

The Spyglass Self: A Model of Vicarious Self-Perception

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Self-perception theory posits that people sometimes infer their own attributes by observing their freely chosen actions. The authors hypothesized that in addition, people sometimes infer their own attributes by observing the freely chosen actions of others with whom they feel a sense of merged identity—almost as if they had observed themselves performing the acts. Before observing an actor's behavior, participants were led to feel a sense of merged identity with the actor through perspective-taking instructions (Study 1) or through feedback indicating that their brainwave patterns overlapped substantially with those of the actor (Studies 2–4). As predicted, participants incorporated attributes relevant to an actor's behavior into their own self-concepts, but only when they were led to feel a sense of merged identity with the actor and only when the actor's behavior seemed freely chosen. These changes in relevant self-perceptions led participants to change their own behaviors accordingly. Implications of these vicarious self-perception processes for conformity, perspective-taking, and the long-term development of the self-concept are discussed.

Keywords: self-perception, self–other overlap, self-concept, prosocial behavior, compliance

Consider the following scenario: One day, you saunter over to the office of a close colleague to ask if he would like to go to lunch. When you arrive at his office, you overhear a student asking him if he would be willing to spend the next half hour with her going over the last two exams. Even though your close colleague's regularly scheduled office hours are later in the afternoon and he could easily come up with an excuse to say no, you hear him agreeing to help. As you make your way back to your office, you are encountered by a student you recognize from your Social Psychology course. He tells you he was planning to come to your office hours tomorrow for an hour or so to get some clarification on last week's lecture topic, self-perception theory. He asks whether you'd be willing to meet with him now instead. Despite your full schedule and empty stomach, you find yourself willingly obliging.

After observing another person perform a given behavior, what motivates individuals to later engage in the same or similar behaviors? For over half a century and from a number of different theoretical perspectives, social psychologists have explored the factors that motivate individuals to match the behaviors of others

(e.g., Bandura, 1977; Chartrand & Bargh, 1999; Cialdini, Kallgren, & Reno, 1991; Deutsch & Gerard, 1955; Griskevicius, Goldstein, Mortensen, Cialdini, & Kenrick, 2006; Latané, 1981; Maass & Clark, 1984; Turner, 1987; for a review, see Cialdini & Goldstein, 2004). We propose a novel conceptualization that may account for behavior matching when an observer feels a sense of shared identity with the actor and, more broadly, that speaks to how the self-concept develops and guides behavior. Before we explain further, consider a somewhat different scenario:

One day, you are about to saunter over to the office of a close colleague to ask if he would like to go to lunch. Before leaving your office, a student from your Research Methods class asks you if you would be willing to spend the next half hour with her going over the last two exams. Even though your regularly scheduled office hours are tomorrow and you could easily come up with an excuse to say no, you agree to help. Shortly after the student leaves, you are encountered by a different student you recognize from your Social Psychology course. He tells you he was planning to come to your office hours tomorrow for an hour or so to get some clarification on last week's lecture topic, self-perception theory. He asks whether you'd be willing to meet with him now instead. Despite your full schedule and empty stomach, you find yourself willingly obliging.

In this second scenario, what might account for your decision to help your Social Psychology student? Self-perception theory (Bem, 1967, 1972) contends that people sometimes infer their attributes (as well as their attitudes and values) from observing their own behaviors, much like similar inferences an outside observer might make. These changes in people's perceived attributes are then likely to steer future behaviors that are consistent with these changes. Almost 40 years of research has demonstrated significant support for self-perception effects (e.g., Burger & Caldwell, 2003; Dolinski, 2000; Freedman & Fraser, 1966; Snyder & Cunningham, 1975; see Burger, 1999, and Cialdini & Goldstein, 2004, for reviews). A self-perception theory interpretation of your

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decision to go hungry while helping your Social Psychology student suggests that after observing yourself freely choosing to help the first student, you might infer that you are the type of person who is sensitive and/or self-sacrificing toward others. These new self-perceptions would then likely play a role in your decision to help the second student.

How might the psychological processes operating in this second scenario be informative about those operating in the first? One apparent distinction between the two scenarios is that in the second, you comply with the second student's request for help after you observed yourself being helpful in a similar way earlier; whereas in the first scenario, you comply with your student's request for help after you observed a close other being helpful in a similar way earlier. Might this distinction between self and other in these scenarios be more apparent than real? The emerging literature on the merging of the self and other is instructive in this regard.

The Merging of Self and Other

Much research over the past several decades has demonstrated the expansiveness of the self-concept and the extent to which the perceived boundaries between the self and other can be blurred in one's cognitive and affective systems. The notion that individuals incorporate aspects of others into their own identities, a primarily intrapersonal phenomenon, has been a core concept in the literature on prosocial behavior (e.g., Aron & Aron, 1986; Cialdini, Brown, Lewis, Luce, & Neuberg, 1997; Hornstein, 1982; Lerner, 1982; Piliavin, Dovidio, Gaertner, & Clark, 1981) as well as in the self-construal and social identity literatures (e.g., Agnew, Van Lange, Rusbult, & Langston, 1998; Brewer & Gardner, 1996; Gardner, Gabriel, & Hochschild, 2002; Goldstein & Cialdini, in press; Markus & Kitayama, 1991; Norton, Monin, Cooper, & Hogg, 2003; Tajfel, 1978; Trafimow, Triandis, & Goto, 1991; Triandis, Bontempo, Vilareal, Asai, & Lucca, 1988).

Although much of the research investigating the expansiveness of the self-concept has focused on how one's group memberships affect one's self-evaluations and one's behaviors (e.g., Maass, Clark, & Haberkorn, 1982; Turner, 1987), researchers have also examined these processes in the context of dyads. Cialdini and colleagues (1997) used the term *oneness* to refer to the extent to which one dyad member feels a sense of shared, merged, or interconnected identities with another. They suggested that feelings of merged identities tend to be enhanced in response to attachment-oriented cues and processes, including perspective-taking (e.g., Davis, Conklin, Smith, & Luce, 1996; Galinsky & Moskowitz, 2000) and cues to genetic relatedness (Hamilton, 1964) and relationship closeness (e.g., Aron & Aron, 1986; Mashek, Aron, & Boncimino, 2003).

Aron, Aron, and colleagues (Aron & Aron, 1986; Aron, Aron, Tudor, & Nelson, 1991; Aron, Aron, & Smollen, 1992; Mashek et al., 2003; Wright, Aron, McLaughlin-Volpe, & Ropp, 1997) have conceptualized individuals in close relationships as having highly overlapping mental representations of one another. Several research teams have found that highly overlapping mental representations lead individuals to confuse cognitions about a close other with cognitions about the self (Aron et al., 1991; Coats, Smith, Claypool, & Banner, 2000; Smith, Coats, & Walling, 1999; Smith & Henry, 1996). One implication of this confusion is that one's

general perceptions of the attributes possessed by a close other should carry over to one's perceptions of one's own attributes.

Evidence for the merging of self and other also comes from research on the outcomes of perspective-taking (e.g., Davis et al., 1996; Galinsky & Moskowitz, 2000). Davis and colleagues (1996) suggested that as a consequence of perspective-taking, mental representations of the self and other come to share more common elements, creating a sense of merged identities. Indeed, they found that individuals who took the perspective of another individual were more likely to ascribe traits to that individual that were descriptive of themselves. Similarly, Galinsky and Moskowitz (2000) showed that individuals who were asked to take the perspective of a member of a stereotyped group later evaluated that group's attributes as more in line with their own attributes.

Taken together, the findings from a number of studies support the supposition that individuals who feel a sense of shared, merged, or interconnected personal identities with another see themselves as possessing many of the stable personality traits possessed by the other. However, given that individuals' impressions of others are not static but rather change depending on observed behaviors, novel information, and what traits are most salient in a given circumstance (see Gilbert, 1998, for a review), what happens to individuals' self-conceptualizations in more fluid, dynamic environments—those in which perceptions of psychologically merged others are likely to change depending on how those others behave in the situations they encounter?

Vicarious Self-Perception and the Spyglass Self

How do interactions with a dynamic environment influence individuals' self-knowledge? One of the most prominent early theories detailing how others' behaviors influence one's own self-knowledge is symbolic interactionism (e.g., Mead, 1934), which posits that the majority of what one knows about oneself comes from interactions with others. Similarly, over a hundred years ago, Cooley (1902) described reflected appraisals—how people come to define themselves by observing how others appraise and respond to them—as the *looking-glass self*.

We propose that when exposed to the behaviors of psychologically merged others, individuals come to know who they are not only through a looking glass, but through a spyglass as well. That is, in addition to defining themselves by registering how others respond to them, we propose that observers can also define themselves by observing how psychologically merged others respond—not to them, but rather to circumstances relevant to the observers' self-concepts. Therefore, in addition to learning about themselves from other people's appraisals of their behaviors, individuals also learn about themselves from appraising the behaviors they observe these others performing.

Thus, in light of self-perception theory (Bem, 1967, 1972) and the aforementioned research demonstrating that individuals' self-concepts often expand to include psychologically close others, we suggest that when observing a behavior carried out by a merged other, the attributes one infers from that person's behavior should carry over to inferences about one's own attributes—almost as if one had observed oneself performing that behavior. This change in self-perception should drive one to behave consistently with these new attributes, often leading one to behave in line with the behavior he or she witnessed the other performing. Although such

instances of vicarious self-perception processes may occur in discrete, isolated situations, the spyglass self may also play a central role in the long-term development (and constant redevelopment) of the self-concept—and it may even be a pivotal process by which individuals develop a self-concept in the first place.

Figure 1 illustrates the central processes by which vicarious self-perception processes are theorized to occur and to drive behavior. In the first step of the model, after observing another person engage in a particular behavior, the observer infers the cause of the behavior on the basis of the perceived level of situational constraints imposed on the actor at the time (Bem, 1967; Jones & Davis, 1965; Kelley, 1967, 1971, 1973; for a review, see Gilbert, 1998). If the observer perceives the action to have occurred in the absence of an external controlling force, the observer is likely to make a dispositional inference regarding the behavior; that is, he or she is likely to infer that the behavior was caused by the actor's values, attitudes, or attributes—an internal (dispositional) attribution (e.g., Kelley, 1973). On the other hand, if the action is perceived to be due to an external controlling force, the observer is less likely to infer that the behavior was caused by internal features of the actor but rather is likely to infer that the behavior was caused by the features of the actor's environment—an external (situational) attribution (e.g., Kelley, 1973). Thus, to return to our first scenario, if the student you observed your colleague helping was just an everyday, typical student, you might make the dispositional inference that your colleague is a

sensitive and self-sacrificing person. In contrast, if you recognized that student as the daughter of the president of the university, you are less likely to make a dispositional inference about your colleague, as the student's relationship to a person in a position of power is likely to be considered an external social force compelling your colleague to acquiesce to the request for help.

