

MIMICRY AND ME: THE IMPACT OF MIMICRY ON SELF-CONSTRUAL

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Previous research has demonstrated that nonconscious interpersonal mimicry engenders liking, affiliation, empathy, and other positive social consequences. Some of these consequences have recently been shown to go beyond the dyad. In other words, interpersonal mimicry not only affects the way we feel toward our immediate interaction partner, but also affects our feelings and behavior toward other people *in general*. The goal of the present research is to understand why it is that nonconscious mimicry has consequences that go beyond the dyad. Specifically, it is hypothesized and found that being mimicked during social interaction shifts self-construals such that they become more interdependent and "other-oriented" (Study 1). Accordingly, interpersonal mimicry heightens one's perception of interpersonal closeness with nonspecified others (Study 2) and decreases one's physical proximity to others (Study 3). In a final experiment (Study 4), the impact of mimicry on self-construal is shown to mediate the positive social consequences of mimicry.

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Many popular books offering advice on “how to win friends and influence people” recommend imitation as a means by which to increase others’ liking for you and facilitate rapport with others (Cialdini, 2001). Empirical evidence has recently been provided to support this popular advice (Bailenson & Yee, 2005; Lakin & Chartrand, 2003; Yabar, Johnston, Miles, & Peace, 2006). Beyond facilitating affiliation and rapport (Bernieri, 1988; Lakin & Chartrand, 2003), mimicry also affects the way individuals think and behave. For example, being mimicked affects one’s cognition such that it becomes more context-dependent (van Baaren, Horgan, Chartrand, & Dijkmans, 2004) and convergent (Ash-ton-James & Chartrand, 2006), and influences people to become more pro-social, not just toward the mimicker, but also toward others in general (van Baaren, Holland, Kawakami, & van Knippenberg, 2004; van Baaren, Holland, Steenart, & van Knippenberg, 2003).

The important caveat of this research is that interpersonal mimicry must go unnoticed. In other words, as long as we are not consciously aware of being mimicked by an interaction partner, we may feel and behave more positively toward them. It appears, therefore, that the positive social consequences of mimicry occur automatically or nonconsciously (Chartrand & Bargh, 1999). While several researchers have proposed explanations for *why* interpersonal mimicry might automatically affect social attitudes and behaviors (Lakin, Jefferis, Cheng, & Chartrand, 2003; Meltzoff, 1990; Schmidt & O’Brien, 1997), there has been no empirically demonstrated explanation for *how* such consequences of mimicry occur. In the present research, we propose an explanatory mechanism for the impact of nonconscious mimicry on people’s subsequent feelings and behaviors. Specifically, we hypothesize that nonconscious mimicry increases the interdependence of one’s self-construal, and secondly that this situation-induced interdependence of self-construal will mediate the positive social consequences of mimicry that go beyond the dyad.

Self-construal is often defined in terms of interconnectedness of the self with others (Brewer & Gardner, 1996); it is the extent to which individuals define themselves or construe their identity with reference to their social roles, groups, status, and relationships. For example, while someone with an *independent* self-construal might identify him or herself by his or her individual or unique skills and attributes (tall, intelligent, friendly), whereas someone who has an *interdependent* self-construal would be more likely to define him or herself by his or her relationships with others (e.g., I am a daughter, I am a sister). It is perhaps not surprising, therefore, that individuals with an

interdependent self-construal exhibit a stronger preference for closeness with others, both emotionally, psychologically, and physically (Aron, Aron, & Smollan, 1992; Gardner, Gabriel, & Hochschild, 2002; Holland, Roeder, van Baaren, Brandt, and Hannover, 2004; Oyserman, Coon, & Kimmelmeier, 2002), compared to individuals with an independent self-construal. Self-construal is thus associated with a more other-focused and, hence, pro-social orientation.

Self-construal is proposed as a mediator of the social consequences of mimicry for several reasons. First, although people can chronically be more or less interdependent, there is now abundant evidence that self-construal orientation is sensitive to context, such as nonconscious priming manipulations (Brewer & Gardner, 1996; Gardner, Gabriel, & Lee, 1999; Kühnen, Hannover, & Schubert, 2001; Kühnen & Oyserman, 2002; Stapel & Koomen, 2001) and social context (Brewer, 1991). For example, Gardner et al. (1999) have demonstrated that people's self-construals become more interdependent after searching a passage for pronouns including "we" and "us" compared with people who search a passage containing the pronouns "I" and "me."

