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Nonconscious Behavioral Confirmation Processes: The Self-Fulfilling Consequences of Automatic Stereotype Activation

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It is now well-established that stereotypes can become activated unintentionally and outside of awareness by the presence of the relevant group features. There is also a long tradition of theory and evidence that perceptual and behavioral processes are intimately related (e.g., Berkowitz, 1984; James, 1890; Piaget, 1948). Considering these two phenomena together suggests that stereotype activation can cause the perceiver to act in stereotype-consistent ways, and recent evidence confirms this prediction (Bargh, Chen, & Burrows, 1996). The present study extended these findings by showing that the perceiver's stereotype-consistent behavior causes the target person to reciprocate in kind, thereby confirming the perceiver's stereotypic beliefs. Compared to a control condition, subliminal activation of the African American stereotype in participants resulted in greater hostility in their interaction partners (as rated by outside judges) and more extreme hostility ratings of the targets by their perceiver partner.

One important function of social schemas and related forms of knowledge structures is to fill in missing information about a person or event and to generate expectancies about what is going to happen next (e.g., Fiske & Taylor, 1992; Hamilton & Trolier, 1986; Higgins, 1989, 1996; Olson, Roese, & Zanna, 1996). These expectancies can then serve as a guide to behavior during social interactions, enabling one to anticipate how the other is likely to act and be ready to respond appropriately.

At the same time, however, one's anticipatory behavior toward the other

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person, based on such expectancies, is an influence and a constraint on how that other person behaves in response. Completing the circle, the other person's (constrained) behavior in turn affects the first person's perceptions of him or her. This predicament was succinctly summarized by Jones (1990, p. 237): ''We act while we see, and what we see is in part affected by our own actions.''

Often, the outcome is that the anticipatory behavior itself causes the other person to engage in the expected behavior. Most deleterious is when the expectation is false to begin with, as in the case of many if not most stereotypic beliefs,[1] so that the anticipatory behavior produces confirmation that would otherwise not have occurred. Known as the ''self-fulfilling prophecy'' (Darley & Fazio, 1980; Jussim, 1986; Merton, 1948; Rosenthal & Jacobsen, 1968) or ''behavioral confirmation'' effect (Jones, 1990; Snyder, 1992; Snyder & Swann, 1978), this phenomenon is the most widely studied expectancy effect in social psychology (see Hilton & Darley, 1991; Miller & Turnbull, 1986; Neuberg, 1994; Olson et al., 1996; and Snyder, 1992, for reviews). The intense research focus is both because of the ''enormous practical importance'' of behavioral confirmation effects for real-world settings (Darley & Fazio, 1980, p. 867) and because the effects constitute the most compelling example of the impact of cognitive/perceptual processes on social interaction.

THE EXPECTANCY-DRIVEN MODEL OF BEHAVIORAL CONFIRMATION EFFECTS

Recent analyses of the processes underlying behavioral confirmation of stereotypes show a good deal of consensus regarding the steps involved (Darley & Fazio, 1980; Hamilton, Sherman, & Ruvolo, 1990; Hilton & Darley, 1991; Miller & Turnbull, 1986; Neuberg, 1994; Olson et al., 1996; Snyder, 1992). First, the group stereotype is the source of expectancies or ''provisional hypotheses'' (Darley & Gross, 1983) about individual members of that group. The perceiver then behaves toward the target as though these beliefs were true. These (usually negative) expectancies then affect the perceiver's behavior toward the target person in a variety of ways. The target responds to the perceiver's behavior in kind (e.g., with hostility and coldness begetting hostility and coldness) or even actively conforms to the perceiver's apparent opinion so as not to disrupt the interaction (e.g., playing the ''stupid foreigner'' in order to get one's visa approved; see Jones, 1990; Snyder, 1992). Finally, the perceiver interprets the target's behavior in line with the expectancy and encodes yet another instance of stereotype-consistent behavior. Thus, behavioral confirmation processes provide a powerful mechanism by which stereotypes and prejudicial behavior are maintained, propagated, and justified.

For example, in a famous early experiment, Snyder, Tanke, and Berscheid

[1] It has been argued recently that not all stereotypic beliefs are false, but instead accurately reflect true group differences (Lee, Jussim, & McCauley, 1995; Jussim, 1990). But as Jussim (1990, p. 21) acknowledges, even accurate knowledge about a group can be overapplied to its individual members, leaving most of Jones' point still in force.

(1977) led male perceivers to believe that a female target with whom they were about to engage in a conversion was either attractive or unattractive. After engaging in a ''getting acquainted'' conversation, males tended to rate their interaction partners as attractive, warm, sociable, and poised when they had initially believed them to be attractive. Furthermore, raters blind to the hypotheses also rated the female as having been more warm and sociable.

Word, Zanna, and Cooper (1974) investigated the influence of racial stereotypes on behavioral confirmation. Caucasian undergraduates interviewed both Caucasian and African American confederates as job applicants. Blind raters coded the verbal and behavioral differences between interview styles associated with African American applicants and Caucasian applicants. The results of this first study showed that when the confederate was African American, the Caucasian participants allowed the interview to last a shorter amount of time, treated the interviewee with less urgency, and displayed a higher rate of speech errors. Next, Word et al. (1974) trained Caucasian confederates to mimic the styles of interviewing that had been collected from the first study. These trained interviewers engaged in sessions with Caucasian job applicants. Blind raters coded the interviews and found that Caucasian participants displayed poorer performances when subjected to the style of interviewing accorded initially to African American participants. Together, these studies suggest that race information affects the behavior of perceivers and also channels the actual behavior of targets to produce confirming behaviors.