The second step of the model details the vicarious self-perception processes that occur as a result of the observer's internal or external attributions for the actor's behavior. If the observer makes an external attribution for the behavior, no self-perception changes are theorized to occur, regardless of perceived shared identity with the actor. However, if the observer makes an internal attribution for the behavior, the observer is theorized to undergo changes in self-perception relevant to the inferred dispositional attributions to the extent that the observer perceives a shared or merged identity with the actor. If the observer perceives no shared or merged identity with the actor, self-perception changes in the observer are unlikely or less likely to occur. Thus, in that first scenario, if the colleague you had observed engaging in the self-sacrificing behavior was not in fact someone with whom you felt a shared identity, you would be unlikely to infer any attributes about yourself on the basis of his behavior, regardless of the extent to which your attributions of his behavior were dispositional or situational. However, assuming you felt a sense of shared identity with your colleague, you would likely incorporate the attributes you inferred from his behavior into your own self-concept. If you

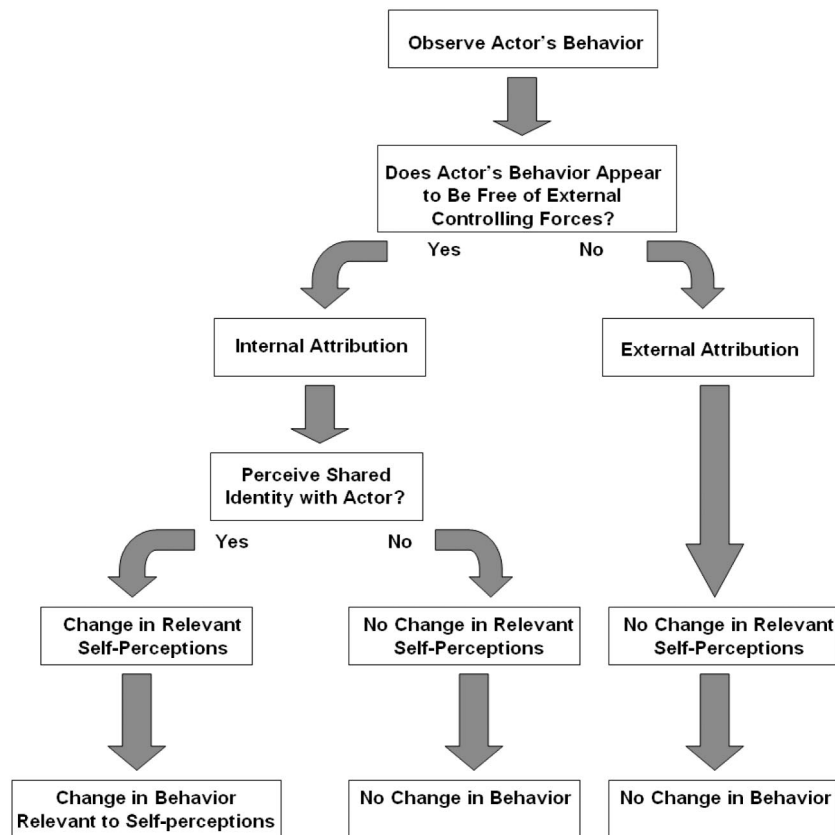


Figure 1. Model of vicarious self-perception processes.

made an external attribution for his behavior, your self-perceptions would be unlikely to change; in contrast, if you made an internal attribution for his behavior, your inferences that he is a self-sacrificing person would likely be incorporated into your own self-concept.

In the final step, those whose self-perceptions are theorized to change as a result of observing the actor's behavior should come to behave in ways that are relevant to these newly changed self-perceptions. In most (but not all) cases, these behaviors should be in line with the originally observed behavior. The vicarious self-perception account stands apart from a social learning account (Bandura, 1977) in that it specifically predicts that changes in a close other's behaviors are driven by changes in one's self-perception as a result of observing the close other's behaviors. In contrast, the social learning account focuses on the rewards (or punishments) perceived to be associated with the behavior itself rather than the attributes one infers about the actor performing that particular behavior. Therefore, it makes no such prediction regarding changes in self-perception.

Overview of the Present Research

We conducted four studies designed to test various aspects of the proposed spyglass self model. Study 1 was designed to determine whether a procedure resulting in perceptions of merged identities would lead observers to come to see themselves as possessing the attributes inferred from an actor's prosocial behavior that occurs in the absence of external controlling forces. In Study 2, using a different procedure to induce perceptions of merged identities, we examined how changes in self-perception steer observers of prosocial behavior toward conduct that is in line with the originally observed prosocial behavior. Study 3 examines the aspect of the model that details the differential impact of internal or external attributions made about another's prosocial behavior on the observer's own self-perceptions and behavior. Finally, in Study 4, we demonstrate how observing a merged other's behaviors in a very different domain—knowledge—may lead observers to perform behaviors that are the opposite of the originally observed behavior as a result of changes in relevant self-perceptions.

Study 1

Study 1 was designed to test the supposition that when people feel a sense of merged identity with another individual, they will come to see themselves as possessing the attributes demonstrated in that other individual's behavior. As noted earlier, Cialdini and colleagues (1997) suggested that the experience of perceived shared identity could come about as a result of perspective-taking. Thus, in Study 1, as a first test of vicarious self-perception processes, we used perspective-taking instructions to induce a sense of shared identity. Participants read a transcript of an interview in which the interviewee describes how he or she went out of his or her way to help a stranger in need. Half of the participants were given perspective-taking instructions before reading the transcript, whereas the other half were given no special instructions. Because the focus of Study 1 was on examining whether observers would come to incorporate attributes demonstrated in the actor's behavior into their own self-concepts, we made it clear that the reason for

the interviewee's helpful behavior was dispositional rather than situational in nature.

We expected that those who were instructed to take the perspective of the interviewee would come to see themselves as possessing the attributes demonstrated by the behavior of the interviewee to a greater extent than would those not given such instructions. The perspective-taking literature to date has demonstrated that perspective-taking causes perspective-takers to include mental representations of themselves in evaluations of a target or the target's group, leading perspective-takers to evaluate the target or target's group more in line with the perspective-takers' own perceived attributes (e.g., Davis et al., 1996; Galinsky & Moskowitz, 2000). Results consistent with our hypothesis would not only be supportive of vicarious self-perception processes but would constitute evidence that the converse is also true. That is, perspective-taking should also lead perspective-takers to include mental representations of the target or target's group in their evaluations of themselves, which should lead perspective-takers to evaluate themselves more in line with the perceived attributes of the target or target's group.

Method

Participants. Participants were 135 undergraduates (66 men and 69 women) who were recruited from an introductory psychology course as partial fulfillment of course requirements. As in all of the studies, participants came to the lab in groups of 2 to 6 and were seated at private computers that were shielded from others by partitions.

Design and procedure. Participants were told that the researchers were interested in people's perceptions of different kinds of interviews. They were informed that they would be reading a transcript of one randomly chosen interview that had ostensibly taken place during the previous semester. Prior to reading the interview, half of the participants were asked to take the perspective of the person being interviewed. We used the following instructions, adopted from studies demonstrating perspective-taking instructions' ability to increase perceived self-other overlap (e.g., Davis et al., 1996): "While you read the transcript of the interview, try to take the perspective of the person being interviewed. That is, try to imagine yourself in his or her shoes, and concentrate on trying to imagine what the person being interviewed is thinking and how he or she is feeling." The other half of the participants were given no instructions prior to reading the transcript.

The transcript of the interview depicted a research assistant asking the purported interviewee, who was the same sex as the participant, about several issues, to which the interviewee responded with generic answers. In the last question, the interviewee was asked to describe the last interaction that he or she had with a stranger. Participants read that on the way to the study, the interviewee saw someone who appeared in need of help to find the main office in the psychology building. The interviewee stated that although she (or he) was afraid she was going to be late for the study, she walked this person to the main office. The interviewee's answer described only her or his behavioral response to the situation; the interviewee made no explicit references to the actual relevant attributes or attitudes.

After participants finished reading the transcript, they were asked a series of distractor questions about how they perceived various aspects of the interview. Participants were then informed that the researchers were also interested in learning more about the participants' personalities. Within another series of distractor questions were items that inquired about the participants' views of their own character attributes. The focal character attributes, which were embedded in a larger number of attributes, were *caring*, *sympathetic*, *giving*, *generous*, and *helpful*. The words *caring* and *sympathetic* were chosen to represent a more disposition-oriented dimension of helpfulness (the tendency to be sensitive to others; Cronbach's $\alpha =$

.75), whereas the words *giving* and *generous* were chosen to represent a more behavior-oriented dimension of helpfulness (the tendency to be self-sacrificing for others; Cronbach's $\alpha = .88$). Finally, the word *helpful* was chosen as an omnibus term to represent helpfulness in general.¹ These Likert-type questions about perceptions of participants' own attributes were asked in the form of "Compared to the average person, to what extent do you consider yourself a *giving* person?" The responses ranged from 1 (*much less than the average person*) to 11 (*much more than the average person*), with 6 (*about the same as the average person*) as the midpoint.

Results

To examine whether the perspective-taking instructions resulted in changes in self-perception among either of the two factors or the omnibus term, we performed three separate tests. Two of these analysis of variance (ANOVA) tests revealed no effect of perspective-taking instructions on the omnibus term *helpful* or on the sensitivity to others composite ($F_s < 1$). However, the ANOVA on the self-sacrificing composite revealed that participants who were asked to take the perspective of the interviewee when reading the transcript considered themselves to be significantly more self-sacrificing than did participants who were not given such instructions ($M = 8.10$ vs. $M = 7.49$), $F(1, 133) = 4.05$, $p < .05$, $\eta^2 = .03$.

Discussion

Study 1 demonstrated that when participants were given perspective-taking instructions designed to facilitate a merging of identities between the participants and the interviewee, participants came to perceive themselves as possessing attributes related to the interviewee's behavior—almost as if they had been observing themselves performing that behavior. Of interest, participants' self-perceptions changed only on the dimension of helpfulness related to the observed behavior (self-sacrificing action rather than a general sensitivity to others).

In addition to demonstrating vicarious self-perception processes, the results of Study 1 are noteworthy for another reason. As mentioned earlier, much of the perspective-taking literature to date has shown that one who takes the perspective of a target comes to see aspects of one's own identity in the identity of the target (or the target's group); these studies typically measure participants' perceptions of the target's (or the target group's) attributes rather than their perceptions of their own attributes after the perspective-taking manipulation takes place (e.g., Davis et al., 1996; Galinsky & Moskowitz, 2000). However, the results of Study 1, which showed that perspective-takers came to believe they possessed the attributes demonstrated by the target individual's behavior, are consistent with the more general assertion that the merging of identities that results from perspective-taking operates in both directions.

