The Role of Attribution of Motivation in Producing Postsuppressional Rebound

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Three studies demonstrated that postsuppressional rebound (PSR) may be both reduced and enhanced by manipulating people's attributions about why they experience difficulty during suppression. Telling participants that suppression failures indicate a high motivation to use the suppressed construct produced more PSR than telling them that suppression failures indicate a low motivation to use the construct (Study 1). Telling participants that an external stimulus would make suppression easy produced more PSR than telling them that it would make suppression difficult (Study 2). Telling participants that suppressing a stereotype is difficult and unindicative of prejudice eliminated PSR (Study 3). These results support the notion that PSR occurs because people infer from the difficulty experienced during suppression and from suppression failures that they are motivated to use the suppressed construct.

People often try to suppress unwanted thoughts. Dieters might try not to think of food, a person trying to quit smoking might try not to think of cigarettes, a student might try to concentrate on an exam and suppress thoughts of unrelated subjects. Many times, however, these attempts to suppress one's thoughts not only fail but produce opposite effects (Wegner, 1992, 1994; Wegner, Shortt, Blake, & Page, 1990). In a groundbreaking experiment, Wegner, Schneider, Carter, and White (1987) first demonstrated both the fallibility of suppression and the existence of postsuppressional rebound—the tendency of the suppressed construct to become even more accessible than it would be without suppression attempts. In the study by Wegner et al. (1987), participants were instructed to try not to think of a white bear for a period of 5 min but to ring a bell each time the thought of a white bear crossed their minds. Following this initial suppression period, a 5 min expression phase was introduced during which participants could think of anything they wanted, including a white bear, and during which they continued to ring a bell each time the thought of a white bear surfaced. Another group of participants performed the expression phase first, without initial suppression. The results showed that thoughts of white bears rebounded after suppression—the rate during the expression phase was higher in the suppression-first group than in the expression-first group.

Since the original study by Wegner et al. (1987), the postsuppressional rebound effect has been replicated with a wide variety of constructs, including white bears (Wegner, Schneider, Knutson, & McMahon, 1991; Wenzlaff, Wegner, & Klein, 1991), green rabbits (Clark, Ball, & Pape, 1991; Clark, Winton, & Thynn, 1993), the use of color words in describing paintings (Liberman & Förster, 2000), thoughts about a film showing a fire in an office building (Davies & Clark, 1998), thoughts about one's own former romantic relationships (Wegner & Gold, 1995), and mood (Wegner, Erber, & Zanakos, 1993). Research has also shown that suppressing stereotype use enhances the accessibility of the stereotype and produces more stereotypic judgments and more prejudiced behavior (Liberman & Förster, 2000; Macrae, Bodenhausen, & Milne, 1998; Macrae, Bodenhausen, Milne, & Jetten, 1994; Monteith, Spicer, & Tooman, 1998; N. A. Wyer, Sherman, & Stroeussner, 1998).

The most prevalent theoretical account of postsuppressional rebound is provided by the ironic monitoring theory of suppression (Wegner, 1994; Wegner & Wenzlaff, 1996). According to this theory, suppressing a thought or a response involves two processes: a controlled search for distractors (i.e., contents other than the one being suppressed) and an automatic monitoring for suppression failures (i.e., occurrences of the suppressed construct). The automatic monitor "reviews potentially conscious material, noting items that imply failed control and increasing their activation" (Wegner, 1994, p. 38). For example, when trying to suppress thoughts of white bears, people try to think about other things (e.g., last night's dinner) and at the same time monitor for occurrences of thoughts of white bears. This monitoring process notes suppression failures (e.g., "I had fish last night. White bears like fish, oops, I should not have thought of white bears") and directs
thoughts to a new subject on detecting a failure (e.g., "Thinking of
the dinner wasn’t a good idea, let me try to think of Maria Callas’s
Tosca performance at La Scala di Milano, screaming ‘Mario,
Mario cosi,’ and her immediate realization of Mario’s death and
Scarpia’s conspiracy"). Although this process successfully pushes
thoughts of white bears out of consciousness, the ironic monitor
remains sensitized to the construct of white bears through the
entire period of suppression and therefore makes the construct
accessible. When the suppression period is over, the accessibility
of the white bears construct is manifested in faster, broader,
and more frequent use of the construct.

Recently, Liberman & Förster (2000) proposed that inferences
about motivation may underlie postsuppression rebound. Specif-
ically, we suggested that people may infer from the difficulty they
experience during suppression and from suppression failures that
they are motivated to use the suppressed construct. In this way,
suppression introduces or enhances the motivation to think of the
suppressed construct, thereby also enhancing its accessibility.

The idea that people engage in inferences about their own
motivation has been proposed within self-perception theory (Bem,
1972) and the overjustification framework (Nisbett & Valins,
1972; Pittman & Heller, 1987). Research on overjustification has
shown that providing a salient extrinsic reward for engaging in an
attractive activity may undermine intrinsic interest and subsequent
engagement in that activity (Lepper, Greene, & Nisbett, 1973) and
that imposing an extrinsic restriction on an initially unattractive
activity may enhance subsequent intrinsic motivation to engage in
it (Wilson & Lassiter, 1982). One can presume that this happens
because people attribute their initial engagement in the activity (or
their refraining from it) to the extrinsic causes and discount (or
augment) their intrinsic motivation. Activity engagement theory
(Higgins, Lee, Kwon, & Trope, 1995; Higgins & Trope, 1990;
Higgins, Trope, & Kwon, 1998) proposes a more general inference
process, one that does not rely on the distinction between intrinsic
and extrinsic motivations. Specifically, it suggests that motivation
may be discounted or augmented as a result of attributing behavior
to other motivations that are present at the same time. Let us
examine more closely how inferences of motivation could be
involved in suppression.

Research by Schwarz and his colleagues is most relevant to the
present framework; it demonstrates that people use the experi-
cenced difficulty of retrieval as information (Belli, Winkielman,
Read, Schwarz, & Lynn, 1998; Rothman & Schwartz, 1998;
Schwarz et al., 1991; Wänke, Bless, & Biller, 1996; Wänke,
Schwarz, & Bless, 1995; Winkielman, Schwarz, & Belli, 1998).
For example, Schwarz et al. (1991) showed that most people find
it difficult to recall 12 examples of assertive behaviors they have
performed but that, being unaware of the objective difficulty of the
task, they misinterpret their experienced difficulty as indicating a
lack of assertiveness on their part. It is possible that a similar
inference took place in some suppression studies. For example, in
the studies by Wegner et al., participants experienced suppression
failures, or intrusions of the suppressed thought (e.g., Wegner &
Gold, 1995; Wegner et al., 1987). Being unaware of the fact that
most people experience a substantial number of such intrusions
(i.e., that the task is objectively difficult), participants may have
attributed these failures to something about themselves and in-
ferred a need to use the suppressed construct. Thus, they might
have thought, “Thoughts of white bears keep popping into my
mind despite my attempts to suppress them, and I seem to be
unable to control these thoughts. It seems, therefore, that I am
compelled to think of white bears, that I really need to think of
them.” It is important to note that although the content of people’s
inferences may be described, our model, like other theories of
metacognition (e.g., Strack & Förster, 1998) and self-perception
(e.g., Lepper et al., 1973), does not suggest that these inferences
are made consciously or explicitly.

Not only suppression failures but also other sources of experi-
cenced difficulty might give rise to misattribution. For example, in
the studies by Macrae et al. (1994) participants wrote a story about
a day in the life of a person presented on a photograph, and they
could have found the task to be difficult. Being unaware of the fact
that the task is difficult even without suppression, participants in
the suppression condition could have misattributed the difficulty to
the need to suppress stereotypes. Thus, they could have thought, “It
must be so difficult for me to write the story because I cannot use
stereotypes. It would have been much easier without this restric-
tion. It must be the case, then, that I really need to use stereotypes.”

