Shorter communication

The tendency to suppress, inhibiting thoughts, and dream rebound

Fiona Taylor, Richard A. Bryant*

School of Psychology, University of New South Wales, Matthews, Room 836, NSW 2052, Sydney, Australia

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Abstract

Ironic control theory proposes that suppressing thoughts leads to increased occurrence of the suppressed thought because monitoring for the unwanted thought leads to intrusions. This study investigated the influence of suppressing unwanted thoughts on dream content. One hundred participants who had high or low levels of tendency to suppress unwanted thoughts nominated an intrusive thought, and half of the participants were instructed to suppress that thought for 5 min prior to sleeping. Participants completed a dream diary upon waking, which was subsequently rated by independent raters for dream content. In terms of the 79 participants who reported dreaming, more high suppressors who were instructed to suppress dreamt about the intrusive thought than high suppressors in the control condition. There was no difference between low suppressors in the suppression and control conditions. These results suggest that dream content can be influenced by attempted suppression prior to sleep, and this is particularly apparent in people with a tendency to suppress unwanted thoughts.

Keywords: Thought suppression; Dreams; Ironic control; Unwanted thoughts

Introduction

Recurrent unwanted dreams contribute to impaired sleep, psychological distress, and fear of going to sleep (Harvey, Jones, & Schmidt, 2003). Understanding the mechanisms underpinning dream occurrence is important for developing strategies to regulate dreams, especially unwanted dreams. A promising model to understand dream occurrence is through the occurrence of unwanted thoughts in waking states. A considerable body of research indicates that suppressing unwanted thoughts often leads to the increase in the suppressed thought. In a seminal study, Wegner, Schneider, Carter, and White (1987) instructed participants to either suppress or express thoughts of a white bear, and found that suppression resulted in increased awareness of white bear thoughts following attempted suppression. A large number of subsequent studies have found that attempted suppression leads to increased accessibility of the suppressed thought either during the period of suppression (Lane & Wegner, 1995; Wegner & Erber, 1992; Wegner, Erber, & Zanakos, 1993) or
after the suppression has been terminated (Clark, Ball, & Pape, 1991; Harvey & Bryant, 1998; McNally & Riccardi, 1996; for a review, see Wenzlaff & Wegner, 2000).

To explain the paradoxical effects of thought suppression, the ironic control theory states that mental control involves the interplay of two processes, an intentional operating process and an ironic monitoring process (Wegner, 1994; Wenzlaff & Wegner, 2000). When one attempts suppression, an operating process is purportedly activated to maintain the desired state of mind by effortfully searching for thoughts that prevent the suppressed thought from occurring. In parallel, a monitoring process searches for indications of the unwanted thought; this process is said to be less effortful and less vulnerable to be disturbed by interference from other tasks (Wegner, 1994). The theory holds that because the intentional operating process is an effortful and conscious process, the search for alternate thoughts is susceptible to disruption by other demands on cognitive resources. Accordingly, when mental capacity is diminished by additional cognitive load, the operating process becomes disrupted while the monitoring process continues its search for mental contents that signal failure of mental control. In this way, trying to suppress unwanted thoughts can lead to the occurrence of the thought that one is trying to avoid.

There is increasing evidence that suppression is mediated by individual difference factors, which influences the degree to which individuals experience thought rebound after a suppression (Rutledge, Hancock, & Rutledge, 1996; Rutledge, Hollenberg, & Hancock, 1993; Smari, Sigurjonsdottir, & Saemundsdottir, 1994). Consistent with the ironic control theory, individuals who have a tendency toward suppression have been shown to experience greater levels of rebound, and also are prone to higher levels of psychopathological responses that involve intrusive thoughts, including depression, anxiety and obsessional thinking (Wegner & Zanakos, 1994).

