

Manipulating Meta-Cognitive Beliefs about the Difficulty to Suppress Scratching: Implications for Obsessive-Compulsive Disorder

Orna Reuven-Magril, Merav Rosenman, Nira Liberman,
and Reuven Dar

Tel Aviv University

The present study explored the effect of a meta-cognitive manipulation of suppression difficulty on post suppressional rebound of behavior. Non-clinical participants were asked to suppress scratching, while working on a questionnaire that presented scratching-related situations. Some participants received a meta-cognitive conceptualization of potential difficulty in executing the suppression task. Namely, they were either told that suppressing scratching is quite easy for everybody, or told that suppressing scratching is very difficult for everybody. Based on the Motivational Inference Model of Post-Suppressional Rebound (MIMO; Liberman & Förster, 2000; Förster & Liberman, 2001) we reasoned that participants would use the meta-cognitive conceptualization to infer their own motivation: those who received the Easy for Everybody instructions would consider their suppression failures to be indicative of their motivation to scratch, and therefore would scratch more. Conversely, participants who received the Difficult for Everybody instructions would consider their suppression failures as natural and noninformative, and consequently would be less motivated to scratch. In accordance with our predictions, the Easy for Everybody group scratched more than the Difficult for Everybody group, which was similar to a control group that completed the questionnaire without suppression instructions. The results are discussed in a broad meta-cognitive framework which examines the relations between suppression and meta-cognitive beliefs about suppression failures in cognitive and meta-cognitive theories of OCD.

Suppression of thoughts and behaviors is a difficult task, as anyone who attempted to quit smoking, loose weight, or stop reminiscing over a romantic partner will confirm (Erskine, 2008; Salkovskis & Reynolds, 1994). The literature on thought suppression shows that attempts to suppress unwanted thoughts typically result in a paradoxical enhancement of these thoughts, both during and following suppression attempts

Address correspondence to Reuven Dar, Ph.D., Department of Psychology, Tel Aviv University, Tel Aviv 69978, Israel; E-mail: ruvidar@freud.tau.ac.il

(e.g., Clark, Ball, & Pape, 1991; Förster & Liberman, 2001; Gold & Wegner, 1995; Koster, Rassin, Crombez, & Näring, 2003; Liberman & Förster, 2000; Muris, Merckelback, & Horselenberg, 1996; Wegner, Schneider, Carter, & White, 1987; for review see Wenzlaff & Wegner, 2000). Wegner, Schneider, Carter, and White (1987) were the first to demonstrate both the fallibility of suppression and the existence of post-suppressional rebound (PSR) - the tendency of the suppressed construct to become even more accessible than it would be if there were no attempts to suppress it. In the classic study by Wegner et al. (1987), participants were instructed to verbalize their stream of consciousness for a period of 5 min while trying not think of a white bear and to ring a bell each time the thought of white bear crossed their minds. Following this initial suppression period, participants were asked to think of a white bear for another 5-min period and continued to ring a bell each time the thought of a white bear surfaced. The results showed that suppression in the first phase was difficult for the participants—most of them thought of white bears despite instructions not to think of them. Moreover, these participants showed a post-suppressional rebound (PSR) effect—they had a higher rate of white bear thoughts during the second phase as compared to participants who were asked to think of a white bear at the outset, without a suppression phase. Since the original study by Wegner et al. (1987), the PSR effect was replicated with different constructs, including white bears (Förster & Liberman, 2001), color terms and stereotypes (Liberman & Förster, 2000), thoughts about one's own romantic relationships (Wegner & Gold, 1995), mood (Wegner, Erber, & Zana-kos, 1993) and more (Wegner & Erber, 1992).