In sum, we suggest that people infer that they are compelled to
think of the suppressed construct from suppression failures and
from the perceived difficulty of the suppression process. This
feeling may be thought of as a need to use the suppressed construct
(Lewin, 1951), which enhances the accessibility of need-related
constructs (Bargh, 1997; Bargh & Barden, 1996; Bruner, 1957;
Higgins & King, 1981) and thereby produces the postsuppression
rebound. Our previous research (Liberman & Förster, 2000) ex-
named the motivational part of our model. In these studies people
first either suppressed or did not suppress a construct (color words
in describing a colorful painting, stereotypes) and then either
expressed or did not express the same construct. The accessibility
of the relevant construct was measured at the third stage. We
reasoned that expressing a previously suppressed construct would
fulfill the suppression-induced need to use it, eliminate that need,
and thus reduce the accessibility of need-related constructs. The
results confirm this prediction—we eliminated postsuppression
rebound by introducing expression after suppression, which sug-
gests that postsuppression accessibility originates from active
needs rather than from recent activation.

Liberman & Förster’s (2000) studies did not test another central
assumption of our model, namely, that motivation to perform the
suppressed activity is inferred from suppression failures and the
experienced difficulty to suppress. The present research examines
this inferential aspect of our model. We reason that if metacogni-
tive inferences mediate rebound, then altering these inferences by
an attributional manipulation should affect the magnitude of re-
bound. The present line of research attempts to examine this
prediction. Studies 1 and 2 were modeled on Wegner et al.’s
(1987) experiments on suppressing thoughts of white bears. In
Study 1, participants were either led to believe that suppression
failures indicate a high motivation to use the suppressed construct
or led to believe that suppression failures indicate a low motivation
to use the suppressed construct. We predicted that rebound would
be higher in the former group than in the latter group. In Study 2,
participants were either led to believe that a recording played
during suppression would distract their thoughts away from white
bears and thus make suppression easy or led to believe that the
recording would subliminally introduce thoughts of white bears
and thus make suppression difficult. In this way, the motivation to
use the suppressed construct should be augmented in the former group and discounted in the latter group, and therefore we predicted more rebound in the former group. In both studies we also included a control group (no prior suppression) and a no-attribution group (prior suppression with no specific instructions). We examined whether our attribution manipulations would enhance rebound above the level obtained with no specific attribution instructions and whether they would reduce it below that level. Finally, three related studies (Studies 3a, 3b, and 3c) examine our model's prediction that rebound of stereotypes will be reduced if participants are told that suppression is difficult for everybody and that a difficulty to suppress is unindicative of a prejudiced attitude.

Study 1: Attribution of Suppression Failures

In the present study we examine whether interpreting suppression failures as informative about one's motivation to use the suppressed construct affects the magnitude of postsuppressional rebound. Participants were introduced to an experiment on spontaneous thoughts and were required to verbalize their thoughts for 5 min while suppressing thoughts of white bears. They were led to believe either that experiencing suppression failures implies a high motivation to think of the suppressed construct or that experiencing such failures implies a low motivation to think of the suppressed construct. Postsuppressional rebound was measured as the number of thoughts of a white bear during a subsequent expression period. We predicted that the high-motivation group would show higher postsuppressional rebound than the low-motivation group.

We also included a no-attribution group, in which no specific interpretation of suppression failures was suggested, and a control group, in which no suppression was introduced before expression. We expected to replicate the rebound effect in that the rate of white bear thoughts during expression would be higher in the former group than in the latter group. According to our theory, participants naturally tend to interpret suppression failures as indicating a high motivation to think of the suppressed construct. Therefore, we did not predict a difference in the magnitude of postsuppressional rebound between the high-motivation group and the no-attribution group. However, we predicted less rebound in the low-motivation group than in the no-attribution group.

Method

Participants

Eighty University of Würzburg undergraduates (40 men, 40 women) participated in a 90-min battery study on information processing. Participants either received course credit or were paid DM 20 (approximately $12 at the time) for their participation. Six participants were excluded from the analyses because their recordings were not understandable. There were no gender differences in any of the results reported.

Procedure

Participants first performed tasks unrelated to the present experiment for about 15 min and then were introduced to a study on people's spontaneous thoughts. They were seated in separate rooms and instructed through headphones to freely verbalize their thoughts for 5 min. Participants were told that a tape recorder placed on the table in front of them would record the entire session. Participants in the three experimental groups were asked to try not to think of a white bear during the entire 5-min period and to ring a small metal bell placed in front of them whenever the thought of a white bear crossed their mind. Participants in the no-attribution condition did not receive any further instructions. This condition is similar to the suppression condition in Wegner et al.'s (1987) studies. Participants in the high-motivation condition were told that some people experience thoughts of white bears during suppression and that such failures to suppress indicate a high motivation to think of white bears. They were told that difficulty to suppress thoughts of a certain construct indicates a high motivation to think about the construct. They were further told that research has found that smokers who try to quit smoking and experience difficulty suppressing thoughts of cigarettes have a relatively high motivation to smoke, whereas people who experience no difficulty suppressing such thoughts have a low motivation to smoke. As another illustration, the same example was repeated about dieters and thoughts of food. Participants in the low-motivation condition were told that some people experience thoughts of white bears during suppression and that such failures to suppress indicate a low motivation to think of white bears. They were further told that people who really want to think about something and are required to suppress thoughts of this construct develop strategies that make suppression easy. Participants were told that successful suppression generally indicates a concern with the concept in question and a high motivation to think of it, whereas suppression failures indicate a low motivation to think of the suppressed construct. Participants in this group were told that research has found that smokers who try to quit smoking and fail to suppress thoughts of cigarettes actually have a relatively low motivation to smoke, whereas people who successfully suppress such thoughts have a high motivation to smoke. As another illustration, the same example was repeated about dieters and thoughts of food.

Participants in all three conditions were stopped after 5 min and introduced to the expression phase. They were instructed to verbalize their thoughts for another period of 5 min, but this time they were told that they were free to think of anything they wanted, including white bears. As in the first (suppression) phase, participants were asked to ring the bell every time they thought of a white bear. A fourth group, which served as the control condition, performed only the expression phase, without first suppressing thoughts of white bears. This group is similar to the expression phase in the expression-first condition in the experiments by Wegner et al. (1987). After completing the expression phase, participants performed tasks unrelated to the present study for about 45 min. At the end of the experiment they were debriefed and thanked for taking part.

Results and Discussion

Following Wegner et al. (1987), we counted instances of participants ringing the bell and mentioning a white bear, instances of participants ringing the bell without mentioning white bears, and instances of participants mentioning a white bear without ringing the bell. We combined these three measures into a single score of the number of white bear thoughts, presented in Table 1. As in the

<table>
<thead>
<tr>
<th>Phase</th>
<th>No attribution (n = 17)</th>
<th>Low motivation (n = 20)</th>
<th>Expression only (n = 17)</th>
<th>High motivation (n = 20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suppression</td>
<td>5.24, a</td>
<td>9.10, b</td>
<td>8.40, b</td>
<td></td>
</tr>
<tr>
<td>Expression</td>
<td>11.47, a</td>
<td>4.30, b</td>
<td>6.53, b</td>
<td>14.35, b</td>
</tr>
</tbody>
</table>

Note. Within each row, means that do not share a common subscript differ at p < .07.
study by Wegner et al., this measure was positively skewed, and we performed a square root transformation to achieve homogeneity of error variance. For clarity, the reported means are not transformed.

**Suppression**

We first examined whether our attribution instructions affected suppression. A one-way analysis of variance (ANOVA) on the number of thoughts of white bears indicated a significant effect of experimental condition, $F(2, 54) = 5.96, p < .005$. Further contrast analyses revealed that participants in the no-attribution condition experienced fewer thought intrusions ($M = 5.24$) than participants in both the low-motivation condition ($M = 9.10$) and the high-motivation condition ($M = 8.40$), which did not differ from each other. It is possible that both types of attribution instructions introduced cognitive load and interfered with thought suppression (Wegner, 1992, 1994).

**Rebound**

Our main dependent measure was the magnitude of the rebound effect, or the number of white bear thoughts in the expression phase. A one-way ANOVA revealed a significant effect for experimental condition, $F(3, 70) = 7.31, p < .0005$. All our hypotheses involved comparing two out of the four groups in our study, and we performed planned contrasts for that purpose. As predicted, the rebound effect was obtained—participants in the no-attribution condition had more white bear thoughts ($M = 11.47$) than participants in the no-suppression (control) condition ($M = 6.53$), $F(1, 70) = 3.30, p = .07$ (see Table 1). Our main hypothesis was that suggesting to participants that suppression failures indicate a high motivation to think about the suppressed construct would produce less rebound than would suggesting that suppression failures indicate a high motivation to think about the suppressed construct. Consistent with this hypothesis, participants in the low-motivation condition had fewer thoughts of white bears ($M = 4.30$) than participants in the high-motivation condition ($M = 14.35$), $F(1, 70) = 18.64, p < .0001$. In fact, suggesting to participants that suppression failures indicate a low motivation to think of the suppressed construct did not produce less rebound but actually eliminated it, as the mean number of white bear thoughts in the low-motivation condition ($M = 4.30$) was similar to (and even slightly lower than) that in the control (no-suppression) condition ($M = 6.53$), $F(1, 70) = 1.20, ns$.