Wegner and colleagues recently conducted an initial study into the effects of thought suppression on dream content (Wegner, Wenzlaff, & Kozak, 2004). They requested undergraduate students to complete a 5-min stream of consciousness writing task before going to sleep. Students had been allocated to one of three conditions: (a) an expression condition (in which they were instructed to focus their thoughts on a target thought), (b) a mention condition (in which they were instructed to think about anything at all), and (c) a suppression condition (in which they were instructed not to think about the target). On the basis of dream reports written upon waking the next morning, it was found that students who were asked to suppress reported more dreams about the target thought than other participants. Wegner et al. (2004) suggested that the brain activity involved in REM sleep fully or partially disables the operating process, and may enhance the ironic monitoring process, thereby leading to suppressed material being more accessible during REM sleep and prompting the return of suppressed material in dreams.

The aim of the current study was to replicate and extend the Wegner et al. (2004) study. Specifically, we extended the study by evaluating the differential effects of attempted suppression on participants with varying levels of suppression tendency. We hypothesized that participants given instructions to suppress before sleeping would report more dreams about their target thought than participants who had not been asked to suppress, and this finding would be stronger for those who have a tendency to suppress.

**Method**

**Participants**

One hundred undergraduate psychology students (73 females and 27 males) at the University of New South Wales participated in the study for course credit. Participants were allocated to high suppressor and low suppressor groups on the basis of a median split of scores on the white bear suppression inventory (WBSI; Wegner & Zanakos, 1994). The WBSI is a 15-item questionnaire that measures the tendency to suppress thoughts; participants rate their tendency to suppress on a five-point Likert scale (1 = “strongly disagree”, 5 = “strongly agree”). There were 51 participants in the high suppressor group and 49 participants in the low suppressor group. Participants were randomly allocated to suppression or control conditions.
Procedure

Following written informed consent procedures at the initial assessment, participants were administered an explanation of the experimental task. Participants were then given a 5-min practice exercise of stream of consciousness writing. Participants were given two envelopes: one labelled “Night Task” and the other labelled “Morning Task”. Participants were instructed to open and complete the contents of the “Night Task” directly before going to sleep on a night of their choice in the coming week. The “Night Task” asked participants to identify and describe in detail their most negative and distressing intrusive thought. An intrusive thought was defined as “a thought or image that you do not intend to think about, but pops into your head every now and then without you wanting it to. It may be a thought or image about a particular person, object, place, past event, imagined future event or even about yourself. It must be a thought or image that you have had before on more than one occasion. For the purpose of this study, it should be a thought or image that you do not like and one that you do not enjoy having intrude into your mind.” Participants were then asked to rate the level of distress caused by this thought on a ten-point Likert (0 = “no distress”, 10 = “extreme distress”) and indicate how many days in the past week their nominated target thought had come to mind. A 5-min stream of consciousness writing task followed, during which participants were instructed to either not think about their target thought (suppression condition) or to think about anything at all (non-suppression condition). The specific instruction told participants that they should “not think about the intrusive thought you…not for a fleeting moment, not even for a second, (and to) do whatever it takes to keep that thought out of your mind”.

To control for priming effects, the target thought was mentioned an equal number of times in each instructional set. All participants were instructed to indicate with a checkmark when their target thought came to mind during the stream of consciousness writing. Once they had completed the stream of consciousness task, participants were instructed to go to sleep.

Participants opened the “Morning Task” envelope the following morning and were asked to indicate on a five-point rating scale (1 = “strongly disagree”, 5 = “strongly agree”) whether they dreamt at all the previous night. Those participants who indicated dreaming about their target thought were asked to rate on a 5-point Likert scale how long they thought their intrusion-related dream lasted (1 = “no time at all”, 5 = “a very long time”), the pleasantness of the dream (1 = “very unpleasant”, 5 = “very pleasant”), and the vividness of the dream (1 = “not at all vivid”, 5 = “extremely vivid”). Finally, all participants were instructed to complete the WSBI for a second time.