Most analyses of the behavioral confirmation process assume that the perceiver plays an active role in producing the confirmatory evidence (Darley & Fazio, 1980; Hamilton et al., 1990; Neuberg, 1989, 1994; Snyder, 1992; Snyder & Swann, 1978; Snyder et al., 1977).[2] For instance, Darley and Fazio (1980) specify that ''The first step in the interaction sequence is the perceiver's formation of an expectancy regarding the behavior of a target person'' (p. 869), and Snyder et al. (1977, p. 663) describe the perceiver as first actively constructing an image of the target. Hamilton et al. (1990) and Neuberg (1994) posit that selective attention and biased information-seeking activities mediate behavioral confirmation effects and that when conditions are not conducive for these active social-perceptual processes (for example, when attentional resources are scarce; Neuberg, 1994, pp. 120–122), expectancy-confirmation effects are less likely to occur. The conscious, deliberate nature of the expectancy-confirmation process is illustrated by the Snyder and Swann (1978) experiment, in which participants informed that their interaction partners had hostile tendencies reported during debriefing that they had deliberately and strategically aggressed first against the partner (see also Kelley & Stahelski, 1970).

[2] An exception is the recent treatment of expectancy effects by Olson et al. (1996), who not only stress the role of unconscious or implicit expectancies, but conclude that most expectancies are of this sort. Stereotypes and other social knowledge structures are said to generate expectancies outside of conscious awareness, without the individual's intent or control, and to thus exert a ubiquitous impact on social interaction (Olson et al., 1996, p. 216; see also Greenwald & Banaji, 1995).

Whereas expectations in the behavior confirmation process are widely seen as consciously held, the perceiver is on the other hand generally considered *not* to be cognizant of his or her causal role in producing the confirmatory behavior (see Hamilton & Trolier, 1986, p. 150; Hamilton et al., 1990, p. 50; Rosenthal & Jacobsen, 1968; Snyder & Swann, 1978; Snyder et al., 1977, p. 658). For example, Hamilton and Trolier (1986) cogently expressed how the contents of the perceiver's awareness act insidiously to perpetuate the stereotype: ''Given the perceiver's awareness of the confirmatory nature of the target's behavior and lack of awareness of his or her own role in producing it, it would seem particularly difficult to convince the perceiver that his or her stereotypic beliefs are wrong'' (p. 150). Snyder and Swann (1978) remarked on how perceivers ''. . . seem blissfully unaware . . . of the causal role that their own activities play in generating the behavioral evidence that erroneously confirms their expectations'' (p. 159).

IS BEHAVIORAL CONFIRMATION A REAL PHENOMENON?

However popular and well-known the phenomenon of behavioral confirmation, it is not without its critics (Jussim, 1990; Miller & Turnbull, 1986). The principal objection is that the laboratory situations used in behavioral confirmation research do not map on to real-world social interactions. For instance, Miller and Turnbull (1986, p. 243) argued that in the experiments, the target person is never informed about the perceiver's expectancies toward him or her, a factor that has been shown to attenuate the effect (Hilton & Darley, 1985). Secondly, they argue, self-*dis*confirming prophecies are just as likely to develop out of expectancies as are self-fulfilling ones. For instance, if one expects a person to be hostile, one may act quite calm and friendly so as to prevent an uncomfortable interaction (or worse) and so produce an expectancy-disconfirming outcome. According to Miller and Turnbull (1986), laboratory situations have been designed to maximize the confirmatory and not the disconfirmatory effect.

Jussim (1990) has gone still farther in questioning the validity of the behavioral confirmation effect. He first notes that most of the evidence in support of the notion has been produced ''under relatively artificial laboratory conditions'' (p. 12) with only a few studies done in the field. Most critical of all for Jussim is that nearly all of the studies showing confirmation effects, including the best known (Rosenthal & Jacobson, 1968; Snyder et al., 1977), have misled perceiver participants by giving them false expectancies about the interaction partner. Experimental designs, in other words, have assumed the expectancies to be false. But what if in real-world settings the perceiver's expectancies were instead usually accurate?

> ''. . . Despite some grandiose claims to the contrary, there is currently no evidence that naturally occurring expectations lead to huge self-fulfilling prophecy effects or perceptual biases. Experiments showing that the intentional induction of erroneous expectations leads to biases and self-fulfilling prophecies provide little information about the extent to which naturally occurring expectations create social reality and contribute to social problems'' (Jussim, 1990, p. 30).

In short, the behavioral confirmation phenomenon recently has come under a two-pronged attack: first, that the default, rather passive social-perceptual activities of the perceiver regarding the target can be modified with the proper motivations (e.g., to be accurate); second, that the empirical support for the phenomenon is faulty because it depends on giving participants false expectancies, whereas in real life these expectancies may be accurate.

However, there exists an alternative mechanism by which behavioral confirmation effects could be produced; one that does not depend on biased information-gathering or any other conscious strategies. Furthermore, its experimental demonstration does not require giving participants any false or inaccurate expectancies about their interaction partners. Thus the above criticisms of the behavioral confirmation phenomenon would apply to it with much less force. This alternative model relies instead on the notion of the perception–behavior link, the idea with a long history in psychology that behavior and perception are based on closely associated, if not identical, mental representations. It is argued here that the direct behavioral consequences of social perception can produce behavioral confirmation effects automatically, without any mediation by conscious perceptual interpretation. Moreover, because the effect depends only on stereotype activation, it can occur in the absence of any false information to experimental participants about their partners.

