A 2×2 ANOVA was conducted with obsession group (low, high) and instruction (suppression, control) as between-subjects factors. The dependent measures were scores on the Control of Thoughts subscale of the OBQ-87 and the follow-up survey.

Results

A cut-off of 6 on the Obsessions subscale of the Y-BOCS questionnaire resulted in 12 low and 18 high obsessive participants in the control condition, and 17 low and 15 high obsessive participants in the suppression condition.

Obsession severity at baseline

Independent samples *t*-tests on baseline Y-BOCS Obsessions scores revealed that there was no difference in symptom severity between low obsessive participants in the suppression group ($M = 3.29$) and control group ($M = 3.58$), $t(27) = .56$, $p > .57$, at baseline. Similarly, there was no difference in symptom severity between high obsessive participants in the suppression group ($M = 7.67$) and control group ($M = 8.56$), $t(31) = 1.55$, $p > .13$, at baseline.

Learning the futility of suppression

The free-form response to the question on the follow-up survey “Did you learn anything from these thought exercises?” was coded dichotomously as a response to the question “Do you believe that trying not to think about an unwanted thought is a good strategy?” We coded a “no” if the participant reported learning from the suppression exercise that suppression is a counterproductive strategy for controlling unwanted thoughts. Since the focus of this study is whether participants learn the futility of suppression, we coded all other responses as “other” (including participants’ reports of learning that suppression is a good strategy or if they did not report learning anything related to the effectiveness of suppression). Coding was completed by a research assistant who was blind to condition and was unaware of the study hypotheses. Scores were submitted to a 2×2 ANOVA with obsession group (low, high) and instruction (suppression, control) as between-subjects factors. The obsession group \times instruction interaction was not significant, $F(1, 58) = .75$, $p = .39$, $\eta^2 = .01$. However, a main effect of instruction was found such that participants in the suppression condition ($M = 1.15$) were less likely than those in the control condition ($M = 1.43$) to endorse suppression as an effective strategy for dealing with unwanted thoughts, $F(1, 58) = 6.04$, $p < .02$, $\eta^2 = .09$ (see Figure 1). Thus, low and high obsessive participants who completed the suppression exercise reported learning the futility of suppression.

Beliefs about the control of thoughts

Scores for the OBQ Control of Thoughts subscale were submitted to a 2×2 ANOVA with obsession group (low, high) and instruction (suppression, control) as between-subjects factors. A significant obsession group \times instruction interaction was observed $F(1, 58) = 5.13$, $p < .03$, $\eta^2 = .08$ and its form was as predicted. Analysis of simple effects showed that high obsessive participants had significantly lower Control of Thoughts scores after suppression ($M = 2.87$) than after the control condition ($M = 3.78$), $F(1, 59) = 7.97$, $p < .01$, whereas among low obsessive participants there was no difference in Control of Thoughts scores between the suppression ($M = 2.62$) and control ($M = 2.46$) conditions, $F(1, 59) = .00$, $p = .99$ (Figure 2). Moreover, there was a significant difference in Control of Thoughts scores during the control condition between the low ($M = 2.46$) and high ($M = 3.78$) obsessive groups, $F(1, 59) = 16.7$,