Also consistent with our model is the finding that the magnitude of rebound in the high-motivation condition ($M = 14.35$) was only slightly and insignificantly higher than in the no-attribution condition ($M = 11.47$), $F(1, 70) = 1.34, ns$. Thus, suggesting to participants that suppression failures indicate a high motivation to think about the suppressed construct did not significantly increase rebound. This finding suggests that people naturally (i.e., with no specific instructions, as in the no-attribution condition) tend to interpret suppression failures as indicating a high motivation to use the suppressed construct (and, therefore, offering this interpretation explicitly makes little difference). It is precisely this process of inference that our model assumes to underlie suppression. To further examine the question of how suppression failures are interpreted in the different experimental conditions, we look at the relation between suppression failures and rebound.

**The Relation Between Suppression Failures and Rebound**

Our model proposes that inferences about suppression failures may play a role in producing postsuppressional rebound. It is interesting, therefore, to examine the relationship between suppression failures and rebound. It is important to note that by the nature of our measure, participants were necessarily aware of their failures to suppress and, therefore, were likely to wonder about these failures and attempt to interpret them. We performed a regression analysis predicting the number of white bear thoughts in the second phase (i.e., rebound) from the number of white bear thoughts in the first phase (i.e., suppression failures) separately in each of the experimental conditions. The results indicate a strong positive relationship in the high-motivation condition ($B = 1.13$), $t(18) = 3.29, p < .005$, and a weaker positive relationship in the low-motivation condition ($B = .14$), $t(18) = 1.89, p = .07$. A regression predicting rebound from suppression failures, condition (high motivation coded as 1, low motivation coded as -1), and their interaction revealed a significant interaction term, $r(36) = 2.22, p < .05$, confirming that the slope in the high-motivation condition was significantly steeper than in the low-motivation condition. Thus, consistent with our model, when participants believed that thought intrusions indicate a high motivation to think of white bears, rebound was higher the more thought intrusions they had, but when participants believed that thought intrusions indicate a low motivation to think of white bears, this positive relation was attenuated.1

It is interesting to note that in the no-attribution condition the relation between thought intrusions and rebound was also significantly positive ($B = .85$), $t(15) = 2.86, p < .02$. It did not differ from the slope in the high-motivation condition ($t < 1$) but differed somewhat from the slope in the low-motivation condition, although this difference did not reach a conventional significance level, $r(33) = 1.66, p = .11$. Thus, the no-attribution condition appears to be closer to the high-motivation condition than to the low-motivation condition both in the magnitude of rebound and in the relationship between rebound and suppression failures.2 This result is consistent with our notion that people spontaneously interpret suppression as indicative of a high motivation to use the suppressed construct, thus rendering the no-attribution condition

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1 It should be noted that the association between suppression failures and rebound could have been affected by factors other than the inference process outlined in our theory. For example, it is possible that individual differences in the tendency to report white bear thoughts contribute to a positive relationship between the number of white bear thoughts in the suppression phase (i.e., suppression failures) and in the expression phase (i.e., rebound). It could be that this generally positive association served to offset the theoretically expected negative correlation between suppression failures and rebound in the low-motivation condition. Generally, then, differences in degrees of association (i.e., moderation) are more meaningful than the absolute magnitude of association (see Wegner et al., 1987, for a similar claim). It should be noted also that in examining differences in degree of association, it has been found that nonstandardized regression coefficients are preferable to standardized correlation coefficients (e.g., Kenny, Kashy, & Bolger, 1998).

2 The original studies on rebound (Wegner et al., 1987) reported non-significant correlations of -.10 and .23 between failures and rebound in the initial suppression group and a significant correlation of .55 between
similar to the high-motivation condition. As a whole, then, the results of Study 1 are consistent with the predictions of our model.

Study 1 applies a very explicit manipulation of motivational attribution: Participants were told to interpret suppression failures in motivational terms, as indicating either a high motivation to use the suppressed construct or a low motivation to use it. The strength of this manipulation is obviously in providing a direct demonstration of the phenomenon in question—a motivational interpretation of suppression failures may reduce rebound. The weakness of the study, however, is that this manipulation could have created an experimental demand not to have (or not to report) white bear thoughts in the low-motivation condition. Study 2 is designed to address this problem by introducing a more subtle manipulation of attribution, one that is not open to a demand interpretation.

**Study 2: Attribution of Experienced Difficulty**

As in Study 1, participants in this study were introduced to an experiment on spontaneous thoughts and were asked to verbalize their thoughts while trying not to think of a white bear. During the suppression period, participants listened to a recording of unintelligible speech, which was an extract from a novel read aloud and played backwards (see Yzerbyt, Schadron, Leyens, & Rocher, 1994, for a similar paradigm). We told some participants 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. We told other participants that the tape would make it difficult for them to suppress thoughts of white bears because it would subliminally introduce such thoughts. We thought that this manipulation would either augment or discount, respectively, attribution of difficulty to an internal cause (i.e., motivation; Heider, 1958; H. H. Kelly, 1972; see Olson & Ross, 1988; Ross & Olson, 1981, for an application of the discounting principle to self-perception). Specifically, we reasoned that participants in the easy-suppression condition would augment the internal cause of the experienced difficulty to suppress, thinking that if it is difficult for them to suppress the thought in spite of the alleged helpful effect of the tape, it must be because they are really compelled to think of white bears (i.e., have a need to think of them). Participants in the difficult-suppression group, on the other hand, would attribute suppression difficulty to the tape and would discount their own motivation to think of the suppressed construct. We predicted, therefore, more rebound in the former group than in the latter group.

As in Study 1, this study included a no-attribution group, for which no tape was played in the suppression phase, and a control group, for which no suppression was introduced in the first phase. We expected to replicate the rebound effect in that the rate of white bear thoughts would be higher in the no-attribution group than in the control group. We also predicted an enhanced rebound in the easy-suppression condition relative to the no-attribution condition and a reduced rebound in the difficult-suppression condition relative to the no-attribution condition.

It is important to distinguish between our difficult-suppression condition, in which we expected suppression to be difficult because of an external condition (i.e., the tape), and what is commonly labeled in suppression experiments a load condition (cf. Wegner & Erber, 1992; Wegner et al., 1993). In load conditions, the entire task (which usually is not defined as thought suppression), rather than suppression, is expected to be difficult because of an external condition. For the purpose of highlighting this distinction, we included in our study a load condition in which the tape was played but no suppression-relevant attribution for its effects was offered. Instead, participants in this condition were told that the tape would make the task of listing their thoughts more difficult. The belief that the tape makes listing thoughts difficult does not constitute an external explanation for the difficulty to suppress thoughts, and, thus, no discounting of internal causes should occur in this condition. We predicted, therefore, that the postsuppressional rebound in the load condition would be as high as in the no-attribution condition and stronger than in the difficult-suppression condition.

**Method**

**Participants**

Eighty University of Würzburg undergraduates (40 men, 40 women) participated in a 90-min battery study on information processing. As in Study 1, participants either received course credit or were paid DM 20 (approximately $12 at the time) for their participation. Three participants were excluded from the analyses because their recordings were unintelligible. There were no gender differences in any of the results reported.

**Procedure**

The no-suppression control group was similar to that of Study 1, and the no-attribution condition of this study was similar to the no-attribution condition in Study 1. In the remaining three experimental conditions, participants performed the same suppression task as in Study 1, except that a tape recording of a male voice reading extracts from a novel by Max Frisch (1995, pp. 47–49) was played during the entire suppression period. The recording was played backwards and was unintelligible. The text did not contain any mention of white bears or any concept that might be related to white bears. Participants in the difficult-suppression condition were told that the tape would subliminally activate the concept of a white bear and thus make suppression difficult. Participants in the easy-suppression condition were told that the tape would subliminally interfere with thoughts of
a white bear and thus make suppression easy. Participants in the load condition were told that the tape would make the task of thought listing difficult. After finishing the experiment, participants performed unrelated tasks for about 45 min. At the end of the experiment they were debriefed and thanked for taking part.

