THE CHAMELEON EFFECT AS SOCIAL GLUE: EVIDENCE FOR THE EVOLUTIONARY SIGNIFICANCE OF NONCONSCIOUS MIMICRY

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ABSTRACT: The "chameleon effect" refers to the tendency to adopt the postures, gestures, and mannerisms of interaction partners (Chartrand & Bargh, 1999). This type of mimicry occurs outside of conscious awareness, and without any intent to mimic or imitate. Empirical evidence suggests a bi-directional relationship between nonconscious mimicry on the one hand, and liking, rapport, and affiliation on the other. That is, nonconscious mimicry creates affiliation, and affiliation can be expressed through nonconscious mimicry. We argue that mimicry played an important role in human evolution. Initially, mimicry may have had survival value by helping humans communicate. We propose that the purpose of mimicry has now evolved to serve a social function. Nonconscious behavioral mimicry increases affiliation, which serves to foster relationships with others. We review current research in light of this proposed framework and suggest future areas of research.

KEY WORDS: affiliation; chameleon effect; human evolution; mimicry.

Human beings are social animals (Aronson, 1999; Caporael, 2001a; Ehrlich, 2000; Wright, 1994). From dawn to dusk (and sometimes from dusk to dawn), our lives are filled with social interactions. We talk to significant others and children as we get ready for work, discuss the events of the previous evening with our co-workers, eat lunch with colleagues before meeting with others during the afternoon, and spend the evening cementing bonds with friends and family members. The number of social interactions that most individuals have on a daily basis—ranging from the superficial to the profound—is extraordinary. It is therefore rather surpris-

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ing that scholars have only recently started theorizing about the evolutionary significance of such social behaviors (for a review, see Buss & Kenrick, 1998). It is perhaps equally surprising that the specific nonverbal behaviors that might have evolved to make these interactions more successful are still rarely acknowledged.

From an evolutionary perspective, the importance of successful social interactions is clear. Our ancestors lived in an environment in which individuals who were "on their own" were not always able to survive and successfully reproduce (Buss & Kenrick, 1998; Johanson & Edgar, 1996). The environment of evolutionary adaptation was complex and difficult to navigate, and individuals were forced to rely on others to complete necessary survival activities (e.g., locating and securing food sources and shelter, defending against predators, raising offspring). The groups in which most early humans began to live (which probably ranged in size from 2 to 200 individuals) became the locus of many of these important biological activities (Lewin, 1993; Poirier & McKee, 1999). In evolutionary terms, group living, which included helping kin (inclusive fitness; Hamilton, 1964; Dawkins, 1982) and non-kin (reciprocal altruism; Axelrod & Hamilton, 1981; Trivers, 1971) may have become the most influential factor in an individual's ability to survive and reproduce (Caporael & Brewer, 1991). Individuals who were able to cooperate successfully with others and maintain harmonious group relationships were more likely to continue to be included in the group and were therefore able to accomplish survival activities (de Waal, 1989). In other words, individuals who were ostracized from the group were less likely to survive, and individuals who were able to maintain successful group relationships were at an evolutionary advantage (Caporael, 1997, 2001a, 2001b; Lewin, 1993; Poirier & McKee, 1999). Some anthropologists have even argued that the average size of a given primate's group is the most reliable predictor of how large that species' neocortex is. The larger the groups, the larger the neocortex, which is at least partially devoted to organizing and storing the social information that is necessary to live in a group (Barton & Dunbar, 1997).

Behaviors that allowed individuals to successfully maintain important group relationships would have eventually become widespread throughout the population (for a similar argument, see Cosmides & Tooby, 1992). Given the significance of nonverbal behaviors in communicating important messages to others (DePaulo & Friedman, 1998), these behaviors might have been particularly likely to be influenced by these selective pressures. Importantly, over time, these behaviors might have even become automatized, or able to occur without conscious awareness or intention (Bargh, 1990). It might be easier to affiliate with group members if a repertoire of

nonverbal behaviors exists and can be utilized for this purpose without excessive planning or thought.

