

Research Article

EFFECT OF SOCIAL CATEGORY PRIMING ON PERSONAL ATTITUDES

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Abstract—*In four studies, we examined the spontaneous activation of specific attitudes related to social categories. These studies investigated whether priming participants with concepts associated with the elderly and skinheads influenced participants' attitudes. The results consistently demonstrated that priming a social category can influence people's attitudes such that they become more similar to those of people in the primed category. After participants were primed with the elderly category, their attitudes became more conservative; after participants were primed with the skinhead category, their attitudes became more prejudiced. We also found that these effects can occur without awareness and intention and are specific to the participants' own attitudes. The theoretical and practical implications of these findings are considered.*

Research on stereotyping has shown that social category priming can automatically activate general attitudes (Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Fazio, Jackson, Dunton, & Williams, 1995; Greenwald, McGhee, & Schwartz, 1998) and specific personality traits and physical characteristics (Blair, 2001; Devine, 1989; Kawakami, Dion, & Dovidio, 1998; Kawakami & Dovidio, 2001; Kawakami, Dovidio, Moll, Hermsen, & Russin, 2000). Even behaviors associated with social categories are spontaneously activated upon presentation of a group representation. People who are primed with specific categories actually tend to act in ways congruent with the stereotypic actions associated with these groups (Bargh, Chen, & Burrows, 1996). For example, Dijksterhuis and van Knippenberg (1998) found that participants primed for 9 min with the category professor answered significantly more general knowledge questions correctly than did participants in control conditions.

Theorizing on why these ideomotor effects occur, Chartrand, Mad-dux, and Lakin (in press) and Dijksterhuis and Bargh (2001) suggested that people demonstrate automatic behaviors because it is often functional to modify one's behaviors to conform to the social environment. For instance, spontaneously activating behaviors associated with a social category upon presentation of that category and behaving in ways congruent with this representation can facilitate social interactions.

If social behaviors are automatically modified to be congruent with the social context (Bargh et al., 1996; Kawakami, Young, & Dovidio, 2002; Wheeler & Petty, 2001) and to facilitate social interactions (Chartrand et al., in press; Dijksterhuis & Bargh, 2001), it is possible that people spontaneously assimilate their specific attitudes to social category targets in the same way. Research has demonstrated that similarity of attitudes is a powerful determinant of interpersonal attraction even when the other person is not immediately physically present

(Byrne, 1971), and people commonly emphasize their relevant similarities to others strategically to make a favorable impression (Stevens & Kristof, 1995; Waldron & Applegate, 1998). Moreover, to the extent that similarity enhances attraction, it can positively influence group cohesion and effectiveness (Mullen & Copper, 1994) and relationship stability (Davis & Rusbult, 2001). Specific attitudes associated with a social category may therefore become automatically activated upon presentation of that category and influence perceivers' attitudes by producing attitudes that are more congruent with the category.

The primary goal of the present research, involving four studies, was to investigate the effect of social category priming on participants' attitudes toward topics that are normally associated with specific groups. In Study 1, participants who were primed with the elderly category expressed attitudes more similar to attitudes normally associated with the elderly than did participants who were primed with the young-people category. In Study 2, we examined whether this priming effect was specific to the participants' own attitudes or whether it generalized to their impression of others' attitudes. We expected that participants' own attitudes would become more conservative after the elderly category was primed, but that their estimates of most people's attitudes would not change. In Study 3, we investigated whether subliminally priming social categories would produce effects like those observed in Study 1. Last, in Study 4, we explored whether an analogous effect would occur for skinhead primes. We expected that compared with participants who were not primed, participants primed with the skinhead category would respond more extremely on items reflecting negative intergroup attitudes but not on items related to other attitudes.

STUDY 1

The primary aim of Study 1 was to examine the possibility that social category priming can spontaneously activate specific attitudes typically associated with the target group. In this experiment, participants first performed a task in which they were instructed to describe an elderly or a young person. Next, they were asked to respond to a questionnaire for an ostensibly unrelated attitude study. The items on this questionnaire were associated with attitudes held by the elderly. Participants were simply instructed to choose a response that best reflected their own attitude toward each issue. We predicted that participants' responses would be more consistent with elderly attitudes in the elderly-priming condition than in the young-person-priming condition.

