

# Of Chameleons and Consumption: The Impact of Mimicry on Choice and Preferences

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This article investigates the effect of mimicry on consumer product consumption and appraisal. We propose and test two paths via which mimicry may influence product preferences. In the mimicking consumer path, we suggest that individuals automatically mimic the consumption behaviors of other people and that such mimicry then affects preferences toward the product(s) consumed. In the mimicked consumer path, we argue that being mimicked leads to increased prosociality, which affects preferences for products presented in dyadic interactions. Three studies confirm the two paths and suggest that mimicry can indeed influence product preferences.

Social scientists have long been intrigued by the human tendency to mimic the behavior of others. Research has shown that individuals automatically mimic multiple aspects of their interaction partners, including their postures, gestures, mannerisms, speech patterns, syntax, accents, facial expressions, and even moods and emotions (Chartrand and Bargh 1999; Chartrand, Maddux, and Lakin 2005; Dijksterhuis, Chartrand, and Aarts 2006). Much of the early work on automatic behavioral mimicry explored the relationship between mimicry and rapport and established that interactions with significant posture and mannerism sharing tended to be characterized by rapport and empathy between interactants (Bernieri 1988; Charney 1966; Dabbs 1969; La France 1979, 1982). Recent work has further explored the downstream consequences of mimicry and has shown, for example, that individuals like those who mimic them more and that mimicry promotes prosocial or helping behaviors

such as picking up dropped pens, increased restaurant tipping, or donating to charity (Chartrand and Bargh 1999; van Baaren et al. 2003; van Baaren et al. 2004).

Even in the internet age, many consumer decisions are made in social environments. Whether they are highly central to a consumer choice (e.g., negotiating with a car salesman at a dealership) or of a more peripheral nature (e.g., browsing the same aisle of a store with other shoppers), interactions with others often play a part in the decision process. Hence, to the extent that behavioral mimicry occurs automatically and can influence actions and attitudes toward others, it has the potential to influence choices made in social contexts. For example, the increased prosociality that mimicry engenders might cause a customer to feel obliged to help a salesperson make a sale or the salesperson to give the customer a better price. Nor may such influence be limited to explicitly dyadic encounters. For example, automatic mimicry of others might influence product choice in the store aisle or snack choice at a party, without any direct interaction necessarily taking place.

The overarching aim of the current research is to explore the potential ways in which consumers' consumption and preferences might be influenced by behavioral mimicry. In particular, we examine the consumption consequences both for the mimicker (i.e., the consequences of automatically mimicking others) and the mimicked (i.e., the consequences of being mimicked by others). The remainder of this article will be structured as follows. First, we will provide an overview of research on automatic behavioral mimicry of others and of research exploring the consequences of being mim-

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icked. Second, we will present three studies that explore the effects of mimicry on consumption.

## THEORETICAL DEVELOPMENT

### Automatic Behavioral Mimicry of Others

It is by now generally accepted that individuals automatically mimic many aspects of their interaction partners. Automatic mimicry of facial expressions, for example, is so hardwired that 1-month-old babies are already smiling or sticking out their tongues when they observe someone else doing the same, and before they reach a year old they are imitating complex emotional expressions such as joy or anger (Meltzoff and Moore 1983; Termine and Izard 1988). Individuals have also been shown to mimic the physical postures and behaviors of their interaction partners (La France 1982; Maurer and Tindall 1983). Even vocalizations tend to be automatically mimicked, with accents, rate, and rhythm of speech all automatically being taken on by interaction partners (Cappella and Panalp 1981; Giles and Powesland 1975; Webb 1972).

Automatic behavioral mimicry thus appears to be a generally pervasive phenomenon that influences a wide variety of physical and vocal actions. Nor is such mimicry restricted to individuals known or liked by the mimicker; indeed, Chartrand and Bargh (1999) demonstrated mimicry among complete strangers. In their study, participants took part in two sequential photo discussion exercises with two different confederates, one of whom rubbed his or her face, while the other shook his or her foot. As predicted, participants rubbed their faces more in the presence of the face-rubbing confederate and shook their foot more in the presence of the foot-shaking confederate. Importantly, participants subsequently expressed no awareness of either their own mimicry or the confederate's particular mannerisms. Thus, the mimicry appeared to be automatic and nonconscious. This chronic tendency to dynamically alter behavioral mannerisms to blend in with the prevailing social surroundings led Chartrand and Bargh to coin the phrase "the chameleon effect" to describe it.