Results and Discussion

Suppression

We coded and analyzed the results in the same way as in Study 1. We first examined whether introducing the tape interfered with suppression. Although the overall one-way ANOVA was not significant, $F(3, 58) = 1.59, p = .20$, a contrast comparison revealed fewer thought intrusions in the no-attribution condition ($M = 3.81$) than in the three experimental conditions in which a tape was introduced during suppression ($M = 8.07$), $F(1, 58) = 3.84, p = .05$ (see Table 2). The numbers of thought intrusions in the three conditions in which the tape was played during suppression did not significantly differ from each other (all $Fs < 1$). Apparently, the recording interfered with suppression, regardless of the participants’ beliefs about its effects.

Rebound

As in Study 1, we were mainly interested in examining the magnitude of the rebound effect, or the number of white bear thoughts in the expression phase. A one-way ANOVA on that measure revealed a significant effect for experimental condition, $F(4, 72) = 19.86, p < .0001$. A planned contrast analysis revealed that, in line with the rebound effect, participants in the no-attribution condition had more thoughts of a white bear ($M = 8.69$) than participants in the no-suppression (control) condition ($M = 5.40$), $F(1, 72) = 6.07, p < .02$. Our main hypothesis was that telling participants that the tape would make suppression difficult would produce less rebound than telling them that the tape would make suppression easy. Consistent with this prediction, participants in the difficult-suppression condition reported significantly fewer thoughts of white bears ($M = 5.06$) than participants in the easy-suppression condition ($M = 17.40$), $F(1, 72) = 61.53$, $p < .0001$. In fact, telling participants that the tape would make suppression difficult did not merely reduce postsuppressional rebound but actually eliminated it, as the number of white bear thoughts in the difficult-suppression group ($M = 5.06$) not only was lower than in the no-attribution condition ($M = 8.69$), $F(1, 72) = 12.23, p < .001$, but also did not differ from the control (no-suppression) condition ($M = 5.40$), $F < 1$. Telling participants that the tape would make suppression easy enhanced rebound ($M = 17.40$) relative to the level of rebound obtained in the no-attribution condition ($M = 8.69$), $F(1, 72) = 19.39, p < .0001$.

Thus, the present study demonstrates both a reduction of rebound and an enhancement of rebound relative to a baseline level of rebound obtained in the no-attribution condition, whereas only reduction of rebound was obtained in Study 1. The crucial difference between the two studies is that the rebound-enhancing manipulation in Study 1 offers an attribution that people may use spontaneously—people might think that suppression failures indicate a high motivation to think of the suppressed construct even when this idea is not explicitly suggested. Contrary to this, in Study 2 the rebound-enhancing manipulation refers to the alleged facilitating effect of the tape, an explanation that cannot be used in the absence of a tape and therefore can enhance rebound above the baseline, no-attribution condition.

Our study includes a load condition in which the tape was introduced during the suppression phase, and participants in this condition were told that the tape would make the thought-listing task difficult. In the load condition no reference was made to the effect of the tape on the difficulty of suppression, and therefore we predicted that, unlike in the difficult-suppression condition, no reduction in rebound would occur. Consistent with this prediction, in the load condition rebound was not reduced relative to the no-attribution condition ($M = 8.69$) but actually showed a marginal increase, $F(1, 72) = 2.91, p = .09$. This marginal increase in rebound in the load condition is of no central importance for us, as our main purpose in including the load condition was to show that no reduction in rebound occurred in this condition.

The Relation Between Suppression Failures and Rebound

As in Study 1, we conducted a regression analysis predicting the number of white bear thoughts in the second phase (rebound) from the number of white bear thoughts in the first phase (suppression failures) separately in each of the four experimental conditions. The results indicate a positive relationship in the easy-suppression condition ($B = .35$, $t(13) = 4.54, p < .001$), in the no-attribution condition ($B = .39$, $t(13) = 6.51, p < .0001$, and in the load condition ($B = .39$, $t(13) = 6.51, p < .0001$). In our theory, load should not necessarily enhance rebound, but it may do so under certain circumstances. For example, load may be necessary to create rebound if without it suppression is experienced as too easy. In the present study, the increase in rebound in the load condition was only marginal, and therefore attempts to explain this effect may be premature.

Examining the literature does not clarify the picture: Although many studies found that load increases suppression failures during suppression, there is very little research examining the effects of load during suppression on rebound postsuppression. We found only one report of this effect: Wegner et al. (1993) found postsuppressional rebound of mood only when suppression was performed under load. It is notable that in these studies suppression appeared quite successful and could have been easy without load. We should note that an increase in rebound as a result of introducing load during suppression would be consistent with ironic monitoring theory (Wegner, 1994), which states that load interferes with the controlled search for distractors, thus "yielding increases in ironic states of mind" (Wegner, 1994, p. 40). Obviously, more research is needed to clarify the effect of load on rebound.

### Table 2

**Number of White Bear Thoughts (Study 2)**

<table>
<thead>
<tr>
<th>Phase</th>
<th>No tape</th>
<th>Suppression difficult</th>
<th>Expression only</th>
<th>Load</th>
<th>Suppression easy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n = 16$</td>
<td>$n = 16$</td>
<td>$n = 15$</td>
<td>$n = 15$</td>
<td>$n = 15$</td>
</tr>
<tr>
<td>Suppression</td>
<td>3.81&lt;sub&gt;a&lt;/sub&gt;</td>
<td>7.62&lt;sub&gt;b&lt;/sub&gt;</td>
<td>6.67&lt;sub&gt;b&lt;/sub&gt;</td>
<td>9.93&lt;sub&gt;b&lt;/sub&gt;</td>
<td></td>
</tr>
<tr>
<td>Expression</td>
<td>8.69&lt;sub&gt;a&lt;/sub&gt;</td>
<td>5.06&lt;sub&gt;b&lt;/sub&gt;</td>
<td>5.40&lt;sub&gt;b&lt;/sub&gt;</td>
<td>12.13&lt;sub&gt;b&lt;/sub&gt;</td>
<td>17.40&lt;sub&gt;b&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

Note. Within each row, means that do not share a common subscript differ at $p < .05$. 3
condition \((B = .65), t(13) = 5.91, p < .0001\). In the difficult-suppression condition an insignificant negative relationship was obtained \((B = -.28), t(14) = 1.42, p = .18\). A regression analysis—taking two conditions at a time and predicting rebound from suppression failures, condition (difficult suppression coded as \(-1\), easy suppression, no attribution, and load coded as \(1\)), and their interaction—revealed significant interaction terms, all \(rs > 3.07, p < .005\), confirming that the slope in the difficult-suppression condition was significantly less steep than in any of the other three conditions.

Thus, when a motivational interpretation of suppression difficulty was introduced by experimental instructions (i.e., in the easy-suppression condition) as well as when no particular interpretation of suppression difficulty was explicitly offered (i.e., in the no-attribution and the load conditions), suppression failures increased rebound. However, when an external, nonmotivational interpretation of suppression difficulty was introduced (i.e., in the difficult-suppression condition) the positive relationship between suppression failures and rebound was attenuated. These results replicate Study 1 and lend additional support to the notion that when no explicit interpretation of suppression difficulty is introduced, participants tend to interpret suppression failures as indicating a motivation on their part to use the suppressed construct.

Study 3: Reducing Postsuppressional Rebound of Stereotypes

Postsuppressional rebound has particularly troubling consequences for suppression of stereotypes because it implies that prejudice and stereotypical perceptions are enhanced by attempts to suppress a stereotype (see Monteith et al., 1998, for a review). Our framework suggests that rebound of suppressed stereotypes can be prevented if suppression difficulty is attributed to a nonmotivational source. Studies 3a, 3b, and 3c test this prediction. In all three studies, German participants wrote a story about a day in the life of a foreign worker (i.e., Ausländer), a social category that was found to be associated with criminality. Participants in the suppression condition were instructed to suppress stereotypes of foreign workers, and participants in the difficult-suppression condition were told, in addition, that research has found that suppression is difficult even for people who are not prejudiced against that group. Participants in the no-suppression group did not receive any specific instructions. We hypothesized that participants in the difficult-suppression condition would not attribute the difficulty they experienced during suppression to their motivation to use the stereotype and, therefore, would not exhibit postsuppressional rebound. Studies 3a, 3b, and 3c assess rebound in different ways: Study 3a examines recommended penalties for crimes associated with foreign workers (e.g., pickpocketing) as compared with crimes unrelated to foreign workers (e.g., driving with no license); Study 3b assesses the extent to which participants interpreted an ambiguous cartoon as a criminal act rather than as a neutral event; Study 3c measures the number of word stems that participants completed with words related to criminality rather than neutral, stereotype-unrelated words.