Information about the intake of alcohol, other drugs or medication on the night of the experiment was also obtained. Although five participants indicated ingesting either alcohol or prescription medication, none were excluded from the study as the quantity of substances was minimal.

Dreams were subsequently coded by the experimenter and a second rater who was blind to participants’ group and suppression status. The raters coded the dream report in terms of the extent to which the content of the dream was related to the intrusive thought (1 = “not at all related”, 5 = “strongly related”), the valence of dream content (1 = “not at all distressing”, 5 = “extremely distressing”), and emotional intensity of the dream (1 = “not at all intense”, 5 = “extremely intense”). The inter-rater reliability of dream ratings was sound for relatedness ($r = .70$), valence ($r = .55$), and emotional intensity ($r = .44$).

Results

Participant characteristics

Participant characteristics are presented in Table 1. A 2 (Suppressor Group) × 2 (Suppression Instruction) analysis of variance (ANOVA) indicated that the four groups did not differ on age, or the number of days on which they had thought about the target thought in the previous week. High suppressors reported that their nominated target thought was more distressing than low suppressor participants [$F(1, 78) = 4.15, p < .05$]. Accordingly, subsequent analyses covaried for distress of the intrusive thought. There was no difference in WBSI scores between males ($M = 51.33$, $SD = 8.22$) and females ($M = 51.38$, $SD = 11.01$), $t(98) = .02$, ns.
Presleep monitoring task

In terms of the frequency of target thought intrusions reported during the stream of consciousness task conducted before participants went to sleep, a 2 (Suppressor Group) × 2 (Suppression Condition) ANCOVA of reported intrusions indicated no significant main or interaction effects.

Incidence of dream reports

In terms of participants who reported a valid dream, there were comparable proportions of participants in each group [Low Suppressor/Suppression: 20% (n = 16); Low Suppressor/Control: 23% (n = 18); High Suppressor/Suppression: 31% (n = 25); High Suppressor/Control: 25% (n = 20)]. The following analyses focused on the 79 participants who reported dreaming.

Dream content

Ratings of dream content were based on the ratings of the independent rater who was blind to participants’ group and suppression status. The independent rater’s ratings of relatedness of dream content to the target memory valence of dream content, and emotional intensity of the dream is reported in Table 1. A 2 (Suppressor Group) × 2 (Suppression Condition) multivariate analysis of covariance (MANCOVA) of the rater’s ratings of relatedness, valence, and intensity that controlled for rated distress of the target memory indicated an overall significant effect \[F(3, 72) = 13.76, \ p < .001\]. Univariate analyses indicated a significant main effect for SuppressionCondition \[F(1, 74) = 5.61, \ p < .05\] and a significant Suppressor Group × Suppression Condition interaction \[F(1, 74) = 3.95, \ p < .05\]. Participants in the suppression condition described dreams with more target thought content than those in the control condition. Further, whereas there was no difference between low suppressors in the suppression and control conditions, high suppressors in the suppression condition reported more dreams involving the target thought than those in the control condition \(p < .05\). There were no main or interaction effects for ratings of valence or emotional intensity. Fig. 1 shows the mean relatedness rating for each of the four groups.

To further understand the relationship between tendency to suppress and dream rebound, we calculated Pearson correlation co-efficients between WBSI scores and target thought relatedness, valence, and emotional intensity separately for participants in the suppression and control conditions. Whereas there were no significant relationships for participants in the control condition, in the suppression condition WBSI scores were positively correlated with relatedness \(r = .31, \ p < .05\) and valence \(r = .28, \ p < .05\).