Study 2

Cialdini and colleagues (1997) noted that in addition to perspective-taking, the symbolic merging of the self and other is also especially likely to occur in situations in which a target individual is exposed to attachment-related cues that signal close bonds and relatively high genetic commonality, such as similarity, kinship, friendship, and familiarity (e.g., Cunningham, 1986;

Krebs, 1991; Park & Schaller, 2005; Wells, 1987). One purpose of Study 2 was to conceptually replicate the findings from Study 1 using a different manipulation to induce a sense of shared identity with a target, one that used such attachment-related cues. Thus, if an observer feels psychologically close to an actor (in a way not unlike the person feels toward family members, close friends, or relationship partners), we reasoned that observing the behaviors of the actor would be akin to observing one's own behaviors. Study 2 was also designed to extend the findings from Study 1 by examining the implications of vicarious self-perception processes for relevant behavior.

Participants in Study 2 were once again asked to evaluate an interview in which the interviewee offered help. Before the interview began, half the participants were given information that their brainwaves and the interviewee's brainwaves were highly overlapping, reflecting similarities usually associated with individuals sharing a close relationship—a manipulation that was intended to create a sense of merged identity with the interviewee (see Maner et al., 2002)—whereas the other half were given no information about brainwave overlap. At the end of the study, participants were themselves given an opportunity to offer help.

We had three major predictions. First, we expected that participants who believed they and the interviewee shared highly overlapping brainwave patterns would be more willing to help the researchers at the end of the study than would participants who received no such brainwave feedback. Second, we expected that participants who received the feedback regarding the similarity of brainwave patterns would demonstrate self-perception changes in relevant attributes relative to participants in the other condition. Finally, we expected those changes in self-perception to mediate the predicted increases in the helping behavior. Such findings would suggest that when an observer behaves similarly to the behaviors of an actor with whom she or he feels a shared identity, the observer's behavior may be driven by self-perception changes relevant to the attributes inferred from the actor's original behavior.

Method

Participants. Participants were 33 (14 men and 19 women) introductory psychology students.

Design and procedure. Much of the design of Study 2 was based on the cover story and methods used by Maner et al. (2002) to create a sense of merged identity between the participants and another individual. Participants were told that prior to listening to the interview, they would have their brain activity patterns measured via electroencephalography (EEG) to assess brainwave similarities between themselves and the person being interviewed. Participants then viewed a series of images and words on the computer screen while their brain activity was ostensibly being measured

¹ To further investigate the dimensions of our focal attributes, we determined the factor structure for these items using Cattell's (1966) scree test method and the factor loadings using a principal axis factor analysis with a promax rotation. Consistent with our attempt to choose focal attributes that reflect either disposition- or behavior-oriented factors, two factors emerged: the tendency to be sensitive to others (*caring, sympathetic*) and the tendency to be self-sacrificing (*giving, generous*). The term *helpful* loaded nearly equally onto both factors, reinforcing its position as an omnibus representation of both factors. These two factors also remained when the term *helpful* was excluded from a second factor analysis.

via an electroencephalographic recording device placed on participants' foreheads. The words and images were chosen so as not to be related to helping behaviors, ranging from sports-related words to images of Noah J. Goldstein's cats. After these words and images appeared on the screen for 5 min, the computer indicated that it was analyzing the brainwaves, which was followed by an animated image of brainwaves moving rapidly across the screen. After the electroencephalographic procedure was complete, all participants were told that they would be listening to the interview of one randomly selected participant out of a large pool of participants who were purportedly interviewed the previous semester. All participants were informed that the computer had randomly selected the interview of Participant 49, who was the same sex as the current participant.

Whereas participants in the no information condition proceeded to the interview, participants in the merged identity condition saw a brainwave similarity report created by the computer, which contained a graphical representation of the participants' and the interviewee's brainwave patterns. The line representing the participants' brainwave pattern overlapped substantially with the line representing the interviewee's brainwave pattern. The report also featured a brainwave similarity index as well as an analysis of that index. The computer informed the participants that their index number was 93 on a scale in which 100 represents the highest degree of brainwave similarity between two people. The analysis section informed them that it is rare for two individuals to fall within the range of 90 to 100. It further informed them that siblings who are similar in age, identical twins, and close friends often share a brainwave similarity index in that range. To bolster the manipulation, a separate screen then appeared asking participants to notify the experimenter at the end of the session about the uncommonly high similarity in brainwave patterns so that the experimenter could check to ensure that the interviewee was not a close friend or sibling of the participant.

Participants then heard a short interview in which a research assistant interviewed a purported undergraduate interviewee on the topic of living on versus off campus. The interviewee stated fairly generic answers to the interviewer's questions. After the last interview question had been asked, the research assistant explained to the interviewee that the interviewee's participation in the study was now complete. Just as the research assistant was about to hit the stop button on the recording, however, the interviewee interrupted him with a question about when he or she would be credited for participation in the study. Having forgotten to press stop because of the interruption, the research assistant went on to say that the principal investigator of the study always asks his participants whether they would be willing to do something for a cause relevant to his other line of research, which is homelessness. The research assistant then asked if the interviewee would be willing to stay an extra 10 min to look at materials that they planned to send out next semester about the local homeless population. The interviewee told the research assistant that she or he would indeed look over the materials. Shortly after the research assistant provided the additional materials, there was silence on the audio recording for a brief period of time, followed by the research assistant's realization that he had forgotten to hit the stop button earlier. After the interviewer supposedly hit the stop button at that point, the audio ended.

All participants were then asked a series of questions about their perceptions of the interview style used by the research assistant. To reduce suspicion, the computer then informed the participants that the researchers did not have time to individually review each recording beforehand; participants were asked whether the volume was too high or low, whether there was too much background noise, and whether the interview recording was started and stopped at the appropriate times. Following this, participants answered questions about their own personalities that were similar to those in Study 1. The focal character attributes, which were embedded in a larger number of attributes, were designed to reflect the omnibus term for helpfulness (*helpful*), sensitivity to others (*caring, sympathetic*; Cronbach's $\alpha = .72$), self-sacrificing (*giving, charitable*; Cronbach's $\alpha = .79$), and complying with requests (*compliant*). This last term was added to reflect

the possibility that participants would infer that the interviewee agreed to the request for help not because he or she was sensitive to others or self-sacrificing but instead because the interviewee was simply compliant in general—that is, the type of person who meekly agrees to requests, regardless of the situation. On the other hand, we reasoned that participants might just as well infer the opposite: In attributing the interviewee's behavior to the interviewee's sensitive or self-sacrificing nature, participants might come to see the interviewee, and by extension themselves, as less compliant.

Next, the computer informed participants that the researchers were in need of additional participants for a completely different survey that they were running before the semester ended in several days. Participants were told that the current study tends to end early and were asked if they would be willing to stay the full time to work on this additional survey.

Participants were then asked some manipulation check items surveying the extent to which participants felt they shared similar brainwaves with the interviewee and the extent to which they perceived self–other overlap between themselves and the interviewee. Participants' perceived level of self–other overlap with the interviewee was measured by asking them the extent to which (a) they felt a shared identity with the interviewee, (b) they were similar to the interviewee, and (c) they shared similar attributes with the interviewee (Cronbach's $\alpha = .94$). The response scales for these items ranged from 1 (*not at all*) to 11 (*extremely*).

Results

Manipulation checks. We included several manipulation check items to ensure that the brainwave feedback served as an effective manipulation of merged identity. First, to examine whether participants in the merged identity condition generally understood the brainwave feedback, we conducted an ANOVA that revealed that participants in the merged identity condition did perceive their brainwave patterns to be significantly more similar to the interviewee's brainwave patterns ($M = 8.13$) than did participants in the no information condition ($M = 5.28$), $F(1, 31) = 7.79, p < .01, \eta^2 = .20$. A second ANOVA revealed that merged identity participants perceived significantly greater self–other overlap with the interviewee than did no information participants ($M = 7.20$ vs. $M = 4.87$), $F(1, 31) = 7.67, p < .01, \eta^2 = .20$.

Helping measure. Participants' helping was measured with a dichotomous *yes* or *no* answer to the request to spend additional time working on the unrelated survey. A chi-square test revealed that participants in the merged identity condition were more likely to help than were participants in the no information condition (93.3% vs. 61.1%), $\chi^2(1, N = 33) = 4.63, p = .03, \Phi = .38$.

Self-perceptions. We conducted several analyses to test differences in self-perception as a result of the merged identity manipulation. First, an ANOVA revealed no effect of the merged identity manipulation on the omnibus term *helpful*, $F(1, 31) = 2.20, ns$. However, an ANOVA revealed that participants in the merged identity condition perceived that they were sensitive to others to a greater extent than did the participants in the no information condition ($M = 9.13$ vs. $M = 8.14$), $F(1, 31) = 4.39, p = .04, \eta^2 = .12$. Another ANOVA revealed that participants in the merged identity condition also considered themselves to be more self-sacrificing than did participants in the no information condition ($M = 7.93$ vs. $M = 6.72$), $F(1, 31) = 4.80, p = .04, \eta^2 = .13$. A final ANOVA revealed a nonsignificant trend for participants in the merged identity condition to consider themselves less compliant than their no information counterparts ($M = 4.53$ vs. $M = 5.56$), $F(1, 31) = 2.88, p = .10, \eta^2 = .09$.

Mediational analyses. The results to this point appear to support our hypotheses. However, we also sought support for our prediction that the relationship between perceived merged identity and helping behavior was mediated by changes in relevant self-perceptions. Kenny, Kashy, and Bolger (1998) suggested that full mediation is demonstrated when each of the following is found: (a) a significant relationship between the independent variable and the dependent variable, (b) a significant relationship between the independent variable and the mediator variable, (c) a significant relationship between the mediator variable and the dependent variable when the independent variable is controlled for, and (d) a previously significant relationship between the independent variable and the dependent variable that is no longer significant when the mediator variable is controlled for. Requirements c and d are tested by including both the independent variable and dependent variable(s) in the same regression equation as predictors of the dependent variable. Although mediation is commonly tested through a series of linear regression analyses (e.g., Baron & Kenny, 1986), we used logistic regression in several instances because our dependent variable was dichotomous (MacKinnon & Dwyer, 1993).

On the basis of the analyses we had already conducted, requirements a and b of the mediational analysis had already been fulfilled—that is, the independent variable was demonstrated to be significantly related to the dependent variable (merged identity participants were more likely to agree to help the researchers than were no information participants), and at least two of the factors (sensitivity to others and self-sacrificing for others) were significantly related to the independent variable. In addition, although the third variable (participants' self-perception of themselves as compliant) was not statistically significant, the small sample size and its proximity to statistical significance indicated that this attribute could be a potential candidate as a mediator.