Study 3a

In Study 3a we conceptualize rebound of the stereotype of foreign workers as the punishment participants suggested for stereotype-related crimes. We reasoned that to the extent that this stereotype was accessible, participants would suggest harsher punishments for stereotype-related crimes but not for stereotype-unrelated crimes (Shaffer & Case, 1982). German participants either suppressed or did not suppress stereotypes of a foreign worker and then, in an ostensibly unrelated study, indicated the appropriate punishments for stereotype-related and stereotype-unrelated crimes. We predicted rebound—we expected that participants would suggest harsher punishments for stereotypic crimes after suppressing stereotypes of foreign workers than they would after no prior suppression. We predicted no similar effect for stereotype-unrelated crimes because the stereotypic knowledge is not applicable in this case (Higgins, 1996). More important, we expected to reduce rebound by telling participants that suppression is difficult even for unprejudiced people.

Method

Participants. Fifty-four Würzburg University students (27 men, 27 women) participated in a study on different psychological tasks. Two participants were excluded from the analyses because their parents were foreign workers. Participants received a chocolate bar as compensation. There were no gender differences in any of the results reported in Studies 3a, 3b, or 3c.

Stimulus material. To assess the content of the stereotype of a foreign worker, we asked 20 undergraduates from Würzburg University to write down, as quickly as possible, five characteristics that are stereotypically associated with foreign workers. Criminal emerged as the most frequent characteristic: Eleven out of the 20 participants listed it as the first characteristic, and 18 participants mentioned it within the five items they listed. To confirm the stereotypic association between foreign workers and criminality, in the second stage of our pretest we presented a list of different characteristics (e.g., criminal, lazy, social) to 43 Würzburg University students. The participants rated how stereotypic each of these characteristics was to foreign workers on a scale ranging from 1 (not at all stereotypic) to 9 (very stereotypic). Criminal was rated as the most stereotypic trait \((M = 7.10)\). In the third stage of our pretest, 30 Würzburg University students rated the degree to which each of 30 crimes was related to foreign workers on a 9-point scale ranging from 1 (not at all related) to 9 (very related). The two highest rated crimes were pickpocketing \((M = 8.10)\) and stealing cigarettes \((M = 7.30)\). The lowest rated crime was driving with no license \((M = 2.30)\). These three crimes were used in the main experiment.

Procedure. The study was described as consisting of a number of unrelated psychological tasks. The first task was to write a story about a typical day in the life of Mr. X, a married 45-year-old foreign worker who lives in Cologne and has a car. Participants in the no-suppression condition received no further instructions. Participants in the suppression conditions were instructed to avoid using stereotypes in their story. They were told, "For example, you should not describe this person as having 10 children or decide that he drives an old Ford" (two features that are commonly assumed to be stereotypic of foreign workers in Germany). Participants in Study 3b, 3c...

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4 The gradient in the load condition was marginally steeper than in the no-attribute condition, \(t(27) = 1.75, p = .09\), and significantly steeper than in the easy-suppression condition, \(t(26) = 2.08, p < .05\). From the perspective of our theory, this difference suggests that people judge suppression failures as more indicative of motivation in the load condition than in other conditions (the no-attribute or the easy-suppression conditions). It is not clear why this is the case. Another possibility is that another process, unrelated to inferences of motivation, contributed to the correlation between suppression failures and rebound in the load condition. Further research is needed to explore these possibilities.
the difficult-suppression condition were told, in addition, “Recently, research has shown that avoiding using stereotypes is difficult, even for nonprejudiced people. It is only natural and does not mean that you are a prejudiced person.” Participants were randomly assigned to experimental conditions. After writing the story for 5 min, participants were stopped and escorted to a different booth, where they proceeded with an ostensibly unrelated study on court judgments. They were asked to indicate what would be a reasonable monetary penalty for pickpocketing, stealing cigarettes, and driving with no license. Participants were then thoroughly debriefed, thanked, and probed for suspicion. None of the participants expressed relevant suspicions. Finally, participants received a chocolate bar in appreciation for their participation.

Results and Discussion

Suppression. Two raters who were unaware of the experimental conditions rated the stereotypicity of the stories on a 9-point scale ranging from 1 (not at all stereotypic) to 9 (very stereotypic). The correlation between the two raters was high \( r = .82 \), and the ratings were averaged into a single score. A one-way ANOVA on this score revealed a significant effect for condition, \( F(2, 49) = 22.43, p < .001 \). Participants wrote more stereotypic stories in the no-suppression condition \( M = 3.78 \) than in either the suppression condition \( M = 2.38 \) or the difficult-suppression condition \( M = 1.79 \), \( F(1, 50) = 41.25, p < .0001 \). The latter two conditions differed from each other marginally, \( F(1, 50) = 3.61, p = .06 \). Thus, participants successfully suppressed stereotypes when instructed to do so, whether or not they were told that suppression is difficult for most people.

Rebound (penalizing stereotypic crimes). The penalties people indicated were positively skewed, and we performed a square-root transformation to achieve homogeneity of error variance. The penalties for stealing cigarettes and pickpocketing were correlated \( r = .65, p < .0001 \) and were standardized and averaged into a single index. The penalties for the stereotype-unrelated crime were standardized and indexed in a similar way.

A one-way ANOVA on the penalties of stereotype-related crimes revealed a significant effect for experimental condition, \( F(2, 49) = 9.82, p < .0005 \). Further contrast analyses revealed a significant rebound effect—higher penalties in the suppression condition \( M = 0.71 \) than in the no-suppression condition \( M = -0.34 \), \( F(1, 50) = 14.72, p < .0005 \). Most important and consistent with our predictions, rebound was eliminated in the difficult-suppression condition—the penalties indicated by participants in this condition \( M = -0.36 \) were significantly lower than those in the suppression condition, \( F(1, 50) = 14.89, p < .0005 \), and did not significantly differ from those in the no-suppression condition \( F < 1 \). As also predicted, there was no effect of experimental condition on the penalties of stereotype-unrelated crime, \( F(2, 49) = 1.26, n.s. \).

The relation between stereotypicity of the story and rebound. Stereotypicity of the stories was not identical to self-perceived suppression failure because it was based on ratings made by judges rather than by the writers themselves. It is entirely possible, for example, that participants overlooked some stereotypic elements in their own stories or that they perceived failures to suppress that were not detected by the judges. Despite these limitations, it is interesting to conceptualize this score as an imperfect measure of suppression failures and compare its relation to rebound across experimental conditions. Regression analyses revealed no relation in the no-suppression condition \( B = 0.08, t < 1 \) or the difficult-suppression condition \( B = 0.05, t < 1 \) and a positive relation in the suppression condition \( B = 0.54, t(15) = 2.41, p < .05 \). A regression analysis—taking two conditions at a time and predicting rebound from stereotypicity of the story, condition (no suppression and difficult suppression coded as \(-1 \), suppression coded as \(1 \)), and their interaction—revealed marginal interaction terms, suggesting that the slope in the suppression condition was marginally steeper than that in the no-suppression condition, \( r(31) = 1.60, p = .12 \), and the difficult-suppression condition, \( r(30) = 1.37, p = .18 \).

These results indicate that, as in the previous studies, introducing a nonmotivational interpretation for suppression failures and suppression difficulty attenuated the relation between suppression failures and rebound. These findings are consistent with our notion that rebound is the result of attributing one’s failures to suppress to a motivation to use the suppressed construct.

This study provides initial evidence in support of our prediction that post-suppressional rebound of stereotypes may be eliminated by an attributional manipulation. Specifically, rebound was not obtained after suppression if participants were informed that suppression is difficult even for nonprejudiced people. We believe that this was the case because in this condition participants did not interpret the difficulty they experienced during suppression as indicative of a motivation on their part to use the stereotype. The pattern of correlations between suppression and rebound also supports this notion. Our next study extends the present results by introducing two other measures of stereotype accessibility.

