Forgetting Congruent and Incongruent Stereotypical Information

TADESSE ARAYA
NAZAR AKRAMI
BO EKEHAMMAR
Department of Psychology
Uppsala University
Sweden

ABSTRACT. In 2 studies, the authors investigated the directed-forgetting effects of stereotypically congruent, incongruent, and irrelevant information, after the in-group (Swedish) and out-group (immigrant) social categories had been subliminally primed. Because of recent theories of the role of attention and level of processing in the cognitive development of stereotypes, we hypothesized that directed-forgetting effects would be found for stereotype-congruent and irrelevant information but not for stereotype-incongruent information. The results supported our hypothesis, suggesting that the level of processing demanded by the type of information (regardless of whether congruent, incongruent, or irrelevant) may moderate directed-forgetting effects. The authors discussed the social implications of the results.

Key words: directed forgetting, stereotypes, subliminal priming

CONSIDER, FOR EXAMPLE, A SITUATION where a member of a personnel recruitment committee will decide whether a job applicant from an out-group or in-group should be recruited according to initially provided stereotypical or counterstereotypical information by the applicant and former colleagues of the applicant. However, before deliberating on the issue, the chairman of the committee

This research was supported by Grant F0890/97 from the Swedish Council for Research in the Humanities and Social Sciences (Study 1) and Grant 2000-0282 from the Bank of Sweden Tercentenary Foundation (Study 2).

We thank Lars-Erik Hedlund and Natacha Vaz Pereira for their help in collecting the data and Henrik Olsson for his valuable comments on an earlier version of the article.

Address correspondence to Tadesse Araya, Department of Psychology, Uppsala University, Box 1225, SE-751 42 Uppsala, Sweden; Tadesse.Araya@psyk.uu.se (e-mail).
admonishes the committee members to disregard some of this information because it is either false or inappropriate and therefore should not be used for forming an impression of the individual. The question is, how likely is it that these committee members will disregard the chairperson's information?

In the present study, we investigated what can happen when people try to banish congruent and incongruent stereotypical information that is encountered first and then followed by other information from memory. We considered this issue important because failing to dismiss invalid information, for example, about stereotyped ethnic groups can lead to continued prejudice against these groups. To examine these effects, we used the list method of directed forgetting (Basden, Basden, & Gargano, 1993; Bjork & Bjork, 1996).

**Intentional Forgetting of Memories**

Much forgetting occurs automatically or unintentionally. However, for various reasons, people may occasionally try to consciously forget a memory of an event (Anderson & Spellman, 1995; Geiselman, Bjork, & Fishman, 1983). Furthermore, because of capacity limitations, trying to remember or process all information that one encounters in a day can be cumbersome. Thus, intentional forgetting is an important component of a memory system that blocks specific unwanted information from memory (Bjork & Bjork, 1996; Geiselman et al.).

Past researchers have suggested that the intentional regulation of memories is achieved through an active implementation of inhibitory processing mechanisms (Anderson & Bjork, 1994; Geiselman & Bagheri, 1985). Furthermore, Macrae, Bodenhausen, and Milne (1995), for example, showed that when participants encountered a person who could be categorized in multiple ways (e.g., a Chinese woman), the activation of one category (e.g., woman) inhibited the other category (Chinese). In any case, recent research has suggested that when people are sufficiently motivated or instructed to suppress irrelevant information, they are more likely to activate inhibitory mechanisms successfully (Bjork & Bjork, 1996; Geiselman & Bagheri; Macrae, Bodenhausen, Milne, & Ford, 1997).

A widely used method for investigating how people can intentionally control their memories has been the directed-forgetting paradigm. Researchers have usually studied the effects of directed forgetting by using either the list method or the word method. In the present study, we chose the list method, because it encourages relational and organizational processing of the presented information (see Basden et al., 1993). A typical feature for the list method is that participants are provided with two lists of words (List 1 and List 2) for study. The number of items in each list is flexible. After the presentation of List 1, participants are given an instruction to either forget or remember all of its words. List 2 is then presented to all participants with the instruction to remember the entire list. Finally, participants are asked to recall the studied words including those they had been instructed to forget.
Two typical findings have appeared in research that has used the list method of directed forgetting. First, the recall for the to-be-remembered List 2 items has been higher in the forget condition than in the remember condition, suggesting that proactive interference from the to-be-forgotten List 1 words was lower in the forget condition than in the remember condition. Second, the recall of the to-be-forgotten words has been very poor as compared with the recall of these words when participants have been instead instructed to remember them (e.g., Basden et. al., 1993; Geiselman & Bagheri, 1985).