To test requirements c and d, we conducted a logistic regression analysis in which we included the independent variable (merged identity information condition) as well as the three attributes

(sensitive to others, self-sacrificing for others, being compliant) as predictors of the dependent measure (helping behavior). The analysis revealed that the parameter estimate for both the self-sacrificing composite and the term *compliant* were significant: $\beta = 0.69$, odds ratio = 1.99, Wald statistic(1) = 3.76, $p = .05$, and $\beta = -0.98$, odds ratio = 0.38, Wald statistic(1) = 4.27, $p = .04$, respectively. The parameter estimate for the sensitivity to others composite was not significant: $\beta = -0.09$, odds ratio = 0.91, Wald statistic(1) = 0.04, *ns*. In addition, evidence for full mediation in this step is demonstrated if the parameter estimate of the independent variable is no longer significant. Indeed, the analysis revealed that the parameter estimate for the independent variable was in fact no longer significant: $\beta = 1.38$, odds ratio = 3.98, Wald statistic(1) = 1.05, $p = .31$ (see Figure 2).

Discussion

The results of Study 2 supported all three of the hypotheses. First, participants who were informed that their brainwave patterns overlapped considerably—a marker, they were told, for genetic similarity and relationship closeness—perceived themselves to be more self-sacrificing, more sensitive to others, and somewhat less compliant than did participants who received no brainwave feedback. Second, these participants were more likely to agree to help the researchers by completing additional surveys. We also found evidence for our third hypothesis: The increase in helping behavior was fully mediated by changes in relevant self-perceptions.

One additional noteworthy finding was that merged identity participants tended to consider themselves to be less compliant than did no information participants, even though participants had earlier observed the interviewee complying with a request. The key to understanding this result may lie in the differentiation between dispositional general compliance and specific compliance for other reasons, such as sensitivity to others or a self-sacrificing nature. With their potentially negative reactions to the characterization of being merely compliant, participants may have been asserting that

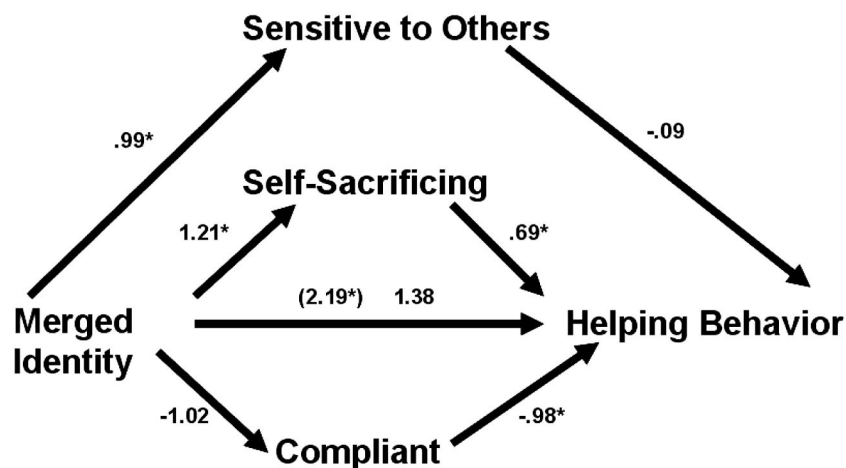


Figure 2. Participants' relevant self-perceptions as mediators of changes in helping behavior (Study 2). The coefficient in parentheses (2.19) represents the direct effect of the merged identity manipulation on helping behavior, whereas the adjacent coefficient (1.38) was found when the self-perceptions were statistically controlled. Coefficients followed by an asterisk are statistically significant ($p < .05$).

the interviewee's decision was not based on his or her compliant nature but rather on his or her sensitive and self-sacrificing nature.

These results are consistent with the spyglass self model: When participants observed a behavior carried out by an individual with whom they perceived a merged identity, the attributes inferred from that other's behavior carried over to inferences about the participants' own attributes—almost as if the participants had observed themselves performing that behavior. Moreover, the results of the mediational analysis suggest that these changes in participants' self-perceptions enhanced their propensity to engage in behavior helpful to the researchers.

Study 3

We conducted Study 3 with three main purposes in mind. First, we sought to investigate a central postulate of self-perception theory in the context of vicarious self-perception. According to Bem (1967, 1972; see also Burger, 1999, and Lepper, 1973), people are likely to infer their attributes, attitudes, and inner states from observations of their own behaviors to the extent that they recognize that those behaviors were not controlled by external factors such as payments or punishments. One major purpose of Study 3 was to determine whether this self-perception postulate transfers to the domain of vicarious self-perception as well. As illustrated in the model presented in Figure 1, we expected individuals to infer their own attributes on the basis of the behavior of a psychologically merged other only when there was no clear externally controlling reason for that person's behavior (e.g., Gilbert, 1998; Kelley, 1973). Thus, in Study 3, some participants read the transcript of an interview in which a psychologically merged other went out of his or her way to help a stranger in need, whereas other participants read a story in which a psychologically merged other helped a stranger in need who offered him or her a reward to engage in the helpful behavior. Also, half of the participants received brainwave feedback indicating a high degree of identity overlap with the interviewee, whereas the other half received no brainwave feedback. We expected participants to undergo a self-perception change (and subsequently demonstrate an increased likelihood of choosing to help) only in the condition in which participants felt a shared identity with the interviewee and the interviewee's helping behavior appeared to be due to dispositional rather than situational factors.

A second purpose of Study 3 was to replicate the conceptual findings of Study 2, using a helping measure that minimized the connection between the observed helping behavior and the potential participant helping behavior. Although we had attempted to do this in Study 2 (the interviewee agreed to help the homeless and our participants were asked to help the researcher), one could argue that the interviewee's behavior helped both the homeless as well as the researcher. Minimizing the connection between the observed behavior and the potential participant behavior also has the capacity to show that vicarious self-perception processes and the behavioral outcomes that follow these processes are not narrowly tailored to a single specific context or type of helping (in this case, helping researchers after observing another help researchers).

Up to this point, we have explored various aspects of the proposed model by examining participants' self-perceptions and their related behavioral responses after they observed another individual engage in prosocial behavior. In the previous two stud-

ies, a key assumption was that the differences found in participants' self-perceptions as a function of the merged identity manipulation reflected differential levels of internalization for the very same trait attributions of the actor. However, because observers sometimes make different attributions to an actor's behavior depending on the psychological closeness between the observer and actor (e.g., Aron et al., 2004; Hewstone, 1990; Sande, Goethals, Ferrari, & Worth, 1989), a third purpose of Study 3 was to examine participants' perceptions of the interviewee more directly.

In summary, we expected participants to make an internal attribution for the interviewee's helping behavior when the interviewee received no external reward for helping. In contrast, we expected participants to make an external attribution for the interviewee's helping behavior when the interviewee performed the helpful behavior in exchange for an external reward in the form of money. Thus, we expected that internal attribution participants would perceive the interviewee to possess relevant attributes to a greater extent than would external attribution participants. However, we expected participants to internalize these attributes, almost as if they had performed the helping behaviors themselves, only when participants felt a sense of merged identity with the interviewee—that is, when they were given feedback indicating a high degree of brainwave overlap. Moreover, we predicted that these changes in relevant self-perceived attributes would mediate the increase in participants' own helping behavior toward the researchers.

Method

Participants. Participants were 179 (68 men and 111 women) introductory psychology students.

Design and procedure. The study used a 2 (merged identity information: merged identity vs. no information) \times 2 (attribution: internal vs. external) between-subjects design. As in Study 2, half of the participants received brainwave pattern feedback indicating that their brainwave patterns were highly similar to those of the interviewee, whereas the other half received no brainwave feedback. In addition, all participants read a transcript of the interview that was similar in most respects to the interview transcript used in Study 1. In the present study, in the last question of the interview, the research assistant interviewer asked the interviewee to describe the last interaction that he or she had with a stranger. All participants learned that on the way to the study, the interviewee saw someone who appeared in need of help to find the main office of the psychology building. Participants in the external attribution condition learned that the interviewee helped the person in need after being offered an external (monetary) reward, whereas participants in the internal attribution condition learned that the interviewee helped the person without being offered an external reward.

Shortly after reading and evaluating the interview, participants rated their own attributes and filled out a number of distractor items. The focal attributes for Study 3 were *caring*, *sympathetic*, *compliant*, *charitable*, *giving*, and *generous*. These attributes were chosen to compose sensitivity to others (*caring*, *sympathetic*; Cronbach's $\alpha = .79$) and self-sacrificing for others (*charitable*, *giving*, *generous*; Cronbach's $\alpha = .88$). Participants were then asked if they would be willing to help the researchers collect additional data for other studies. Finally, participants were asked to rate their impressions of the interviewee on a number of attributes, including the focal attributes. These items had the same format as the attribute items to which participants had responded earlier.

Results

Manipulation check. We first examined whether participants in the internal attribution condition perceived the interviewee as

Table 1
Helping Attributions and Helping in Study 3

Condition	Internal attribution						External attribution					
	Self-ratings			Interviewee ratings			Self-ratings			Interviewee ratings		
	Self-sacrificing	Sensitivity	Compliant	Self-sacrificing	Sensitivity	Compliant	Self-sacrificing	Sensitivity	Compliant	Self-sacrificing	Sensitivity	Compliant
		% helping			% helping			% helping			% helping	
Merged identity	7.83	8.26	6.88	7.88	8.52	6.83	7.03	8.00	6.86	6.50	7.06	6.51
<i>M</i>	1.74	1.58	1.88	1.68	1.64	1.68	1.49	1.70	1.82	1.36	1.53	1.35
<i>SD</i>												
No information	7.25	7.89	6.36	7.71	8.03	6.42	7.11	8.30	6.83	6.77	7.08	6.51
<i>M</i>	1.86	2.02	1.77	1.49	1.81	1.58	1.70	1.61	1.86	1.63	1.50	1.57
<i>SD</i>												

possessing helping-relevant attributes to a greater degree than those in the external attribution condition by conducting three separate two-way ANOVAs. These ANOVAs revealed a main effect of attribution condition in the predicted direction on the extent to which participants perceived the interviewee to be self-sacrificing, $F(1, 175) = 24.95, p < .001, \eta^2 = .13$, and sensitive to others, $F(1, 175) = 24.45, p < .001, \eta^2 = .12$, but not on the extent to which they saw the interviewee as compliant ($F < 1$). There were no main effects of merged identity condition or interactions on any of the three attribute types ($F_s < 1.04$), suggesting that participants' attributions of the interviewee's behavior did not differ as a function of perceived psychological closeness (see Table 1).