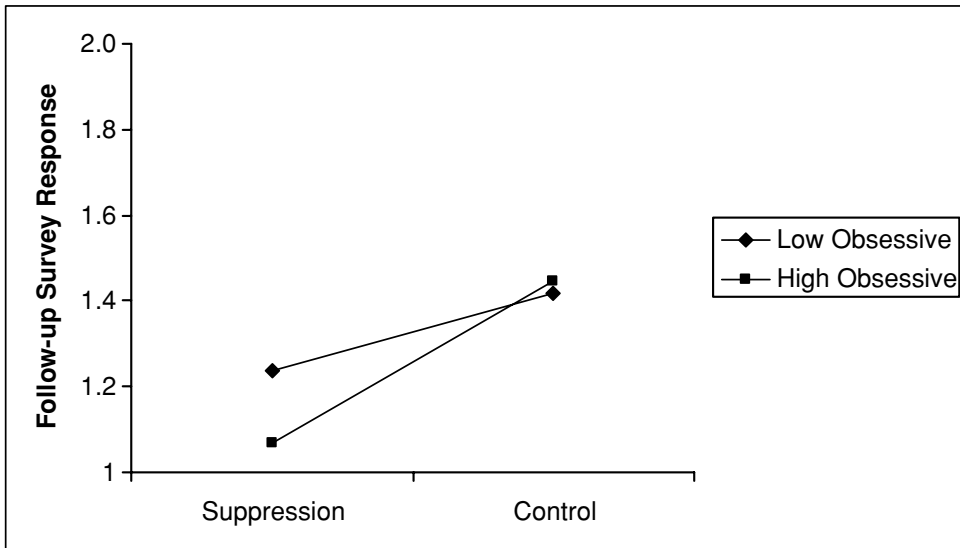


Figure 1. Follow-up survey response (“Do you believe that trying not to think about an unwanted thought is a good strategy?”) for low and high obsessive groups under suppression and control conditions in Study 1. Lower score indicates the belief that suppression is a counterproductive strategy

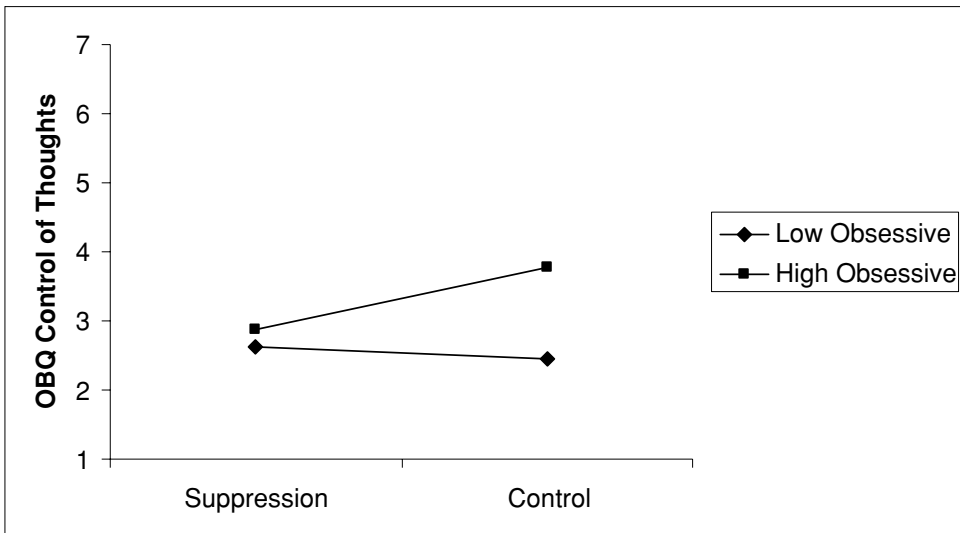


Figure 2. OBQ-87 control of thoughts subscale scores for low and high obsessive groups under suppression and control conditions in Study 1

$p < .001$, but not during the suppression condition between the low ($M = 2.62$) and high ($M = 2.87$) obsessive groups, $F(1, 59) = .7, p = .41$.

Ruling out alternative interpretations

To explore effects of the mental control instruction, we examined occurrences of the suppression target word (“penguin”) in the stream of consciousness reports of the participants in the suppression condition. “Penguin” intrusions were added across the three consecutive 5-minute suppression periods. The difference between the number of intrusions of the suppression target experienced by low obsessive participants ($M = 21$) and high obsessive participants ($M = 19$) was not statistically significant, $F(1, 30) = .04, p > .83$. A similar pattern was observed for intrusions recorded by the participants on the counter. Post-task responses to the item “How often, during the exercise, did you try not to think this thought?” were also not significantly different between the low ($M = 12$) and high ($M = 11$) obsessive participants, $F(1, 30) = .37, p > .55$. Thus, effects of the experimental manipulation are unlikely to be due to a difference in the number of intrusions of the target word or in suppression effort between the low and high obsessive groups. Most important to note is that, with the exception of two participants in the low obsessive group, no one in the suppression condition across the low and high obsessive groups reported perfect suppression. In fact, mean “penguin” intrusions for this group was 20.13, confirming the inefficiency of suppression. As was expected in the control condition, since there was no mention of “penguin” in the instructions, no participant in this condition reported a “penguin” intrusion.