Method

Thirty-six undergraduate students volunteered for a study that included a number of ostensibly unrelated tasks. The first two activities were of particular importance. The first task involved a priming procedure in which participants were presented with a photograph and instructed to describe the person in the photograph for 5 min (Dijksterhuis & van Knippenberg, 1998; Macrae, Stangor, & Milne,

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1994). Whereas half of the participants were asked to write down the hobbies, personality traits, and general character of an elderly woman, the other half of the participants were asked to describe a young woman.

After completing the priming procedure, participants rated their own attitudes by responding to four questions that were specifically selected on the basis of a pilot study¹ to reflect a broad range of different dimensions of attitudes generally presumed to be held by the elderly (e.g., “I think that more money should be given to health care”; “I have nothing against sex and nudity on TV”). Participants were instructed to use a 9-point scale ranging from 1, *totally disagree*, to 9, *totally agree*, to indicate their own attitude to each item on the questionnaire.

Results and Discussion

The analysis of participants' combined attitudes, in which items were appropriately reverse-scored, demonstrated, as anticipated, that participants' attitudes were more consistent with elderly attitudes in the elderly-priming condition ($M = 4.68$) than in the young-people-priming condition ($M = 4.01$), $F(1, 35) = 4.57$, $p < .05$. These findings provide preliminary evidence that priming the elderly category can spontaneously activate specific attitudes associated with the elderly and that this activation can influence participants' own attitudes so that they become more congruent with those held by the elderly.

STUDY 2

The primary goal of Study 2 was to provide a conceptual replication of our initial finding that category priming can activate specific attitudes. We made three major modifications. First, at the end of the experimental session, all participants were extensively interviewed. This phase was included to examine the potential influence of demand characteristics—that is, to determine whether participants perceived a relationship between the first “priming study” and the second “attitude study” and hypothesized that the experimenters expected them to change their attitudes so they would be more consistent with attitudes of the elderly. Because of the diversity of attitude items and the inclusion of multiple, ostensibly unrelated tasks, it seemed unlikely that demand characteristics had influenced responses in Study 1. Nevertheless, participants in Study 2 were explicitly questioned concerning their beliefs about the expectations of the researchers to address the issue of awareness and demand characteristics directly.

Second, Study 2 included a no-prime control condition so we could examine whether the findings in Study 1 were due to the young-people prime resulting in participants' attitudes becoming less conservative or to the elderly prime resulting in participants' attitudes becoming more conservative and consistent with the elderly viewpoint. Although both results are congruous with the present theorizing, it is important to know whether college students spontaneously change their attitudes so that they are more similar to an elderly out-group.

1. The results from the pilot study ($N = 45$) demonstrated that the items in Studies 1, 2, and 3 after recoding were strongly associated with the elderly ($M_s = 7.62, 7.71, \text{ and } 7.49$ on a 9-point scale ranging from 1, *not associated*, to 9, *very associated*) and that the elderly were likely to agree with the specific attitudes ($M_s = 7.27, 7.41, \text{ and } 7.09$ on a 9-point scale ranging from 1, *totally disagree*, to 9, *totally agree*).

Study 2, therefore, included two priming conditions—an elderly-priming condition and a no-prime condition.

Third, to explore whether the effects of category priming are specific to the individual's own attitudes or encompass the individual's estimation of others' attitudes as well, we included an additional rating format in Study 2. Recent theorizing on automatic behavior effects suggests that people may often unintentionally imitate others' behavior to facilitate specific interpersonal interactions (Chartrand et al., in press; Dijksterhuis & Bargh, 2001). This theorizing suggests that participants unconsciously modify their attitudes toward specific topics to be more complementary to the attitudes associated with primed social categories and thereby pave the way for smoother interactions. If so, priming would mainly influence people's own attitudes and not their general impression of others' attitudes, as would be the case if more general mechanisms such as availability were operating (Schwarz et al., 1991). We therefore predicted that as in Study 1, participants' personal attitudinal responses would be more consistent with elderly attitudes in the elderly-prime condition than in the control condition, but that participants' estimates of most people's attitudes would not be influenced by type of prime.