A NONCONSCIOUS MODEL OF BEHAVIORAL CONFIRMATION

In contrast to the traditional model in which behavioral confirmation is mediated either by biased information-gathering and perceptual processes or by strategically adopted behavioral strategies (or both), the present approach hinges on the direct, automatic link between perceptual and behavioral representations (see Bargh, 1997; Bargh, Chen, & Burrows, 1996; Prinz, 1990, for reviews). That is, the activation of a stereotype (e.g., for African Americans) in the course of perceiving another person is hypothesized to result automatically in behavioral tendencies in line with the activated stereotypic content. By acting in line with the stereotype, but without knowing he or she is doing so, the individual elicits similar behavior by the target person in response. However, consistent with the traditional conception of behavioral confirmation effects, the perceiver is aware only of the confirmatory behavior of the target and not of his or her role in producing it. In this way, the entire sequence from stereotype activation to its confirmation is automatic and not mediated by any conscious perceptual or behavioral strategies.

1. Automatic Stereotype Activation

The first step in the nonconscious production of behavioral confirmation effects is the automatic activation of the stereotype by the presence of an individual member of the stereotyped group. A substantial amount of research has shown that individuals automatically utilize those trait concepts and stereotypes easily accessed from memory in the course of perceiving and making judgments about

others (e.g., Banaji, Hardin, & Rothman, 1993; Bargh, Bond, Lombardi, & Tota, 1986; Brewer, 1988; Devine, 1989; Higgins, Rholes, & Jones, 1977; Macrae, Milne, & Bodenhausen, 1994; Pratto & Bargh, 1991; Srull & Wyer, 1979). Theoretically, through frequent and consistent use, automatic perceptual pathways develop between representations of the distinguishing, diagnostic physical features of a social group (e.g., skin color, age-related or gender features) and stereotypic representations of the personality characteristics of members of that social group (see Bargh, 1984, 1994). The stereotype eventually comes to be activated reflexively upon the mere presence of those features, without the perceiver's intending it or being aware of the trait concept or stereotypic influence on perceptual interpretation or judgment.

For instance, Higgins et al. (1977) showed that participants unobtrusively primed with stimuli related to the constructs of ''reckless'' or ''adventurous'' in one experiment subsequently interpreted a target person's ambiguously relevant actions in line with the primed construct. The character (who climbed Mt. McKinley and went whitewater kayaking) was seen as more adventurous when participants had previously been exposed to words related to adventurousness, but more reckless when they had been exposed to words related to recklessness. Devine (1989) proposed that automatic activation of the African American stereotype would concurrently heighten the accessibility of stereotype-related traits such as hostile and aggressive, even though stimuli related to hostility or aggressiveness were never directly exposed to the participants. Participants were first exposed (or not) to stereotype-related stimuli subliminally as part of an ostensibly unrelated first experiment. Subsequent ratings of the hostility of a target person who behaved in an ambiguously hostile manner were shown to be higher for those whose stereotype of African Americans had been primed subliminally than for control participants.

2. The Perception–Behavior Link

The effects of direct, automatic activation of stereotypic representations are not limited to social perceptual processes. Several theorists have posited a direct and passive connection between perception and behavior. William James (1890) called it the *principle of ideomotor action,* that merely thinking about a movement ''awakens in some degree the actual movement'' (p. 526). Models of language learning in children have often included a passive, imitative effect on language learning of perceiving spoken language (e.g., Dell, 1986; Lashley, 1951; see Prinz, 1990, for a review). An automatic perception–behavior link has been proposed as necessary for imitative learning by Koffka (1925), Piaget (1948), Bandura (1977), and others. In social psychology, Berkowitz (e.g., 1984; see also Carver, Ganellen, Froming, & Chambers, 1983) has long argued that the mere perception of aggressive acts (as through the media) causes an increase in aggressive action tendencies.

The causal chain theoretically connecting environmental events to behavioral responses therefore has two links: one, between the events and their perception,

the other between perception and action. In three tests of this hypothesis, Bargh et al. (1996) used the same priming techniques as in previous social-perception research (see Bargh, 1989, 1994; Higgins, 1989; Wyer & Srull, 1989, for reviews) but with the participant's own behavior, not social judgments, as the dependent measures. In Experiment 1, participants surreptitiously primed with stimuli related to either rudeness or politeness (or neither trait) acted accordingly when subsequently given the opportunity. Specifically, participants exposed to words related to rudeness were more likely to interrupt a conversation compared to control participants, while participants whose concept of politeness had been primed were the least likely group to interrupt.

The findings of Experiment 2 extended the behavioral effects of priming to the case of stereotypes (i.e., constellations of trait constructs). Participants were first primed (or not) with stimuli related to the stereotype of the elderly, but which did not include any stimuli semantically related to physical slowness or weakness (although these traits do participate in the stereotype; Perdue & Gurtman, 1990). Following the design logic of Devine (1989), if the traits of slowness or weakness were activated by the priming manipulation, it would be via their membership in the stereotype, not by directly related stimuli. In two replications, participants primed with stereotype-related stimuli, after they thought the experiment was over, walked down the hallway more slowly than did control participants.

In Experiment 3, the effects of stereotype activation on behavior were extended to the African American stereotype. It was found that participants who had been subliminally exposed to faces of young African American males subsequently reacted with greater hostility to a request of the experimenter to redo the (rather boring) experimental task, compared to participants in the control group.

These effects of stereotype activation on behavior have been replicated recently by Dijksterhuis and van Knippenberg (1996), who had their experimental participants play a game of Trivial Pursuit. Prior to playing the game, the stereotype of either a college professor or a secretary was primed, and those in the ''professor'' condition outperformed the other participants. In another experiment, participants whose stereotype of soccer hooligans (believed to be of relatively low intelligence) had been activated subsequently answered fewer questions correctly than did the secretary control group. Once again, the trait concepts activated as part of the stereotype caused subsequent behavior to be in keeping with the stereotype.