The evidence supporting automatic behavioral mimicry of others suggests that it is extremely pervasive and robust. However, consistent with a focus on relationships and rapport, we note that almost all mimicry research to date has focused on the mimicry of behaviors (e.g., vocalizations, facial expressions, hand movements) that occur in the context of (usually dyadic) social interactions. Less attention has been paid to the mimicry of behaviors occurring outside of direct social interactions. There are many situations in which individuals do not explicitly interact but where there is still an opportunity for one person to mimic the other, such as two consumers in a store browsing independently in the same aisle. Thus it is important to explore the extent to which automatic behavioral mimicry extends to imitable consumption-orientated behaviors that occur outside of the context of direct interactions.

### Consequences of Automatically Mimicking Others

Although automatic mimicry of consumption behaviors is interesting in and of itself, more importantly, it may also have important consequences for the mimicker. If a mimicking individual consumes something, she may construct her preferences to be in line with her behavior (Bem 1967, 1972), regardless of whether she is aware of the underlying motivation for that consumption. As a result, the mimicker may conclude that she has a favorable preference toward the item consumed, even though the consumption was not due to conscious choice but rather to nonconscious mimicry of another's consumption. To the extent that preferences are positively (negatively) changed as a result of engaging in such mimicry, an individual could be more (less) likely to choose the item in the future. Thus, automatic mimicry of the consumption behaviors of others could be an important nonconscious source of unintentional preference and behavior shifts.

In the only demonstration of consumption-related mimicry of which we are aware, Johnston (2002) demonstrates that eating behavior (in this case the quantity of ice cream consumed) is indeed affected by automatic mimicry of the eating behavior of a visible confederate. From a marketing perspective, this research leaves several important unanswered questions that we wanted to explore. First, will the effect of mimicry on consumption carry over to downstream preferences? Second, if preferences are indeed influenced by the consumption behaviors of visible others, is mimicry a necessary condition for such influence to pertain, or is mere observation of such consumption behaviors sufficient? That is, if an individual observes another person consuming something but is without the means to mimic that consumption (e.g., you see someone eating mints on a bus but do not have any yourself), will preferences be changed to the same extent?

### Consequences of Being Mimicked

Given that behavioral mimicry of others is often observed, another important area to explore is the downstream consequences for the individuals being mimicked. Although research in this area is still formative, one emerging theme is that mimicry seems to enhance prosocial emotions and behaviors. In fact, prosociality is an important outcome of being mimicked. Being mimicked creates feelings of rapport, affiliation, and closeness toward the mimicker (in other words, prosocial emotions; Lakin et al. 2003) and has been shown to engender helping toward others (in other words, prosocial behavior; van Baaren et al. 2004). Prosociality in general has important implications for developing individual dyadic relationships, for bonding with group members, and for benefiting others (Penner et al. 2005).

Bavelas and colleagues (1987, 1988) have long argued that mimicry serves as an important communication tool, communicating to the person being mimicked that "I show how you feel." Such arguments, in conjunction with the correlation uncovered between mimicry and rapport (La

France 1982), suggest that mimicry may be quite adaptive. That is, by fostering communication and rapport, mimicry provides social glue, helping to bind social groups together and to create harmonious relationships (Lakin et al. 2003). The correlational nature of the initial work on mimicry and rapport left unexplored the issue of causality, in particular whether mimicry was a consequence or driver of liking and rapport. Although much of the early work was motivated by the idea that automatic behavioral mimicry was a downstream consequence of existing rapport, it seemed reasonable to predict a more bidirectional pattern of causation, namely, that mimicry of mannerisms and postures might in fact lead to more liking and rapport between individuals.

Chartrand and Bargh (1999, study 2) tested the prediction that mimicry would lead to more liking and smoother interactions between individuals. In this study, participants interacted with a single confederate in a task in which the confederate and participant took turns describing what they saw in various photographs. Throughout the interaction, the confederate either mirrored the posture, gestures, and mannerisms of the participant (e.g., crossing legs, touching hair, slouching in chair) or did not. Following the interaction, participants were given an exit questionnaire asking, among other things, how much they liked the other participant (i.e., the confederate) and how smoothly the interaction went with him or her. As predicted, those participants who were mimicked by the confederate reported liking the confederate more and thought that the interaction went more smoothly than those who were not mimicked. This was the first study to provide causal evidence that mimicry leads to more liking and rapport between interactants.