Forgetting Stereotypical and Counterstereotypical Information

Stereotypes are beliefs or general knowledge structures concerning the characteristics, attributes, and behaviors of out-group members (for reviews, see Fiske, 1998; Hamilton & Sherman, 1994; Hilton & von Hippel, 1996). Because people are exposed to so much information and have limited cognitive capacity to process it, stereotypes, when activated, can help them to simplify the cognitive processing of complex social stimuli (Macrae, Milne, & Bodenhausen, 1994; Stangor & Duan, 1991). Some social psychologists, therefore, have characterized stereotypes as energy-saving devices that serve the important cognitive function of simplifying information processing (e.g., Gilbert & Hixon, 1991; Macrae et al., 1994).

What happens when people have been admonished to forget or remember stereotypical and counterstereotypical information learned immediately after activation of a relevant category label? Macrae et al. (1997) investigated this issue by using the list method of directed forgetting. In that study, half of the participants were first blatantly primed with the social category child abuser and the other half with a neutral category. They were then given a word-learning task that included two lists. Words in List 1, which were presented first, were stereotypical with respect to the activated social category (child abuser), whereas the words in List 2 were not. After completion of List 1 items, participants were given an interlist instruction to either forget or remember. The results showed that both participants who had been category primed, and those participants who had not been primed recalled more List 1 items when provided with a remember instruction than with a forget instruction. Thus, the instruction to forget impaired participants’ recall in both conditions. Interestingly, the results of Macrae et al. (1997) were in line with previous research findings that used lists consisting of only neutral words as stimuli (e.g., Basden et al., 1993). Because the cognitive properties of stereotypical and neutral words could be different, the obvious question is why directed-forgetting effects were observed with both types of information. Second, given that these effects were observed for both stereotypical and neutral material, what happens if the to-be-forgotten information is incongruent with the activated social category?

An answer to these questions might reside in the relationship between atten-
tion and the stages of cognitive development of stereotypes (Sherman, 1996; Sherman, Lee, Bessenoff, & Frost, 1998; Stangor & Ruble, 1989). According to this line of theorizing, an initial encounter with a stimulus may attract people's attention because they have little or no prior knowledge about it. At this stage, the information will demand a thorough processing so that people can make a coherent representation of this stimulus. With the formation of a coherent representation of the stimulus (through repeated exposure or practice), attention to that stimulus is gradually diminished or withdrawn (Ruble & Stangor, 1986; Sherman, Lee, et al., 1998; Smith & Lerner, 1986). Once it is well practiced, a response to this stimulus needs less information and processing.

As Sherman, Lee, et al. (1998) remarked, “it is in the initial stages of stereotype development, when stereotypes act as more hypotheses than strong expectancies, that attentional allocation and perceptual encoding are more likely to be biased toward stereotype-confirming information” (p. 603). Thus, stereotypes as well-learned schematic knowledge structures can lead to superficial or less controlled processing of incoming information, resulting in an increased reliance on already existing knowledge structures. This increased reliance on prior knowledge suggests that stereotypes might block incoming information concerning a familiar stimulus from gaining too much access to the mind (von Hippel, Jonides, Hilton, & Narayan, 1993). This blocking would allow scarce resources to be directed to another source of information rather than wasting them in processing an already familiar stimulus (Sherman, Lee, et al., 1998; von Hippel et al.). As Stangor and Ruble (1989) remarked, “As the knowledge about a given social group increases, perceivers may be less attentive to new information in general, and this may especially influence the amount of processing given to incongruent information” (p. 31).