In the current paper, we argue that nonconscious mimicry, or the tendency to adopt the behaviors, postures, or mannerisms of interaction partners without awareness or intent, might have played an important role in human evolution by allowing individuals to maintain harmonious relationships with fellow group members (Chartrand & Bargh, 1999; Chartrand, Maddux, & Lakin, in press). We first provide a working definition of nonconscious mimicry, focusing on an individual's tendency to mimic the behaviors of other people. We then argue that this nonverbal behavior has evolutionary significance: While initially having survival value by facilitating communication, the consistent link between behavioral mimicry and liking suggests that this behavior may have ultimately evolved to serve a "social glue" function, binding people together and creating harmonious relationships. This framework is then used to understand the latest research on nonconscious behavioral mimicry, which definitively links this nonverbal behavior to affiliation. Finally, we end by suggesting some areas for future research that would provide more comprehensive support for our proposition.

Nonconscious Mimicry

Mimicry has been of interest to researchers for decades, and this interest has yielded a large literature replete with fascinating examples and demonstrations of the ways in which we mimic other people. Although consciously mimicking others is certainly intriguing, researchers have more recently become interested in the automaticity of this mimicking behavior, or the tendency to mimic others without awareness, intent, or conscious control. As we argue that this nonconscious mimicry would have been especially important from an evolutionary perspective, the review of the literature below (and the research discussed in the remainder of this paper) focuses exclusively on nonconscious mimicry.

Individuals automatically mimic many different aspects of interaction partners, including their speech patterns, facial expressions, emotions, moods, postures, gestures, mannerisms, and idiosyncratic movements (for reviews, see Chartrand & Bargh, 1999; Chartrand, Cheng, & Jefferis, 2002; Chartrand & Jefferis, in press; Chartrand, Maddux, & Lakin, in press). Research within each of these different areas is briefly outlined below.

First, we nonconsciously mimic the accents (Giles & Powesland, 1975), rates of speech (Webb, 1969, 1972), and speech rhythms (Cappella & Pan-

alp, 1981) of interaction partners. For example, individuals asked a question about a picture (e.g., of a person playing the piano) generally answer the question with syntax that matches the question. If participants were asked, "On which instrument does Paul play?" they tended to answer, "on the piano," while participants who were asked, "Which instrument is Paul playing?" tended to answer "the piano" (Levelt & Kelter, 1982).

We also mimic the facial expressions of other people. This is so hardwired that one-month-old infants have been shown to smile, stick out their tongues, and open their mouths when they see someone else doing the same (Meltzoff & Moore, 1977). By nine months, infants are mimicking more abstract emotional expressions, such as joy, sadness, and anger (Termine & Izard, 1988). Mimicking these facial expressions can result in actually adopting the emotions and moods of others as well (for a comprehensive review, see Hatfield, Cacioppo, & Rapson, 1994). If we see or hear others laugh, we tend to laugh more ourselves (Young & Frye, 1966), or if we listen to a happy or sad person, we tend to mimic their tone and take on their mood state (Neumann & Strack, 2000).

Finally, research has also uncovered evidence for interpersonal coordination. Interpersonal coordination refers to the "degree to which the behaviors in an interaction are nonrandom, patterned, or synchronized in both timing and form" (Bernieri & Rosenthal, 1991, p. 403). Importantly, interpersonal coordination can be further divided into interactional synchrony and behavior matching. Interactional synchrony refers to the rhythm of an interaction, and the extent to which the interaction is smooth (Bernieri, Davis, Rosenthal, & Knee, 1994). While certainly related to interactional synchrony, behavior matching is the kind of nonconscious mimicry that is the focus of the current paper. Behavior matching refers to the tendency to mimic or mirror the behaviors of interaction partners. This matching has been demonstrated in a number of situations, and more often than not, is unintentional (Bavelas, Black, Lemery, MacInnis, & Mullet, 1986). For example, students in a small class were found to exhibit the same postures as their instructor and other classmates (Bernieri, 1988; LaFrance, 1979, 1982; LaFrance & Broadbent, 1976), and counselors have been found to mimic the behaviors of their clients (Maurer & Tindall, 1983). In addition, research has also suggested that individuals mimic a variety of commonplace and idiosyncratic movements that are probably witnessed on a daily basis (e.g., wincing at another's injury or ducking as another does; Bavelas, Black, Chovil, Lemery, & Mullett, 1988; Bavelas, Black, Lemery, & Mullett, 1987).