3. Automatic Behavioral Confirmation

We believe that these demonstrated effects of stereotype activation on the perceiver's own behavior have serious ramifications for the perpetuation of social stereotypes. First of all, if stereotype activation causes the individual to behave in line with the stereotype, the perceiver could unwittingly engage in a ''first strike'' stereotype-consistent action when interacting with the stereotyped-group member. For instance, activation of the concept of hostility as part of the stereotype of African Americans may ''leak out'' of the perceiver nonverbally through facial expression or tone of voice (e.g., DePaulo, 1992; Ekman & Friesen, 1969). This

overt behavior may well cause the other person to behave in kind (i.e., with some hostility), thereby confirming the perceiver's stereotype of that social group. Any hope that this perceived hostility might be attributed situationally, instead of to the target person's disposition, would be dashed by the automaticity of the behavioral effect, as the perceiver would have no conscious experience of choosing to behave in the stereotype-consistent manner.

It has been shown that automatic activation of stereotypes produces stereotype-consistent behavior in the perceiver. The present study is intended to provide a test of the behavioral confirmation consequences of the automatic behavior effect. To do so, we combined automatic stereotype activation techniques with the essential design of the Snyder et al. (1977) study. If stereotypes are automatically (subliminally) activated in one participant, and this person then interacts with a second experimental participant (in whom no stereotypes are experimentally activated), the behavior of this *second* participant should be found to be consistent with the primed stereotype, as rated by outside judges blind to the experimental hypotheses. Moreover, the impression ratings of the target by the perceiver participant will be more in line with the primed stereotype—reflecting stereotype confirmation—compared to those made by nonprimed participants of their interaction partners.

METHOD

Overview

The present experiment was designed to test whether the automatic activation of the African American stereotype directly produces behavioral confirmation effects. To this end, pairs of participants first worked separately on the identical computerized visual task. For one participant (the *perceiver*), in the course of that task the computer program subliminally presented photographs of either young male African American faces or of young male Caucasian faces. For the other participant (the *target*), no subliminal photographs were presented in the course of the visual task.

Next, the two participants engaged in a verbal game (''Catch Phrase'') for 6 min. On each trial, one participant tried to guess a word based on clues given by the other participant. For the first 3 min, the perceiver was the clue-giver and the target was the guesser, after which the participants switched roles. Their interaction during this game was recorded on separate channels of an audiotape-recorder. When the game was completed, the two participants gave their impressions of each other on a series of trait scales, some related to and others unrelated to the trait of hostility. Our central hypothesis was that compared to the Caucasian priming condition, the subliminal priming of the African American stereotype in the perceivers would result in greater behavioral hostility in the targets, as judged by the perceiver who interacted with the target as well as by hypothesis-blind observers who later listened to the audiotaped interaction.

Participants

One hundred (36 male, 64 female) undergraduates at New York University who were enrolled in the Introductory Psychology course participated in the experiment in partial fulfillment of a course requirement. Sessions were scheduled in same-sex pairs. Because the study was concerned with processes of impression formation and behaviors between nonacquainted pairs, data from four pairs were excluded from the final analysis because they were friends who had signed up for the experiment together. Thus the final data set included observations on 92 participants.

All participants were Caucasian. Thus our prediction was that perceivers primed with the African American stereotype would behave with greater hostility toward a Caucasian (not an African

American) partner and perceive him or her as being more hostile as a result. It could be argued that the design should have called for African American and not Caucasian target persons, in order for our experimental situation to better map onto the real-world situation to which we wish to generalize. However, doing so would have precluded a test of our hypothesis. Because the perceiver would have been consciously aware of the African American race of the target, conscious perceptual and behavioral strategies on the part of the perceiver could not be ruled out as alternative explanations for any effects we would obtain (see Devine, 1989, Experiment 2 for the identical logic). Second, the actual physical presence of an African American as the interaction partner would likely overwhelm the subliminal priming manipulation, as the latter is but a simulation of the former. If the African American target was presented in both the experimental and the control priming conditions, the priming effect would likely be mitigated entirely.

At the same time, it is important to point out that our African American subliminal priming manipulation stands for the nonconscious effects of actually encountering an African American, not a Caucasian, outside of the laboratory. Just as in the present experiment the African American stereotype should only be activated in the African American and not the Caucasian priming condition, so too in the real world the African American stereotype should only be activated—and the predicted behavioral confirmation effects obtained—in the presence of African American, not Caucasian, interaction partners.

Apparatus

Priming task. Two Gateway 486 computers were used to present the priming stimuli and the dot-estimation task on high-resolution (SVGA quality) color monitors, with display refresh rates of 76 Hz. The monitor display was under control of a Visual Basic program modified from that used in the Bargh et al. (1996) Experiment 3.

During the priming phase, the perceiver participant was subliminally exposed to black-and-white photographs of either African American or Caucasian male faces taken from popular magazines (see Bargh et al., 1996, Experiment 3, for details). On a given trial, a photograph of a face was presented for 13 ms (one screen-refresh cycle for the monitor) and was immediately erased by the presentation of the two masks, also for 13 ms each, at the same location on the screen. The first pattern mask was composed of a black and white pattern of diagonal crosshatches. The second mask, presented immediately after the first, was conceptually similar but not identical to the visual task stimulus picture, which followed immediately and erased the second mask from the display. This picture was composed of between 4 and 24 (the number varied on each trial) small colored circles (''dots'') on a gray background, and it remained on the screen for 3 s.

Following the presentation of the dots picture, the participant was asked to indicate by clicking a response button on the display, using the computer mouse, whether there had been an odd or an even number of dots presented. Pretesting as well as previous experiments (Bargh et al., 1996, Experiment 3) have shown this procedure to be effective in presenting the face stimuli outside of the participant's awareness. At the end of the 130th trial of the dot-estimation task, a message on the computer screen informed the participant that this concluded the first part of the experiment. (Note that unlike Bargh et al. (1996) Experiment 3, no ostensible computer data saving failure followed the conclusion of the dot-estimation task.)