Taking the example of von Hippel et al. (1993) as an illustration, consider a situation where an African American is shoving a White person. On seeing this, perceivers holding a stereotype that African Americans are hostile may construe the situation as involving a hostile activity because of the perceptual features of the shove and their prior stereotypical knowledge. However, the details of the whole situation will not be encoded because the accessible stereotype fills in the “missing” information, enabling the perceiver to go beyond the information given (Bruner, 1957). Under these circumstances, the perceiver is more likely to encode and remember “the gist of the behavior—that the African-American shoved the Caucasian—in a stereotype-consistent manner” (von Hippel et al., p. 924) rather than the details involving the incident. As Sherman, Klein, Laskey, and Wyer (1998) have noted, “when making judgments about relevant group attributes, perceivers will be more likely to have stored trait summaries at their disposal, and will be less likely to rely on biographical memories for specific group behaviors” (p. 60). However, a person with no prior knowledge of the stereotypes associated with African Americans would be sensitive to the details and encode them more elaborately (von Hippel et al.). Research has suggested that people are like-
ly to spend more time in processing information that violates their expectancy than in processing information that does not (Sherman, 1996; Sherman, Lee, et al., 1998; Stangor & McMillan, 1992; Stangor & Ruble, 1989). Thus, stereotypically incongruent information, compared with stereotypically congruent information (Stangor & Ruble), is likely to be processed more elaborately and to have more interitem linkages in memory.

Following this line of reasoning, we suspected that directed-forgetting effects may vary as a function of the allocated attention or the level of processing conducted on the information (Challis & Brodbeck, 1992). Thus, the directed-forgetting effects found by Macrae et al. (1997) on stereotypically congruent and irrelevant information could be, first, that both types of information might have attracted less attention and been subjected to shallower processing. In other words, their participants could have encoded the semantic summaries of the presented words and failed to attend to and to elaborately process each word separately (Langer, Blank, & Chanowitz, 1978; Sherman, Lee, et al., 1998). As Langer et al. have succinctly pointed out, “Through repeated exposure to a situation and its variations, the individual learns to ignore and remain ignorant of the peculiar semantics of the situation. Rather, one pays attention to the scripted cues that invite participation by the individual in regular ways” (p. 638). Second, a forget instruction, compared with a remember instruction, might have cued their participants more easily to discontinue their rehearsal of the congruent and irrelevant words.

Overview and Hypotheses

Currently, with the exception of Macrae et al. (1997), no researchers have investigated what happens when people are admonished, using the list method of directed forgetting, to forget or remember stereotypical information learned immediately after activation of a social category label. Moreover, no researchers have investigated the directed-forgetting effects on incongruent information by using this paradigm. So, using the basic experimental design of Macrae et al. (1997, Study 1), we investigated the effects of the instruction to remember or forget on stereotypically congruent and incongruent information (i.e., to the initially activated social category set) that is provided first and followed by another type of information. We used the procedure of Macrae et al. because it enabled us to also investigate the proactive interference of the to-be-forgotten information on the recall of List 2 words. Unlike Macrae et al. (1997), however, we used subliminal priming to activate the social categories immigrant (out-group) and Swede (in-group). To our knowledge, no researcher has investigated directed-forgetting effects by using subliminal priming. Furthermore, we used this procedure because we suspected that because of the special character of stereotypes, blatant priming might lead to demand effects. Moreover, previous researchers in this domain have used mostly neutral stimuli. Accordingly, subliminal priming can allow us
to test the contention that people can deploy inhibitory mechanisms to suppress unwanted thoughts even when these thoughts involve well-learned and often-practiced stimuli such as stereotypes.

In Study 1 and Study 2, participants initially studied stereotypical words pertaining to immigrants (i.e., out-group members) independent of the priming conditions. Thus, in Study 1, participants in the immigrant-prime condition studied words that were consistent with the activated social category immigrant, whereas those in the Swedish-prime condition studied words that were incongruent to the activated social category Swedish. In Study 2, participants studied immigrant stereotypes in both the Swedish (incongruent) condition and the no-prime (irrelevant) condition.

We expected to replicate the findings of Macrae et al. (1997, Study 1) for the stereotypically congruent and irrelevant information; that is, for the participants with immigrant primes, we expected that they would recall more List 1 (congruent) items under a remember instruction than under a forget instruction.