Helping measure. Consistent with predictions, a chi-square test revealed that participants in the merged identity-internal attribution condition were more likely to help than were those in the other three conditions (59.5% vs. a combined 33.6%), $\chi^2(1, N = 179) = 9.04, p < .01, \Phi = .23$ (see Table 1). In addition, a more specific chi-square test comparison revealed that consistent with predictions, merged identity-internal attribution participants were significantly more likely to help than were merged identity-external attribution participants (59.5% vs. 37.2%), $\chi^2(1, N = 85) = 4.24, p = .04, \Phi = .22$ (see Table 1).

Self-perceptions. Three separate a priori contrasts were conducted to determine whether participants in the merged identity-internal attribution condition differentially considered themselves to be sensitive to others, self-sacrificing, or compliant compared with those in the other three conditions. One contrast revealed that participants in the merged identity-internal attribution condition reported being significantly more self-sacrificing than did participants in the other three conditions, $F(1, 178) = 5.34, p = .02, \eta^2 = .03$ (see Table 1), whereas the other two contrasts revealed no difference between the merged identity-internal attribution condition and the other three conditions ($F_s < 1$). Three additional a priori contrasts were conducted to determine whether participants' relevant self-perceptions differed between those in the merged identity-internal attribution condition and the merged identity-external attribution condition. One contrast revealed that participants in the merged identity-internal attribution condition reported being significantly more self-sacrificing than did participants in the merged identity-external attribution condition, $F(1, 178) = 4.59, p = .03, \eta^2 = .03$, whereas the other two contrasts once again revealed no difference between those conditions ($F_s < 1$).

Taken together, consistent with predictions, the manipulation check data and self-perception change data suggest that regardless of merged identity condition, participants attribute more helping-relevant attributes to the interviewee in the internal attribution condition. However, they ascribed those traits to themselves only when they were given information to make them feel a sense of merged identity with the interviewee.

Mediational analyses. The results of Study 3 to this point appear to support our hypotheses. Participants in the merged identity-internal attribution condition saw themselves as significantly more self-sacrificing than did participants in the merged identity-external attribution condition, and they were also more likely to have agreed to help the researchers. However, we also sought support for our hypothesis that the relationship between the type of attribution and the helping behavior for merged identity



Figure 3. Merged identity participants' relevant self-perceptions as mediators of changes in helping behavior (Study 3). The coefficient in parentheses (.91) represents the direct effect of the attribution manipulation on helping behavior, whereas the adjacent coefficient (.69) was found when the self-perceptions were statistically controlled. Coefficients followed by an asterisk are statistically significant ($p < .05$).

participants was mediated by changes in relevant self-perceptions.² Thus, we performed a mediational analysis.

On the basis of the analyses we had already conducted, several steps of mediation had already been fulfilled—that is, the independent variable was demonstrated to be significantly related to the dependent variable (merged identity–internal attribution participants were more likely to agree to help the researchers than were merged identity–external attribution participants), and at least one of the factors (self-sacrificing) was significantly related to the independent variable.

To test the final two requirements for full mediation, we conducted a logistic regression analysis in which we included the attribution type (the independent variable) and the self-sacrificing composite (the proposed mediator) as predictors of the dependent measure (helping behavior).³ The analysis revealed that the parameter estimate for the self-sacrificing composite was significantly related to the dependent variable: $\beta = 0.39$, odds ratio = 1.48, Wald statistic(1) = 6.18, $p = .01$. In addition, evidence for full mediation in this step is demonstrated if the parameter estimate of the independent variable is no longer significant. Indeed, the analysis revealed that the parameter estimate for the independent variable was in fact no longer significant: $\beta = 0.69$, odds ratio = 1.99, Wald statistic(1) = 2.15, $p = .14$ (see Figure 3).

Discussion

Consistent with predictions, we found that merged identity–internal attribution participants came to see themselves as being more self-sacrificing and were more likely to agree to help the researchers in comparison to those in the merged identity–external attribution condition.⁴ Moreover, this change in their self-perception mediated the increased likelihood that participants would agree to help.

Study 3 also demonstrated the relative context independence of vicarious self-perception by showing the predicted effects despite that there was little connection between the details surrounding the original observed behavior (giving directions and guidance to a lost stranger) and the details surrounding the helping dependent measure that we used (aiding the researcher collect additional data). As Freedman and Fraser (1966) demonstrated in their investigation of the foot-in-the-door technique, participants need not see a clear connection between the content of the first request and the second. If changes in self-perceived attributes are driving these increases in prosocial behavior—which they appear to be—then the similarity of the details between the two requests is not of

paramount importance; instead, what is critical is simply that the self-perception changes following the first behavior are relevant to the attributes related to engaging in the second.

Study 4

So far, we have demonstrated that vicarious self-perception processes lead individuals to come to see themselves as possessing the very attributes they infer from observing the behaviors of psychologically merged others. Yet, up to this point, we have investigated this phenomenon in the context of only a single behavioral domain—prosocial behavior. To broaden the scope of the spyglass self model and to ensure that this phenomenon operates across different levels of human experience, we sought to investigate vicarious self-perception processes using a wholly different type of attribute. Moreover, we thought it would be especially informative if we chose a domain in which people might be expected to act incongruently rather than congruently with the observed behavior, as that would surely run counter to a social learning theory modeling account.

One such attribute could be knowledge. According to a vicarious self-perception perspective, if individuals observe a merged other performing behaviors that demonstrate that the other is very knowledgeable, they should come to see themselves as more knowledgeable

² This analysis strategy was chosen because it provided the clearest test of the question of interest: Given a merged identity, what role does the attribution for the observed behavior play in changing the observer's self-perceptions and future behavior? However, we also conducted a mediational analysis that contrasted the effect of the merged identity–internal attribution condition against the effect of the other three conditions, which yielded similar results; the only difference was that the results indicated that the self-sacrificing self-perception partially (rather than fully) mediated the effect of condition on helping behavior.

³ The other two attributes (sensitivity to others, being compliant) were not included in the presented analyses because earlier analyses suggested that the independent variable had no effect on them. However, to be conservative, we also conducted a mediational analysis that included these two attributes, which produced nearly identical results.

⁴ Unlike in Study 2, there were no differences between conditions in the extent to which participants considered themselves to be compliant. Although it is speculative, perhaps the reason for this difference between studies is that giving directions to a stranger (the interviewee's focal behavior in Study 3) is not perceived as a compliance issue in the way that agreeing to help an authority figure (the interviewee's focal behavior in Study 2) is.

than they actually are. Furthermore, we might expect that this inflated sense of knowledge from participants' psychological connection to the other might lead to higher estimates of success (see Hirt, Zillman, Erickson, & Kennedy, 1992) and to overconfidence on tasks in which knowledge is considered to be essential to complete the task. Because an overly high sense of self-efficacy for general knowledge- and analytical-based tasks may lead an individual to perform worse on those tasks than would be the case had their perceptions of self-efficacy been more accurate (e.g., Bandura & Jourden, 1991; Gigerenzer, Hoffrage, & Kleinbolting, 1991; Vancouver, Thompson, Tischner, & Putka, 2002), this overconfidence could lead such individuals to perform incongruently with the originally observed behavior—that is, it could lead observers who perceive a sense of merged identity with the knowledgeable actor to actually perform worse on a knowledge-oriented task, not better.

In Study 4, all participants read the transcript of an interview in which the interviewee described engagement in the types of behaviors that imply that the interviewee is very knowledgeable about a wide range of topics. As in Studies 2 and 3, half of the participants were informed that they and the interviewee shared highly overlapping brainwave patterns often characteristic of kinship or genetic commonality. After reading the interview transcript, participants were asked to go through a large number of multiple-choice trivia questions and try their best to answer them correctly.

Compared with the no information participants, we expected that merged identity participants would come to see themselves as more knowledgeable. Moreover, the increase in self-perceived knowledge that results from vicarious self-perception might lead participants to grow overconfident (i.e., more confident than would be warranted from a consideration of their existing attributes and abilities). This overconfidence, in turn, might lead participants to think less hard about, spend less time on, and consider fewer alternatives to their intuition. If true, vicarious self-perception would lead participants to do the opposite of the behavior they observed, scoring lower on the task than those in the no information condition. Furthermore, the literature on overconfidence suggests that we should expect this pattern to be especially evident on more difficult questions (e.g., Gigerenzer et al., 1991; Lichtenstein & Fischhoff, 1977; Pulford & Colman, 1997). By their nature, difficult items require more time to search one's memory, consider alternatives, and use more sophisticated elimination strategies to arrive at the correct answer. Thus, we expected individuals with overly inflated confidence levels to be particularly error prone on the more difficult questions.

Method

Participants. Participants were 178 (126 men and 52 women) introductory psychology students.

Design and procedure. The design of Study 4 mirrored the design of Studies 2 and 3 in many respects. However, all participants in Study 4 read the same version of the interview transcript, one that was meant to lead participants to make an internal attribution for the relevant attribute (knowledge). Participants were informed by the research assistant at the beginning of the study that they would be taking part in two separate, unrelated studies. The first study included reading the transcript of an interview that took place last semester. The second study was described as a pretest of some materials to be used in a joint collaboration between the marketing department and the psychology department. Participants were not informed of any more details regarding this second study until after the first study was completely finished.

In what participants believed to be the first study, half of the them were told that their brainwave patterns closely matched the brainwave patterns of the interviewee to an extent often indicative of genetic commonality (merged identity condition), whereas the other half were not given any brainwave feedback (no information condition). The transcript of the interview revealed that the interviewee engaged in activities such as watching the quiz show *Jeopardy!* on television and successfully competing on the university quiz bowl team. As in previous studies, shortly after reading and evaluating the interview, participants rated their own attributes embedded in a number of distractor items. The main focal attribute for Study 4 was *knowledgeable*, but we also measured how motivated (*motivated*, *ambitious*; Cronbach's $\alpha = .75$) participants perceived themselves to be. Participants then rated their perceptions of the interviewee on those same attributes and distractor items. The response scales were the same ones used in Study 3.

Next, participants were told that they had completed the first study and that now they would be helping to pretest materials for a study on people's evaluations of board games, which was purported to take place during the next semester. The computer informed them that they were to answer a set of 50 moderate-to-difficult multiple-choice questions. They were then asked to rate how confident they were that they would perform well on the task; responses ranged from 1 (*not at all*) to 9 (*very much*).