Scores for the Y-BOCS Obsessions subscale were submitted to a 2×2 ANOVA with obsession group (low, high) and instruction (suppression, control) as the between-subjects factors. The obsession group \times instruction interaction was not significant $F(1, 58) = 2.47, p = .12, \eta^2 = .04$. Next, scores for the Y-BOCS Compulsions subscale were submitted to a 2×2 ANOVA with obsession group (low, high) and instruction (suppression, control) as the between-subjects factors. Again, the obsession group \times instruction interaction was not significant $F(1, 58) = .05, p = .82, \eta^2 = .001$. Thus, effects of the experimental manipulation are unlikely to be due to differences in obsessive-compulsive symptoms.

Summary

Taken together, results show that both low and high obsessive participants report learning the futility of suppression after the suppression exercise. Furthermore, after the suppression exercise, obsessive beliefs about the control of thoughts in the high obsessive group were as low as those of the low obsessive group. This was not the case for the control condition, after which obsessive beliefs about the control of thoughts were significantly higher in the high obsessive group as compared to the low obsessive group.

Study 2: Method

Overview

Participants consisted of individuals with a primary diagnosis of OCD as assessed by a clinical interview, the Structured Clinical Interview for DSM-IV (SCID, First, Spitzer, Gibbon and Williams, 1995) and a cut-off score of obsessive-compulsive symptom severity. The procedure

for Study 2 was similar to that of Study 1, with one exception: in addition to completing the self-report measures following the task, participants also completed these measures prior to the experimental task. At the end of the session, participants were given a packet of questionnaires with instructions to complete and return within 3 days.

Participants

Twenty-nine OCD patients (17 women, 12 men) participated in the study. Clinical participants were recruited from the OCD Clinic at Massachusetts General Hospital and from the community via advertisements. Requirements for inclusion in the clinical group were a primary diagnosis of OCD, a Y-BOCS total score greater than or equal to 16, and a Y-BOCS Obsessions score greater than or equal to 8. Participants were excluded from the study if they had a history of psychotic disorders, bipolar disorder, or PTSD, or evidence of substance abuse within the past month. Additionally, participants were excluded from the study if they endorsed prior exposure to the thought suppression demonstration or suppression-related psychoeducation during therapy. One participant was excluded from analysis because she did not return the post-task questionnaires. The mean Y-BOCS score for the sample was 21.68 ($SD = 5.24$), the mean for the Obsessions subscale was 11.07 ($SD = 2.69$), and for the Compulsions subscale was 10.61 ($SD = 3.48$). Thus, our sample was in the moderate range of symptom severity. Of the clinical sample, four (14%) had a comorbid diagnosis of major depressive disorder, three (11%) had a comorbid diagnosis of social anxiety disorder, three (11%) had comorbid generalized anxiety disorder, and six (21%) had comorbid specific phobia. Eleven participants (39%) were on anxiolytic medication. Participants received monetary inducement for participation. Four participants did not enter their ages; the mean age for the rest of the sample was 37.8 years ($SD = 13.8$).

Procedure

During a phone screen, potential participants completed the Y-BOCS. Inclusion criteria for the clinical group were a Y-BOCS Obsessions score of 8 or higher, and a Y-BOCS total score of 16 or higher. If eligible, participants were invited to the laboratory session. The study procedures were explained to the participants and informed consent was obtained before proceeding. During the session, participants were first asked questions about their psychiatric history and screened for current and past Axis I disorders using the Structured Clinical Interview for DSM-IV. Participants who did not fully meet eligibility criteria were paid for their time and excluded from further participation. Eligible participants completed a set of questionnaires and were randomly assigned to the suppression ($n = 14$) or control condition ($n = 14$). The instructions for the conditions were the same as those described above for Study 1. After the task, participants were given a packet of the same questionnaires that they completed prior to the experimental task and were asked to complete the questionnaires and to return them to us within 3 days.