However, the basic goal of the present study was to determine whether directed-forgetting effects can be found for stereotypical words that are incongruent to the activated in-group social category (Swedish). More specifically, for participants with the Swedish primes, we attempted to determine (a) whether the recall for List 1 (incongruent) words would be poorer under a forget instruction than under a remember instruction and (b) whether the recall for List 2 would be higher than that for List 1 words in the forget condition (when participants are asked to forget List 1 words). In Study 2, we directly addressed this issue by using an appropriate control condition (no prime).

STUDY 1

Method

Participants and Design

The participants were 69 nonpsychology Swedish university students (21 men and 48 women). They participated in the experiment for pay. The study had a 2 (prime: immigrant vs. Swedish) × 2 (instruction: forget vs. remember) × 2 (list: List 1 vs. List 2) mixed design, with repeated measures on the last variable. The experiment was divided into three seemingly unrelated phases: a priming phase, a word-learning phase, and a recall task.

Apparatus

We conducted the entire experiment with an Everex Step station II with a Nokia 19 in. 446× pro screen. The monitor was run at a resolution of 1152×864 with an 85-Hz screen refresh rate, that is, one screen refresh cycle every 12 ms,
which was the exposure time of the prime and the mask. An Authorware 3 program controlled the monitor display.

**Stimulus Materials**

In a pilot study, 50 male facial photographs were rated by a pool of independent students ($N = 14$) for how representative they were of either a Swede or an immigrant. On this basis, 40 photographs (20 of Swedes and 20 of immigrants) were selected to serve as primes. These were then modified to be facial shots and to have a dark beige background. The immigrant photographs represented faces with foreign-looking features relative to Swedes—that is, dark hair, dark eyes, and sometimes dark skin—whereas the Swedish photographs represented faces with a paler and blonder appearance. We used two different types of masks: one composed of dark beige background with short, brown lines (pattern mask) and one composed of dark beige with colored (blue, brown, or red) circles (dots). The number of dots in this mask varied between 6 and 12. Except for the colors and the number of dots, the modifications of the photographs and the arrangement of the masks were designed according to the study of Chen and Bargh (1997).

In the word-learning task, we used 10 stereotypical words (and 5 filler items) with each prime group (totaling 30 items). The words were selected because prior research had shown that they were stereotypical of either immigrants or Swedes (Akrami, Ekehammar, & Araya, 2003). The words were presented in lower-case letters in the center of the screen.

**Procedure**

A male experimenter greeted the participants on arrival and randomly assigned them to one of the experimental conditions. Half of the participants were then subliminally primed with immigrant facial photographs and the other half with Swedish facial photographs. The immigrant photographs represented faces with foreign-looking features relative to Swedes—that is, dark hair, dark eyes, and sometimes dark skin—whereas the Swedish photographs represented faces with a paler and blonder appearance. In the priming task, the participant sat facing the monitor from approximately 55 cm away. Each participant saw 40 presentations. In each presentation, the prime appeared for 12 ms, in one of the four parafoveal positions ($2–6^\circ$ of the visual field). The primes were positioned between 3.5 and 6.5 cm from the center of the screen. Both the order and the location of the primes were randomized; the only restriction was that the same picture could not appear twice in a row in the same areas. The prime was replaced by the pattern mask, which was then presented for 12 ms and then in turn replaced by the dot mask, which remained on the screen for 2 s. After each presentation, the participant was asked to indicate whether an odd or an even
number of dots had been presented. The brief prime duration, the immediate
masking, and the parafoveal positioning of the photographs were used as pre-
cautions so that the participants would not become conscious of the priming
stimuli.

After completion of this task, the experimenter informed each participant that
the next task involved word learning (see Bjork, 1989; Johnson, 1994). The exper-
 imenter then explained that a list of 15 words would be presented on the com-
puter screen and that the participant’s task was simply to memorize the words in
the list. The first list of 15 words (List 1) then appeared on the screen. Each word
was presented separately and remained on the screen for 3 s with an interstimu-
lus interval of 0.5 s. In this list, 10 words were negative and stereotypically con-
gruent with the immigrant primes (criminal, hostile, unfriendly, allowances,
noisy, rape, quarrelsome, dishonest, unreliable, and junkie). The remaining 5
words were filler items.