Second, initial empirical support for the hypothesis that being mimicked leads to a more pro-social orientation or interdependent self-construal is provided by the finding that being mimicked leads to pro-social behavior not just toward the mimicker, but also toward others unrelated to the mimicker (van Baaren, Holland et al., 2004). This finding provides indirect support for the idea that being mimicked affects not simply one's perception of his or her relationship with the immediate interaction partner, but also one's perception of his or her relationship with others in general.

Third, van Baaren, Maddux, Chartrand, de Bouter, and van Knippenberg (2003) have demonstrated that interdependence is a predictor of the extent to which one mimics another person during social interaction. The more interdependent one's self-construal is, the more likely that person is to mimic. In the present research, we investigate whether or not this demonstrated relationship is bidirectional. Specifically, we predict that being mimicked during a social interaction will increase the interdependence of one's self-construals. Further, it is predicted that

the interdependent self-construals activated via mimicry will mediate subsequent pro-social behavior.

In order to qualify as a mediating variable, interdependent self-construals must not only be causally affected by mimicry, but interdependence must in turn be a proximal cause of the prosocial consequences of mimicry (Baron & Kenny, 1986). Interdependence is a demonstrated predictor of many of the same social and cognitive consequences of mimicry. Just as interdependence fosters prosocial behavior (Karremans, Van Lange, & Holland, 2005; Van Lange, 1999), being mimicked by an interaction partner also affects one's social value orientation such that it is more prosocial (van Baaren, Holland et al., 2004). Further, having an interdependent self-construal and being mimicked by another are both associated with having a context-dependent perceptual style (Kühnen et al., 2001; van Baaren, Horgan et al., 2004). Finally, interdependence and interpersonal mimicry both increase one's perception of affiliation with interaction partners (Galinsky, Ku, & Wang, 2005; Lakin & Chartrand, 2003), facilitate social coordination (Finkel, Campbell, Brunell, Dalton, & Chartrand, *in press*; Galinsky et al., 2005), and help negotiators to reach mutually beneficial (integrative) outcomes (Giebels, De Dreu, & Van de Vliert, 2000; Maddux, Mullen, & Galinsky, 2006).

There are, therefore, several theoretical bases upon which it is hypothesized that being mimicked during social interaction will increase the interdependence of a person's self-construal, which in turn will mediate the impact of being mimicked on subsequent social evaluations and behaviors. It is expected, therefore, that compared with those who are not mimicked by an interaction partner, those who are mimicked will demonstrate feelings and behaviors toward others that are consistent with an interdependent self-construal, such as interpersonal closeness (Aron et al., 1992) and proximity seeking (Holland et al., 2004). Further, it is predicted that the interdependent self-construal activated via mimicry will mediate subsequent prosocial behavior.

THE PRESENT STUDIES

In order to test the hypothesis that the interdependence of one's self-construal mediates the pro-social consequences of mimicry,

two steps will be taken. First, we will examine the impact of nonconscious mimicry on the interdependence of one's self-construal. Toward this end, three studies examine the impact of being mimicked (or not mimicked) by an experimenter on the interdependence of participants' self-statements (Study 1), on their subjective perception of connectedness with unspecified others (Study 2), and on participants' physical closeness to unfamiliar others (Study 3). Second, we will test whether the impact of mimicry on self-construals mediates pro-social consequences of mimicry that go beyond the dyad. Specifically, in Study 4, after being mimicked (or not) by the experimenter, the interdependence of participants' self-statements is assessed, and their willingness to donate their time to help another experimenter is recorded.

STUDY 1

METHOD

Participants and Design. Forty-one participants (27 females and 14 males) were paid \$7 for their participation in this study. The experiment had a single-factor (Mimicry Condition: mimicry or no mimicry) between-subjects design.

Procedure. Participants were seated directly facing the experimenter with four feet between them. Participants were instructed that the study consisted of two unrelated tasks: an interview about their "memory for everyday events," and a pencil and paper "identity survey" (Twenty Statements Test [TST]; Kuhn & McPartland, 1954). During the interview, in which the participant was asked to recall, in as much detail as possible, a series of mundane events ("Tell me everything that you can remember doing from the moment you woke up this morning until the time you arrived at the laboratory"; "what did you learn about in your last lecture class?"), the experimenter subtly mimicked (or did not mimic) the nonverbal gestures and postures of the participant. The experimenter was trained to mimic only those behaviors that people do automatically or nonconsciously, such as foot shaking, body scratching, face or hair touching, leg crossing, and posture changing, in order to ensure that participants did not recognize the experimenter's gestures as mimicry. In the no-mimicry condi-

tion, the experimenter was trained to refrain actively from mimicking any of the participants' gestures and postures.