Self-report measures

The Yale-Brown Obsessive Compulsive Scale, the Follow-up Survey, and the Obsessive Beliefs Questionnaire (OBQ-87) are described above.

Table 1. Baseline measures

	Suppression		Control		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Y-BOCS Obsessions	10.64	1.98	11.50	3.28	$t(26) = .84, p > .41$
Y-BOCS Compulsions	10.14	3.78	11.07	3.22	$t(26) = .70, p > .49$
OBQ Control of Thoughts	3.49	1.30	4.25	1.03	$t(26) = 1.71, p > .10$

Structured Clinical Interview for DSM-IV (SCID; First, Spitzer, Gibbon and Williams, 1995). The SCID was used to assess the diagnostic status for all OCD patients. It is a widely used instrument with acceptable psychometric properties (First et al., 1995). All SCIDs were administered by authors HR and JF.

Data analysis plan

A 2×2 repeated-measures ANOVA was conducted with instruction (suppression, control) as the between-subjects factor. The dependent measures were scores on the follow-up survey and pre/post-task scores on the Control of Thoughts subscale of the OBQ-87.

Results

Baseline assessment

Independent samples *t*-tests on baseline Y-BOCS and OBQ-87 scores revealed no differences between the suppression and control groups at baseline (see Table 1).

Learning the futility of suppression

As in Study 1, the free-form response to the question on the follow-up survey, “Did you learn anything from these thought exercises?” was coded dichotomously as a response to the question “Do you believe that trying not to think about an unwanted thought is a good strategy?” As in Study 1, we coded a “no” if the participant reported learning from the suppression exercise that suppression is a counterproductive strategy for controlling unwanted thoughts. An example of a “no” response from our sample was “I learned from the exercise that thoughts seem to become ‘OCD’ when we avoid them and give them power in a sense.” An independent samples *t*-test with instruction (suppression, control) as the independent variable revealed that participants in the suppression group were less likely to endorse suppression as an effective strategy for dealing with unwanted thoughts than were participants in the control group, $t(26) = 3.12, p < .004$. Most important to note is that no one in the suppression condition reported perfect suppression. In fact, mean “penguin” intrusions for this group was 23.69, confirming the ineffectiveness of suppression.

Beliefs about the control of thoughts

Scores for the OBQ Control of Thoughts subscale were submitted to a 2×2 repeated-measures ANOVA with instruction (suppression, control) as the between-subjects factor and time (pre-task, post-task) as the within-subjects variable. The instruction \times time interaction was not significant, $F(1, 26) = .32, p = .58, \eta^2 = .01$, and neither was the main effect of instruction, $F(1, 26) = 2.33, p = .14, \eta^2 = .08$.

Summary

Results from this study show that although participants learned the futility of suppression after the suppression exercise, they did not experience a reduction in obsessive beliefs about the control of thoughts.

Discussion

In Study 1, the non-clinical, high obsessive group learned the futility of suppression after the suppression exercise and experienced a reduction in obsessive beliefs about the control of thoughts. Additional analyses confirmed that these results were not due to a difference in number of target intrusions, that is, the low obsessive group was no better or worse than the high obsessive group in its ability to suppress thoughts. Additional analyses also confirmed that these results were not due to a difference in suppression effort between low and high obsessive participants in the suppression group. In Study 2, on the other hand, although individuals with OCD also learned the futility of suppression after the suppression exercise, contrary to our prediction, they did not experience a reduction in obsessive beliefs about the control of thoughts.