Before the presentation of the first word in List 1, the experimenter told
the participants in each prime condition that the Department of Psychology “has
recently been experiencing a malfunction in its computer programs” so that they
should not be surprised if the screen suddenly became dark. He added that a
malfunction would lead to a “loss of already collected data” and that “because
we anticipate such an event during this experiment, we have prepared additional
lists to compensate for the lost data.” The experimenter further directed partic-
ipants to follow the instructions that would be given in case of computer fail-
ure. For half of the participants in each prime condition, the simulated failure
occurred, and a written instruction then appeared on the computer screen stat-
ing that the participants should, regrettably, forget the previously presented
items and that a new list (List 2 or the to-be-remembered items) would soon
appear on the screen. The remaining half of the participants in the two prime
conditions, the remember group, received no such instruction. List 2 items were
then presented in the same procedure as before. The 10 items in this list con-
sisted of positive adjectives related to stereotypes of Swedes (kind, grateful,
romantic, intelligent, considerate, industrious, interesting, sympathetic, reli-
able, and competent). The remaining 5 were filler items and were neutral in
valence.

After the word-learning task, participants were given a 4-min distracter task
to diminish short-term memory effects (recency and primacy effects). This task
involved multidigit multiplication problems. Participants were then instructed to
write, on the provided paper, any words that they could recall from the experi-
ment, including the words they were instructed to forget. They were given 5 min
to complete the task.

Finally, the participants were asked to guess the purpose of the experiment
and whether they had seen any of the primes in the experiment. None of the par-
ticipants indicated any suspicion about the purpose of the experiments or saw any
of the primes. Participants were then debriefed, paid, thanked, and dismissed.
Results and Discussion

After excluding the 5 filler words from each list, we calculated proportional scores by dividing the number of items that each participant correctly recalled by the total number of target items in each list (10 per list). The recall scores were then submitted to a 2 (prime: immigrant vs. Swedish) × 2 (instruction: remember vs. forget) × 2 (list: List 1 vs. List 2) ANOVA, with repeated measures on the last variable. The analysis revealed only a significant Prime × Instruction interaction, $F(1, 65) = 3.90, p = .05$.

To test our specific hypotheses, we performed planned comparisons. As anticipated, for the participants exposed to immigrant primes, the analyses showed that the effect of instruction on List 1 words was significant, $F(1, 65) = 4.75, p = .03$. Thus, participants recalled more to-be-remembered than to-be-forgotten List 1 words (see Table 1, upper part). Furthermore, the analysis showed no significant difference in the forget condition between the recall of List 1 (congruent) and List 2 items, $F(1, 65) = 0.11, p = .74$.

For the participants exposed to Swedish primes (incongruent condition), the effect of instruction on the recall of List 1 words was not significant, $F(1, 65) = 0.32, p = .53$. Further, there was no significant difference between the recalls of List 1 and List 2 words in the forget condition, $F(1, 65) = 0.39, p = .53$.

### Table 1: Mean Recall Scores and Standard Deviations as a Function of Prime, Instruction, and List Type in Study 1 and Study 2

<table>
<thead>
<tr>
<th>Prime</th>
<th>Instruction</th>
<th>List 1</th>
<th>List 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Immigrant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remember</td>
<td>.38,*</td>
<td>.16</td>
<td>.33</td>
</tr>
<tr>
<td>Forget</td>
<td>.26,4</td>
<td>.17</td>
<td>.25†</td>
</tr>
<tr>
<td>Swedish</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remember</td>
<td>.34,5</td>
<td>.17</td>
<td>.27</td>
</tr>
<tr>
<td>Forget</td>
<td>.31,5</td>
<td>.14</td>
<td>.34†</td>
</tr>
<tr>
<td></td>
<td>Study 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remember</td>
<td>.40,*</td>
<td>.10</td>
<td>.32</td>
</tr>
<tr>
<td>Forget</td>
<td>.26,5</td>
<td>.15</td>
<td>.40†</td>
</tr>
<tr>
<td>Swedish</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remember</td>
<td>.32,4</td>
<td>.17</td>
<td>.43</td>
</tr>
<tr>
<td>Forget</td>
<td>.31,4</td>
<td>.10</td>
<td>.38†</td>
</tr>
</tbody>
</table>