There is also experimental evidence that people mimic the mannerisms of complete strangers. In a test of this idea, Chartrand and Bargh

(1999, Study 1) had participants interact with two unknown "participants" (actually confederates). For half the participants, the first confederate rubbed her face and the second confederate shook her foot throughout their respective sessions. For the other half, the first confederate shook her foot and the second confederate rubbed her face. Results revealed that participants mimicked the mannerisms of the confederates—they shook their foot more when they were with the foot-shaker than the face-rubber, and rubbed their face more when they were with the face-rubber than the foot-shaker. When the experiment was over, participants were asked about the mannerisms of the confederate and about their own mannerisms, and they did not report noticing either. Thus, it appears that the mimicry was nonconscious and unintentional, or in other words, automatic.

Evolutionary History of Nonconscious Behavioral Mimicry

Automatic mimicry is a pervasive phenomenon, but what purpose does it serve? From an evolutionary perspective, it is not difficult to see that automatic mimicry has significant adaptive value. The actions of other members of our species communicate to us important features of the environment, such as the presence of predators, prey, and potential mates. Coordination and mimicry have been argued to be necessary prerequisites for communication (Condon & Sander, 1974; Kendon, 1970), and increased ability to communicate would have certainly benefited our ancestors. Thus, automatic behavioral mimicry seems to have evolutionary roots.

If the behavior of others communicates necessary survival information, our perceptions of others' behaviors should then be used to guide our own behavior (Chartrand, Maddux, & Lakin, in press). Indeed, our ability to perceive evolved not because we needed it to analyze and comprehend our world, but because we needed it to behave (Dijksterhuis & Bargh, 2001; Milner & Goodale, 1995). Possessing a direct perception-behavior link was therefore critical to our survival as a species (and the survival of other animal species, see Dijksterhuis & Bargh, 2001, for a review), and natural selection ensured that those of us who had automatic mimicking tendencies survived.

As our physical and ecological world evolved, so did our social world. Communal living became increasingly important for humans (as the evidence reviewed earlier suggests), and we are now a species that is highly dependent on social groups for survival. Selection pressure on "social survival" was therefore likely to have intensified over the course of evolution, and automatic mimicry may now serve to help us survive in our social

world. Humans have a fundamental need to belong and to affiliate (Baumeister & Leary, 1995; Brewer, 1991); our constant drive to get along with others and to gain social acceptance suggests that automatic mimicry is functional at a day-to-day level. Thus, we argue that automatic mimicry has remained adaptive for humans, although its specific purpose might have shifted to one of bonding people together. In other words, automatic mimicry functions today as "social glue."

The Relationship Between Nonconscious Behavioral Mimicry and Affiliation

Given the role that social groups played in the evolutionary history of humans, it would be essential for group members to feel a sense of psychological connection with each other, which would allow them to live in harmony and accomplish all necessary survival activities. Behaviors that facilitated and maintained bonds between group members would therefore be extremely important. Individuals who had a tendency to mimic their peers would have been more likely to experience this psychological connection, and therefore more likely to continue to be included in the group.

Thus far, we have argued that nonconscious behavioral mimicry is a pervasive phenomenon, and that this behavior might be evolutionarily adaptive, as it is one way to appear similar to others and therefore create a psychological connection. But is there any empirical evidence to support the idea that behavioral mimicry is related to affiliation? That is, does mimicking the behaviors of others actually lead to feelings of closeness and liking, and make social interactions smoother and more harmonious? We believe that the answer to both questions is yes; recent research on behavioral mimicry is consistent with the idea that mimicking the behaviors of others "bonds" people together.