Study 3b

In the present study we conceptualize stereotype accessibility as interpreting ambiguous behavior in a stereotype-consistent way (see Devine, 1989; R. S. Wyer & Srull, 1989). We exposed participants to a cartoon story in which a target person performs an ambiguous behavior—he either steals cigarettes or buys them. We reasoned that high accessibility of the stereotype of foreign workers would cause people to disambiguate the target’s behavior as criminal. We also offered participants an opportunity to donate the chocolate bar they received for participation to an asylum center for the children of foreign workers. We used refusing to donate the chocolate as a measure of prejudiced behavior and reasoned that an accessible stereotype of foreign workers would make participants more reluctant to donate the chocolate to children of foreign workers. We predicted, therefore, that a criminal interpretation of the cartoon would be enhanced after suppression relative to no suppression but would be reduced when a nonmotivational interpretation of suppression difficulty was introduced. Likewise, we predicted that helping members of the stereotyped group would decrease after suppression relative to no suppression but would be restored to the no-suppression rate in the difficult-suppression condition.

Method

Participants. Fifty-four Würzburg University students (18 men, 36 women) from different disciplines participated in an experiment on different psychological tests and received a chocolate bar as compensation.

Stimulus material. A cartoon story was designed for the purposes of the present study. It consisted of a series of black-and-white pictures with
no verbal labels. The pictures showed a person wearing a fashionable hooded sweater that covered most of his face. The person entered a supermarket, put a few things in his shopping basket, then put some of the groceries on the cashier counter, took a packet of Lucky Strike cigarettes and looked at them. Finally, he paid the cashier and left the supermarket. The pictures were ambiguous as to whether he paid for the cigarettes.

Procedure. The suppression phase of the experiment was identical to that of Study 3a. After completing it, participants were introduced to an ostensibly unrelated study on imaginative ability that took part in a different room. Participants were shown the cartoon and were asked to describe the events in it. They were then asked to rate the person’s criminality (i.e., “How criminal do you think the person is?”) and unfriendliness (i.e., “How unfriendly is the person?”) on 9-point scales ranging from 1 (not at all) to 9 (very much). At this point participants received a chocolate bar in appreciation for their participation and were offered an opportunity to donate it to an asylum for children of foreign workers in Frankfurt. Finally, participants were thoroughly debriefed, thanked, and probed for suspicion. None of the participants expressed relevant suspicions.

Results and Discussion

Suppression. We computed stereotypicality scores in a way similar to the method we used in Study 3a (intrater r = .95). A one-way ANOVA on these scores revealed a significant effect for condition, F(2, 51) = 5.38, p < .01. More stereotypic stories were written in the no-suppression condition (M = 4.00) than in both the suppression condition (M = 2.58) and the difficult-suppression condition (M = 1.89), F(1, 52) = 9.65, p < .005. The latter conditions did not differ from each other, F(1, 52) = 1.12, ns.

Perceptual rebound (perceiving the target as criminal). The criminality ratings of the target person revealed the predicted pattern. A significant one-way ANOVA, F(2, 51) = 6.19, p < .01, indicated higher criminality ratings in the suppression condition (M = 4.61) than in both the no-suppression condition (M = 3.11), F(1, 52) = 8.60, p < .005, and the difficult-suppression condition (M = 3.00), F(1, 52) = 9.92, p < .005. The latter two conditions did not differ from each other, F < 1. Participants also indicated how unfriendly the target person was. These ratings, however, revealed no significant effect for condition (Ms = 4.22, 5.10, and 4.94, for the no-suppression, suppression, and difficult-suppression conditions, respectively), F(2, 51) = 1.15, p = .32. This pattern of results indicates that suppression activated the specific content of the stereotype of foreign workers rather than activating negative trait concepts in general.

Behavioral rebound (prejudiced behavior). Ninety-four percent of the participants in the no-suppression condition donated their chocolate bar to the center for children of foreign workers. This rate was reduced to suppression to 72%, thus showing the expected rebound effect, χ²(1, N = 36) = 3.20, p = .07. Consistent with our predictions, rebound was eliminated in the difficult-suppression condition: The donation rate in this condition was 100%, and it did not differ from the no-suppression condition, χ²(1, N = 36) = 1.03, p = .31, but differed significantly from the suppression condition χ²(1, N = 36) = 5.81, p = .01.

In sum, the present pattern of results indicates that, in line with the rebound effect, suppressing stereotypes of foreign workers increased the likelihood of disambiguating the cartoon as depicting a criminal act and increased the likelihood of prejudiced behavior. It also shows, consistent with our predictions, that rebound was reduced when participants were told that suppressing stereotypes is difficult and is not indicative of prejudice.

The relation between stereotypicality of the story and rebound. A regression of criminality ratings on the stereotypicality of the stories revealed no relation in the no-suppression condition (B = −0.02, t < 1), a positive relation in the suppression condition (B = 0.46, t(16) = 4.75, p < .001, and no significant relation in the difficult-suppression condition (B = 0.23, t < 1). A regression similar to the one conducted in Study 3a revealed that the slope in the suppression condition was significantly steeper than that in the no-suppression condition, t(16) = 2.11, p < .05, but the slope in the difficult-suppression condition, despite being, as predicted, lower than the slope in the suppression condition, did not significantly differ from each of the other two conditions, both rs < 1. These results suggest that, as in the previous studies, a nonmotivational interpretation of suppression failures somewhat attenuated the relation between suppression failures and rebound. This finding is consistent with our notion that rebound is the result of attributing one’s failures to suppress to a motivation to use the suppressed construct.

Study 3c

In Study 3c we extend the findings of Studies 3a and 3b by using yet another measure of stereotype accessibility, this time conceptualizing it as completing word stems with stereotype-related words rather than with neutral terms. In addition, we measure experienced difficulty during suppression and examine its relation to rebound.

Method

Participants. Sixty Wurzburg University undergraduate psychology students (21 men, 39 women) participated in a study on different psychological tasks in return for course credit.

Materials. In a pretest, 20 participants rated 30 words on how much they were related to criminality on scales ranging from 1 (not at all related) to 9 (very related). We selected 10 words that were highly related to criminality (M = 6.99) and created for each of these words a stem that could be solved with either the original, criminality-related word or an unrelated, neutral word. To make sure that the neutral solutions were unrelated to criminality, we rated them in the same way as above. These ratings were low (M = 3.50), establishing these words as unrelated to criminality. Examples of word stems that were used in the study are BETR_G (Betrag [fraud] or Betrag [amount]), _E (Dieb [thief] or lieb [nice]), and _KS (Koks [cocaine] or Keks [cookie]).

We also included in the task eight word stems that could be solved with either negative or moderately positive words—for example, _E (label [foul] or aber [over]) and _EL (Ekel [disgust] or Ekel [donkey]). A pretest confirmed that one of the solutions was negative (M = 2.90, on a 9-point scale ranging from 1 = very negative to 9 = very positive), whereas the other solution was mildly positive (M = 6.20). Examining the number of negative word solutions found for these stems would make it possible to determine whether suppression activated the semantic content of the stereotype or activated general negative evaluations. The word stem task also included 12 filler stems with a single, stereotype-unrelated, neutral solution.

Procedure. The suppression phase was identical to that of Studies 3a and 3b. After writing the story, participants were escorted to a different booth, where a second, ostensibly unrelated task was to be performed. Participants then worked on the word-stem completion task, which was introduced as an assessment of their verbal skills and titled “the R.
Results and Discussion

Suppression. The stereotypicality ratings were computed in the same way as in Studies 3a and 3b (the interrater correlation was .67). A one-way ANOVA on this measure revealed a significant effect of experimental condition, $F(2, 57) = 4.73, p < .02$, indicating more stereotypic stories in the no-suppression condition ($M = 3.80$) than in both the suppression condition ($M = 2.60$) and the difficult-suppression condition ($M = 1.98$), $F(1, 59) = 8.39, p < .01$, which did not differ from each other, $F(1, 59) = 1.07, n.s.$

Rebound. Our main dependent measure was the number of stems completed with words related to criminality. A one-way ANOVA on this measure revealed a significant effect for experimental condition, $F(2, 57) = 4.66, p < .05$. Further planned contrasts revealed the predicted rebound: There were more criminality-related words in the suppression condition ($M = 5.20$) than in the no-suppression condition ($M = 3.20$), $F(1, 59) = 5.80, p < .05$. Most important and also as we predicted, rebound was eliminated in the difficult-suppression condition: The number of criminal words in this condition ($M = 2.85$) did not differ from the number in the no-suppression condition ($M = 3.20$), $F < 1$. It is important to note that the present study used an implicit measure of stereotype accessibility, one that the participants were unable to control. Thus, this study shows that rebound reduction was not achieved through an experimental demand or any other conscious strategy on the participants’ part.