Note. List 1 contained stereotypes related to immigrants. List 2 contained stereotypes related to Swedes. Means in the same column that share the same subscripts have been compared, and * denotes a significant difference at $p < .05$. Means in the rows with one † have been compared, and * denotes a significant difference at $p < .05$. 
Replicating the findings of Macrae et al. (1997), the participants exposed to immigrant primes recalled less stereotypically congruent information when they received a forget instruction than when they received a remember instruction. However, when participants were primed with Swedish photographs and subsequently received incongruent information, their recall performance for List 1 words was roughly the same regardless of the instruction condition; that finding suggests that the incongruent information was processed elaborately. Further, there was no difference between the recalls of List 1 and List 2 words in the forget condition. Thus, the directed-forgetting effects that are usually found with neutral words (e.g., Basden et al., 1993) and stereotypical information (Macrae et al., 1997) might not be found when the to-be-forgotten information is incongruent to the previously activated social category.

Further, the absence of a significant difference between the participants’ recalls of List 1 and List 2 items in the forget conditions (Swedish and immigrant primes) suggested that the proactive interference of the to-be-forgotten information was roughly the same in both prime conditions. This possibility might have been realized because incongruent items are elaborately processed and therefore highly memorable. Thus, the effortful nature of forgetting such information diminished the memorial advantage of List 2 over List 1 words that has typically been found in this kind of research (e.g., Bjork & Bjork, 1996). Similarly, for the congruent condition, forgetting the gist of the encoded information led to a diminished recall of List 2 words. Accordingly, whereas in the congruent condition, the proactive interference was attributed to the gist of the encoded information, in the incongruent condition, it was attributed to the elaborate processing of these items (cf. Macrae et al., 1997). This contention was in accord with previous research that has shown that stereotypically congruent information was more likely than incongruent information to be falsely recognized because the former is easily assimilated to the existing knowledge structures, suggesting differential processing of congruent and incongruent information (e.g., Stangor & Ruble, 1989).

**STUDY 2**

In Study 2, we further investigated the effects of directed forgetting on counterstereotypical information, by using an appropriate no-prime condition as a control group. Half of the participants were primed with Swedish photographs, and the other half got no priming. Thus, participants in the Swedish prime condition studied words that were incongruent with the activated social category, Swedish, whereas those in the no-prime condition studied stereotypical words with no prior activation of any social category to aid their processing of the information. Here, we expected to replicate the result of Study 1 for the Swedish prime condition (incongruent words). For the no-prime condition, we expected to replicate the findings of Macrae et al. (1997), so that participants would recall more List 1
(irrelevant) items after a remember than after a forget instruction and more List 2 than List 1 items with a forget instruction.

**Method**

**Participants and Design**

Participants were 53 nonpsychology Swedish university students (24 men and 29 women). They participated in the experiment for pay. The study had a 2 (prime: Swedish prime vs. no prime) × 2 (instruction: forget vs. remember) × 2 (list: List 1 vs. List 2) mixed design, with repeated measures on the last variable. The experiment was divided into three seemingly unrelated phases: a priming phase, a word-learning phase, and a recall task.

**Apparatus**

The entire experiment was conducted with the same apparatus as in Study 1.

**Stimulus Materials**

The same photographs as in Study 1 were used in the Swedish prime condition.

**Procedure**

A female experimenter greeted each participant on arrival and randomly assigned him or her to one of the conditions. Half of the participants were then subliminally primed with Swedish facial photographs, and the other half received no such primes. The rest of the procedure was the same as in Study 1. As before, with the completion of the final task of the experiment, participants were debriefed, paid, thanked, and dismissed.

**Results and Discussion**

After excluding the 5 filler words from each list, we calculated proportional scores by dividing the number of correctly recalled items by the total number of target items in each list (10 per list) for each participant. The recall scores were then submitted to a 2 (prime: Swedish prime vs. no prime) × 2 (instruction: remember vs. forget) × 2 (list: List 1 vs. List 2) ANOVA, with repeated measures on the last variable. The analyses showed a main effect of list, $F(1, 49) = 5.14, p < .03$, that was qualified by a significant Prime × Instruction × List interaction, $F(1, 49) = 6.67, p < .01$. We further investigated the nature of this interaction by using planned comparisons.