The tendency to spontaneously engage in thought suppression is believed to be closely associated with metacognitive “beliefs, defined as beliefs about one's cognitive system” (Wells, 1995, p. 302). Specifically, heightened levels of cognitive self-consciousness and negative appraisal of one's own thoughts are related to frequent efforts of thought suppression (Purdon, 2004; Wells, 1997, 2005). This relationship is central to cognitive and meta-cognitive theories of OCD, which suggest that attempts to suppress unwanted thoughts are driven by beliefs that thoughts are controllable, that one is responsible for the content of one's thoughts and that thoughts may lead to unwanted actions or events (Clark & Purdon, 1993; Purdon & Clark, 1999; Rachman, 1997, 1998; Salkovskis, 1985, 1989, 1996; Wells, 1997, 2000). For example, within the cognitive tradition, Salkovskis and colleagues suggest that OCD patients interpret intrusive thoughts as indicating responsibility for unacceptable and preventable harm, which leads to discomfort and excessive neutralization efforts (Salkovskis et al., 1996; Salkovskis, Shafran, Rachman, & Freeston, 1999). Research on Thought-Action Fusion suggests that OCD patients tend to believe that thinking about an unacceptable or disturbing event makes that event more probable and to interpret obsessional thoughts as morally equivalent to actions (Shafran & Rachman, 2004; Shafran, Thordarson, & Rachman, 1996). Wells (1997, 2000) developed a meta-cognitive framework that emphasizes beliefs about the importance, meaning and power of thoughts, and beliefs about the need to control thoughts and perform rituals. Wells (1997, 2000) also expanded the concept of fusion beliefs, proposing the notions of Thought-Event Fusion, a meta-cognitive belief that thinking a thought will make something bad happen or means it already happened, and Thought-Object Fusion, a belief that thinking a thought will cause it to be passed into an object or contaminate a place.

There is considerable evidence that the catastrophic interpretations of thoughts typical to OCD patients are related to the intensive attempts of OCD patients to avoid or suppress anxiety-related thoughts (Janeck & Calamari, 1999; Tolin, Abranowitz,

Hamlin, Foa, & Synodi, 2002). Cognitive theories of OCD also postulate that OCD patients experience a high rate of PSR, which explains the persistence (and often the intensification) of obsessional thoughts. A social psychological model of PSR implies that this high rate of PSR may also be related to the metacognitive beliefs shared by OCD patients. The Motivational Inference Model (MIMO) of PSR (Förster & Liberman, 2001; Liberman & Förster, 2000) states that people may infer from the difficulty they experience during suppression or from suppression failures that they are motivated to use the suppressed construct. This kind of inference, in turn, enhances the motivation to think of the suppressed construct, thereby also enhancing its accessibility. In the studies by Wegner et al., for example, participants experienced suppression failures or intrusions of the suppressed thoughts (e.g., Wegner & Gold, 1995; Wegner et al., 1987). Lacking the knowledge that most people experience a substantial number of such intrusions (i.e., that the task is objectively difficult), participants may think that the failures are informative of their own motivational state (thoughts of white bears keep popping into my mind despite my attempts to suppress them. It must be, then, that I am compelled to have these thoughts). When experienced difficulty is interpreted as a need to use the suppressed construct, the need is intensified and also enhances the accessibility of the suppressed construct, thereby giving rise to a PSR.

According to MIMO, because inferences about the meaning of experienced difficulty of suppression mediate rebound, altering these inferences should affect the magnitude of rebound. More specifically, MIMO predicts that PSR would be reduced when suppression difficulty and suppression failures are not understood as indicating motivation to use the suppressed construct. Förster and Liberman (2001) demonstrated the processes of motivational inferences that underlie PSR using various suppressed constructs, meta-cognitive manipulations and PSR measures. One of their studies, for example, added a manipulation of meta-cognitive beliefs about suppression difficulty to Wegner's white bear paradigm. During the suppression period, participants listened to a recording of unintelligible speech. In order to manipulate inferences about difficulty, some participants were told that the tape would make it easy for them to suppress thoughts of white bears because it would subliminally introduce concepts that interfere with such thoughts. Other participants were told that the tape would make it difficult for them to suppress thoughts of white bears because it would subliminally encourage those thoughts. Förster and Liberman (2001) reasoned that for participants in the first group (tape makes suppression easy) the inference process would be something like, "If it is difficult for me to suppress the thought in spite of the helpful effect of the tape, it must be because I am really compelled to think of white bears." Participants in the second group (tape makes suppression difficult) would engage in an inference process like: "It is difficult for me to suppress the thoughts, but it must be the effect of the tape and not something special about me." As predicted by MIMO, during the expression phase, participants in the second group (tape makes suppression difficult) reported significantly fewer thoughts of white bears (i.e., less PSR) than participants in the first group (tape makes suppression easy). In fact, telling participants that the tape would make suppression difficult entirely eliminated PSR. Similarly, Förster and Liberman (2001) showed that telling German participants that suppressing stereotypes of Turkish foreign workers is difficult even for nonprejudiced people eliminated PSR of that stereotype. In another set of studies, similar effects were found for the suppression of aggressive or violent thoughts (Förster & Liberman, 2003).

