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ENHANCING THOUGHT SUPPRESSION WITH HYPNOSIS

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Abstract: Much research indicates that attempts to suppress thoughts lead to increased accessibility of those thoughts, especially when additional cognitive load is present. On the premise that hypnosis may permit more effective management of cognitive load, it was hypothesized that hypnosis may enhance more effective thought suppression. The present research examined whether the obstacle of cognitive load could be bypassed using hypnosis to facilitate successful thought suppression. Thirty-nine high and 40 low hypnotizable participants were hypnotized and received either a suppression instruction or no instruction for a memory of an embarrassing experience and subsequently completed a sentence-unscrambling task that indexed accessibility of embarrassing thoughts. Whereas lows instructed to suppress displayed a delayed increase in suppressed thoughts, highs did not. These findings support the proposition that hypnosis facilitates thought suppression.

There is robust evidence that attempts to suppress unwanted thoughts lead to increased occurrence of those thoughts. The typical study of thought suppression requires a participant to either suppress or not suppress a target thought for a brief period and then accessibility of the thought is indexed during the suppression period and during a subsequent period after suppression has been terminated. In a seminal study, Wegner, Schneider, Carter, and White (1987) instructed participants to either suppress or to express thoughts of a white bear and found that suppression resulted in increased awareness of white bear thoughts following attempted suppression. Subsequent studies have found that attempted suppression leads to accessibility of the suppressed thought either during the period of suppression (Lane & Wegner, 1995; Macrae, Bodenhausen, Milne, & Ford, 1997; Wegner & Erber, 1992; Wegner, Erber, & Zanakos, 1993) or after the suppression has been terminated (Harvey & Bryant, 1998; McNally & Riccardi, 1996; for a review, see Wenzlaff & Wegner, 2000).

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The ironic control theory has been offered to explain the paradoxical effects of attempted suppression (Wegner, 1994; Wenzlaff & Wegner, 2000). This theory states that mental control involves the interplay of two processes, an intentional operating process and an ironic monitoring process. During mental control, an operating process attempts to maintain the desired state of mind by searching consciously and effortfully for items consistent with the preferred state (i.e., anything other than the unwanted thought). That is, this controlled process during suppression attempts to prevent the unwanted thought from entering the mind by seeking out alternate thoughts. In parallel, a monitoring process searches the mind for indications of the failure of mental control (i.e., presence of the unwanted thought). During attempted mental control, the monitoring process is less effortful and less likely to be disturbed by the allocation of attention to concurrent tasks (Wegner). The theory holds that because the intentional operating process is an effortful and conscious process, the search for alternate thoughts is susceptible to being disrupted by other demands on cognitive resources. In contrast, the monitoring process requires fewer cognitive resources and will continue in its vigilance for unwanted thoughts. 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. Ironic control theory holds that the primary reason attempted suppression is unsuccessful is because under conditions of cognitive load or cessation of suppression, the monitoring process searches for and elicits awareness of the unwanted thoughts.

Hypnosis provides a viable means of studying thought suppression under conditions that reduce cognitive load. Hypnosis may be particularly useful because of its potential to perform cognitive tasks with relatively fewer cognitive resources. Bowers’s (1984) dissociated-control theory proposes that hypnosis permits more effective management of cognitive load because it involves dissociation of cognitive subsystems that can initiate and maintain tasks with minimal interference of other subsystems. Supporting this hypothesis, there is convergent evidence that hypnosis permits completion of cognitive tasks with less effort than nonhypnotic tasks (Crawford & Gruzelier, 1992; Miller & Bowers, 1993). Relatedly, individuals with high levels of hypnotizability are characterized by greater attentional capacity (Bowers & Brenneman, 1981; Graham & Evans, 1977). The tendency for hypnosis to manage cognitive demands more effectively suggests that hypnosis may contribute to more effective thought suppression.