Taken together, results of the two studies suggest that learning the futility of suppression may be necessary and sufficient for altering faulty beliefs about the control of thoughts in high obsessive individuals in the non-clinical population, but for individuals with OCD, this learning may be insufficient for altering underlying beliefs. We suspect that underlying beliefs about the control of thoughts may be more ingrained in individuals with OCD and hence altering them may take multiple iterations of the suppression demonstration. In an open trial assessing the effectiveness of cognitive therapy for OCD, Wilhelm et al. (2005) have shown that underlying obsessional beliefs, including beliefs about the control of thoughts, can indeed be altered in patients with OCD. In the trial, however, therapists used Socratic questioning, cognitive restructuring, and mindfulness skills, in addition to the suppression demonstration. Moreover, multiple belief domains were targeted simultaneously, for example, in addition to beliefs about the control of thoughts, the treatment targeted beliefs about overinflated sense of responsibility and over-importance of thoughts. It may be argued that beliefs about the need to control unwanted thoughts become more amenable to change if the patient is simultaneously learning to reduce the importance of unwanted thoughts or beliefs about his/her own responsibility to prevent the consequences of the thought. Finally, the trial was run over a period of 14 weeks. Thus, it may well be possible to modify underlying beliefs in OCD, but only over a longer period of time and with multiple techniques aimed at challenging underlying beliefs.

One possibility is that, in Study 2, since we did not conduct the post-manipulation assessment immediately after the manipulation, and instead allowed participants to turn it in up to 3 days after the session, we might have diminished the likelihood of finding effects of the manipulation. Another limitation of our study relates to the difference in learning during a contrived lab task versus applying it to a personally salient obsession. For example, individuals with OCD have greater practice suppressing their obsessions on a regular basis and this could be one reason why, in Study 2, demonstration with a contrived task did not produce significant learning. Another potential limitation of our design is the lack of pre-manipulation assessment of the key dependent variable (beliefs about the control of thoughts) in Study 1. We have assumed that the combination of fairly large sample size ($N = 62$) and random assignment to conditions in Study 1 has resulted in comparable pre-manipulation beliefs about the control of thoughts in the suppression and control groups. Additionally, we did test for comparability of pre-manipulation obsessional symptoms and found no difference in symptom severity between low obsessive participants in the suppression and control groups, nor between high obsessive participants in the suppression and control groups. Nevertheless, the fact that we did not measure pre-manipulation beliefs about the control of thoughts could be a potential limitation of Study 1. In Study 2, however, since our sample size was smaller ($N = 28$), we did complete a pre-manipulation assessment of the key dependent variable to avoid the potential problem of unequal groups at baseline. Finally, 39% of the sample for Study 2 was on anxiolytic medication. Although this constituted a similar number of participants in the suppression ($n = 5$) and the control conditions ($n = 6$), it is possible that medication affected the two groups differentially. Given the small sample size, we were unable to conduct additional analyses to examine the effects of medication on our results.

In our study, we have shown that patients with OCD are able to learn the futility of suppressing a neutral target; however, it may be the case that they are unable to make the connection between suppressing a neutral thought and a personally relevant obsession and hence do not show reductions in underlying beliefs. For OCD patients, this connection may need to be stated explicitly in order to affect their obsessive beliefs. In terms of treatment, this might be accomplished by following up the suppression demonstration with a psychoeducational discussion about the futility of suppression of all types of thoughts, including neutral ones, like thoughts of penguins, and distressing ones, such as their obsessions (see Wilhelm and Steketee, 2006). Our hope is that through repeating a combination of the suppression demonstration and a psychoeducational discussion about the futility of suppression, over time patients will come to learn that their thoughts are not the problem, but rather it is their maladaptive beliefs about the need to control thoughts and their unrealistic expectations regarding the controllability of thoughts.

References

- Abramowitz, J. S., Tolin, D. F. and Street, G. P.** (2001). Paradoxical effects of thought suppression: a meta-analysis of controlled studies. *Clinical Psychology Review*, 21, 683–703.
- Baer, L.** (2001). *The Imp of the Mind: exploring the silent epidemic of obsessive bad thoughts*. New York: Dutton/Penguin Books.
- Clark, D. A.** (2001). Unwanted mental intrusions in clinical disorders: an introduction. *Journal of Cognitive Psychotherapy: An International Quarterly*, 16, 161–178.