Although MIMO is a social psychological model of PSR, and not a model of OCD, we believe that the mechanism it suggests is highly relevant to the meta-cognitive explanations of this disorder. MIMO suggests that during suppression attempts people engage in a meta-cognitive interpretation of their own experiences of suppression difficulty. Furthermore, in this model, the meta-cognitive interpretation people apply alludes to something about their (possibly covert) motivation. In these respects, the inference process that MIMO postulates is similar to the catastrophic meta-cognitive interpretations of thoughts suggested by models of OCD. OCD patients might think that being unable to suppress a thought says something very important and extremely unpleasant about themselves. The resemblance between MIMO and meta-cognitive models of OCD becomes even more apparent when we consider some therapeutic implications: if altering meta-cognitive beliefs about the meaning of suppression difficulty can alter PSR, then telling OCD patients that attempting to control thoughts is objectively difficult and that failures in thought control are a normal phenomenon may help them be less engaged in the persistent recurring of thoughts. The phenomenology of OCD, however, raises the question whether MIMO may apply not only to thoughts but also to behaviors: Will acknowledging that control of behaviors, i.e., avoiding performance of specific rituals, is extremely difficult reduce compulsive behavior? According to MIMO it should. Since OCD patients probably interpret the difficulty they encounter during suppression as an indication of their motivation to perform the ritual, telling them that suppressing behaviors is difficult might reduce behavioral PSR.

Reviewing the literature on behavior suppression reveals that it has been studied much less than thought suppression (but see Ansfield & Wegner, 1996; Wegner, Ansfield, & Pilloff, 1998) and specifically, MIMO was never studied in the context of suppression of behavior. The present experiment targets this empirical gap, thereby addressing the relevance of meta-cognitive models not only to obsessions but also to compulsions.

The present experiment attempts to explore behavioral rebound that is produced by suppression of behaviors. For this study, we chose a behavior that is basic and repetitive in nature rather than OCD-specific. Participants were invited to an experiment on reaction to imagined tactile stimuli and completed a questionnaire describing situations that may give rise to scratching. Participants in the no-suppression, control group (one third of participants) did not receive further instructions, whereas other participants were instructed to suppress scratching. One third of the participants were also led to believe that suppressing scratching is quite easy for everybody, whereas another third were let to believe that doing so is very difficult for everybody. We reasoned that all participants would experience difficulty in suppressing scratching, and that participants in the Easy for Everybody condition would think that if it is difficult for them not to scratch in spite of the alleged ease of the task, then it must be because they have the need to do so. Conversely, participants in the Difficult for Everybody condition would think that it is difficult for them not to scratch because the suppression task is difficult, and would not infer a special need to scratch on their part. We measured PSR as the number of scratches during a subsequent expression period. We expected a PSR, namely, more scratching during the expression phase in the Easy for Everybody condition than in the control, no suppression condition. Based on MIMO, we also expected less PSR in the Difficult for Everybody suppression condition than in the Easy for Everybody suppression condition.

METHOD

Participants

Sixty Tel-Aviv University undergraduates (42 women) participated in the study for course credit. Their age ranged from 18 to 44 ($M = 22.56$, $SD = 3.34$). There were no gender differences in any of the reported results. All participants signed an informed consent prior to participation and were fully debriefed after the completion of the study.