Method

Forty-eight undergraduate students participated in the experiment, receiving \$3. They were told that they would be completing a number of studies that were unrelated but combined to save time and money.

The procedure in Study 2 was similar to that in Study 1, except that half the participants were presented with the elderly-prime task and half were not primed before being asked to complete five attitude statements similar to those used in Study 1. All participants were presented with the attitude items in two different formats that were counterbalanced. In the first format, participants were asked to provide answers reflecting their own opinions, as in Study 1. In the second format, participants were asked to answer the same questions according to how they thought most other people would respond (e.g., “Most people think that the drug policies in the Netherlands are good”). At the end of the experimental session, all participants were asked about what they perceived the main goal of each study to be, their beliefs concerning the goals and expectations of the experimenter, and the relationship between the studies. None of the participants reported any suspicion regarding the relationship between the priming and attitude tasks, and no participants provided any hypothesis that was even remotely related to the actual predictions.

Results and Discussion

To examine the effect of elderly priming, we performed a 2 (prime: elderly vs. no prime) \times 2 (format: own attitudes vs. most people's attitudes) \times 2 (order of format: own attitudes first vs. most people's attitudes first) mixed-model analysis of variance on the two main attitude indices (i.e., the average for own attitudes and the average for most people's attitudes). A significant main effect of format showed that participants' ratings of most people's attitudes on the elderly items ($M = 4.67$) were more extreme than their own attitudes ($M = 3.55$), $F(1, 44) = 79.65$, $p < .001$. As expected, this effect was qualified by a Prime \times Format interaction, $F(1, 44) = 7.64$, $p < .01$. Whereas participants' own attitudes were more consistent with attitudes of the elderly after being primed with that category ($M = 3.88$) than in the no-prime condition ($M = 3.22$), $F(1, 47) = 6.09$, $p < .05$, their estimates of most people's attitudes did not

differ as a function of priming condition ($M_s = 4.67$), $F(1, 47) = 0.01$, $p > .05$. This effect was not qualified by a Prime \times Format \times Order of Format interaction, $F(1, 44) = 0.46$, $p > .05$.

These findings replicate the results from Study 1 by showing that priming the elderly category can activate specific attitudes associated with this category and induce people to respond in ways consistent with how the elderly respond. The results for the no-prime control condition indicate that after priming with the elderly category, college students' personal attitudes became more consistent with the perceived attitudes of the elderly. Furthermore, these effects are not readily attributable to demand characteristics. Participants did not perceive a causal relationship between the elderly primes and their own responses on the attitude task, nor did they believe that the experimenter expected such a relationship. Finally, consistent with theorizing that automatic behavior and automatic attitude effects occur because people unintentionally imitate others to facilitate interpersonal interactions (Chartrand et al., in press; Dijksterhuis & Bargh, 2001), the results from Study 2 indicate that the influence of the elderly prime was specific to the participants' own attitudes and did not affect the participants' estimates of most people's attitudes.

STUDY 3

Although Study 1 and Study 2 provide converging evidence for the spontaneous activation of specific attitudes following presentation of social categories, it is possible that the priming technique utilized in these studies inadvertently directed participants to activate attitudes as well as other social category associations. The instructions to describe the general character of an elderly person, including the person's personality traits and hobbies, may have led participants to assume that they were also expected to describe specific attitudes related to this group. This task may therefore also have led participants to generate reasonable arguments in line with these associations. In Study 3, by subliminally priming participants with words that were related or unrelated to the elderly, we assessed whether the mere presentation of a social category is sufficient to influence people's attitudes. The use of primes presented out of awareness also eliminated any potential influence of demand characteristics. We again hypothesized that participants' attitudes would be more consistent with elderly attitudes when the elderly category was primed than when it was not primed.