Recent research has begun to explore whether the positive prosocial effects of mimicry influence behavior toward others. Van Baaren et al. (2003) showed that verbal mimicry could influence customer tipping behavior in a restaurant environment. A confederate waitress received significantly larger tips when she mimicked her customers (i.e., by repeating their orders verbatim) than when she did not (i.e., by paraphrasing their order). The simple act of verbally mimicking customers thus appeared to change their tipping behavior to the benefit of the waitress. Subsequent work has shown that this prosocial result generalizes both to different types of mimicry (behavioral rather than verbal) and to different types of prosocial behavior (picking up pens and giving to charity). For example, van Baaren et al. (2004) demonstrated that participants who had previously been mimicked by an experimenter picked up more pens dropped by the experimenter than did the non-mimicked participants. In a second study, mimicked participants also gave more generously to an experimenter-introduced charity.

While such charitable behaviors are a fascinating consequence of mimicry, it seems plausible that such increased prosociality will have consequences beyond helping per se. One such potential implication of mimicry-induced prosociality is that it may have implications for persuasion. Although the effect of mimicry on persuasion has been largely unstudied to date, related research has established that motor

movements can influence message persuasiveness and product evaluations outside of conscious awareness (Forster 2004; Wells and Petty 1980). In the first direct exploration of the effects of mimicry on persuasion, Bailenson and Yee (2005) had participants interact with computer avatars in a virtual reality environment. The avatars delivered a message about a controversial campus security policy that would mandate carrying identification. In the mimic condition, the technology enabled the avatar's head movements to exactly mimic those of the participants at a 4-second delay. In the recorded condition, a replay of head movements of a previous participant was used. Participants who were mimicked subsequently reported higher levels of agreement with the message.

While this finding is consistent with an explanation relying on mimicry-induced prosociality, one way to substantiate this would be to manipulate the extent to which the mimicker appears to need help or to be invested in a certain outcome. If the observed effect of mimicry on persuasion is indeed driven by prosociality, then the effect of mimicry ought to be enhanced when the mimicker's need is more evident. When an individual makes a clear plea that she is in need of help, someone experiencing increased prosociality should be more likely to help such a person. In addition to supporting the role of prosociality, this result would also have important potential ramifications in consumer contexts. Consider, for example, an interaction between a salesperson and a consumer. While the consumer may have her guard up against being pushed into a purchase, the prosociality engendered in a mimicked customer may actually lead her to want to help the salesperson by engaging in behaviors consistent with that salesperson's implicit desire to make a sale. Thus, it is possible that even when consumers' guards are up, on a nonconscious level, they might actually be more vulnerable to certain persuasive devices (e.g., mimicry). This potential disassociation between consciously guarding against persuasion and nonconsciously wanting to be prosocial is particularly important and interesting to explore.