Target participants also engaged in the dot-estimation task on a separate computer, and all aspects of the program, display, and dot-estimation task were the same as those for the perceiver participants, except that no faces were presented before the two successive masks. It is important to note that the experimental treatment of target participants (as opposed to perceiver participants) was identical in the two prime conditions.

Interaction task. For the second phase of the experiment, two Realistic PZM microphones with power preamplifiers and two AKG-240 headphones were connected to an RCA portable dual-cassette recorder. By wearing the headphones and speaking into the microphones, the pair of participants could converse with each other from different rooms and without any visual contact. Each participant's portion of the conversation was recorded on a separate channel of the cassette recorder, so that later on

each could be listened to and judged for degree of hostility in isolation from the other participant's portion.

The word disk from the Parker Brothers game ''Catch Phrase'' was used for the verbal phase of the experiment. The disk consisted of a plastic enclosure with a clear window. Depressing a green button advanced the disk to expose the next word in the window.

Impression rating form. Our hypothesis is that the subliminal priming manipulation will activate the African American stereotype, which includes the trait concept of hostility. Activated thus in the course of perception, this concept will nonetheless have behavioral effects in the perceiver and consequently produce similar behavior in the target. Because this model calls specifically for an effect on the hostility of both perceiver and target participants, it is important to show that compared to nonprimed participants, stereotype-primed participants perceive their partner to be more hostile and not just more negatively. If, as according to models of category-based affect (e.g., Fiske, 1982), an overall negative evaluation is stored within the stereotype, its subliminal activation could produce general negative feelings toward the target that could ''leak out'' without the perceiver's awareness (see Harris & Rosenthal, 1985).

Accordingly, we developed an impression rating form that contained positive and negative trait dimensions that were either related to or unrelated to the trait of hostility. A pretest group of 20 participants rated each of 13 traits on 5-point scales both as to that trait's relatedness to hostility (1 = not at all unrelated; 5 = extremely related) and its valence (1 = extremely negative; 5 = extremely positive). Based on these ratings, we were able to create separate indices for hostility and nonhostile negativity. The six traits with the highest relatedness ratings (ranging from 2.9 to 4.9) formed the hostility index, with reverse scoring (R) for those with mean valence ratings above the scale midpoint of 3: *warm (R), hostile, friendly (R), aggressive, kind (R),* and *competitive.* The six traits with the lowest relatedness ratings (ranging from 1.6 to 2.5) formed the negativity index: *touchy, helpful (R), excited (R), conventional, sociable (R),* and *sensitive.* (The valence mean rating for one trait term, *emotional,* fell exactly at the valence scale midpoint of 3 and so could not be classified as positive or negative.) On the ''Impression Rating Form'' that participants completed, they were asked to rate the other participant in their experimental session on each of these traits on scales ranging from 1 (not at all) to 5 (extremely).

Procedure

To ensure that the experimenter was kept blind to the perceiver-participant's priming condition, assignment to condition was randomized by the Visual Basic program at the start of the session. Two same-sex participants took part in each session. The experimenter brought each of them separately into their respective rooms immediately upon arrival at the waiting room so that they would not see each other prior to the start of the experiment.

Next, standing in the doorway between the two rooms, the experimenter explained that the research had to do with whether individuals work differently when alone versus with others. Consequently, the participants would first work on a task by themselves on the computer and then work on a verbal task together. At this point, both participants signed an experimental consent form and a separate consent form to give permission for the verbal task to be audiotape recorded.

The participants then separately completed the dot-estimation task. Within a frame on the computer screen a number of colored dots, from 4 to 24 on each trial, appeared for 3 s and the participant was instructed to respond as quickly and accurately as possible whether the number of dots presented on that trial was odd or even. After making sure that the participants understood the task, the experimenter left the room, returning when the computer emitted a tone signaling the task was over. As part of this task, the perceiver participant was subliminally presented on each trial with either an African American or a Caucasian male face.

The experimenter next explained the second task to the participants, informing them that it would involve verbal performance in the absence of any visual information, to complement the first part of the experiment, which had involved visual and not verbal ability. Participants were informed about a game they were about to play together. The object of the game was for one individual, the ''clue-giver,'' to elicit each of a series of phrases and single words from the other individual, the

''guesser.'' The only rules of the game were that the clue-giver was not allowed to say or spell out the phrase or word explicitly. It was suggested that for difficult phrases or words, the clue-giver might want to try methods such as rhyming or leaving the test word out of a sentence. Participants were informed that the pair of participants who attained the highest score by the end of the semester would receive $10 each.

At this point, the experimenter instructed each participant to put on the headphones and speak into the microphone to make sure that they could hear each other. The word disk was handed to the perceiver participant and the pair was informed that they would have 3 min to complete as many words as possible. The experimenter then started the stopwatch timer, said ''Begin,'' and left the rooms. At the end of the 3 min, the experimenter reentered the rooms and stopped the play of the game. The participants were informed that they would now switch roles, and the target-participant was handed the word disk after it had been advanced to the next word. The experimenter announced that they would have another 3 min to complete as many words as possible, started the timer, and again left the room, returning after the allotted time to stop the game.

The experimenter then informed the participants (separately, in their own rooms) that the last task would be the Impression Formation Questionnaire, on which they were to indicate their impressions of each other. Each participant was told that their responses would be completely confidential and that the other participant would not see them and then completed the trait ratings of the other participant.