For the participants exposed to Swedish primes (incongruent condition), the
effect of instruction on the recall of List 1 words was not significant, \( F(1, 49) = 0.05, p = .83 \). Furthermore, there was no significant difference in the recall of List 1 and List 2 words in the forget condition, \( F(1, 49) = 1.46, p = .23 \). Thus, as in Study 1, participants’ recall performance did not vary as a function of the instruction to forget or remember (see Table 1, lower part).

For the participants in the no-prime condition (irrelevant words), the analysis showed that participants recalled more List 1 items when they were given a remember rather than a forget instruction, \( F(1, 49) = 6.97, p < .01 \). Moreover, in the forget condition, participants recalled more List 2 than List 1 words, \( F(1, 49) = 7.80, p < .007 \).

Consistent with previous findings (e.g., Basden et al., 1993; Macrae et al., 1997), the analyses in the present study showed that people could readily forget stereotypically irrelevant information. However, for the participants with the Swedish primes, the analysis showed that participants’ recall of the incongruent information was roughly equivalent regardless of the type of instruction—to forget or remember. Moreover, in the no-prime condition, participants recalled more List 2 than List 1 words when they were given a forget rather than a remember instruction; that is, a forget but not a remember instruction enhanced the recall for the List 2 items. This result shows that forgetting irrelevant information may not tax participants’ processing capacity. This situation was not the case, however, for participants with the Swedish primes, as shown by the absence of significant effects of instruction.

The pattern of results observed in the no-prime condition and the absence of significant effects for the participants exposed to Swedish primes support the contention that the amount of attention allocated and the level of processing committed to a stimulus may moderate directed-forgetting effects. More specifically, because incongruent items are not conceptually fluent (Sherman, Lee, et al., 1998; von Hippel et al., 1993), people are likely to attend to them more carefully and to process them more elaborately in a manner that would make them more difficult to forget than congruent or irrelevant information.

**GENERAL DISCUSSION**

Starting from previous research on cognitive development of stereotypes (e.g., Sherman, Lee, et al., 1998; Stangor & Ruble, 1989; von Hippel et al., 1993) and automaticity (Smith & Lerner, 1986), we argued that the attention allocated to and the level of processing of (see Challis & Brodbeck, 1992) the incoming information could moderate directed-forgetting effects. In accord with this line of theorizing, we found directed-forgetting effects for stereotypically congruent (Study 1) and irrelevant (Study 2, no-prime condition) information (see Table 1). However, when the to-be-forgotten words were incongruent to the activated in-group social category (Swedish), participants had difficulties in forgetting this information (Study 1). They recalled roughly the same number of items regard-
less of whether they were given a remember or a forget instruction. These results were replicated in Study 2 (see Table 1).

Further, in Study 2, participants in the no-prime condition recalled more List 2 than List 1 items when they were given a forget instruction, suggesting that forgetting irrelevant information does not tax people’s processing capacity (Macrae et al., 1997). We argue that this finding may even explain the discrepant results in the recall of List 1 and List 2 items in the immigrant (Study 1) and no-prime (Study 2) conditions when given a forget instruction (see the summary of the results in Table 1). Moreover, for participants with the in-group (Swedish) primes, the absence of significant difference in participants’ recall of List 1 and List 2 words (in the forget condition) indicated that forgetting information that is stereotypically incongruent with respect to an activated in-group social category can be a daunting task.

**Does Forgetting Matter? Perceptual Versus Gist Encoding**

Recently, one of the authors overheard a discussion between two persons about a story that one of them had presumably read in a book. The story was, briefly, about a master and his slave who went on a hunting expedition and got lost in an extremely inhospitable desert. After days of wandering, the master fell down to the ground, asking for water. On seeing his master lying helpless on the ground, the slave thought for a moment about whether it would be better for him not to give his master water, to leave him there, and to continue alone. “But if I leave him,” the slave reasoned, “people will think that I deliberately left him to die and will lynch me.” So he decided to give his master water and rushed toward him with a cup of water in his right hand. Seeing that the slave was coming toward him with something in his hand, the delirious master thought that he was coming with a pistol to kill him. The master thought “I must kill that bastard before he kills me” and so took his pistol and shot the unlucky slave dead.