Participants then chose answers to 50 multiple-choice trivia questions presented one at a time. Each trivia question (e.g., "Japanese prime minister Keizo Obuchi was a victim of karoshi. What is karoshi?") was accompanied by four answer choices, one of which was correct (e.g., "bribery scandal," "false accusations," "sexual misconduct," or "death by overwork"). The trivia questions spanned an array of different topics, ranging from entertainment (e.g., "Which wrestler starred as Fezzik in *The Princess Bride*?") to science (e.g., "In 1855, I created a burner that produces a steady, smokeless flame. Who am I?"). Because we were interested in how participants might differentially react to more versus less difficult questions, we included a block of 15 difficult questions at the end of the 50-question task. These 15 questions were found in a pilot test to be substantially more difficult than were the remaining moderately difficult questions (28.4% vs. 55.0% correct). After completing the trivia task, participants were once again asked to rate their confidence level.

Finally, participants were asked some manipulation check items surveying the extent to which they perceived self–other overlap with the interviewee. Participants' perceived level of self–other overlap with the interviewee was measured by asking the participants about the extent to which (a) they felt a shared identity with the interviewee, (b) they were similar to the interviewee, and (c) they shared similar attributes with the interviewee (Cronbach's $\alpha = .92$). The response scales for these items ranged from 1 (*not at all*) to 11 (*extremely*).

Results

Manipulation checks. We included several manipulation check items used in Study 2 to ensure that the brainwave feedback served as an effective merged identity manipulation. We conducted an ANOVA on the effect of the merged identity manipulation on perceptions of self–other overlap between the participants and the interviewee. For this test, we used the composite of the three items assessing their perceived shared identity, general similarity, and trait similarity with the interviewee. The test revealed that compared with participants in the no information condition, participants in the merged identity condition perceived greater self–other overlap with the interviewee ($M = 5.24$ vs. $M = 4.62$), $F(1, 176) = 4.42$, $p = .04$, $\eta^2 = .24$.

Perceptions of the interviewee. To examine whether the merged identity manipulation differentially affected participants' perceptions of the interviewee's attributes, we conducted separate ANOVAs on participants' ratings of how knowledgeable and how motivated the

interviewee was perceived to be, both of which demonstrated no differences in participants' perceptions of either ($F_s < 1$).

Self-perceptions. We predicted that participants in the merged identity condition would come to see themselves as being more knowledgeable than would participants in the no information condition. An ANOVA supported this hypothesis ($M = 8.22$ vs. $M = 7.75$), $F(1, 176) = 4.14$, $p < .05$, $\eta^2 = .02$. Another ANOVA revealed that the two groups of participants were not significantly different on self-perceived motivation ($F < 1.11$).

Confidence ratings. To test the extent to which participants' perceptions of their trivia-answering abilities differed as a function of the merged identity manipulation, an ANOVA was conducted on participants' confidence levels before the trivia task. Consistent with predictions, the test showed that merged identity participants were significantly more confident in their ability to do well on the trivia task than were no information participants ($M = 5.94$ vs. $M = 5.36$), $F(1, 176) = 6.80$, $p = .01$, $\eta^2 = .04$. Similarly, an ANOVA revealed that merged identity participants retained their enhanced confidence relative to the no information participants after the task was completed ($M = 5.31$ vs. $M = 4.72$), $F(1, 176) = 4.61$, $p = .03$, $\eta^2 = .03$.

Trivia scores. On the basis of prior evidence (e.g., Gigerenzer et al., 1991; Lichtenstein & Fischhoff, 1977; Pulford & Colman, 1997), we predicted that the potential overconfidence that merged identity participants should experience would have the strongest effect on difficult items, for which participants would likely not immediately recognize the answer and have to decide how much time to think about the alternatives before mentally solidifying their guess and moving on. Consistent with this prediction, although there were no significant differences on the easier set of items ($F_s < 1$), merged identity participants scored significantly lower on the more difficult block of the trivia task than did no information participants ($M = 3.84$ vs. $M = 4.35$), $F(1, 176) = 4.91$, $p = .03$, $\eta^2 = .03$. Thus, in comparison to no information participants, merged identity participants perceived themselves to be more knowledgeable and estimated their trivia-answering abilities to be better, yet merged identity participants actually performed worse than their counterparts on these questions.⁵ We also examined the average amount of time that participants spent on these questions. Consistent with the trivia score data, we found that merged identity participants spent less time per question than did no information participants ($M = 11.17$ s vs. $M = 12.10$ s), a finding that approached conventional levels of statistical significance, $F(1, 176) = 2.82$, $p < .10$, $\eta^2 = .02$.

Given the statistically significant positive correlation between the amount of time participants took to answer each question and the accuracy of the participants' response to each question (Pearson $r = .22$, $p < .01$), it seems likely that participants who felt a sense of merged identity with the interviewee came to see themselves as more knowledgeable and had greater confidence in their own abilities; this overconfidence, in turn, likely led them to spend less time thinking about the answers to the particularly difficult block of questions before moving on with their best guess, ultimately leading to their lower scores.

Discussion

In summary, as a result of vicarious self-perception processes, merged identity participants came to see themselves as more knowl-

edgeable and more confident in their trivia-answering abilities than did no information participants. On the difficult items, they tended to spend less time per question and they scored significantly lower on the task than did their no information counterparts. Consistent with previous research (e.g., Bandura & Jourden, 1991; Stone, 1994; Vancouver et al., 2002), the results suggest that participants who had an artificially inflated sense of confidence tended to contribute fewer mental resources to each difficult question before feeling confident enough in their answer to move on.

General Discussion

The current work investigated a previously unexplored phenomenon, vicarious self-perception, and examined whether this process might account for dyadic behavior matching between individuals who perceive a merged identity. We hypothesized that because there is a blurring of the boundaries between the identities of such others, observing one such other engage in a particular behavior might be akin to observing oneself engage in that behavior. Consistent with this supposition, Study 1 showed that when a merging of identities was facilitated by perspective-taking, people came to believe that they possessed the characteristics inferred from another's behavior to a greater extent than did control participants.

Study 2 demonstrated that one behavioral implication of vicarious self-perception processes is that they can lead to behavior matching between individuals who share a merged identity. As predicted, participants who felt a sense of merged identity with an interviewee who engaged in prosocial behavior came to see themselves as more self-sacrificing, more sensitive to others, and less compliant. Moreover, these self-perception changes mediated the enhanced likelihood that participants would themselves engage in prosocial behavior. The data from Study 2 also point to a previously untested and novel alternative explanation for conformity effects that occur between psychologically close individuals, one that shifts the focus from the behavior to the person engaging in the behavior. That is, whereas much of the extant conformity literature suggests that an observer's private behavioral conformity is a result of the actor's validation for the *behavior* as effective, appropriate, or approved (see Cialdini & Goldstein, 2004), the spyglass self model suggests that behavioral conformity may be, at least to some extent, a direct result of inferences made by the observer about the *person* engaging in the behavior.

In Study 3, we sought to show that a central postulate of self-perception theory—that one is likely to infer one's atti-

⁵ We conducted several mediational analyses to see whether participants' self-perceived level of knowledge or their confidence (or both together) mediated the effect of the merged identity manipulation on trivia score. However, none of these analyses demonstrated evidence of mediation. Given our success with the mediational analyses for Studies 2 and 3, we were somewhat puzzled. However, in retrospect, we realized that one potential reason for this lack of mediation could be that there is a moderator that we had not measured—the participants' actual level of trivia knowledge. We reasoned that merged identity participants' newfound level of confidence after the manipulation should lead them to do worse on the trivia questions only if they in fact were truly not very knowledgeable about trivia. However, for participants who were truly knowledgeable about trivia, this increased confidence might have led these individuals to do better on the trivia task, not worse. Such a possibility, however, is beyond the scope of the current article.

tudes, attributes, and internal states from one's behaviors only to the extent that one recognizes that the behavior was not due to external controlling forces—transfers to vicarious self-perception processes as well. The results of Study 3 confirmed this hypothesis: Observers of a merged other's prosocial behavior were more likely to believe they possessed the behavior-relevant attributes when there was no clear external attribution for that behavior and were more likely to engage in prosocial behavior themselves, an effect that was once again mediated by changes in relevant self-perceptions. The results of Study 3 also indicate that the phenomenon operates outside the boundaries of direct behavioral conformity, demonstrating the relative context independence of the spyglass self model by showing the predicted effects despite that there was little connection between the details of the original observed behavior and the details of the behavioral dependent measure that we used.

Finally, we also sought to demonstrate that the spyglass self model generalizes to attributes and observed behaviors beyond those related to prosocial behavior. Furthermore, we chose a domain that would deviate from the findings in Studies 1–3 by potentially leading participants to behave incongruently with the behaviors they observed the merged other performing. We found this to be the case, demonstrating that there are certain situations in which vicarious self-perception processes can produce behavioral outcomes that are opposite of the initially observed behaviors. In Study 4, when merged identity participants took on an inflated sense of their own knowledge, the resultant overconfidence appears to have led to lower rather than higher scores on the difficult questions of a knowledge test.

Our data not only support the existence of vicarious self-perception processes but also shed light on some of the more dimly lit aspects of the processes by which the self and other are merged. First, Study 1 yielded evidence that suggests that the merging of identities that perspective-takers undergo is bidirectional. Whereas previous research has demonstrated that perspective-takers see more of their own attributes in their targets, the data from Study 1 demonstrate that the converse is also true—perspective-takers also see more of the target's attributes in themselves. These data offer further evidence that perspective-takers do not simply possess a separate mental representation of the target that contains components of the self, but rather possess overlapping mental representations that contain components of both the self and other.

Second, the traditional research on the merging of self and other has tended to assume, at least implicitly in the methods used in such studies, that individuals' perceptions of merged others' attributes are stable across time and context. When individuals in these studies are asked to think about the attributes of such others, they are typically asked to do so generally—that is, in a completely context-free environment. Although individuals are likely to have fairly stable impressions of merged others in environments free of context, it is also the case that certain attributes possessed by those others are likely to be more or less salient depending on how the others are observed to behave in response to different circumstances (see Smith et al., 1999). The results of our studies demonstrate the dynamic ways in which individuals' self-views change as a result of observing how merged others behave in response to specific situations they encounter.

Third, the current research goes beyond much of the traditional research on the inclusion of other in self by examining the behav-

ioral outcomes of incorporating mental representations of merged others into mental representations of the self.

A Consideration of Potential Alternative Explanations

Although we believe the evidence for vicarious self-perception processes presented in Studies 1–4 is strong, three potential alternative explanations are worth consideration. Although social learning theory applies to many situations (e.g., Bandura, 1977; Midkiff & Burke, 1991; Rice & Grusec, 1975), we do not believe that the theory, which focuses on actors modeling behaviors rather than demonstrating attributes relevant to those behaviors, can adequately explain our results. Although social learning theory does predict the behavioral changes relevant to the observed behavior (as found in all four studies), nor does it predict that the behavior matching performed by the observer would be driven by these changes in self-perception. Furthermore, social learning theory would certainly not have predicted that people who feel merged with a person who regularly performed tasks indicative of having knowledge would actually perform worse on a knowledge-based task than would those who did not feel close to that person.