Behavioral Mimicry, Rapport, and Interpersonal Closeness

Early research on behavioral mimicry focused on posture sharing as a nonverbal indicator of group rapport. Body positioning was thought to be an indicator of liking and understanding (Scheflen, 1964), which foreshadowed Bavelas' argument (e.g., Bavelas et al., 1986) that mimicry is a tool used to communicate liking for and rapport with another. The work of LaFrance and her colleagues and Bernieri and his colleagues demonstrated this connection; posture sharing was observed in classroom situations in

which rapport already existed (Bernieri, 1988; Bernieri & Rosenthal, 1991; LaFrance, 1979, 1982; LaFrance & Broadbent, 1976). Thus, early work in this area provided correlational evidence of a relationship between mimicry and rapport (cf. Bernieri, 1988; LaFrance & Ickes, 1981).

There is also experimental evidence that behavioral mimicry creates rapport. Chartrand and Bargh (1999, Study 1) found that people tend to automatically mimic the nonverbal behaviors of their interaction partners. In a second study, they examined the functions of behavioral mimicry (1999, Study 2). Participants were engaged in a task with a confederate who either mimicked their mannerisms or had neutral, nondescript mannerisms. Compared to those who were not mimicked, participants who were mimicked later reported liking the confederate more and that the interaction had been more smooth and harmonious. These results suggest that behavioral mimicry actually increases liking between interaction partners, which is consistent with our argument that mimicking would be evolutionarily advantageous to the extent that it helps rapport develop between group members.[1]

The causal relationship between mimicry and rapport can go the other way as well: rapport and interpersonal closeness can cause a person to mimic more. Jefferis, van Baaren, and Chartrand (2003) explored this idea by having a participant and confederate dyad take turns answering a series of scripted questions. In one condition, the questions remained impersonal (e.g., "What is your major?") throughout the session. In a second condition, the questions became more personal as the session continued (e.g., "Describe your relationship with your parents."). Throughout the session, the confederate shook her foot, and the amount of mimicry by participants was measured. When the questions remained impersonal, the amount of mimicry did not change over the course of the experiment. However, in the increasingly personal session, mimicry increased as the questions became more personal. In other words, as people shared information about themselves and learned information about their partner, they began to engage in more similar nonconscious behaviors. Sharing information may lead to greater rapport, which is expressed through increases in mimicry.

Mimicry that results from increasing interpersonal closeness may be a particularly interesting example of how adaptive this behavior is. Chartrand and Bargh (1999, Study 2) demonstrated that mimicking another leads to increased rapport, which would presumably lead to interpersonal closeness, which leads to even more mimicry (Jefferis et al., 2003). This is a never-ending cycle that would allow members to be successful with their group interactions. An individual mimics to create rapport and be included

in the group. The interpersonal closeness that inevitably develops between group members then perpetuates the cycle, as it causes group members to continue to mimic each other, which creates more rapport.

Behavioral Mimicry and Situational Factors that Activate a Desire to Affiliate

Recent research has also demonstrated that mimicking the behaviors of others is a natural response in situations where there is a desire to affiliate. For example, people who are given a conscious affiliation goal (i.e., "you will be interacting with this person as part of a cooperative task in which it is important to get along and work well together") or a nonconscious affiliation goal (i.e., subliminally primed with words related to affiliation—*affiliate, friend, together*) are more likely to mimic the behaviors of an interaction partner than people who do not have a goal to affiliate (Lakin & Chartrand, 2003, Study 1). Situations where there is a conscious or nonconscious desire to affiliate activate the tendency to mimic the behaviors of interaction partners.

Lakin and Chartrand (2003, Study 2) went one step further and examined a situation where the desire to affiliate might be even stronger. They reasoned that a recent failure when trying to affiliate with another person might substantially increase the desire to affiliate with a different person. Participants were subliminally primed with an affiliation goal or not, and then were led to be successful or unsuccessful in their attempt to affiliate with a first confederate. The interaction of interest occurred with a second confederate, who shook her foot throughout her interaction with the participant. It was predicted that failing at an affiliation goal would increase subsequent affiliation goal-directed behaviors, including unintentional mimicry of the confederate's mannerisms. Results were as predicted. In the no goal condition, participants were equally likely to mimic the second confederate after succeeding or failing. However, in the affiliation goal condition, participants were much more likely to mimic the second confederate if they had failed in their attempt to affiliate with the first confederate than if they had succeeded.