After five minutes, the interview was terminated and participants' were given TST (Kuhn & McPartland, 1954) as a measure the relative interdependence versus independence of their self-construals. The TST is an open-ended questionnaire that involves generating 20 self-construals in response to the question "who am I?" Participants were then thanked and debriefed. Using Chartrand and Bargh's (1999) funnel debriefing technique, participants were asked a series of probing questions designed to identify whether or not they were aware of being mimicked or not mimicked during the interview task.

Following Gardner et al. (1999), participants' responses on the TST (self-construals) were subsequently coded by two raters as independent if they described a personal attribute (trait, ability, physical descriptor, or attitude: e.g., "I am intelligent"; "I am athletic"), and as interdependent if they described a social role or relationship ("I am a team captain"; "I am a sister") (interrater reliability = .88).

RESULTS AND DISCUSSION

To test the hypothesis that people who are nonconsciously mimicked during social interaction will express more interdependent self-construals than people who are not mimicked, the number of interdependent self-construals that participants listed on the TST were submitted to a 2 (Mimicry Condition: mimicry or no mimicry) \times 2 (Gender: female or male) analysis of variance. As shown in Table 1 a main effect of Mimicry Condition was found, $F(1,37) = 6.78, p < .001$. Participants who were subtly mimicked by the experimenter during their five-minute interview reported more interdependent self-construals ($M = 7.35$) than those who were not mimicked ($M = 3.76$). In addition, a main effect for Gender was found, $F(1,37) = 8.42, p < .01$. Consistent with the previous theory and research on gender and self-construals (Cross & Madson, 1997), female participants reported interdependent self-construals more frequently ($M = 6.52$) than male participants ($M = 3.57$). No interaction between Mimicry Condition and Gen-

TABLE 1. Effects of Mimicry Condition and Participant Gender on Interdependence (Study 1) and Interpersonal Closeness (Study 2)

	Interdependent Self-Construals (Study 1)			Inclusion of Others in the Self (Study 2)		
	Mimicry	No-Mimicry	Overall	Mimicry	No-Mimicry	Overall
Female	9.33 (3.77)	4.27 (2.89)	6.53 (4.13)	4.63 (0.75)	3.89 (1.17)	4.23 (1.03)
Male	4.38 (5.01)	2.50 (2.24)	3.57 (4.09)	3.80 (1.10)	2.50 (0.58)	3.22 (1.09)
Overall	7.35 (4.87)	3.76 (2.83)		4.31 (0.95)	3.46 (1.20)	

Note. Standard deviations are in parentheses.

der was found, $F(1, 37) = 1.7, p = .20$. Analysis of the funnel debriefing revealed that no participants indicated awareness of the experimenter's mimicry (or lack thereof), or of its effect on their self-statements.

These results provide initial support for the hypothesis that mimicry increases the interdependence of people's self-construals. The results of Study 1 also replicate previous findings that women are more interdependent than men (see Cross & Madson, 1997 for a review).

While the results of Study 1 succeed in demonstrating the impact of mimicry and anti-mimicry on expressions of interdependence, it is not clear whether mimicry is creating a fundamental change in the way that participants construe themselves in relation to others in general, or whether mimicry is simply increasing the salience of existing personal relationships. If mimicry is merely increasing participants' interdependence with *specific* individuals, then it would be theoretically unsound to suggest that the relationship between mimicry and pro-social behavior toward *unspecified* others would be mediated by such interdependence. Hence, the purpose of Study 2 is to test the impact of mimicry and anti-mimicry on self-construals using an alternative measure of interdependence that assesses the extent to which individuals feel connected with others in society in general.

STUDY 2

METHOD

Participants and Design. Twenty-six participants (17 females

and nine males) were paid \$2 for their participation in this study. The experiment had a single-factor (Mimicry Condition: mimicry or no-mimicry) between-subjects design.

Procedure. Participants were led into a room by the experimenter and seated behind a desk. The participant's chair half-faced the experimenter. The experimenter, who was blind to the hypothesis, seated himself behind a desk and explained to the participant that the study concerned people's perceptions of advertisements. The task of the participant was to look at each of the ten ads and take approximately 30 seconds to describe the visual content of each advertisement while the experimenter discretely took notes. During the task, the experimenter subtly mimicked the nonverbal gestures and postures of participants who were randomly assigned to the mimicry condition, and refrained from mimicking the behaviors of participants who were assigned to the no-mimicry condition.