The traditional means of thought suppression in the context of hypnosis is posthypnotic amnesia, which involves instructing people during hypnosis that they will not be able to recall certain events encoded during hypnosis (Kihlstrom, 1985). An important difference between
posthypnotic amnesia and thought-suppression instructions is that whereas posthypnotic amnesia informs participants that they will effortlessly forget target information, thought suppression instructions tell participants to effortfully and intentionally inhibit a thought. Bowers and Woody (1996) compared intentional thought suppression and posthypnotic amnesia in high and low hypnotizable participants, both in and out of hypnosis. They reported that whereas lows in all conditions and highs in the thought suppression condition reported high levels of intrusions of the target thought, highs who received the suggestion for posthypnotic amnesia reported fewer intrusions. This study was confounded by the use of very different suppression instructions (i.e., thought suppression vs. posthypnotic amnesia) and by a repeated-measures design in which all participants engaged in both approaches. In a relevant study, King and Council (1998) compared high and low hypnotizable individuals on a suggestion for amnesia and blank mind instructions and found that whereas highs achieved fewer intrusions during amnesia, lows did not differ across strategies. These previous findings underscore the potential utility of applying hypnosis to enhance understanding of thought suppression.

The current research tests the proposal that thought suppression during hypnosis will lead to more effective suppression. We asked hypnotized participants to suppress affectively laden personal memories because previous research has indicated that suppressing emotional and personal memories are particularly difficult (Petrie, Booth, & Pennebaker, 1998; Wegner & Erber, 1992; Wegner, Shortt, Blake, & Page, 1990). High and low hypnotizable participants were administered a hypnotic suggestion and then half of the participants were administered instructions for suppression of a memory of a failure experience. Participants were instructed to indicate the occurrence of thought of the personal memory during the task. The primary measure of accessibility of the memory was subsequent completion of a sentence-unscrambling task. This task involves unscrambling sentences by omitting one word of the potential words that can be used so they may either form an embarrassing sentence or a nonembarrassing one. This indirect measure was used because self-report is prone to response bias and artificially sensitizing the participant to the unwanted information. Previous studies have indicated that attempted thought suppression leads to increased accessibility of the unwanted thought on the sentence-unscrambling task (Rude, Wenzlaff, Gibbs, Vane, & Whitney, 2002; Wenzlaff & Bates, 1998). We hypothesized that whereas high hypnotizable participants who suppress their failure memory will not display increased accessibility, low hypnotizable participants will display the ironic effects of attempted suppression by displaying increased accessibility of suppressed memory.
METHOD

Participants
Participants were undergraduate students at the University of New South Wales, who participated in this experiment in return for research credit. Participants were preselected on the basis of their extreme scores on a tailored 10-item version (excluding finger lock and communication inhibition) of the group-administered Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor & Orne, 1962), and they were confirmed as high or low hypnotizable on the basis of their performance on a 10-item tailored version (excluding arm immobilization and negative visual hallucination) of the individually administered Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer & Hilgard, 1962). The sample comprised 39 high hypnotizable participants (26 female, 13 male) of mean age 19.45 years (SD = 2.01), and 40 low hypnotizable participants (19 female, 21 male) of mean age 19.75 years (SD = 4.11). High hypnotizable participants scored from 7 to 10 on the HGSHS:A (M = 8.59, SD = 0.97) and from 7 to 10 on the SHSS:C (M = 8.41, SD = 1.02). Low hypnotizable participants scored from 0 to 2 on the HGSHS:A (M = 1.31, SD = 0.89) and from 0 to 3 on the SHSS:C (M = 1.73, SD = 0.93).

Measures
Following Wenzlaff and Bates (1998, 2000), the scrambled-sentences task comprised 10 sentences, each comprising nine words that included one embarrassing word and one nonembarrassing word. The task requires the participant to order eight words to make a sentence and, depending on the use of the embarrassing or nonembarrassing word, the sentence would convey an embarrassing or nonembarrassing meaning. For example, the sentence, “embarrassed me happy kissed mother my I when felt,” could be unscrambled to form an embarrassing (“I felt embarrassed when my mother kissed me”) or nonembarrassing (“I felt happy when my mother kissed me”) sentence. The order of presentation of the embarrassing and nonembarrassing word in the order of the scrambled words was counterbalanced in two different sentence lists that were randomly administered to participants.