One might wonder whether the increased mimicry was actually helpful to participants in the failure condition who were trying to affiliate with the second confederate. The second confederate provided ratings of her interaction with each participant, and analysis of this information revealed that the most-liked participants were the ones who were primed with an affiliation goal and had failed in their first attempt to accomplish it. Thus,

the results of this second study demonstrate that initially failing at an affiliation goal leads to increased efforts to affiliate with a new interaction partner. These efforts manifest themselves in greater mimicry of that person's mannerisms, which appears to be effective in increasing liking for the mimicker.

Another situation that might result in increased mimicry would be feeling too dissimilar from an important group. According to Brewer's Optimal Distinctiveness Theory (1991), people are in a continual quest to balance their need for *distinctiveness*, or seeing themselves as different from others, and their need for *assimilation*, or seeing themselves as the same as others. This leads to the prediction that individuals who currently feel too different from an important group (i.e., they are experiencing a heightened need for assimilation) should engage in behaviors that bring them closer to the group (i.e., mimicry). Uldall, Hall, and Chartrand (2003) tested this hypothesis by giving participants false feedback on a bogus "personality inventory" that suggested they had either a relatively rare or a relatively common personality profile (compared to other undergraduate students at the same institution). After they received the bogus feedback, they engaged in a task with a confederate who shook her foot throughout the interaction. As expected, participants who were made to feel too distinct by being placed in the rare category mimicked the confederate more than those who were made to feel the same as everyone else by being placed in the common category. Thus, participants mimicked more when they were in a situation where they felt too different from a peer group.

Overall, the results of the Lakin and Chartrand studies and the Uldall et al. study suggest that situations in which there is a desire to affiliate increase behavioral mimicry. Importantly, these results also provide further evidence that nonconscious mimicry is evolutionarily adaptive. Early humans who wanted to be included in groups might have relied on mimicry as a tool to accomplish their objectives, just as the participants in the Lakin and Chartrand (2003) studies used mimicry as a nonverbal tool to accomplish an active affiliation goal, or the participants in the Uldall et al. (2002) study mimicked when they felt too different from their group. Because social groups were so important, not mimicking group members might have been selected against; that is, mimickers were at an advantage because group members would like these individuals, and they would therefore be included in the group, which would increase their chances of accomplishing survival activities.

Behavioral Mimicry and Individual Differences that Activate a Desire to Affiliate

Situational factors that create a desire to affiliate result in more mimicry, but there are also individual differences in the desire to affiliate with others that can reliably influence mimicry behavior. Specifically, research looking at the role of perspective-taking and self-monitoring also supports the link between mimicry and affiliation, and suggests that mimicry behaviors are not indiscriminately utilized.

Chartrand and Bargh (1999, Study 3) hypothesized that individual differences in empathy might influence the likelihood of mimicking the behavior of an interaction partner. Perspective taking, or the ability to adopt and understand the perspective of others, is one component of empathy (Davis, 1983), and likely a characteristic that would have conferred an advantage on anyone who was trying to be accepted by a social group. Understanding the perspectives of others would make it easier to predict and control their behaviors, which would help the individual to have more control over their own inclusion in the group. Chartrand and Bargh (1999, Study 3) found that people who scored high on the perspective-taking subscale of Davis' (1983) empathy questionnaire were more likely than those who scored low to mimic the behavior of others. Thus, the ability to take the perspectives of others increases behavioral mimicry, suggesting that individuals who are able to affiliate with group members because of their ability to understand others also routinely utilize mimicry behavior.

Individual differences in self-monitoring (Snyder, 1974, 1987; see also Gangestad & Snyder, 2000) might be another variable that influences mimicry. Compared to low self-monitors, those who are high in self-monitoring are chronically sensitive to factors in the social environment that may be useful for them. Thus, when interacting with individuals who are likely candidates for group relationships, high self-monitors should be more likely to mimic their interaction partners than low self-monitors. Cheng and Chartrand (in press, Study 1) tested these ideas. They assumed that college students would have a goal to affiliate with a fellow undergraduate student, whereas they would not be as motivated to affiliate with someone of a different age group—either a high school student or a graduate student. It was further hypothesized that high self-monitors would be more aware of differences in age and what that meant for them, and would therefore be more attuned to situations where they might gain a friend (the undergraduate) versus situations where they would not (high school or graduate student). Participants interacted with a female confederate, who was ostensibly a high school student, an undergraduate student, or a graduate student,

who subtly touched her face throughout the interaction. The results supported the hypothesis: low self-monitors did not differentially mimic the confederate, yet high self-monitors mimicked the fellow undergraduate student more than they did either the high school student or the graduate student.