After the advertisement task, participants were given a modified Inclusion-of-the-Other-in-the-Self-Scale (IOS scale, Aron et al., 1992) that was designed to measure the closeness they felt toward other people in general. Interconnectedness with others in society is a defining characteristic of an interdependent self-construal (Markus & Kitayama, 1991). Furthermore, feelings of closeness to other people in general are associated with pro-social behavior toward unknown others (Cialdini, Brown, Lewis, Luce, & Neuberg, 1997). The IOS task depicted six pairs of circles (numbered one to six), which were increasingly overlapping with each other. Participants were asked to indicate how close they felt toward "other people in general" by selecting one of the six pairs of circles. Higher numbers are indicative of a smaller felt distance between oneself and others. After this task, participants were thanked, paid, and carefully debriefed. Importantly, none of the participants indicated any awareness of the mimicry manipulation.

RESULTS AND DISCUSSION

To test the prediction that participants who were mimicked would show a greater closeness to "other people in general," scores on the

closeness questionnaire were submitted to a 2 (Mimicry Condition: mimicry or no-mimicry) \times 2 (Gender: male or female) between-subjects analysis of variance. As shown in Table 1, a main effect for Mimicry Condition was found, $F(1,22) = 6.46, p < .02$. Participants who had been mimicked by the experimenter felt closer to people in general ($M = 4.3$) than the participants who had not been mimicked ($M = 3.5$). In addition, a main effect for Gender was found, $F(1,22) = 7.64, p < .02$, confirming that women feel closer to other people ($M = 4.2$) than men ($M = 3.2$). No interaction was found ($F < 1$). During the debriefing, no participant indicated awareness of the mimicry (or lack thereof) or of its effect on the dependent variable.

These results confirmed the hypothesis that mimicry increases interpersonal closeness toward undefined others, thereby extending previous findings that mimicry increases liking, rapport, and pro-social behavior. The present data show that, after being mimicked, people also feel closer to others in general, which is a defining characteristic of people who have an interdependent self-construal (Markus & Kitayama, 1991). Consistent with the results of Study 1, Study 2 also indicates that compared to men, women feel closer to unspecified others.

Studies 1 and 2 jointly confirm that being subtly mimicked leads one to adopt a more interdependent self-construal such that one not only defines him or herself by his or her relationships with specified others, but also such that one expressly values his or her interconnectedness with unspecified others in society in general. However, each of these studies employs explicit, self-report measures of self-construal. As such, it is possible that interpersonal mimicry may be affecting explicit attitudes toward the relationship between oneself and others, not necessarily causing fundamental shifts in one's implicit self-construal. Since it is our implicit attitudes, values, and beliefs that are most predictive of social behavior (Maison, Greenwald, & Bruin, 2004; McConnell & Leibold, 2001), in Study 3 we examined the impact of mimicry on an implicit, behavioral measure of self-construal—namely physical closeness or proximity to others (Holland et al., 2004). After being subtly mimicked (or not mimicked) by an experimenter, we observed the distance away from which participants sat from an unknown other person.

STUDY 3

METHOD

Participants and Design. Fifty-eight undergraduates (35 women and 23 men) were paid \$2 for their participation in this study. The experiment had a single-factor (Mimicry Condition: mimicry or no-mimicry) between-subjects design.

Procedure. Upon arrival at the laboratory, participants were randomly assigned to one of two mimicry conditions (mimicry or no mimicry). Participants were informed by a male experimenter that they would take part in two separate studies. The experimenter explained that for the first study, he would interview the participant about traveling behavior (with the help of a questionnaire), but that he would not be supervising the second study, for which a different experimenter would join them. The “first” experimenter mimicked the postures and gestures of participants randomly assigned to the mimicry condition, and refrained from expressing similar gestures or postures for the participants randomly assigned to the no-mimicry condition.

After the travel interview during which participants were either mimicked or not mimicked by the experimenter, participants were thanked and asked to take a seat in an adjoining room while waiting for the second study. The experimenter made it clear to all participants that a different experimenter would soon arrive to conduct the second study.