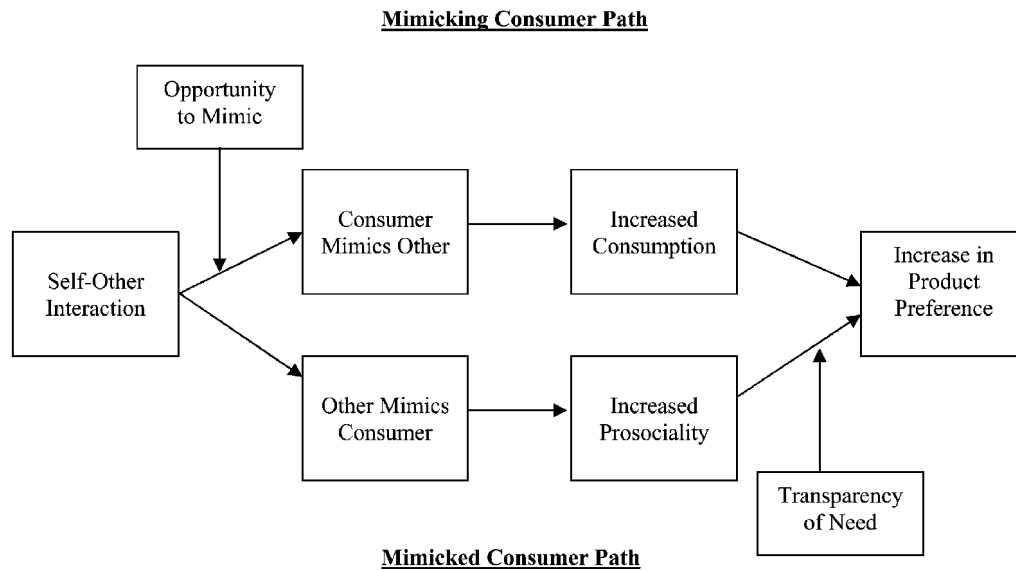
## Research Overview

The current research is designed to explore the potential for mimicry to influence product consumption and appraisal. In particular, we investigate two distinct paths via which this influence may manifest itself. The consumer may mimic another individual or she may be mimicked by another individual, with each of these paths having consequences for consumption and preference. These paths are presented in figure 1 and are described in detail below.

1. The *mimicking consumer path* (consumer mimics other) relies on a consumer's automatic mimicry of observed consumption behaviors. First, the consumer must have the opportunity to mimic the interaction partner. That is, he or she must have equivalent access to the consumed product. Given that mimicry occurs, it results in increased consumption of the snack selected by the interaction partner. We hypothesize

FIGURE 1

DUAL PATHWAYS BY WHICH MIMICRY CAN INFLUENCE PRODUCT CONSUMPTION AND PREFERENCE



that this increased consumption will influence the preferences of the mimicking consumer.

2. The *mimicked consumer path* (other mimics consumer) relies on prosocial emotions being generated in a consumer when he or she is mimicked by an interaction partner. That partner mimics the behavior of the consumer. This generates feelings of rapport and liking, and thus prosocial emotions, which then have consumption-related downstream consequences for the person being mimicked. Specifically, based on the previously observed consequences of mimicry for both persuasion and prosocial outcomes, we hypothesize that a consumer would display greater liking for a product that was introduced by a mimicker than by a nonmimicker. Further, the effect of mimicry should be stronger when the mimic's need is made more transparent.

In the first experiment, designed to investigate the mimicking consumer path, participants watched a confederate undertake a task during which one of the two snacks was consumed. The participants had the same two snacks available to select from. In experiments 2 and 3, designed to investigate the mimicked consumer path, participants were introduced by the facilitator to a new snack product during an interaction in which the facilitator either did or did not mimic them. In addition, the facilitators either did (experiment 3) or did not (experiments 2 and 3) disclose a self-interest in the nature of the participants' views toward the product. In all three experiments, participants' consumption of said snacks was discretely measured and their opinions of the snacks in question were recorded.

### EXPERIMENT 1

The mimicking consumer path is potentially applicable whenever consumers occupy the same environment, regard-

less of whether they formally interact or communicate. If mimicry can occur even under such nonsocial circumstances, then the effects have the potential to be quite ubiquitous in our daily lives.

Experiment 1 examined mimicry of consumption behavior and its subsequent effect on the mimicker's preferences. Participants believed that they were engaging in a study concerning memory for advertisements. They were told that they would watch a video of another participant (actually a confederate) describing a series of advertisements and that they would later be asked about their memory for and impressions of those ads. During the task, the confederate ate only one of two available snacks. We hypothesized that (a) participants would mimic the snacking behavior of the confederate, (b) preference ratings provided during an ostensibly unrelated second study would be consistent with participants' snacking behavior, and (c) the effect of the confederate's snacking behavior on participants' preferences would be mediated by participants' mimicry behavior. We believe that participants' snacking behavior, which is the direct outcome of mimicry, will shift preferences.

An alternative theory of these effects is that merely observing someone's consumption behavior affects preferences toward the consumption objects, which then determine behavior. This explanation predicts that preferences for the snacks will be affected irrespective of whether mimicry occurs. The following steps were taken to rule out this explanation. First, we included no-food conditions in which participants observed the confederate's snacking behavior but did not have the opportunity to select any snacks. If our explanation is correct and it is mimicry that affects preferences instead of vice versa, we should not observe an effect of the confederate's snacking on preferences in the no-food con-

ditions; the effect should only be evident in the food-present conditions. Second, we conducted a mediation analysis to directly test if changes to preferences were mediated by mimicry-induced consumption.

## Method

**Participants.** Participants were 147 undergraduates from Duke University. Thirty-four participants were excluded due to equipment failures, suspicions about the study's purpose, not wanting videos coded, or not eating in the food conditions. Data from 113 participants were thus used in the final analysis.