A second potential alternative explanation worth consideration is that the results of the study could have come about because of simple associative priming (e.g., Srull & Wyer, 1979). Specifically, one might argue that perhaps the observation of the helping behavior in Studies 1–3 led to spontaneous attribute inferences (e.g., Winter & Uleman, 1984), which, in turn, activated relevant attribute constructs (see Wegner & Bargh, 1998, for a review), which then spurred participants to act in line with these constructs (e.g., Bargh, Chen, & Burrows, 1996). For instance, activating the constructs relevant to the observed prosocial behavior could cause participants to behave more prosocially. However, this potential alternative explanation does not explicitly predict what we found regarding the merged identity manipulation—that participants were more likely to undergo self-perception changes when they felt a merged identity with the interviewee.

There is a third potential alternative explanation that deserves discussion. Norton et al. (2003) demonstrated that individuals could experience cognitive dissonance vicariously through an ingroup member who advocated a position with which he or she was known to have disagreed. Is it possible that cognitive dissonance experienced vicariously through close others could account for the results we obtained in our studies? Because cognitive dissonance—and, likewise, vicarious cognitive dissonance—comes about from a strong inconsistency between one's deeply held beliefs, attitudes, or self-concept and one's actions, we do not believe it adequately explains our data. In each study, our participants observed a merged other engage in behaviors that were very unlikely to be perceived as inconsistent with the actor's core self-concept, beliefs, and values. Specifically, it seems unlikely that our participants perceived the interviewee to be acting in a counterattitudinal manner when he or she was performing helpful behaviors or describing how he or she competes on the university quiz bowl team.

Limitations and Future Directions

Although we believe the evidence for vicarious self-perception is robust, our studies do have several limitations. First, the temporal

boundaries of the phenomenon of vicarious self-perception are still relatively unknown. In all of our studies, the opportunity for participants to engage in behavior similar to the observed behavior took place no more than 20 min after they read the transcript. Studies that have used the foot-in-the-door technique (Freedman & Fraser, 1966), which is generally thought to be successful because of changes in self-perception (for reviews, see Burger, 1999; Cialdini & Goldstein, 2004), have demonstrated that the technique is effective even when the initial request and the later request are separated in time by days or even weeks. To this point, it is unclear whether vicarious self-perception processes engender changes in self-perception that are more than just ephemeral. We suspect that the power of observing oneself actually performing an initial behavior is likely to produce longer term self-perception changes than simply observing a close other engaging in this behavior, partly because performing the behavior is active rather than passive (see Cioffi & Garner, 1996). Nonetheless, we believe that vicarious self-perception processes are likely to operate in longer-term scenarios than the ones we used in these studies.

Similarly, our studies of the spyglass self model to this point have been limited to demonstrating how vicarious self-perception processes occur in discrete, isolated situations. As we noted earlier, we believe that vicarious self-perception may also play a pivotal role in the long-term development (and constant redevelopment) of the self-concept and that it may even be a central process by which individuals develop a self-concept in the first place. Consider, for example, a small child who observes her mother and father acting in a self-sacrificing manner with strangers throughout the course of her childhood—opening doors for others, donating to charities, volunteering for blood drives, leaving generous tips for food servers, and treating others with kindness regardless of class or power differences. Although no one single behavior on the part of her parents is likely to strongly influence the long-term development of her self-concept, the frequent occurrence of such unselfish acts would likely serve to shape and continually reinforce her self-concept as a self-sacrificing person.

An additional limitation of the current investigation is that we examined the phenomenon in question only in the United States, a generally individualistic society. Because individuals in collectivistic cultures may have a greater predisposition to include psychologically merged others in the self-concept (see Markus & Kitayama, 1991), it seems feasible that vicarious self-perception would be, if anything, more likely to occur in collectivistic cultures as compared with individualistic cultures. If this is the case, then it is possible that our results underestimate the effect sizes that one might find in more collectivistic societies, a hypothesis that is open to future empirical verification.

One somewhat unexpected aspect of these data that deserves future consideration concerns the extent to which various attribute types are incorporated into participants' self-concepts and mediate future behaviors. In our studies, the more behavior-oriented attribute type (i.e., self-sacrificing for others) appeared to be more influential in this process than did the more disposition-oriented attribute type (i.e., sensitivity to others). It is not immediately clear to us why this was the case, but there appear to be several possibilities. Is it simply easier to change more concrete, behavior-oriented self-perceptions than more abstract dispositions? Might it be that individuals have more defined self-concepts on dispositional attributes than on more behavioral attributes? Although we do not have any hard data to support our supposition, we believe that the behavioral terms simply provided the

more proximal and better fitting description of the other's *behavior* as it occurred in these studies than did the more dispositional terms. Research that investigates this potential boundary condition is certainly welcome.

It is also worth noting that an implicit assumption throughout this article has been that vicarious self-perception processes occur only if the observer perceives a merged identity with the actor prior to the occurrence of the target behavior. However, it is conceivable that the very behavior itself could elicit such a perception in the observer's eyes when it did not previously exist. For example, if you knew very little about a new colleague but you observed this person donating money to your favorite charity, the match between that action and your current self-views could engender previously nonexistent perceptions of a merged identity between you and the actor, potentially leading you to feel even more self-sacrificing as a result.

Finally, future research should also address the extent to which vicarious self-perception processes are likely to occur when an observer views a close other willingly engaging in behaviors that the actor perceives to be counter to his or her own self-image. In the current investigation, observers incorporated the positively valenced characteristics demonstrated by seemingly merged others, a process that we suspect occurred automatically and outside of our participants' awareness. Although we can only speculate, we suspect that when an observer views a psychologically merged actor behaving in ways that are clearly discordant with the observer's self-image, the observer likely becomes more self-aware and deliberately motivated to act in ways contrary to the behavior and the characteristics inferred from that behavior in order to distance himself or herself from the actor (for similar reasoning in other domains, see Bator & Cialdini, 2006; Cialdini, Wosinska, Dabul, Whetstone-Dion, & Heszen, 1998). Does this mean that the spyglass self operates only in cases of positive behaviors? Not necessarily. Because the more deliberate and thoughtful reaction to observing a psychologically merged other engage in a negative behavior would likely require greater use of cognitive resources than would the more automatic, positively valenced self-perception processes, it is conceivable that under a strong cognitive load, observers may very well incorporate such negative attributes into their own self-concepts.⁶

However, under circumstances that are not particularly cognitively taxing, we suspect that individuals would be unlikely to incorporate the merged other's attributes or attitudes if the behavior the merged other performs is antithetical to the individuals' own perceived attributes, attitudes, or values. To use an extreme example, if you worked at an animal shelter in your spare time, you are unlikely to kick a dog at the shelter after having observed your close colleague kick his own dog earlier in the day. If vicarious self-perception processes take place at all, you might come to perceive yourself as slightly more aggressive, but not

⁶ A separate hypothesis open to validation relates to the general effect of cognitive load on vicarious self-perception processes. In Study 3, we found that participants were able to distinguish between situational and dispositional causes for the prosocial behavior they observed the actor performing. However, because cognitive load increases the likelihood that observers will infer dispositional causes of others' behaviors (Gilbert, Krull, & Pelham, 1988; Gilbert, 1989), cognitively loaded individuals might experience vicarious self-perception processes even in circumstances in which the actor's behavior is constrained by powerful situational factors.

toward the animals that you devote yourself so much to saving. Perhaps your observations and subsequent change in self-perceived aggressiveness would lead you to kick your colleague instead.