At this point, participants were told that the experiment was over and were debriefed and thanked for their help with the study. As part of the debriefing, each was probed individually for suspiciousness about the computer displays during the dot estimation task; for example, they were asked if they had seen anything unusual in the displays, and if so, what it was. Only one participant reported seeing any extra images in the computer task, but as she had been assigned to the target-participant condition (and so had not been presented with any subliminal priming), her data were not eliminated from analyses.

Coding of Audiotaped Interactions

Two coders blind to experimental hypotheses listened to the 6-min audiotape made by each of the 92 participants during the word-guessing game and rated each participant on his or her degree of hostility. Because perceiver and target participants had been recorded on separate channels of the tape recorder, only one and not the other participant could be heard on a given channel. Thus it was possible to present all of the tape-recorded sessions to the judges in a randomized order, so that the ratings were not made of the original perceiver–target pairs but of individual participants. The judges did not know the priming condition of the participants or, in fact, anything about the priming manipulation.

Hostility ratings were made using a 7-point unipolar scale ranging from 1 (not at all hostile) to 7 (extremely hostile). The judges used the following concrete scoring key in making their ratings, with the rating based on the highest level of hostility exhibited during the interaction:[3]

1 = The individual is super nice. Continues to give clues in a cheery manner, regardless of the other's performance.
2 = Neither nice nor hostile. Flattened affect indicating polite, yet indifferent attitude.
3 = Subtle signs of frustration. Occasional sighing, terseness of language. Use of long ''no''s.
4 = Moderate signs of frustration. Frequent sighing, increasing voice volume, and terseness of language. Curt use of ''no.''

[3] For example, if the participant usually sounded annoyed but did on an occasion insult the other participant, he or she received a score of 7 and not 5; if the participant usually sounded indifferent but did on occasion show clear annoyance, the score would be 5, not 2. The alternative of having the judges attempt to average the various manifestations of hostility across the 6-min period proved to be a considerably less reliable method of scoring (apparently because of differences in how this average was computed) compared to this focus on specific behavioral instances.

5 = Significant signs of frustration. Characterized by outward annoyance, but still attempts to remain civil.
6 = Display of moderate outward hostility. Heightened voice level, significant outward annoyance, signs of anger.
7 = High levels of outward hostility. Yelling, use of insults, and derogatory comments.

Reliability analyses revealed a Cronbach's α of .73 for this scoring method. In order to assign a single hostility rating to each participant, the mean of the two sets of ratings was used.

RESULTS

The major prediction of the experiment was that those target participants who had interacted with perceiver participants subliminally primed with African American faces would exhibit greater hostility compared to target participants in the Caucasian prime condition, both as rated by their perceiver-participant partner and as rated by outside observers listening to the audiotape recordings. In line with the proposed process model of automatic behavioral confirmation, it was further predicted that this increased hostility of the target participants in the African American prime condition would be mediated by the increased hostility of the perceiver participants, as a consequence of the nonconscious activation of their African American stereotype.

Observer Ratings of Hostility

Main analysis. Judges blind to the experimental hypotheses rated the verbal behavior of each participant for degree of hostility. These ratings were entered into a Repeated Measures Analysis of Variance, with Prime (African American vs Caucasian faces), Pair Gender (Male vs Female), and Role (Perceiver vs Target) as between-subjects independent variables. The central prediction of the study was supported: the main effect of Prime was significant, $F(1, 42) = 6.42$, $p < .05$, with greater verbal hostility for both perceiver and target participants in the African American than the Caucasian priming condition (see Fig. 1). No other effects were reliable, all ps $> .15$.

Because it is crucial for the prediction of self-fulfilling prophecy effects to demonstrate an increase in hostility specifically for the target participant, a simple effects test was conducted for the influence of the subliminal priming manipulation on the targets' hostility and separately for that of the perceiver participants. Supporting the hypothesis, target participants in the African American priming condition were reliably rated as more hostile than those in the Caucasian priming condition, simple $F(1, 42) = 4.44$, $p < .05$. Perceiver participants primed with African American faces were also considered by the observers to be more hostile than their Caucasian-priming condition counterparts, simple $F(1, 42) = 5.62$, $p < .05$.

Mediational analyses. That perceiver participants as well as target participants in the African American priming condition were seen by outside observers to display significantly greater hostility toward one another is consistent with the proposed model of behavioral confirmation, in which increased behavioral

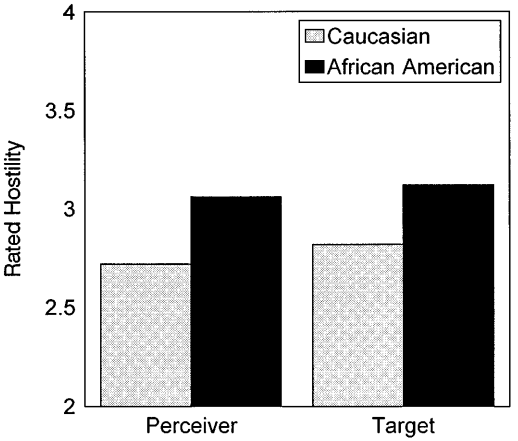

FIG. 1. Mean hostility ratings of perceiver and target verbal behavior by stereotype priming condition.

hostility of the perceiver caused by nonconscious stereotype activation results in increases in the target's hostility in response. However, a more precise test of mediation would be to examine whether *within each participant pair* manifest target hostility covaries with perceiver hostility.

We first conducted an analysis of covariance on the hostility ratings of the target participants, with Prime and Pair Gender as factors, and covarying on rated hostility of the perceiver participant paired with each target. Consistent with the hypothesized mediation, statistically controlling for the effect of perceiver hostility eliminated the effect of Prime on target hostility, $F(1, 41) = 1.05$, $p > .30$.