**Materials.** The experiment used a 2 (confederate's snacking behavior: goldfish vs. animal crackers)  $\times$  2 (food presence: food vs. no-food) design. In a pretest, undergraduates rated liking for 45 different snacks on a nine-point scale. Goldfish and animal crackers were rated equally positively ( $M$ 's = 6.59 and 6.27, respectively;  $F < 1.0$ ) and were chosen for use in this study. In the food conditions, bowls of the two snacks were placed on a table in front of the participant, while in the no-food conditions, no snacks were available.

**Prior Preferences.** Baseline preference measures toward the animal and goldfish crackers were collected by sending participants an e-mail message requesting completion of a Web-based survey at least 3 days before the study session. Participants were given \$1 to complete the survey, in which they indicated how much they liked a variety of items (including goldfish and animal crackers) in four different product categories on a nine-point scale from 1 (do not like at all) to 9 (like very much).

**Procedure.** Participants arrived individually and were seated at a table with a computer monitor in a private lab room. They were told that they would complete two unrelated studies, the first examining the effects of hearing ad descriptions on ad memory and the second examining personality and product preferences. They were told that students recruited earlier had been videotaped describing a series of ads and that they would watch the video of one of these participants (the confederate). Participants were told that the second study would serve as a necessary delay between the ad description task and the memory assessment. Bottled water and two bowls were directly in front of the confederate; one bowl had animal crackers, and the other bowl had giant goldfish crackers. Just prior to playing the first ad, the experimenter (on the videotape) mentioned the snacks to the confederate in passing. In the food conditions, the confederate was told that he could help himself to the snacks and water at any point. In the no-food conditions video, the confederate was told that the snacks were left over from a prior study and that he could help himself to the snacks and water at any point. This was done so that participants in the no-food conditions would not wonder why they themselves did not have any snacks. Participants in the food conditions were given the same instructions

regarding the snacks as the confederate. During the task, the confederate exclusively ate either goldfish or animal crackers, taking one cracker at a time at intervals of 10–20 seconds whenever he was not speaking. After the video, the participant was moved into a different room to complete the ostensibly unrelated second study. There, participants rated how much they liked 30 different snacks, including goldfish and animal crackers, and then they completed the filler personality scale. Finally, participants completed the funneled debriefing form.

**Measures.** Experimental sessions were videotaped. A trained coder recorded the number of instances in which the participant took at least one snack from either bowl. The snack selection measure was the percentage of times that goldfish crackers were selected. Mimicry would be indicated if participants in the goldfish cracker-only condition selected goldfish a greater percentage of the time than they selected animal crackers (i.e., more than 50%), and vice versa in the animal cracker-only condition. Snack preference ratings were measured on a nine-point scale from 1 (do not like at all) to 9 (like very much). The preference dependent measure was calculated as the difference between the goldfish and animal cracker ratings.

## Results and Discussion

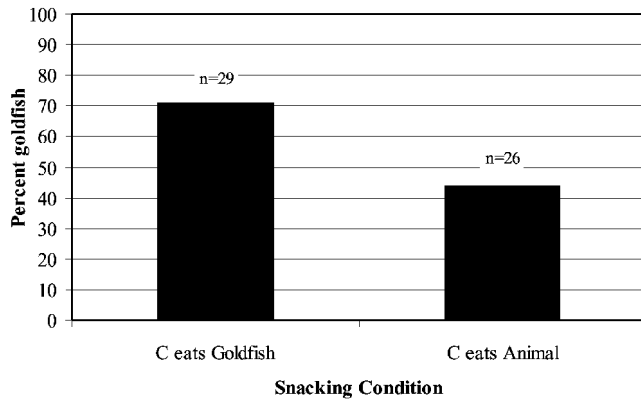
**Prior Preferences.** The snack premeasures indicated that goldfish were rated significantly higher than animal crackers ( $M$ 's = 6.33 and 5.67, respectively;  $t(112) = 2.56$ ,  $p = .01$ ). Importantly, prior preferences did not differ across snacking conditions or food presence ( $F$ 's  $< 1.0$ ). Participants' prior preferences, gender, and race were included as covariates in all analyses.