Method

Sixty-five undergraduate students participated in an experiment consisting of a series of ostensibly unrelated studies and received \$4. The first task was a lexical-decision task in which participants were presented sequentially with a series of letter strings and asked to indicate as quickly as possible, by pressing a key, whether the letter string was a word or nonword (Dijksterhuis, Aarts, Bargh, & van Knippenberg, 2000). Half of the letter strings were words (e.g., "bike") and half were nonwords (e.g., "kieb"). Before each lexical decision, however, participants were subliminally primed with a word that was related or unrelated to the elderly. In the elderly-priming condition, the prime was selected from a set of 15 words related to characteristics of the elderly but unrelated to attitudes of the elderly (e.g., "old," "gray"). In the control, no-priming condition, the prime was selected from a set of 15 words unrelated to the elderly (e.g., "door," "lamp"). Each prime word was presented twice, once with a word and once with a nonword. On each trial, the prime was presented individually

for 17 ms and then masked by a random letter string (e.g., "foscng") presented for 225 ms. Previous studies have demonstrated that participants are unaware of primes presented under these conditions (Dijksterhuis et al., 2000), and our debriefing provided further evidence that all participants were unaware of these primes. Following the mask, the word or nonword letter string was presented and remained on the screen until a lexical decision was made. A blank screen was presented for 1,500 ms before the next trial.

After the participants completed the lexical-decision task, they were all asked to complete an unrelated opinion task in which they were given three attitude statements similar to those used in Study 1.

Results and Discussion

The results supported the prediction and were consistent with the results of Studies 1 and 2. Participants' attitudes were more conservative after subliminal priming with elderly words ($M = 4.57$) than after priming with words unrelated to the elderly ($M = 4.18$), $F(1, 63) = 4.31$, $p < .05$. These findings indicate that specific instructions to think about the target group and awareness of the target group are not necessary to activate attitudes related to that social category. Even subliminal priming of specific groups can influence participants' own attitudes.

STUDY 4

The primary goal of Study 4 was to examine the generalizability of the automatic attitude effect by investigating whether priming participants with the skinhead category would influence their responses to attitudes normally associated and not associated with this category. To support the cover story that the experimental session consisted of a number of separate, unrelated studies, we first asked participants in Study 4 to complete a short math quiz. Next, while half the participants were primed with the skinhead category, the other half simply proceeded to the attitude questionnaire, which comprised items reflecting negative intergroup attitudes associated with skinheads and items on a variety of topics not associated with skinheads. By including nonassociated attitudes, we were able to examine whether the influence of category priming was specific to attitudes that are stereotypically related to the target group. We predicted an interaction between priming condition and type of attitude. Specifically, we expected that participants' responses would be more consistent with skinhead prejudicial attitudes in the skinhead-priming condition than in the no-priming condition, but that there would be no difference between priming conditions for items not associated with skinheads.

Method

Forty-six undergraduate students were paid \$3 to participate in a session they were told would include a number of unrelated studies. To emphasize the independence of these studies, we first presented the participants with 10 arithmetic problems to complete in 10 min. Half of the participants then proceeded to the priming phase, in which they were presented with the photograph of a skinhead and asked to describe the person in the photograph for 5 min; the other half of the participants were not presented with this task.

Next, all participants were asked to complete an ostensibly independent questionnaire about their own attitudes. To further disguise the true purpose of the study, we included among the total of 14 items

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only 3 items that were based on statements from the Modern Racism Scale (McConahay, 1986) and clearly associated with skinheads (e.g., "The Netherlands should accept more immigrants from poor countries"; "I think that minorities ask too much in their demands for equal rights").² The other 11 items, which were not associated with skinheads, were related to a variety of issues other than intergroup attitudes (e.g., "I think that they should make driving a car more expensive"; "I think a family with both a mother and a father is the best"). Participants were instructed to indicate their own attitude regarding each item by using a 9-point scale ranging from 1, *totally disagree*, to 9, *totally agree*.

Results and Discussion

To examine the effect of skinhead priming, we performed a 2 (prime: skinhead vs. no prime) \times 2 (item type: intergroup vs. unassociated) mixed-model analysis of variance on the two main attitude indices (i.e., the mean intergroup attitudes and the mean nonassociated attitudes). Although a significant main effect for item type showed that participants' responses were less extreme on negative intergroup items ($M = 3.75$) than on the nonassociated items ($M = 5.60$), $F(1, 44) = 102.09$, $p < .001$, this effect was qualified by the predicted interaction, $F(1, 44) = 4.05$, $p < .05$. Simple effects analyses demonstrated that whereas participants were more prejudiced following priming with skinheads ($M = 4.07$) than in the no-prime condition ($M = 3.42$), $F(1, 45) = 5.12$, $p < .05$, participants' attitudes on items not associated with skinheads did not differ as a function of condition ($M_s = 5.56$), $F(1, 45) = 0.15$, $p > .05$.