- Clark, D. A. (2005). *Intrusive Thoughts in Clinical Disorders: theory, research, and treatment*. New York: Guilford Press.
- Dagleish, T. and Yiend, J. (2006). The effects of suppressing a negative autobiographical memory on concurrent intrusions and subsequent autobiographical recall in dysphoria. *Journal of Abnormal Psychology*, 115, 467–473.
- First, M. B., Spitzer, R. L., Gibbon, M. and Williams, J. B. W. (1995). *Structured Clinical Interview for DSM-IV Axis I Disorders*.
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: a new area of cognitive developmental inquiry. *American Psychologist*, 34, 906–911.
- Goodman, W. K., Price, L. H., Rasmussen, S. A., Mazure, C., Fleischmann, R. L., Hill, C. L., Heninger, G. R. and Charney, D. S. (1989a). The Yale-Brown Obsessive Compulsive Scale: II. development, use, and reliability. *Archives of General Psychiatry*, 46, 1006–1011.
- Goodman, W. K., Price, L. H., Rasmussen, S. A., Mazure, C., Delgado, P., Heninger, G. R. and Charney, D. S. (1989b). The Yale-Brown Obsessive Compulsive Scale: II. validity. *Archives of General Psychiatry*, 46, 1012–1016.
- Guthrie, R. and Bryant, R. A. (2000). Attempting suppression of traumatic memories over extended periods in acute stress disorder. *Behaviour Research and Therapy*, 38, 899–907.
- Harvey, A. G. and Bryant, R. A. (1998). The effect of attempted thought suppression in acute stress disorder. *Behavior Research and Therapy*, 36, 583–590.
- Janeck, A. S. and Calamari, J. E. (1999). Thought suppression in obsessive-compulsive disorder. *Cognitive Therapy and Research*, 23, 497–509.
- Kelly, A. E. and Kahn, J. H. (1994). Effects of suppression of personal intrusive thoughts. *Journal of Personality and Social Psychology*, 66, 998–1006.
- Najmi, S., Riemann, B. and Wegner, D. M. (in press). Managing unwanted intrusive thoughts in obsessive-compulsive disorder: relative effectiveness of suppression, focused distraction, and acceptance. *Behaviour Research and Therapy*.
- Najmi, S. and Wegner, D. M. (2008). Thought suppression and psychopathology. In A. J. Elliot (Ed.), *Handbook of Approach and Avoidance Motivation* (pp. 447–459). New York: Psychology Press.
- McNally, R. J. and Ricciardi, J. N. (1996). Suppression of negative and neutral thoughts. *Behavioural and Cognitive Psychotherapy*, 24, 17–25.
- Obsessive Compulsive Cognitions Working Group** (1997). Cognitive assessment of obsessive-compulsive disorder. *Behaviour Research and Therapy*, 35, 667–681.
- Obsessive Compulsive Cognitions Working Group** (2001). Development and initial validation of the obsessive beliefs questionnaire and the interpretation of intrusions inventory. *Behaviour Research and Therapy*, 39, 987–1006.
- Obsessive Compulsive Cognitions Working Group** (2003). Psychometric validation of the Obsessive Beliefs Questionnaire and the Interpretation of Intrusions Inventory: Part I. *Behaviour Research and Therapy*, 41, 863–878.
- Purdon, C. L. and Clark, D. A. (1993). Obsessive intrusive thoughts in nonclinical subjects: Part I. content and relation with depressive, anxious and obsessional symptoms. *Behaviour Research and Therapy*, 31, 713–720.
- Purdon, C. L. and Clark, D. A. (2000). White bears and other elusive intrusions: assessing the relevance of thought suppression for obsessional phenomena. *Behavior Modification*, 24, 425–453.
- Purdon, C. L. and Clark, D. A. (2001). Suppression of obsession-like thoughts in nonclinical individuals: impact on thought frequency, appraisal and mood state. *Behaviour Research and Therapy*, 39, 1163–1181.
- Purdon, C. L., Rowa, K. and Antony, M. M. (2005). Thought suppression and its effects on thought frequency, appraisal and mood state in individuals with obsessive-compulsive disorder. *Behaviour Research and Therapy*, 43, 93–108.
- Rachman, S. J. (1997). A cognitive theory of obsessions. *Behaviour Research and Therapy*, 35, 793–802.