**Main Analysis.** We predicted that participants in the food conditions would mimic the confederate's behavior, as evidenced by selecting more of the snack consumed by the confederate than the snack not consumed by the confederate. Figure 2 displays the percentage of times that the participant selected goldfish crackers by snacking condition (food present conditions only). As expected, participants in the goldfish cracker-only condition selected goldfish more often than they did animal crackers, while participants in the animal cracker-only condition selected goldfish crackers less often than they did animal crackers ( $M$ 's = 71% and 44%, respectively;  $F(1, 46) = 13.59$ ,  $p < .001$ ).

We also predicted that participants' preferences would reflect their eating patterns in the food conditions but that preferences would not differ across snacking condition in the no-food conditions. Figure 3 displays the difference in preference ratings as a function of snacking condition and food presence. The greater the positive value, the higher the preference rating for goldfish crackers relative to animal crackers. There was a main effect of snacking condition ( $F(1, 102) = 4.61$ ,  $p = .03$ ). More importantly, there was an interaction between snacking condition and food presence ( $F(1, 102) = 4.47$ ,  $p < .04$ ). In the food conditions, partic-

FIGURE 2

EXPERIMENT 1: PARTICIPANTS' SNACK SELECTION BY SNACKING CONDITION



Participants in the goldfish cracker-only condition rated goldfish higher than animal crackers ( $M_{\text{difference}} = 1.61$ ), whereas in the animal cracker-only condition, participants rated goldfish about the same as animal crackers ( $M_{\text{difference}} = .21$ ;  $F(1, 102) = 8.74, p = .004$ ). In contrast, in the no-food conditions, participants in both the goldfish cracker-only and the animal cracker-only conditions rated goldfish higher than animal crackers and at the same levels ( $M_{\text{difference}}$ 's = 1.23 and 1.22, respectively;  $F(1, 102) = .00, \text{NS}$ ).

A mediation analysis was conducted as we expected the relationship between snacking condition and participants' preferences to be mediated by mimicry, that is, participants' snacking behavior. This analysis was necessarily limited to participants in the food conditions. Figure 4 displays the regression coefficients for the key relationships. There was a significant relationship between snacking condition and participant's snack selection (*a*), snacking condition and preferences (*b*), and participant's snack selection and preferences (*c*). The relationship between snacking condition and preferences was not significant when controlling for participant's snack selection (*d*), and the reduction in the beta with versus without the mediator is significant by a Sobel test ( $z = -2.75, p = .01$ ; Preacher and Leonardelli 2001). Combined with the lack of effect of snacking condition on preferences in the no-food conditions, these results support the position that mimicry of consumption behavior led to adjustments in preferences.

Awareness of the confederate's influence on participants' behavior and preferences was also assessed. Food condition participants were asked to describe how they decided what to eat. These written responses were coded for mentions of (*a*) properties of the food, (*b*) preexisting preferences, and (*c*) the behavior of the confederate. Forty-five percent of participants mentioned properties of the food, and 64% mentioned their preferences for the food. Only 11% mentioned the confederate's behavior. Participants were also asked to indicate the extent to which their eating behavior, their prior preferences, and the confederate's behavior influenced their

ratings for goldfish and animal crackers from 1 (not at all) to 9 (to a large extent). The mean response for the effect of prior preferences was 6.91. In contrast, participants indicated that the confederate's behavior did not affect their ratings, with a mean response of 1.66. These responses did not differ by food presence. The question regarding own eating behavior referred to eating during the study session for participants in the food conditions and to past eating behavior for participants in the no-food conditions. The mean response was 3.95 in the food conditions compared to 6.55 in the no-food conditions, a significant difference ( $F(1, 111) = 28.72, p < .001$ ).

These results suggest that when food was present, participants tended to mimic the confederate's consumption. Further, participants' preference ratings reflected their snack selection. Participants were not aware that the confederate's behavior had an influence on their own snack choice or preferences. They primarily attributed their snacking behavior and snack ratings to their prior preferences, but the effects of mimicry on preferences are evident even after covarying out these prior preferences. Results from the no-food conditions suggest that mere observation of snack choice did not differentially affect preferences. Experiment 1 thus provides the first evidence that automatic mimicry of others can influence the preferences of the person engaging in the mimicry.