PROCEDURE

Following written informed-consent procedures, the experimenter administered a 15-minute hypnotic induction (based on the SHSS:C induction) and then administered several unrelated hypnotic suggestions (hand lowering, vertical moving hands apart,
mosquito hallucination, and taste hallucination). The experimenter then asked participants to write down an embarrassing event that had happened to them and to imagine the embarrassing situation in vivid detail for 20 seconds. Participants in the suppression condition were then instructed to not think about the embarrassing event. They were informed that they were to not think about the memory in any form for the following 3 minutes. Participants in the nonsuppression condition were given instructions that they could think about any thought they desired, including the embarrassing memory. The number of references to the embarrassing memory was equivalent in the suppression and nonsuppression conditions to control for priming effects of mentioning the memory. All participants were then asked to place a mark on a sheet of paper each time the embarrassing memory occurred to them during a 3-minute monitoring period. Participants in the suppression condition then had the instruction for suppression cancelled without referencing the embarrassing memory itself. All participants were then administered further unrelated hypnotic suggestions (arm rigidity, hypnotic dream, age regression). The experimenter then instructed participants that they were required to make sense of scrambled sentences by using eight of nine words to make sensible sentences. Participants were told to place a number from one to eight over each word to designate the order of selected words. Participants were given 1 minute to complete the task and then were administered a hypnotic deinduction. Only 1 minute was allowed to increase the likelihood that participants would provide the first sentence that came to their minds. Participants then completed the White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994), which indexes an individual’s tendency to engage in suppression. The experimenter then terminated the session.

RESULTS

Preliminary Analyses

To confirm that participants in different conditions did not differ in terms of their embarrassing memories, two independent judges who were blind to participants’ hypnotizability or suppression condition rated the embarrassment of these memories on a 10-point Likert-type scale (0 = not at all embarrassing, 10 = extremely embarrassing). Interrater reliability was high (r = .85). A 2 (suppression condition) × 2 (hypnotizability) analysis of variance (ANOVA) of ratings indicated no significant main or interaction effects. That is, there were comparable embarrassment ratings for participants’ memories in the suppression (M = 6.61, SD = 1.2) and nonsuppression (M = 6.63, SD = 1.32) conditions.
SELF-REPORTED THOUGHTS

Table 1 presents the mean number of self-reported occurrences of the embarrassing memory during the monitoring period. A 2 (suppression condition) × 2 (hypnotizability) ANOVA of reported thoughts of the memory indicated significant main effects for suppression condition, $F(1,75) = 11.31$, $p < .001$, and hypnotizability, $F(1,75) = 7.46$, $p < .01$, but no significant interaction effect, $F(1,75) = 0.15$, $p = .70$. Participants in the nonsuppression condition reported more target thoughts than participants in the suppression instruction condition, and high hypnotizable participants reported more target thoughts than low hypnotizable participants.

Sentence-Unscrambling Task

The sentence-unscrambling task was scored by summing the number of sentences that conveyed the embarrassing meaning. Sentences in which participants used both the nontarget word and target word were excluded from analyses. An initial one-way ANOVA on the order of the version of the sentence-unscrambling task indicated a non-significant effect ($p > .05$), indicating that the order of the embarrassing word in the unscrambled sentence was not influential. Subsequent analyses collapsed the two versions of the sentences.

Table 1 presents the mean number of sentences completed using the target embarrassing word. A 2 (suppression condition) × 2 (hypnotizability) ANOVA on the number of sentences completed using the embarrassing words indicated a significant main effect for the
suppression condition, $F(1, 75) = 4.843, p < .05$, and a significant interaction between suppression condition and hypnotizability, $F(1, 75) = 4.38, p < .05$. Participants in the suppression condition completed more embarrassing sentences than participants in the nonsuppression condition. Whereas highs completed comparable numbers of embarrassing sentences in both conditions, lows in the suppression condition completed more embarrassing sentences than lows in the nonsuppression condition, $t(38) = -3.22, p < .005$.

**White Bear Suppression Inventory**

A 2 (condition) $\times$ 2 (hypnotizability) between participants ANOVA on participants’ total WBSI scores indicated a significant main effect for hypnotizability, $F(1, 75) = 5.05, p < .05$. Highs ($M = 54.56, SD = 8.55$) scored higher on the WBSI than lows ($M = 50.04, SD = 9.02$). To index the influence of personal tendency for suppression on the sentence-unscrambling task, a 2 (hypnotizability) $\times$ 2 (condition) analysis of covariance (ANCOVA) on the number of embarrassing sentences completed was then conducted with WBSI scores as a covariate. There was a significant effect for condition, $F(1, 75) = 5.43, p < .05$, and a significant interaction effect between condition and hypnotizability, $F(1, 75) = 5.49, p < .022$. That is, after controlling for WBSI scores, participants who received suppression instructions unscrambled more sentences using the embarrassing word than participants in the nonsuppression condition. Further, whereas highs in both conditions unscrambled similar numbers of sentences using the embarrassing word, lows in the suppression condition unscrambled more sentences using the embarrassing word than control participants.