Five chairs were placed side by side along one of the walls of the waiting room. On top of the leftmost chair, a bag, a jacket, and some documents were placed, thereby indicating the presence of another (and unknown) person. The distance between the “occupied” chair and the chair on which the participant chose to sit was an implicit measure of the interdependence of one’s self-construal (Holland et al., 2004). After a short wait, the second experimenter entered the waiting room to pick up the participant for the (irrelevant) second study, and made note of the chair on which the participant was sitting. Finally, the participant was thanked, paid, and debriefed. Importantly, no participant indicated awareness of being mimicked (or not mimicked) during the first study.

RESULTS AND DISCUSSION

To test the prediction that participants who were mimicked would choose to sit closer to an unknown other, the distance between the participant's chair and the occupied chair was submitted to a 2 (Mimicry Condition: mimicry or no-mimicry) \times 2 (Gender: male or female) between-subjects analysis of variance. As expected, a main effect for Mimicry Condition was found, $F(1,54) = 6.68, p < .05$. Participants who had been mimicked by the experimenter sat closer to the occupied chair ($M = 1.47$) than the participants who had not been mimicked ($M = 1.96$). No main effect of Gender or interaction between Gender and Mimicry Condition was obtained.

Together with Studies 1 and 2, Study 3 provides further support for the notion that interdependence is engendered in those who are nonconsciously mimicked during social interaction. Interestingly, the observed main effect of gender in Experiments 1 and 2 was not replicated in Experiment 3, although other work has recently found such a gender effect on seating distance (Holland et al., 2004).

STUDY 4

The goal of Study 4 was to test the hypothesis that the relationship between mimicry and pro-social behavior that goes beyond the dyad is mediated by the interdependence of one's self-construal. Consistent with existing research demonstrating that individuals with an interdependent self-construal have a more pro-social behavioral orientation than people with an independent self-construal, we expected to find that the interdependence of participants' self-construals would correlate with whether or not they exhibited pro-social behavior toward an unknown other. Further, on the basis that (a) being mimicked by an interaction partner should increase the interdependence of one's self-construal, and (b) interdependence is associated with generalized pro-social behavior, we predicted that the impact of mimicry on pro-social behavior would be mediated by interdependence.

METHOD

Participants and Design. Fifty-one undergraduate students (33 female, 18 male) from Duke University participated in this laboratory experiment for \$7. The experiment had a one-factor (Mimicry Condition: mimicry or no-mimicry) between-subjects design. Mimicry conditions were randomly assigned across participants.

Procedure. On arrival at the laboratory, participants were seated directly in front of the experimenters' chair, with four feet in distance between them. The experimenter then explained to the participants that they would participate in two unrelated tasks. The first was an interview survey of students' memory for everyday events, and the second was an "identity questionnaire" (the TST; Kuhn & McPartland, 1954).

During the interview about memory for everyday events ("Tell me everything that you do on a typical Monday from the time you wake to the time you sleep"), the experimenter mimicked or did not mimic the participant's postures and subtle nonverbal gestures such as foot shaking, face touching or scratching, and leg crossing. Following the same procedures of Studies 1 through 3, in the no-mimicry condition the experimenter sat in a neutral pose for the duration of the interview and refrained from mimicking any of the participant's subtle movements and behaviors. After approximately five minutes, the experimenter discontinued the interview due to "time constraints," and provided participants with a TST: Kuhn & McPartland, 1954, described in Study 1, to assess the interdependence of their self-construal.

After completion of the TST, the experimenter first paid the participants and then asked them if they would help an anonymous PhD student without research funding by completing a survey without payment. To increase the perceived personal costs of volunteering their help (time, energy, cognitive resources), participants were provided with an "extended" version of the survey to peruse, which was five double-sided pages, single-spaced, and written in a small font (ten-point Times Roman). To measure participants' pro-social behavior, the experimenter made note of whether or not participants were willing to help the unknown PhD student by completing his survey. If participants volunteered to complete the extra survey for which they would not be

paid, the experimenter then explained that they only had to do the first section, which took approximately one minute.

RESULTS AND DISCUSSION

To examine the effect of mimicry on pro-social behavior, we conducted a Kruskal–Wallis test on willingness to complete a further survey without payment. Consistent with the hypothesis that being mimicked by the experimenter would increase the likelihood of pro-social behavior, 72% of participants who were mimicked were willing to complete a further survey without payment, compared to 38% of participants in the anti-mimicry condition, $\chi^2(1, 51) = 5.677, p = .017$.