This story nicely illustrates the perils associated with stereotypes and strong expectations. Under demanding task conditions or situations that approximate everyday social interaction, activated stereotypes can function as effective insulators and prevent perceivers from attending to and elaborately encoding new information (Stangor & McMillan, 1992). As Sherman, Lee, et al. (1998) and von Hippel et al. (1993) have convincingly argued, perceivers encode the gist of behavioral information enacted by, for example, a stereotyped group member but not all perceptual information that is necessary to make a correct picture of the enacted behavior. Hence, one can understand how “the master” in our story, under strain, could “see” a pistol but not a cup and interpret a helping hand as a harbinger of death.

If people encode the gist of a stereotyped group’s behavior and not the perceptual details (Sherman, Lee, et al., 1998; von Hippel et al., 1993), then it should not surprise researchers to find directed effects in the immigrant and no-prime
conditions of the present study. It can be argued that participants simply forgot the congruent information because it was easy to forget information that they had not attended to and encoded properly in the first place. If this is the case, then the question is whether it is necessary to ask people to forget information that has been subjected to shallow encoding from the beginning.

Furthermore, people's preference for encoding the gist of congruent information that is perceived against the background of activated out-group stereotypes suggests that they are less likely to avoid the influence of this information on their subsequent judgments. If, for example, personnel-recruiting professionals are going to evaluate a job applicant known to be an immigrant, they are more likely to automatically activate the stereotypes associated with immigrants than if they do not know that the job applicant is an immigrant (out-group member). Subsequently encountered information is likely to be encoded against the background of the activated category, immigrant. Under these circumstances, the character of the congruent information (e.g., whether true or false) may not be of fundamental importance. It seems that the damage has already been done because the gist of the information concerning the individual and the associated category has been encoded at the initial processing stage. Although people might genuinely forget the new information that they were admonished to forget, they might be totally unaware of their having encoded the gist of the information. This unconscious registration can then color their judgment of the immigrant applicant, particularly when one considers that a recruitment decision usually involves the processing of complex information pertaining to several individuals and selecting one among equally competent applicants (Stangor & McMillan, 1992).

Consequently and with regard to the social application of the present research, does the ease with which people forget stereotypically congruent information imply a promise for or an illusion of stereotype reduction? Past research suggests that the use of directed forgetting for stereotype reduction might be rather limited. For example, Wolf and Montgomery (1977) found that jurors who were instructed to ignore inadmissible testimony were more likely to use it in their judgments than those who were not given such an instruction (for a review, see Johnson, 1994). Moreover, previous research indicates that although the to-be-forgotten information can be temporarily inhibited, it can be still available in memory (Basden et al., 1993; Bjork & Bjork, 1996; Geiselman et al., 1983). Thus, in situations where judgments are made on the basis of availability and familiarity, forgotten information can contribute to these familiarity effects leading to false recognition and judgmental biases (Banaji & Greenwald, 1995; Johnson, 1994; Wilson & Brekke, 1994).

If stereotypically congruent information is "easily" forgotten as the results of Macrae et al. (1997) and the present study show, then it is legitimate to ask, why are stereotypes maintained despite their alleged falsehood? We suggest that the most plausible explanation is that because of its familiarity, false but stereotypically congruent information might attract less attention and get shallow pro-
cessing whenever it is encountered (Sherman, Lee, et al., 1998; von Hippel et al., 1993). Such processing, in turn, is unlikely to lead to fundamental change in the mental representation of stereotyped groups.

However, the interpretation of our findings and the conclusions drawn from them are limited by our design because, as outlined in the introduction, our purpose was not to make a complete analysis of the issue at hand. Such an analysis would obviously involve a counterbalanced design to eliminate a potential valence/stereotype confound of the lists (List 1 and List 2). However, our aim was rather modest: to know what happens when perceivers are first provided with negative information that is either congruent or incongruent to the already activated social category and then asked to either forget or remember this information. We think that this situation is more common in everyday social encounters and thus the most ecologically relevant situation in the present context.

The present study extends earlier research on directed forgetting in specifying the conditions under which directed-forgetting effects may and may not be found and in suggesting the theoretical bases that are involved in these processes. It also contributes to the extant research on memory of incongruent stereotypical information.

REFERENCES


*Received May 8, 2001*

*Accepted November 21, 2001*