**DISCUSSION**

The finding that lows displayed greater accessibility of suppressed thoughts on the unscrambling sentence task after the suppression period replicates previous studies that have employed the sentence-unscrambling task (Wenzlaff & Bates, 1998, 2000). This pattern accords with considerable evidence from studies that have employed other measures of thought accessibility and found delayed increase of suppressed thoughts after suppression (Harvey & Bryant, 1998; McNally & Riccardi, 1996). The observation of an increase in accessibility of suppressed memories also accords with evidence that suppression of emotional events typically results in thought rebound (Wegner & Erber, 1992; Wegner et al., 1990).

The novel finding was the observation that high hypnotizable participants did not display any paradoxical effects of attempted suppression. This finding accords with previous work that indicates that
individual differences contribute to the success of attempted suppression (Rutledge, Hancock, & Rutledge, 1996; Rutledge, Hollenberg, & Hancock, 1993; Smari, Sigurjonsdottir, & Saemundsdottir, 1994). According to the ironic control theory (Wegner, 1994), failure to effectively suppress unwanted thoughts occurs because there are inadequate cognitive resources to maintain the function of the operating process to search for distracting thoughts. This proposition is supported by the evidence that added cognitive demands impede successful thought suppression (Macrae et al., 1997; Wegner & Erber, 1992; Wenzlaff & Bates, 2000). It is possible that high hypnotizable participants are able to more successfully achieve thought suppression because hypnosis permits more effective management of cognitive load.

According to Bowers’s (1984) dissociated-control theory, suggestions administered to highly hypnotized individuals can activate subsystems of control more directly and in doing so reduce the executive control of the behavior. For example, Miller and Bowers (1986) reported that whereas hypnotized and nonhypnotized participants were able to achieve analgesia to painful stimuli, hypnotized participants could do this with less interference on a concurrent cognitive task. There is also evidence that high hypnotizable participants are better able to shift attention between cognitive tasks (Crawford & Gruzelier, 1992), which may predispose them to more effectively engage in thoughts that are unrelated to the suppressed memories. This evidence suggests that hypnotized individuals may be able to achieve thought suppression more effectively because of their capacity to manage multiple cognitive tasks with fewer demands on cognitive resources.

High levels of tendency to suppress (as indexed by the WBSI) were associated with higher levels of hypnotizability. Interestingly, high hypnotizable participants reported more intrusions of unwanted thoughts than low hypnotizable participants. According to the ironic control theory, the tendency to suppress unwanted thoughts leads to more intrusions. There is evidence that high hypnotizable participants generally report more intrusions on a daily basis (Bryant & Idey, 2001). It is possible that high hypnotizable participants tend to have more intrusions because they are prone to suppression; alternatively, they may tend to suppress because they have more intrusive thoughts. Importantly, the tendency to suppress did not alter the finding that when instructed to suppress during hypnosis, high hypnotizable participants were able to suppress effectively. This pattern suggests that despite the tendency to experience intrusions more frequently, high hypnotizable participants are able to utilize their skills efficiently during hypnosis to inhibit accessibility of thoughts that are targeted for suppression.
We recognize a number of limitations. First, we did not index the influence of attempted suppression during the suppression period. Second, we did not manipulate cognitive load, which would provide a more direct test of the hypothesized mechanism by which hypnosis may facilitate thought suppression. Third, we did not compare the effects of attempted suppression in participants in hypnotic and non-hypnotic contexts. Direct comparison of hypnotizable participants in and out of hypnosis is essential to clarify the role of hypnosis in facilitating thought suppression. Fourth, we did not ask participants to rate their own level of embarrassment about their memories. Finally, there is a need to clarify the role of demand characteristics in responding to a hypnotic thought suppression instruction. The debate over the mechanisms explaining ironic effects of thought suppression can be advanced by understanding conditions that violate the paradoxical effects typically seen in attempted suppression. These initial data suggest that hypnosis provides a useful way to identify the cognitive or social factors that underpin more successful thought suppression.

REFERENCES


**Verbesserung von Gedankenunterdrückung durch Hypnose**

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completaron una tarea de poner en orden oraciones, tarea que evaluó la accesibilidad de pensamientos embarazosos. En tanto que los poco hipnotizables instruidos para suprimir pensamientos mostraron un aumento demorado en los pensamientos suprimidos, los muy hipnotizables no mostraron tal efecto. Estos hallazgos apoyan la propuesta de que la hipnosis facilita la supresión de pensamientos.

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