To test the impact of mimicry on self-construal, a research assistant blind to experimental condition coded participants' responses on the TST as *independent* if they described a personal attribute (trait, ability, physical descriptor, or attitude: e.g. "I am intelligent"; "I am athletic"), and as *interdependent* if they described a social role or relationship ("I am a team captain"; "I am a sister"; cf. Gardner et al., 1999). Interrater reliability was high ($r = .89$). An independent groups *t*-test was executed on the number of interdependent self-construals expressed by participants in each mimicry condition. As expected, participants who were mimicked by the experimenter expressed more interdependent self-construals ($M = 6.44$) than participants who were not mimicked ($M = 4.35$). This difference was marginally significant, $t(49) = 1.70, p = .09$.

Whether or not the relationship between mimicry and pro-social behavior is mediated by interdependence of self depends on whether interdependence impacted pro-social behavior. As predicted, a linear regression analysis of the number of interdependent self-construals on willingness to complete a second unpaid survey revealed a significant positive relationship between interdependence and pro-social behavior, $\beta = .52, F(1, 50) = 18.128, p < .001$. On the basis that there was a strong relationship between interdependence and pro-social behavior in the predicted direction, we conducted a mediation analysis using Baron and Kenny's (1986) multiple regression technique. A multiple regres-

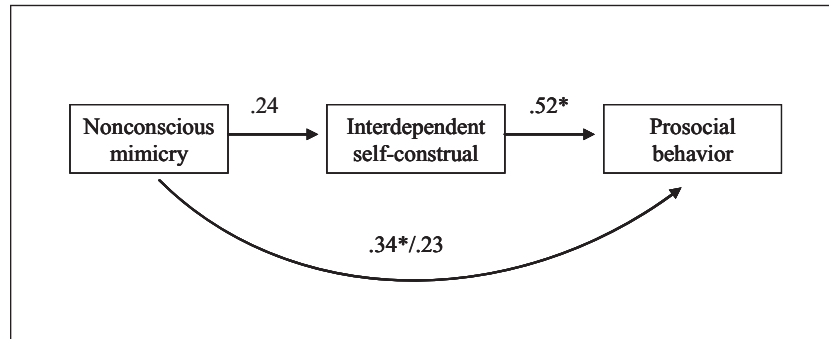


FIGURE 1. Results for the test of mediation. Baron and Kenny's (1986) multiple regression test of mediation was used in addition to a Sobel test. Asterisks denote those paths that are significant

sion of mimicry condition and interdependence of self-construal on pro-social behavior reduced the significance of the path from mimicry to pro-social behavior from $\beta = .335, p = .016$ to $\beta = .227, p = .07$. A Sobel test confirmed that this reduction was significant, Sobel test statistic = 3.63, $p < .001$.

These results support our prediction that interdependence mediates the relationship between nonconscious mimicry and positive social outcomes. Specifically, as represented in Figure 1, we found that compared to participants who were not mimicked during a social interaction, participants who were mimicked by the experimenter reported more interdependent self-construals and more frequently volunteered to help an anonymous doctoral student. Further, the relationship between mimicry and pro-social behavior was found to be mediated by the interdependence of participants' self-construals

FINAL REMARKS

The present studies investigated whether the pro-social consequences of being mimicked can be explained by shifts in self-construal. Studies 1 through 3 found a direct effect of mimicry on self-construal, and Study 4 demonstrated that

self-construal indeed mediates the effects of mimicry on pro-social behavior. These findings are an important step in solving the puzzle of how mimicry has the positive consequences it does, because they explain how mimicry affects one's behavior to other people *in general*, not just within the dyad.

In addition, the findings in these four experiments contribute to the existing literature on self-construal in two important ways. First, given that mimicry induces an interdependent self-construal, mimicry might moderate several of the cognitive, motivational, and behavioral correlates of independence and interdependence. Second, an important and new finding is that our self-construal adapts to the quality of the social interactions in which we engage. Whereas previous work (e.g., Gardner et al., 1999, Kühnen et al., 2001, Stapel & Koomen, 2001) has shown that self-construals are not only chronically determined, but can be temporarily altered, the current studies provide the first data to show how actual interactions (as opposed to priming techniques) affect self-construal. This suggests that self-construal is not only a determining factor in interactions, but is also a consequence of interactions. Future studies can examine in more detail *how* and *when* self-construals adapt to the environment.

In sum, the present studies help to illuminate the mechanism driving the positive social consequences of mimicry. The finding that being mimicked fundamentally affects the self has broad implications for understanding the processes underlying many of the interpersonal consequences of mimicry.

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