This mediational process model can be more graphically illustrated by the following path analysis, in which Prime Condition (Caucasian vs African American) is the predictor variable, Target Hostility the dependent variable, and Perceiver Hostility as the mediator. As shown in Fig. 2, only the mediated path from Prime to Target Hostility through Perceiver Hostility is reliable; there is no

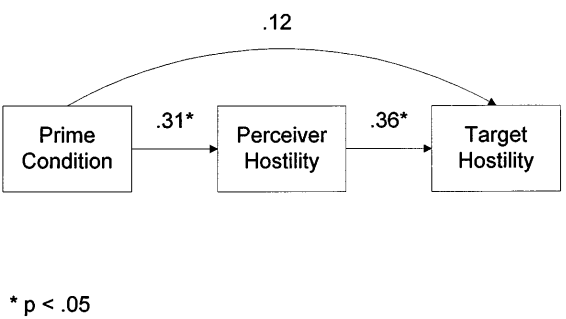

FIG. 2. Path analyses of target hostility ratings as a direct function of prime condition and its mediation by perceiver hostility ratings.

unmediated or direct effect. As a further test of this conclusion, the Baron and Kenny (1986; see also Kenny, Kashy, & Bolger, 1996) modification of the Sobel test revealed a statistically significant reduction of target hostility when perceiver hostility was controlled, $Z = 1.65$, $p < .05$.

Impression Questionnaires

While it is necessary for the proposed model of automatic behavioral confirmation of stereotypes to show that African American stereotype activation in the perceiver produces observable increases in hostility in his or her interaction partner, it is not sufficient. What must also be shown is that the perceiver leaves the interaction believing that the target with whom he or she interacted is more hostile compared to the impressions formed of targets by perceivers whose stereotype was not activated. Moreover, in order to argue convincingly that the African American stereotype of hostile behavior had been ''confirmed'' in perceiver-participants' minds, we must show that the impression effects are specific to hostility and not only general negativity.

Following their interaction in the course of playing the word-guessing game, the two participants in each experimental session gave their impressions of each other on several trait dimensions. Half of these were related to hostility and the other half unrelated. We first took the mean of the hostile-related scales and of the hostile-unrelated scales to form hostility and negativity indexes, standardizing across participants on each to remove spurious rating variance due to the specific scales used. (The pattern of significant and nonsignificant results is the same whether standardized or unstandardized indexes are analyzed.) These scores were then subjected to a Repeated Measures Analysis of Variance, with Prime (Caucasian vs African American) and Role (Perceiver vs Target) as the between-subjects factors and Trait Relevance (Hostile-related vs unrelated) as the within-subjects factor.

Results showed that the main effect of Prime was not significant, $F(1, 44) < 1$, but that the Prime $\times$ Relevance interaction was marginally reliable, $F(1, 44) = 3.26$, $p = .075$. No other effect in the analysis, including the Prime $\times$ Relevance $\times$ Role interaction was reliable, all ps $> .25$. As Fig. 3 shows, the Prime $\times$ Relevance interaction is attributable to an effect of the priming manipulation on impression ratings on hostile-related, but not on hostile-unrelated, traits of both targets by perceivers and of perceivers by targets. This conclusion is supported by the results of simple effects tests: for hostile-related traits, the simple main effect of Prime was reliable, $F(1, 44) = 4.38$, $p < .05$; but it was negligible for hostile-unrelated traits, $F < 1$.

DISCUSSION

The data analyses support all aspects of the hypothesized nonconscious model of behavioral confirmation. First and foremost, judges blind to the experimental hypotheses considered target participants in the African American stereotype priming condition to have behaved with greater hostility than those in the

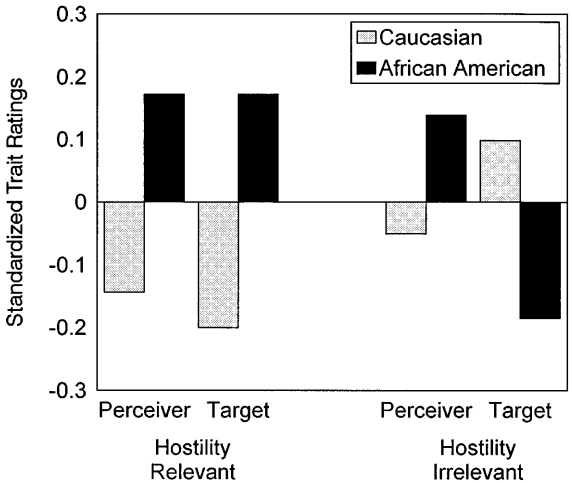

FIG. 3. Standardized impression trait ratings as a function of prime condition, hostility relevance, and role.

Caucasian priming condition. These target participants were not themselves primed, but had interacted with perceiver participants who had been subliminally exposed to African American faces. Next, mediational analyses confirmed that the increase in target participants' hostility was due to increases in the perceivers' own hostility caused by the subliminal priming manipulation. Third, perceivers in the African American priming condition did have their stereotypes ''confirmed'' as they considered their interaction partners to be more hostile, but not more negative generally, than perceivers in the Caucasian priming condition believed their partners to be.

The nonconsciousness or automaticity of this process was clearly evidenced by the subliminal nature of the stereotype activation and the participants' lack of awareness of anything in the priming that could have influenced their behavior toward their session partners. Most importantly, because all participants were of Caucasian origin, there was nothing in the experimental situation that could have produced conscious stereotype activation and expectancy-confirmation processes. This rules out any explanation for the observed behavioral confirmation effects in conscious or strategic terms.

These findings extend our knowledge both of the effects of stereotype activation and of their resistance to change. The behavioral effects of stereotype activation shown by Bargh et al. (1996) were shown to spread to others with whom the perceiver interacts. In this way, the perceiver him- or herself creates the very evidence that reaffirms the validity of the stereotype.