References

- Agnew, C. R., Van Lange, P. A. M., Rusbult, C. E., & Langston, C. A. (1998). Cognitive interdependence: Commitment and mental representation of close relationships. *Journal of Personality and Social Psychology, 74*, 939–954.
- Aron, A., & Aron, E. N. (1986). *Love and the expansion of self: Understanding attraction and satisfaction*. Washington, DC: Hemisphere.
- Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of the other in the self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology, 63*, 596–612.
- Aron, A., Aron, A. E., Tudor, M., & Nelson, G. (1991). Close relationships as including other in the self. *Journal of Personality and Social Psychology, 60*, 241–253.
- Aron, A., McLaughlin-Volpe, T., Mashek, D., Lewandowski, G., Wright, S. C., & Aron, E. N. (2004). Including the others in the self. In W. Stroebe & M. Hewstone (Eds.), *European review of social psychology* (pp. 101–132). Chichester, England: Wiley.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A., & Jourden, F. J. (1991). Self-regulatory mechanisms governing the impact of social comparison on complex decision making. *Journal of Personality and Social Psychology, 60*, 941–951.
- Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype priming on action. *Journal of Personality and Social Psychology, 71*, 230–244.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.
- Bator, R. J., & Cialdini, R. B. (2006). *The nature of consistency motivation: Consistency, inconsistency, and anticonsistency in a dissonance paradigm*. Manuscript submitted for publication.
- Bem, D. J. (1967). Self-perception: An alternative interpretation of cognitive dissonance phenomena. *Psychological Review, 74*, 183–200.
- Bem, D. J. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 6, pp. 1–99). New York: Academic Press.
- Brewer, M. B., & Gardner, W. (1996). Who is this “we”? Levels of collective identity and self representations. *Journal of Personality and Social Psychology, 71*, 83–93.
- Burger, J. M. (1999). The foot-in-the-door compliance procedure: A multiple-process analysis and review. *Personality and Social Psychology Review, 3*, 303–325.
- Burger, J. M., & Caldwell, D. F. (2003). The effects of monetary incentives and labeling on the foot-in-the-door effect: Evidence for a self-perception process. *Basic and Applied Social Psychology, 23*, 235–241.
- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research, 1*, 245–276.
- Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: The perception–behavior link and social interaction. *Journal of Personality and Social Psychology, 76*, 893–910.
- Cialdini, R. B., Brown, S. L., Lewis, B. P., Luce, C., & Neuberg, S. L. (1997). Reinterpreting the empathy–altruism relationship: When one into one equals oneness. *Journal of Personality and Social Psychology, 73*, 481–494.
- Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology, 55*, 591–621.
- Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct. *Advances in Experimental Social Psychology, 24*, 201–234.
- Cialdini, R. B., Wosinska, W., Dabul, A. J., Whetstone-Dion, R., & Heszen, I. (1998). When social role salience leads to social role rejection: Modest self-presentation among women and men in two cultures. *Personality and Social Psychology Bulletin, 24*, 473–481.
- Cioffi, D., & Garner, R. (1996). On doing the decision: Effects of active versus passive choice on commitment and self-perception. *Personality and Social Psychology Bulletin, 22*, 133–147.
- Coats, S., Smith, E. R., Claypool, H. M., & Banner, M. J. (2000). Overlapping mental representations of self and in-group: Reaction time evidence and its relationship with explicit measures of group identification. *Journal of Experimental Social Psychology, 36*, 304–315.
- Cooley, C. H. (1902). *Human nature and the social order*. New York: Scribner’s.
- Cunningham, M. R. (1986). Levites and brother’s keepers: A sociobiological perspective on prosocial behavior. *Humboldt Journal of Social Relations, 13*, 35–67.
- Davis, M. H., Conklin, L., Smith, A., & Luce, C. (1996). Effect of perspective taking on the cognitive representation of person: A merging of self and other. *Journal of Personality and Social Psychology, 70*, 713–726.
- Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. *Journal of Abnormal and Social Psychology, 51*, 629–636.
- Dolinski, D. (2000). On inferring one’s beliefs from one’s attempt and consequences for subsequent compliance. *Journal of Personality and Social Psychology, 78*, 260–272.
- Freedman, J. L., & Fraser, S. C. (1966). Compliance without pressure: The foot-in-the-door technique. *Journal of Personality and Social Psychology, 4*, 195–202.
- Galinsky, A. D., & Moskowitz, G. B. (2000). Perspective-taking: Decreasing stereotype expression, stereotype accessibility, and in-group favoritism. *Journal of Personality and Social Psychology, 78*, 708–724.
- Gardner, W. L., Gabriel, S., & Hochschild, L. (2002). When you and I are “we,” you are not threatening: The role of self-expansion in social comparison. *Journal of Personality and Social Psychology, 82*, 239–251.
- Gigerenzer, G., Hoffrage, U., & Kleinbolting, H. (1991). Probabilistic mental models: A Brunswikian theory of confidence. *Psychological Review, 98*, 506–528.
- Gilbert, D. T. (1989). Thinking lightly about others: Automatic components of the social inference process. In J. S. Uleman (Ed.), *Unintended thought* (pp. 189–211). New York: Guilford Press.
- Gilbert, D. T. (1998). Ordinary personology. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., pp. 89–150). New York: McGraw Hill.
- Gilbert, D. T., Krull, D. S., & Pelham, B. W. (1988). Of thoughts unspoken: Social inference and the self-regulation of behavior. *Journal of Personality and Social Psychology, 55*, 685–694.
- Goldstein, N. J., & Cialdini, R. B. (in press). Using social norms as a lever of social influence. In A. Pratkanis (Ed.), *The science of social influence: Advances and future progress*. Philadelphia: Psychology Press.
- Griskevicius, V., Goldstein, N. J., Mortensen, C. R., Cialdini, R. B., & Kenrick, D. T. (2006). Going along versus going alone: When fundamental motives facilitate strategic (non)conformity. *Journal of Personality and Social Psychology, 91*, 281–294.
- Hamilton, W. D. (1964). The genetic evolution of social behavior. *Journal of Theoretical Biology, 7*, 1–52.
- Hewstone, M. (1990). The “ultimate attribution error”? A review of the literature on intergroup causal attribution. *European Journal of Social Psychology, 20*, 311–335.
- Hirt, E. R., Zillmann, D., Erickson, G. A., & Kennedy, C. (1992). Costs and benefits of allegiance: Changes in fans’ self-ascribed competencies

- after team victory versus defeat. *Journal of Personality and Social Psychology*, 63, 724–738.
- Hornstein, H. A. (1982). Promotive tension: Theory and research. In V. Derlega & J. Grzelak (Eds.), *Cooperation and helping behavior: Theories and research* (pp. 229–248). New York: Academic Press.
- Jones, E. E., & Davis, K. E. (1965). From acts to dispositions: The attribution process in person perception. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 2, pp. 219–266). New York: Academic Press.
- Kelley, H. H. (1967). Attribution theory in social psychology. In D. Levine (Ed.), *Nebraska Symposium on Motivation* (Vol. 15, pp. 192–238). Lincoln: University of Nebraska Press.
- Kelley, H. H. (1971). Attribution in social interaction. In E. E. Jones, D. E. Kanouse, H. H. Kelley, R. E. Nisbett, S. Valins, & B. Weiner (Eds.), *Attribution: Perceiving the causes of behavior* (pp. 1–26). Morristown, NJ: General Learning Press.
- Kelley, H. H. (1973). The processes of causal attribution. *American Psychologist*, 28, 107–128.
- Kenny, D. A., Kashy, D. A., & Bolger, N. (1998). Data analysis in social psychology. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (Vol. 1, 4th ed., pp. 233–265). Boston: McGraw-Hill.
- Krebs, D. (1991). Altruism and egoism: A false dichotomy? *Psychological Inquiry*, 2, 137–139.
- Latané, B. (1981). The psychology of social impact. *American Psychologist*, 36, 343–356.
- Lepper, M. R. (1973). Dissonance, self perception and honesty in children. *Journal of Personality and Social Psychology*, 25, 65–74.
- Lerner, M. J. (1982). The justice motive in human relations and the economic model of man. In V. Derlega & J. Grzelak (Eds.), *Cooperation and helping behavior: Theories and research* (pp. 249–278). New York: Academic Press.
- Lichtenstein, S., & Fischhoff, B. (1977). Do those who know more also know more about how much they know? The calibration of probabilistic judgments. *Organizational Behavior and Human Performance*, 20, 159–183.
- Maass, A., & Clark, R. D. (1984). Hidden impact of minorities: Fifteen years of minority influence. *Psychological Bulletin*, 95, 428–450.
- Maass, A., Clark, R. D., & Haberkorn, G. (1982). The effects of differential ascribed category membership and norms on minority influence. *European Journal of Social Psychology*, 12, 89–194.
- MacKinnon, D. P., & Dwyer, J. H. (1993). Estimating mediated effects in prevention studies. *Evaluation Review*, 17, 144–158.
- Maner, J. K., Luce, C. L., Neuberg, S. L., Cialdini, R. B., Brown, S., & Sagarin, B. J. (2002). The effects of perspective-taking on motivations for helping: Still no evidence for altruism. *Personality and Social Psychology Bulletin*, 28, 1601–1610.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224–253.
- Mashek, D. J., Aron, A., & Boncimino, M. (2003). Confusions of self with close others. *Personality and Social Psychology Bulletin*, 29, 382–392.
- Mead, G. H. (1934). *Mind, self, and society*. Chicago: University of Chicago Press.
- Midkiff, R. M., & Burke, J. P. (1991). An empirical examination of the integration of causal attribution and social learning theories in achievement situations. *Social Behavior and Personality*, 19, 177–193.
- Norton, M. I., Monin, B., Cooper, J., & Hogg, M. A. (2003). Vicarious dissonance: Attitude change from the inconsistency of others. *Journal of Personality and Social Psychology*, 85, 47–62.
- Park, J. H., & Schaller, M. (2005). Does attitude similarity serve as a heuristic cue for kinship? Evidence of an implicit cognitive association. *Evolution and Human Behavior*, 26, 158–170.
- Piliavin, J. A., Dovidio, J. F., Gaertner, S. L., & Clark, R. D., III (1981). *Emergency intervention*. New York: Academic Press.
- Pulford, B. D., & Colman, A. M. (1997). Overconfidence: Feedback and item difficulty effects. *Personality and Individual Differences*, 23, 125–133.
- Rice, M. E., & Grusec, J. E. (1975). Saying and doing: Effects on observer performance. *Journal of Personality and Social Psychology*, 32, 584–593.
- Sande, G. N., Goethals, G. R., Ferrari, L., & Worth, L. T. (1989). Value-guided attributions: Maintaining the moral self-image and the diabolical enemy-image. *Journal of Social Issues*, 45, 99–118.
- Smith, E. R., Coats, S., & Walling, D. (1999). Overlapping mental representations of self, in-group, and partner: Further response time evidence and a connectionist model. *Personality and Social Psychology Bulletin*, 25, 873–882.
- Smith, E. R., & Henry, S. M. (1996). An in-group becomes part of the self: Response time evidence. *Personality and Social Psychology Bulletin*, 22, 635–642.
- Snyder, M., & Cunningham, M. R. (1975). To comply or not comply: Testing the self-perception explanation of the “foot-in-the-door” phenomenon. *Journal of Personality and Social Psychology*, 31, 64–67.
- Srull, T. K., & Wyer, R. S. (1979). The role of category accessibility in the interpretation of information about persons: Some determinants and implications. *Journal of Personality and Social Psychology*, 37, 1660–1672.
- Stone, D. N. (1994). Overconfidence in initial self-efficacy judgments: Effects on decision processes and performance. *Organizational Behavior and Human Decision Processes*, 59, 452–474.
- Tajfel, H. (1978). *Differentiation between social groups: Studies in the social psychology of intergroup relations*. New York: Academic.
- Trafimow, D., Triandis, H. C., & Goto, S. (1991). Some tests of the distinction between the private and collective self. *Journal of Personality and Social Psychology*, 60, 649–655.
- Triandis, H. C., Bontempo, R., Villareal, M. J., Asai, M., & Lucca, N. (1988). Individualism and collectivism: Cross-cultural perspectives on self-in-group relationships. *Journal of Personality and Social Psychology*, 54, 323–338.
- Turner, J. C. (1987). A self-categorization theory. In J. C. Turner, M. A. Hogg, P. H. Oakes, S. D. Reicher, & M. S. Wetherell (Eds.), *Rediscovering the social group: A self-categorization theory* (pp. 42–67). Oxford, England: Blackwell.
- Vancouver, J. B., Thompson, C. M., Tischner, E. C., & Putka, D. J. (2002). Two studies examining the negative effect of self-efficacy on performance. *Journal of Applied Psychology*, 87, 506–516.
- Wegner, D. M., & Bargh, J. A. (1998). Control and automaticity in social life. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (4th ed; pp. 446–496). Boston: McGraw-Hill.
- Wells, P. A. (1987). Kin recognition in humans. In D. J. C. Fletcher & C. D. Michener (Eds.), *Kin recognition in animals* (pp. 395–416). New York: Wiley.
- Winter, L., & Uleman, J. S. (1984). When are social judgments made? Evidence for the spontaneousness of trait inferences. *Journal of Personality and Social Psychology*, 47, 237–252.
- Wright, S. C., Aron, A., McLaughlin-Volpe, T., & Ropp, S. A. (1997). The extended contact effect: Knowledge of cross group friendships and prejudice. *Journal of Personality and Social Psychology*, 73, 73–90.

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