Procedure

Participants were invited to 30 min individual sessions of a study on reaction to imagined tactile stimuli, which were described as “stimuli that one can feel on her skin, such as touch, pain, heat and cold.” Participants were asked to complete a questionnaire on their reactions to such stimuli. The questionnaire included 7 items like “an ant is crawling on your hand,” “a bee is heading towards your face so you can hear the buzzing.” Each item was followed by four questions: “to what degree this feeling is (1) itching; (2) tickling; (3) strong; (4) scary” with scales ranging from 1 (not at all) to 9 (very much). All Participants were told that a video camera will record the entire experimental session. The camera was placed at the corner of the room, and was operated by the experimenter after receiving participant’s consent for videotaping their session. Participants were then randomly allocated to experimental groups. Participants in the control group (one third of participants) completed the questionnaire with no further instructions. Participants in the experimental groups (the remaining two thirds) were instructed not to scratch as they complete the questionnaire. Half of these were told that avoiding scratching is quite easy. They were informed that other participants experienced no difficulty in completing this task, i.e., they had no problem working on the questionnaire without scratching. The remaining one third of participants was told that avoiding scratching is quite difficult. They were informed that other participants experienced considerable difficulty while complying with these instructions, i.e., they found it very difficult to complete the questionnaire without scratching. After completing the questionnaire, all participants were introduced to the expression phase. Participants who received suppression instructions were told that these instructions were no longer relevant. During expression, participants completed a number of questionnaires unrelated to the study, which were intended to keep them busy with writing. The video camera was left on, so that the expression phase was still recorded. Participants were then fully debriefed and thanked for taking part.

The time participants took to fill the questionnaires varied, but only the first 5 min of the phase were coded towards the measure of PSR. Two judges counted the number of times each participant scratched during suppression and during the first 5 min of the expression phase. Reliability between judges was high $r(20) = .89$, $p < .001$.

TABLE 1. Means (and SDs) of the Number of Times Participants Scratched During Suppression and Expression Phases by Experimental Condition

	Control, No suppression <i>N</i> =20	Suppression, "easy for everybody" <i>N</i> =20	Suppression, "difficult for everybody" <i>N</i> =20
Suppression phase	8.1 (9.65)	0.3 (0.57)	0.4 (0.75)
Expression phase	5.2 (3.39)	8.95 (5.06)	4.6 (3.95)

RESULTS

The mean number of times participants scratched during suppression and expression phases is presented in Table 1. We expected that participants in the two suppression groups would comply with the suppression instructions. More importantly, we expected a PSR in the Easy for Everybody suppression group, and a reduced rebound in the Difficult for Everybody suppression group.

Suppression Phase: manipulation check

We first examined whether our suppression instructions were effective. Due to the skewed distribution of the number of scratches, we used nonparametric analysis (Sprent, 1992). A nonparametric ANOVA (Kruskal-Wallis Test) of the number of scratches during suppression indicated a significant effect of experimental condition, $X^2_{(3, 80)} = 40.58, p < .001$. A nonparametric contrast analysis using the Mann Whitney U test revealed that participants in the no suppression condition ($M = 8.1$) scratched more than participants in both the Easy for Everybody suppression condition ($M = 0.3$) and the Difficult for Everybody suppression condition ($M = 0.4$), both $U < 22.00, p < .001$, whereas the latter two did not differ from each other, $U = 190.00, p = .80$. Thus, participants in the suppression conditions complied with the experimental instructions to suppress scratching.

Expression Phase: Post-Suppressional Rebound

Our main dependent measure was the magnitude of the behavioral rebound, namely, the number of times participants scratched during the expression phase. A nonparametric ANOVA (Kruskal-Wallis Test) of this measure revealed a significant effect of experimental condition, $X^2_{(3, 80)} = 13.61, p = .003$. Mann Whitney nonparametric contrast analysis revealed that participants in the Easy for Everybody suppression condition ($M = 8.95$) scratched more than participants in the no suppression condition ($M = 5.2$), $U = 67.00, p < .001$, showing evidence of a PSR. Most importantly, PSR was reduced in the Difficult for Everybody suppression condition ($M = 4.6$) relative to the Easy for Everybody suppression condition ($M = 8.95$), $U = 105.00, p = .009$. In fact, telling participants that suppression was difficult for everybody eliminated rebound, as the number of times participants scratched in the Difficult for Everybody

suppression condition ($M = 4.6$) did not differ from the control, no suppression condition ($M = 5.2$), $U = 164.00$, $p = .34$.