### Table 1

Mean participant characteristics and ratings of dream content

<table>
<thead>
<tr>
<th></th>
<th>High suppressor</th>
<th>Low suppressor</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Suppression</td>
<td>Control</td>
</tr>
<tr>
<td>WBSI</td>
<td>58.40 (5.78)</td>
<td>58.95 (3.69)</td>
</tr>
<tr>
<td>Age</td>
<td>20.00 (2.68)</td>
<td>19.45 (2.82)</td>
</tr>
<tr>
<td>Distress of target thought</td>
<td>7.64 (1.32)</td>
<td>7.90 (1.01)</td>
</tr>
<tr>
<td>Frequency of intrusive thought</td>
<td>2.92 (1.44)</td>
<td>3.10 (1.99)</td>
</tr>
<tr>
<td>Number of presleep intrusions</td>
<td>3.11 (3.26)</td>
<td>3.77 (3.66)</td>
</tr>
<tr>
<td>Dream relatedness</td>
<td>2.68 (1.75)</td>
<td>1.25 (0.91)</td>
</tr>
<tr>
<td>Valence</td>
<td>2.64 (1.63)</td>
<td>1.85 (1.49)</td>
</tr>
<tr>
<td>Emotional intensity</td>
<td>3.24 (.88)</td>
<td>3.20 (1.51)</td>
</tr>
</tbody>
</table>

*Note:* Standard deviations appear in parentheses.
Discussion

The finding that participants asked to suppress an intrusive thought recounted significantly more target-related dream content than those who did not suppress replicates the results of Wegner et al. (2004), and is also consistent with considerable evidence of rebound of suppressed thoughts in waking states (Clark et al., 1991; Harvey & Bryant, 1998; McNally & Riccardi, 1996). Consistent with our prediction, the post-suppression rebound of target-related material in dreams was significantly more pronounced for those participants with a tendency to suppress unwanted thoughts. These observations also accord, in part, with Freud’s (1900/1965, p. 590) notion that “wishes suppressed during the day assert themselves in dreams”.

Wegner et al. (2004) explained dream rebound in terms of REM changes during sleep. Specifically, they suggest that deactivation of prefrontal regions during REM sleep (Hobson, Pace-Schott, & Stickgold, 2000; Muzur, Pace-Schott, & Hobson, 2002) may result in diminished executive control. It is possible that this reduced executive control may result in diminished effectiveness of the operating process, which could then lead to increased accessibility of the suppressed presleep thoughts during dreams. Alternately, Wegner et al. (2004) suggest that the monitoring process may be enhanced during REM because of evidence that semantic associations are more accessible during post-REM waking than at other times (Stickgold, Scott, Rittenhouse, & Hobson, 1999), and this may lead to increased activity of searching for the suppressed thought. These explanations are very speculative at this time, and will require closer study of dream rebound in the context of REM-related research.

The current finding extends earlier research by suggesting that the ironic effect of suppression on dream rebound is particularly pronounced in people who are prone to suppression. This pattern was underscored by the positive correlation between WBSI scores and the extent that dreams were related to the suppressed thought. Previous work has pointed to the importance of individual differences in successful thought suppression (Smari et al., 1994; Rutledge et al., 1996). It is possible that people who regularly suppress engaged in the suppression task more effortfully prior to sleep; their greater attempts to suppress the intrusive thought may have resulted in the monitoring process becoming more predominant as the operating process was diminished during REM. Alternately, it is possible that people who tend to suppress may have preferentially recalled dreams about the target thought because of their stronger desire to inhibit these thoughts.

We recognise that our study could have been improved by (a) indexing compliance with suppression instructions, (b) employing target thoughts that were not intrusive, (b) using a condition in which participants focused on the thought prior to sleep, and (c) conducting this study over repeated nights to determine the
cumulative effect of presleep suppression. Additionally, we recognize the problem of demand characteristics on reported dreams following instructions to suppress specific thoughts. Identifying the mechanisms underpinning the content of dreams is important for developing effective means of regulating unwanted dreams. Consistent with the notion that suppressing unwanted thoughts may lead to dreaming of the unwanted thought, there is strong evidence that teaching people to think about their unwanted dreams and restructure them effectively reduces these dreams (Krakow et al., 2001). The thought suppression paradigm appears to be a useful means to shed light on how our cognitive strategies during wake influence our dreaming activity.

Acknowledgments

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References