Another type of social information to which high self-monitors might be more attentive to is differences in relative power. In another study, Cheng and Chartrand (in press, Study 2) tested whether high self-monitors would be more likely to engage in mimicry when their outcome was dependent on the person with whom they were interacting. Participants were told that they were the "leader" or "worker" during an interaction with another participant (actually a confederate). It was predicted that high self-monitors would be more likely than low self-monitors to have an affiliation goal automatically activated when the situational cues indicated that it might be useful for them (i.e., when they were the worker and the other person had command over them). This was consistent with what was found: high self-monitors mimicked the confederate more when the confederate was their "leader" than when she was their "worker," whereas low self-monitors did not differentially mimic the confederate.

All of the studies reported in this section demonstrate that there are individual differences in people's tendencies to mimic the behaviors of others. Empathic individuals mimic people more than people low in empathy (Chartrand & Bargh, 1999, Study 3), and high self-monitors, who are more attuned than low self-monitors to differences in what others might be able to do for them, mimic others who have the potential to be useful more than individuals who are less useful (Cheng & Chartrand, in press). Both sets of studies suggest a tight relationship between nonconscious mimicry and affiliation. More importantly, they also demonstrate that mimicry behavior does not occur indiscriminately. This is an important point, as it suggests that this particular nonverbal behavior evolved to be part of a repertoire of behaviors that are used for a very specific purpose—to affiliate with others. In evolutionary terms, it makes more sense for a person to concentrate their affiliative efforts on people who are going to be able to help the mimicker in some way (e.g., by allowing them to enter the coveted group). To mimic the behaviors of people who are not part of the same peer group or who have lower power is less advantageous, and therefore less likely to occur.

Future Research

The research reviewed above is consistent with the idea that one reason people mimic others is that this mimicry has some adaptive value. To the extent that an individual gets along with other people and engages in behaviors that facilitate this goal, that person will be more likely to be included in important social groups. Because these groups were the locus of many important survival activities, individuals who exploited these mimicking tendencies were more likely to survive. In addition to offering a framework with which to understand the most recent research on behavioral mimicry and affiliation, our argument that mimicry behaviors are evolutionarily advantageous also offers suggestions for future research.

Culture and Mimicry

Behaviors that have an evolutionary basis are typically argued to be cross-cultural (Buss & Kenrick, 1998). Thus, we would expect the research described above to replicate with participants from many different cultures, although studies exploring this specific aspect of our model have yet to be conducted. However, the cross-cultural generalizability of behavior matching effects does not preclude the fact that there could also be cultural differences in the tendency to mimic the behaviors of interaction partners. Recent research has shown that an interdependent self-construal, but not an independent self-construal, is associated with assimilation of the other into the self (Markus & Kitayama, 1991; Stapel & Koomen, 2001). Therefore, individuals from interdependent cultures might exhibit a chronic tendency to mimic the behaviors of others to a greater degree than individuals from more independent cultures. In a study exploring this issue (van Baaren, Maddux, Chartrand, de Bouter, & van Knippenberg, 2003), people with interdependent self-construals (Japanese) exhibited more nonconscious mimicry than people with independent self-construals (Americans), regardless of the ethnicity of their confederate interaction partner. This study provides evidence that it is not only Americans who mimic the behaviors of others, but also suggests a complex relationship between culture and nonconscious behavioral mimicry that will need to be explored in future research.