These results suggest that participants used the meta-cognitive conceptualization of the difficulty of suppression as a motivational cue. Those who were led to believe that suppression of scratching is easy for everybody, considered their suppression failures as particularly indicative of a motivation on their part to scratch, and therefore scratched more. Conversely, participants that were led to believe that suppression is difficult for everybody, considered the experience of suppression difficulty as natural and noninformative, did not infer that they were motivated to scratch and consequently scratched less.

DISCUSSION

The present research examined whether different meta-cognitive explanations of the perceived difficulty to suppress an action would affect the magnitude of behavioral PSR. We found that participants who were told that suppressing scratching is easy for everybody showed PSR, i.e., scratched more during expression phase in comparison to participants who did not receive suppression instructions, whereas telling participants that suppression is difficult for everybody eliminated PSR.

These results support Förster and Liberman's (2001, 2003) MIMO, according to which people may infer from suppression difficulty that they are motivated to perform the suppressed action. It seems that when participants attributed suppression difficulty to the objective difficulty of the task they discounted their need to scratch and consequently scratching did not rebound. Conversely, participants who were led to believe that suppressing scratching is easy attributed their difficulties to their motivation to scratch, resulting in a greater rebound. Our results demonstrate that PSR may be mediated by inferences even in the case of behaviors that are often considered to be instinctive, such as scratching. However, it should be acknowledged that our behavioral measure should be further investigated and compared with other self-report measures, as part of expanding the yet limited research on behavior suppression.

Our study corresponds with increasing evidence that appraisal of one's cognitive processes is a key factor in understanding the persistence of obsessions and compulsions (Emmelkamp & Aardema, 1999; Fisher & Wells, 2005, 2008; Gwilliam, Wells, & Cartwright-Hatton, 2004; Janeck, Calamari, Ricmann, & Heffelfinger, 2003; Purdon, Rowa, & Anthony, 2005). Gwilliam et al. (2004), for example, found that meta-cognitive beliefs concerning the need to control thoughts, thought-action fusion, and negative beliefs about cognitive competence are reliable predictors of OCD. Janeck et al. (2003) concluded that an excessive reflection on one's cognitive processes may increase opportunities for negative appraisals of intrusive thoughts, thereby enhancing vulnerability to developing OCD. Future research may continue to explore the antecedents and consequences of the attempts to control thoughts and behaviors, which appear to be of vital importance to our understanding of OCD.

Our results join in with this line of metacognitive research by showing that behavioral manifestations of PSR, which may be conceptualized as behavioral relapses, can be reduced by nonmotivational interpretation of suppression difficulty. In the case of OCD, nonmotivational interpretations of suppression difficulty may serve to lessen the vicious cycle of exerting effort in suppression attempts, an effort which is guided by the belief that such efforts should be successful, but which ends up in inevitable

failure. Our results suggest that it may be beneficial to develop specific components in cognitive and meta-cognitive therapies for OCD that aim to convey to the patient that control is naturally difficult for everybody and is not indicative of a unique need or desire.

Finally, it is interesting to note that psychodynamically-oriented therapy actually conveys to patients the opposite idea, namely that obsessions are difficult to suppress exactly because they are indicative of personal wishes and motivations. In line with this notion it would be interesting to study the effects of meta-cognitive conceptualizations of suppression difficulty that resemble therapeutic interpretations. For example, participants during the suppression period can receive a version of the psychodynamic conviction that ideas find their way to consciousness because they are particularly meaningful and intense. Other participants can be given the meta-cognitive therapy version, stating that thoughts tend to surface and recur because thought control is extremely difficult, and not because these ideas are particularly true or important. MIMO predicts that participants receiving the "psychodynamic" manipulation will experience more PSR. Such a result, if obtained, may partially account for the well established advantage of CBT over psychodynamic therapy for OCD (e.g., Greist & Jefferson, 1995).

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