These findings conceptually replicate the previous results and support our contention that social category priming can influence people's attitudes so that they become more consistent with attitudes associated with the primed group. The results also suggest that the effects of category priming can be found with a variety of disparate social categories and for a number of different issues. Category priming did not influence attitudes not stereotypically associated with the group.

GENERAL DISCUSSION

Four studies examined the impact of priming a social category on participants' responses to attitudes associated with the primed group. Whereas the first three studies provided initial evidence that priming the elderly category results in attitudes becoming more conservative and congruent with the attitudes of the elderly, Study 4 showed that attitudes become more prejudiced when participants are primed with the skinhead category. Together, these findings provide further evidence for the complex and multicomponential nature of cognitive representations of social categories (Deaux & Lewis, 1984; Kunda, 1999; Stangor & Lange, 1994). Specifically, a growing body of research shows that priming social categories not only directly activates personality traits, physical characteristics, and general positive and negative evaluations, but can also produce behaviors that are congruent with the primed group (Bargh et al., 1996; Kawakami et al., 2002) and change attitudes so that they are more in line with attitudes associated with the group.

2. The results from the pilot study also showed that the three intergroup items in Study 4 were more strongly associated with skinheads than were the neutral items ($M_s = 7.20$ vs. 4.20) and that skinheads were more likely to agree with the intergroup items than the neutral items ($M_s = 6.92$ vs. 4.26).

The present findings also demonstrate how social categories can influence people without their awareness or intention. In Study 3, the effect of priming on participants' attitudes was obtained even when participants were unaware of the presentation of the prime. Furthermore, we found that people may assimilate their attitudes to those of the primed category even when the shift is in a direction that is not personally or socially desirable. When asked in a separate pilot study how they would feel if their attitudes were to become more similar to those of the elderly or skinheads, participants ($N = 45$) responded negatively for both categories ($M_s = 3.85$ and 2.21, on a 9-point scale ranging from 1, *very negative*, to 9, *very positive*). The finding that participants would not want to be influenced by these category primes provides further evidence that the priming effect occurs without intention.

Theoretically, these results suggest a conversion rather than a compliance process. Because there is no obvious reason for participants in the present studies to have misrepresented their attitudes so that they would seem congruent, a process other than public compliance was likely involved. Although simply presenting category-associated attitudes without changing one's actual attitudes may be sufficient to facilitate social interactions, this process may tax one's cognitive capacities and therefore in the long run may be less efficient and adaptive than assimilating the attitudes (Paulhus, Graf, & van Selst, 1989). People may, therefore, "socially tune" their attitudes to make them more consistent with their social environment (Lowery, Hardin, & Sinclair, 2001). For example, research has shown that women judged themselves as more feminine after imagining a conversation with Barbara Bush, who is characterized as more traditional, than after imagining a conversation with Hillary Clinton, who is considered to be more nontraditional (Hardin & Conley, 2001).

Because of the importance of attitude similarity in attraction and in social coordination (Byrne, 1971; Davis & Rusbult, 2001), a salient social category may automatically elicit attitudes that are stereotypically consistent with that category. In line with the research on automatic social behavior (Bargh et al., 1996; Kawakami et al., 2002) in which priming effects were obtained in the absence of the physical presence of category members, the present findings indicate that automatic attitude effects can occur as a function of directly activating representations of a social category and without the belief that one will interact with or develop a social relationship with a target group member (Blanchard, Lilly, & Vaughn, 1991; cf. Hardin & Conley, 2001). Because of the importance of social coordination in human functioning, people may have learned that adjusting their behavior and attitudinal responses to be consonant with others facilitates social interaction. As this process of adaptation becomes habitual over time (Chartrand et al., in press), factors that make a particular social category salient may become sufficient to automatically elicit consonant behaviors and, as we have demonstrated, similar attitudes as well. Thus, our research offers further evidence of the power of social categories to shape personal responses and ultimately social interactions of people without their awareness or intention.

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