Our study also included eight stems that could be completed with either negative or positive words. A one-way ANOVA on the number of negative word solutions revealed no effect for experimental condition, $F < 1$ ($Ms = 4.10, 3.65$, and $4.20$ in the no-suppression, suppression, and difficult-suppression conditions, respectively, $F < 1$ for all contrasts). Thus, it appears that suppressing the stereotype of foreign workers enhanced the accessibility of the dimension of criminality rather than the more general dimension of negative evaluations. This aspect of the results is consistent with the findings of Study 3b.

The relation between stereotypicality of the story and rebound. We examined the relation between the stereotypicality of the stories and crime-related word solutions separately in each of the three experimental conditions. Regression analyses revealed no relation in the no-suppression condition ($B = 0.06, t < 1$), a positive relation in the suppression condition ($B = 1.47$), $t(18) = 2.51, p < .05$, and a negative relation in the difficult-suppression condition ($B = -0.64$), $t(18) = -2.65, p < .05$. A regression conducted in the same way as in Studies 3a and 3b revealed that the slope in the suppression condition was significantly steeper than that in both the no-suppression condition, $t(18) = 2.78, p < .01$, and the difficult-suppression condition, $t(18) = 3.45, p < .001$. As in all the previous studies, a nonmotivational interpretation of suppression failures attenuated the relation between suppression failures and rebound.

The relation between experienced difficulty and rebound. After completing the word-stem task, participants reported how difficult it was for them to write the story. A one-way ANOVA on these experienced difficulty ratings did not reveal any effect for condition, $F < 1$. Participants in all the experimental conditions found writing the story fairly difficult, as these ratings were higher than the scale’s midpoint, $t(59) = 5.89, p < .0001$ ($Ms = 6.20, 6.65$, and $6.50$ in the no-suppression, suppression, and difficult-suppression conditions, respectively). We next examined the relation between experienced difficulty and rebound (i.e., the number of crime-related word solutions) separately in each experimental condition. Our model predicted that experienced difficulty would be interpreted differently in different experimental conditions. Specifically, it predicted that in the suppression condition, difficulty in writing the story would be misattributed to the suppression requirement (i.e., a participant may think, “It must be so difficult for me to write the story because I cannot use the stereotype”) and would be interpreted as indicating a high motivation to use the suppressed construct (i.e., the same participant may think, “It must be the case, then, that I really need to use this stereotype”) and thus create rebound. Consistent with this prediction, we found a positive relation between experienced difficulty and rebound in the suppression condition ($B = 1.01$), $t(18) = 2.22, p < .05$. Our model predicted no relation between experienced difficulty and rebound in the no-suppression condition, in which the inferential logic outlined before does not apply. This prediction was supported by the data ($B = -0.18$), $t(18) = -1.12, p = .27$. The two slopes differed from each other significantly, as indicated by a significant interaction term in a regression predicting rebound from experienced difficulty, condition (suppression coded as 1, no suppression coded as -1), and their interaction, $t(36) = 2.59, p < .01$.

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5 An anonymous reviewer raised the possibility that the difficult-suppression instructions created an experimental demand to reduce stereotyping. Intuitively, our difficult-suppression instructions (which were "avoiding using stereotypes is difficult, even for nonprejudiced people. It is only natural and does not mean that you are a prejudiced person") hardly seem to be a demand to avoid stereotyping. Intuitions aside, however, it is especially important to emphasize in the context of this suggestion that Study 3e demonstrates elimination of rebound using an implicit measure of stereotype accessibility, one that cannot be affected by a conscious desire to appear less stereotypic. It may be worth noting also that a demand account cannot explain why different relations between stereotypicality or the stories and rebound were obtained in the suppression and the difficult-suppression conditions, nor can it explain the pattern of results obtained with the measure of experienced difficulty.

6 We also performed a full mediation analysis, in which stereotypicality of the story affected rebound through perceived difficulty, but this yielded inconclusive results, showing that including perceived difficulty as a mediator insignificantly attenuated the direct path from stereotypicality to rebound. This analysis is of limited value, however, because of the low power of the design ($N = 20$). Another potential limitation to a mediation analysis is that, theoretically, this mediation is predicted with perceived failures to suppress as the exogenous variable. As noted before, the stereotypicality of the stories as rated by external judges is only a proxy to this variable.
It is important to note that attributions of experienced difficulty to suppression, although reasonable, are faulty in the context of the present experiment. This is because, evidently, writing the story was equally difficult when participants did not suppress stereotypes. It is important to note that our model did not predict that suppression would necessarily make the task more difficult, as it is quite possible that some tasks are difficult even without suppression (see Liberman & Förster, 2000, Study 5, for similar results). Our model only predicted that suppression would affect the interpretation of the experienced difficulty: It predicted that in the suppression condition but not in the no-suppression condition, experienced difficulty would be used to augment the motivation to use the suppressed construct, a prediction that is fully supported by the results.

According to our model, rebound was reduced in the difficult-suppression condition because participants in this condition did not interpret the experienced difficulty of writing the story as indicative of a motivation on their part to use the stereotype. Consistent with this reasoning, we found no relation between experienced difficulty and rebound in the difficult-suppression condition ($B = 0.06, t < 1$). The relation between experienced difficulty and rebound in the difficult-suppression condition was attenuated relative to the suppression condition, as indicated by a significant interaction term in a regression predicting rebound from experienced difficulty, condition (suppression difficult coded as $-1$, suppression coded as 1), and their interaction, $r(36) = 1.92, p = .06$.

Together, Studies 3a, 3b, and 3c demonstrate that post-suppression rebound of stereotypes may be eliminated by an attributional manipulation. Specifically, in all three studies rebound was not obtained after suppression if participants were informed that suppression is difficult even for nonprejudiced people. We believe that this was the case because in this condition participants did not interpret the difficulty they experienced during suppression as indicative of a motivation on their part to use the stereotype. Consistent with this notion is the finding, obtained in all three studies, that the positive relation between rebound and the stereotypicality of the stories written during the suppression phase (which may be viewed as a proxy to experienced difficulty) was attenuated in the difficult-suppression condition relative to the suppression condition. Also consistent with this notion is the finding of Study 3c that the perceived difficulty of writing the story was positively related to rebound in the suppression condition but not in the difficult-suppression condition. Overall, the results of all three studies lend considerable support to our motivational attribution theory of post-suppression rebound.

**General Discussion**

We proposed that inferences about motivation may take place during suppression and produce post-suppression rebound. Specifically, people may infer that they are motivated to think about the suppressed construct from the occurrences of suppression failures and from experiencing suppression as difficult. The enhanced motivation is revealed in a high accessibility of the suppressed construct and in a more extensive use of it after suppression. Three studies tested this model by manipulating people’s attributions for suppression failures and suppression difficulty and examining the effect of this manipulation on post-suppressional rebound.

Study 1 found that suggesting to participants that suppression failures indicate a low motivation to think of the suppressed construct eliminated rebound, whereas suggesting that such failures indicate a high motivation to think of the suppressed construct preserved rebound. Study 2 found that augmenting internal attributions of suppression difficulty (by telling participants that an unintelligible recording played during suppression would make suppression easy) enhanced rebound, whereas discounting internal attributions for suppression difficulty (by telling participants that the recording would make suppression difficult) eliminated rebound. Study 3 found that telling participants that suppressing stereotypes of foreign workers is difficult even for nonprejudiced people eliminated post-suppressional rebound of stereotypes. Thus, rebound is eliminated when people do not attribute suppression failures and suppression difficulty to their motivation to use the suppressed construct, whereas an enhanced rebound is obtained when such attributions are augmented.