Most importantly, this new mechanism of behavioral confirmation does not depend on the operation of active expectancies in the perceiver. Previous studies of the behavioral confirmation process have shown how conscious expectancies

about the target individual can lead to selective information gathering about and interpretation of the target's behavior and thereby produce stereotype-consistent evidence. But the current study demonstrates that such behavioral confirmation effects may come from automatic perceptual and behavioral sources as well. If this is the case, the behavioral confirmation of stereotypes is a more pervasive and difficult-to-control process than previously believed. If the perceiver has no awareness of the activation of the stereotype or its direct and immediate effect on his or her own behavior toward the stereotyped-group member, the individual cannot help but experience the target's resultant stereotype-consistent behavior as unprovoked and dispositionally driven. Not only would there be an underutilization of the situational influences on the target's behavior when forming judgments about its cause (e.g., Gilbert & Malone, 1995; Ross, 1977), there would be a complete lack of awareness of those situational determinants in the first place.

Previous criticisms of behavioral confirmation research, which have led some to question the validity of the effect itself, can be shown not to apply to the present demonstration. This is primarily because those criticisms have been leveled mainly at the active expectancy component of the traditional model. Miller and Turnbull (1986), for instance, argued that the probability of behavioral confirmation is reduced when the target is aware of the perceiver's expectancies and Jussim (e.g., 1990) faulted the practice of giving participants false expectancies about their interaction partners. Yet in the present study no expectancies at all were given to the experimental participants; the only manipulation was to show them, subliminally, faces of African Americans. Our manipulation thus maps onto the real-world situation of an individual encountering the physical features of an African American—and our results show that this is sufficient in itself to produce behavioral confirmation effects.

Another objection raised by Miller and Turnbull (1986) was that expectancies do not have to result in confirmation strategies but can just as easily result in disconfirmation strategies. Expecting a person to be shy, one can try to put him or her at ease and, if successful, produce more gregarious and outgoing behavior (disconfirming the expectancy). But because this is an active, conscious strategy employed by the perceiver, such disconfirmation outcomes cannot occur via the present, nonconscious mechanism—the behavioral effects of automatic stereotype activation can only result in confirmation.

Finally, Neuberg (1989, 1994), Miller and Turnbull (1986), and others have noted how self-fulfilling effects are less likely to occur when the perceiver has a goal of forming an accurate impression of the interaction partner, compared to when the perceiver has the default, less effortful impression-formation goal (see Fiske & Neuberg, 1990). However, the present nonconscious model does not depend on the perceiver's having any impression-formation goal and so applies more widely to the multitude of interaction settings in which individuals have goals other than impression-formation (see Gollwitzer & Moskowitz, 1996; Hilton & Darley, 1991).

This is not to say that the individual does not have the ability to control

automatic behavioral confirmation effects, for example, through adopting an accuracy impression-formation goal. Studying the degree to which such motivations can overcome automatically produced effects is an important avenue of research (e.g., Blair & Banaji, 1996; Fiske & Neuberg, 1990; Kawakami, Dion, & Dovidio, 1996). However, along with several recent commentators, we do not believe that such accuracy goals are all that common outside of the laboratory setting, in which the individual knows his or her perceptions and judgments are under scrutiny (Hilton & Darley, 1991; Olson et al., 1996, p. 223). Rather, we share the conclusion reached by Hilton and Darley (1991) that whereas accuracy ‘‘ . . .is certainly a goal that perceivers may adopt in their daily interactions, it is only one goal, and one that we believe occurs with surprisingly little frequency in the real world’’ (p. 259). Thus, in our opinion, accuracy motivations most likely do not reduce to any great extent the frequency with which automatic behavioral confirmation effects occur in the nonlaboratory world.

Moreover, the nonconsciousness of the behavioral-confirmation process demonstrated in the present study must surely decrease the likelihood that any such control will be exerted because such control requires one’s awareness of the effect’s occurrence in the first place (see Bargh, 1989, 1994).

Research has shown many ways in which stereotypes, like a dangerous virus, can survive and perpetuate themselves despite attempts to eradicate them. They can bias the interpretation of a target person’s behavior and generate assumptions about that person in the absence of any real evidence, all in line with stereotypic content (e.g., Hamilton & Trolier, 1986). Moreover, they can do so automatically, behind the perceiver’s back so to speak, so that he or she will have no chance to correct the situation (e.g., Bargh, 1994). The present study reveals a new and potent weapon to this arsenal—the ability to create actual confirming evidence in the stereotyped group member’s behavior, via the stereotype’s effect on the perceiver’s own behavior. Again, this is a capability of the stereotype that can bypass the perceiver’s conscious vigilance and motivations. In our view, it is a capability that may go far in accounting for why stereotypes are so resistant to change.

We realize that we are painting quite a pessimistic picture of the chances that stereotypes can be controlled and ameliorated. However, although we do not believe that conscious control over the effects of activated stereotypes are that likely to occur outside of the laboratory, we do find encouragement in recent evidence that the automatic effects of stereotypes are more likely for prejudiced than for nonprejudiced individuals (e.g., Fazio, Jackson, Dunton, & Williams, 1995; Kawakami et al., 1996; Lepore & Brown, 1997). Thus, while it may be that once stereotypes are so entrenched in an individual as to become automatically activated, there is little probability that their biasing effects will be prevented (for all of the above reasons), it also may be that individuals do have some control over the establishment of the automatic capability in the first place. Prevention of, or changing, an existing automatic stereotype-activation pathway seems to be a

much more promising approach to ending what Merton (1957) called the stereotype's ''reign of error.''

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