- Rachman, S. J. and de Silva, P.** (1978). Abnormal and normal obsessions. *Research and Therapy*, 16, 233–248.
- Rassin, E.** (2005). *Thought Suppression*. New York: Elsevier.
- Salkovskis, P. M.** (1985). Obsessional-compulsive problems: a cognitive-behavioral analysis. *Behaviour Research and Therapy*, 23, 571–583.
- Salkovskis, P. M. and Campbell, P.** (1994). Thought suppression induces intrusion in naturally occurring negative intrusive thoughts. *Behaviour Research and Therapy*, 32, 1–8.
- Salkovskis, P. M. and Harrison, J.** (1984). Abnormal and normal obsessions: a replication. *Research and Therapy*, 23, 571–584.
- Salkovskis, P. M. and Reynolds, M.** (1994). Thought suppression and smoking cessation. *Behaviour Research and Therapy*, 32, 193–201.
- Shipherd, J. C. and Beck, J. G.** (1999). The effects of suppressing trauma-related thoughts on women with rape-related posttraumatic stress disorder. *Behaviour Research and Therapy*, 37, 99–112.
- Taylor, S.** (1995). Assessment of obsessions and compulsions: reliability, validity, and sensitivity to treatment effects. *Clinical Psychology Review*, 15, 261–296.
- Tolin, D. F., Abramowitz, J. S., Hamlin, C., Foa, E. B. and Synodi, D. S.** (2002a). Attributions for thought suppression failure in obsessive-compulsive disorder. *Cognitive Therapy and Research*, 26, 505–517.
- Tolin, D. F., Abramowitz, J. S., Przeworski, A. and Foa, E. B.** (2002b). Thought suppression in obsessive-compulsive disorder. *Behaviour Research and Therapy*, 40, 1255–1274.
- Trinder, H. and Salkovskis, P. M.** (1994). Personally relevant intrusions outside the laboratory: long-term suppression increases intrusion. *Behaviour Research and Therapy*, 32, 833–842.
- Wegner, D. M.** (1994). Ironic processes of mental control. *Psychological Review*, 101, 34–52.
- Wegner, D. M., Schneider, D. J., Carter III, S. and White, L.** (1987). Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology*, 53, 5–13.
- Wenzlaff, R. M. and Bates, D. E.** (1998). Unmasking a cognitive vulnerability to depression: how lapses in mental control reveal depressive thinking. *Journal of Personality and Social Psychology*, 75, 1559–1571.
- Wenzlaff, R. M. and Eisenberg, A. R.** (2001). Mental control after dysphoria: evidence of a suppressed, depressive bias. *Behavior Therapy*, 32, 27–45.
- Wenzlaff, R. M., Meir, J. and Salas, D. M.** (2002). Thought suppression and memory biases during and after depressive moods. *Cognition and Emotion*, 16, 403–422.
- Wenzlaff, R. M., Wegner, D. M. and Roper, D. W.** (1988). Depression and mental control: the resurgence of unwanted negative thoughts. *Journal of Personality and Social Psychology*, 55, 882–892.
- Wenzlaff, R. M. and Wegner, D. M.** (2000). Thought suppression. In S. T. Fiske (Ed.), *Annual Review of Psychology: Vol. 51* (pp. 59–91). Palo Alto, CA: Annual Reviews.
- Wilhelm, S. and Steketee, G.** (2006). *Cognitive Therapy for Obsessive-Compulsive Disorder: a guide for professionals*. Oakland, CA: New Harbinger Press.
- Wilhelm, S., Steketee, G., Reilly-Harrington, N., Deckersbach, T., Buhlmann, U. and Baer, L.** (2005). Effectiveness of cognitive therapy for obsessive-compulsive disorder: an open trial. *Journal of Cognitive Psychotherapy*, 19, 173–179.