The results of our studies also show that there was a positive relation between rebound and suppression failures when attributions were not manipulated as well as when an attribution of suppression difficulty to a high motivation to use the suppressed construct was suggested. All three studies show that when the motivational interpretation was discounted, this positive relationship was attenuated. These findings are consistent with the notion proposed in our theory that when no particular attribution is suggested for suppression failures and suppression difficulty, people tend to interpret these as indicating a high motivation to use the suppressed construct.

Our theory is in line with self-perception theory (Bem, 1972; Olson & Hafer, 1990) and particularly with the applications of this theory to inferences about one’s own motivation (e.g., Higgins et al., 1995; Higgins & Trope, 1990; Higgins et al., 1998; Lepper et al., 1995; Higgins & Trope, 1990; Nisbett & Valins, 1972; Pittman & Heller, 1987; Wilson & Lassiter, 1982). In the context of thought suppression, this theory predicts that people who find themselves thinking of white bears despite attempting not to do so might infer that they are motivated to think about white bears (Wegner et al., 1987). We propose a variation of self-perception theory by suggesting that motivation may be inferred not only from overt behavior (i.e., suppression failures) but also from the difficulty experienced during suppression. For example, we predict that rebound may occur in the absence of overt failures to suppress if suppression is nevertheless experienced as difficult (Liberman & Förster, 2000, Study 5).

**Alternative Theories of Post-suppressional Rebound**

Could other theories of post-suppressional rebound account for our results? We first examine ironic monitoring theory, which is the central theory of post-suppressional rebound, and then discuss other accounts of the phenomenon: the distractor associations model (Wegner, 1992), the suppression disruption model (Martin, Tesser, & McIntosh, 1993), and Brehm’s (1966) reactance theory (Wegner 1992, 1994; Wegner et al., 1987).
**Ironic Monitoring Theory**

According to ironic monitoring theory (Wegner, 1994), post-suppression rebound occurs because suppression activates the ironic monitor, which remains sensitized for occurrences of the suppressed construct during the entire suppression period, thus enhancing its accessibility. It is notable that there were no differences in the rate of suppression failures between the high- and the low-motivation groups in Study 1 and between the easy-suppression and difficult-suppression groups in Study 2. In Study 3, participants in the difficult-suppression condition suppressed stereotypes at least to the same extent as in the suppression condition. It appears that suppression, and therefore presumably also ironic monitoring for occurrences of suppression failures, took place in all these experimental conditions, and, according to the theory, rebound should have been obtained in all of these cases. The differences in rebound between our experimental conditions suggest, therefore, that processes other than ironic monitoring were at least partly responsible for producing rebound in our studies.

**The Distractor Associations Model**

Wegner (1992; see also Wegner et al., 1991) suggested that during the suppression period, the suppressed content and the distractors become associated as a result of being present in the mind at the same time. Suppression, then, creates a large set of retrieval cues that bring to mind the thought one tried to suppress (Wegner, 1992). For example, in our experiments, suppressing thoughts about white bears could have involved trying to distract oneself by thinking about the room, the experimenter, or, in some conditions of Study 2, the tape. It is possible that these distractors became associated with white bears and, during the subsequent expression period, reminded participants of white bears, thereby producing rebound. In support of this theory, it was shown that rebound is reduced when the environment is changed between the suppression and the expression phases (Wegner et al., 1991) and when one’s mood during suppression is different from that during expression (Wenzlaff et al., 1991). We have no reason to believe that in the high-motivation or the easy-suppression conditions people formed more associations for white bears or that in these conditions the suppression and the expression phases were more similar to each other than in the low-motivation or the difficult-suppression conditions. Just like ironic monitoring theory, this theory cannot explain our results.

**Disruption of the Goal to Suppress**

Martin et al. (1993; see also Martin & Tesser, 1996; Tesser, Martin, & Cornell, 1996) suggested that postsuppressional rebound may occur because people experience thought intrusions as suppression failures and think of the goal of suppression as being incomplete. Martin et al. further argued that an incomplete task makes task-related constructs highly accessible (Martin, 1986; Martin & Achee, 1992; Zeigarnik, 1927). In support of their hypothesis, Tesser et al. (1996) showed that providing success feedback after suppression by telling participants that they had a relatively small number of suppression failures reduced rebound relative to a no-feedback condition. There is no reason to believe that participants in the high-motivation condition of Study 1 thought that the task of suppression was incomplete, whereas participants in the low-motivation condition perceived it as being completed. Thus, once again, this theory cannot explain our results.

**Reactance**

According to reactance theory (Brehm, 1966), restrictions threaten one’s freedom of action and thereby elicit a reactance response—an unpleasant state of arousal followed by an urge to reaffirm one’s freedom by breaking the restrictive rules. According to this theory, rebound is a reactance to the restrictions introduced by suppression (Wegner et al., 1987). Both our model and reactance theory offer a motivational explanation of postsuppressonal rebound. However, reactance theory assumes that the motivation to use the suppressed construct stems from the need to reduce the unpleasant arousal introduced by the suppression instructions, whereas our model assumes that this motivation is inferred from suppression instructions, suppression failures, and suppression difficulty. Our findings that postsuppressional rebound may be altered by an attributional manipulation support the inferential explanation proposed within our model rather than the pure arousal-reduction reactance explanation.

We emphasize that, in theoretical terms, none of the models discussed above is contradicted by our model, as the processes outlined in these different theories might well coexist and independently contribute to postsuppressonal rebound. In empirical terms, however, the fact that in our studies rebound was eliminated, not just reduced, suggests that the present examples of rebound were not produced by any of these alternative processes. Our studies, then, point to the need to supplement these models with an additional, inferential mechanism.

**Other Sources of Inferring a Motivation to Use the Suppressed Construct**

In the present article we demonstrate that a motivation to use the suppressed construct may be inferred from suppression failures and from experienced difficulty during suppression. We note that, potentially, motivation could be inferred also from suppression instructions alone. This is because according to the conversational maxim of relevance (Grice, 1975), a speaker should only ask a recipient not to do something if the speaker believes that the recipient is likely to do it. Viewed from this perspective, suppression instructions presuppose that the participant is motivated to engage in the behavior in question. Research has shown that participants often assume the presuppositions implied in experimental instructions (Higgins, 1981; Schwarz, 1994; Strack, 1994). An anonymous reviewer suggested, in a related vein, that suppression failures make one think that one cannot control one’s thoughts and that believing that one cannot control something makes that process more threatening and salient. Both Martin et al.’s (1993) model and this suggestion would find it difficult to explain why rebound sometimes occurs after successful (in fact, perfect) suppression (Liberman & Förster, 2000, Studies 1, 2, and 5) that does not appear all that threatening (in these studies participants suppressed the use of color words in describing a colorful and abstract painting).
Schwarz, & Wänke, 1991). Thus, a participant in a suppression experiment might think, “Why would the experimenter ask me not to think of white bears unless he or she thought that I was about to do that? Probably, then, in this experiment I will feel compelled to think of white bears.” It is interesting to note that this idea suggests that rebound may occur after suppression instructions are delivered and before actual suppression is performed.

Implications for Reducing Postsuppressional Rebound

In our studies rebound was reduced by an experimental introduction of a nonmotivational interpretation of suppression difficulty. It is interesting to examine whether similar processes may take place in real life situations. For example, attempts to control one’s eating, smoking, and drug-abuse behaviors often produce relapse, which may be conceptualized as an instance of postsuppressional rebound (Wegner & Smart, 1997). Our model suggests that relapse can be reduced if people are told that control is difficult for everybody and that experiencing difficulty is natural and is not indicative of a unique desire on one’s part to do the behavior one is trying to refrain from. It is possible that this exact information is conveyed in support groups and may be partly responsible for their beneficial effect on self-control.

Our studies on rebound of stereotypes suggest that conveying to individuals the information about the objective difficulty of suppression may be an effective (and fairly simple) way to reduce postsuppressional rebound of stereotypes. It might prove effective, for example, to let people know that experiencing recurrent stereotypic thoughts when trying to suppress racist behavior does not imply that one is a racist.

More broadly, it is interesting to investigate the origin of the metatheories that underlie postsuppressional rebound. What is the source of the layperson’s metamotivational theory that “if it is difficult for me to suppress thoughts about a subject, I really need to think about it”? It is possible that this belief reflects the prevalence of psychoanalytic ideas in some cultures. If so, then, it is possible that in other cultures that do not endorse this theory, no postsuppressional rebound would be observed. It is also conceivable that with time, or in certain domains, this general metatheory could be changed.

References