Ostracism

The evolutionary psychology research described in the introduction demonstrates how important being included in social groups was for sur-

vival. This research is consistent with social psychological research on ostracism, which demonstrates that being ostracized from a group is one of the most psychologically damaging experiences that an individual can endure (Williams, 2001; Williams, Shore, & Grahe, 1998; Williams & Zadro, 2001). Therefore, one could argue that being ostracized from a group would be a particularly strong situational factor that would activate the tendency to mimic the behaviors of an interaction partner (Lakin, 2003). One would therefore expect to see a significant increase in mimicry after being ostracized from a group. Preliminary results support this conclusion. Lakin (2003) found that participants who were excluded from a ball-tossing game were more likely to mimic the behaviors of a subsequent interaction partner. It will also be important to demonstrate that mimicry behavior is uniquely related to being ostracized or excluded from a group, and not a result of any "failure" experience. That is, individuals should mimic an interaction partner more after being excluded from a group than after receiving failure feedback on an exam.

Self-Esteem

Leary and colleagues have proposed that self-esteem can be understood as a barometer of how people are doing with regard to their acceptance in social groups (Leary & Baumeister, 2000; Leary, Tambor, Terdal, & Downs, 1995). Specifically, they argue that self-esteem should decrease whenever a person is in danger of social exclusion, and this decrease would inform the individual that she needs to do something to restore her group standing. Mimicking the behaviors of group members would be one solution. In addition, the sociometer perspective would suggest that the mediating factor between being excluded from a group and an increase in mimicry behavior is state self-esteem. Exclusion should activate the self-esteem system, which would inform the person she is in (social) danger, and this activation of the self-esteem system might be one factor that activates the tendency to mimic the behaviors of group members. Harmony might then be restored, and the individual would no longer be in danger of exclusion.

Helping and Other Pro-Social Behaviors

Our argument thus far is that behavioral mimicry is related to affiliation, and utilizing behavioral mimicry to create affiliation confers significant evolutionary advantages on the mimicker. It would be interesting to continue to explore this pathway and demonstrate what specific behaviors

result from the increased liking created by mimicry. One possibility is that affiliating with an interaction partner increases the resources that we are able to obtain from them. Preliminary evidence supports this proposition. van Baaren and colleagues (van Baaren, Holland, Steenaert, & van Knippenberg, in press) assessed the effect of behavioral mimicry on tipping in restaurants. They found that when a waitress mimicked her customers, her tip amount significantly increased. This study demonstrates that mimicry can lead to sharing of resources, which would have been important for our ancestors who were not always able to attain enough food to feed themselves or their dependents. It is even possible that mimicking the behaviors of others could increase pro-social behaviors more generally (van Baaren, Holland, Kawakami, & van Knippenberg, in press), as well as lead to other adaptive outcomes. For example, perhaps individuals who mimic would communicate more effectively, or work more efficiently. Future research will need to focus on determining whether other types of behaviors are also fostered by affiliation as a result of nonconscious mimicry.

A Final Note

Given the importance of groups in our evolutionary history, it is perhaps not that surprising that nonverbal behaviors that helped to maintain these important relationships would have become such a pervasive part of our daily lives. In this paper, we have discussed what nonconscious mimicry is and its potential evolutionary significance. We also reviewed the recent literature on nonconscious mimicry and affiliation, which is consistent with our argument that mimicking the behaviors of others would have given our ancestors the skills necessary to be included in a group and maintain harmonious relationships with other group members. This framework can also be used to drive future research, and it is our hope that this research will lead to a greater appreciation for the significance of nonconscious behavioral mimicry, as well as other nonverbal behaviors that have been important in our evolutionary history.

Note

1. It should be noted that the confederates in Chartrand and Bargh (1999) Study 2 were trained to mimic the behaviors of the participants with whom they interacted. This methodological strategy leaves open the possibility that the confederates might have engaged in some other behavior, in addition to the mimicry, that led to the development of rapport. That is, mimicking the behaviors of the participants might not have been the factor respon-

sible for the increased sense of rapport that the mimicked participants experienced. Additional analyses were conducted to determine if some other nonverbal behavior (e.g., smiling, eye contact) was more likely in the condition where participants were mimicked, and this did not appear to be the case; there were no differences in smiling or eye contact in the two conditions. At least in this particular study, it therefore appears that mimicry was responsible for the increased feelings of liking and harmony.

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