EXPERIMENT 2

Experiment 1 supported the mimicking consumer path, namely, that our automatic tendency to mimic others extends to consumption-oriented behaviors and that such mimicry

FIGURE 3

EXPERIMENT 1: DIFFERENCE IN PREFERENCES FOR SNACK BY SNACKING CONDITION AND FOOD PRESENCE

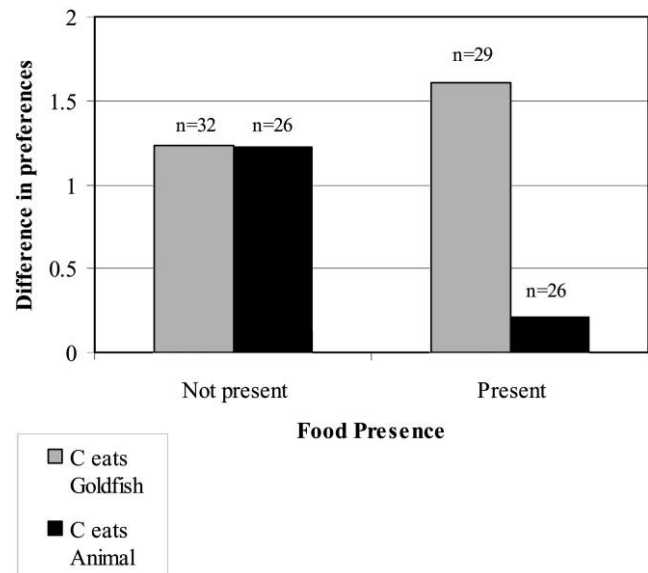
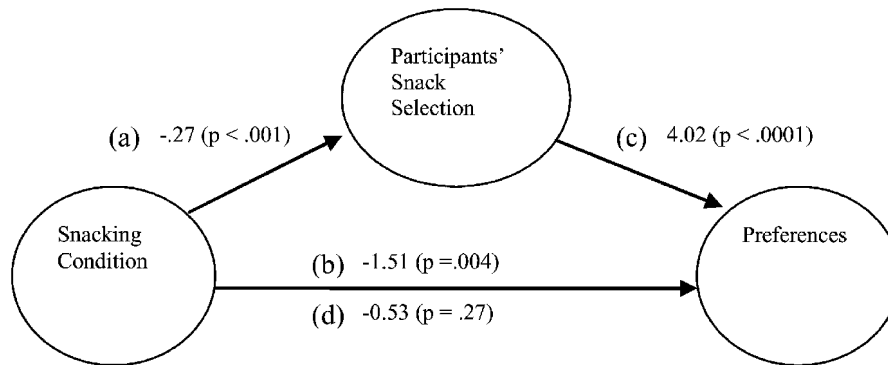


FIGURE 4

EXPERIMENT 1: MEDIATION ANALYSIS OF THE EFFECT OF SNACKING CONDITION ON PREFERENCES BY PARTICIPANTS' SNACK SELECTION



can mediate not only the consumption behavior itself but also our preferences for the product in question. In sum, automatic mimicry of others' consumption can affect our own consumption and thus can play an important role in everyday consumption behavior. The flip side, that one can be mimicked by others, also has consequences for subsequent behavior. We now turn our focus to the second pathway, the mimicked consumer path, which explores the downstream effects of being mimicked by others. Experiment 2 was designed as an initial test of whether being mimicked by an interaction partner can influence perceptions of a consumer product (in this case an ostensibly new sports drink) introduced during a dyadic interaction. The experiment used a simple two-condition, between-subject design, with mimicry being manipulated across conditions. Behavioral, affective, and cognitive measures of participants' preference for the product were taken.

## Method

**Participants.** Thirty-nine participants from Duke University were assigned randomly to either the mimic or the no-mimic condition. Two participants who expressed suspicion that the facilitator appeared to be studying their body language during the interaction were excluded from the subsequent analysis, leaving data from 37 participants.<sup>1</sup>

**Procedure.** Participants were guided to the lab room by a male experimenter who waited for them at a designated waiting area. The experimenter first briefed participants about the study's purpose. Participants were told that the experiment concerned the impression formation process for new products and that a trained facilitator would be questioning them about their soft drink preferences and explaining some features of a new sports drink called Vigor that was approaching market launch. The experimenter then brought them to the room and introduced them to the fa-

ilitator (who was blind to the study's hypothesis). The experimenter then left the room. Participants were seated at an angle of approximately 120 degrees to the facilitator. A small table was positioned between them. The facilitator briefly reiterated the purpose of the study and explained that there would be an opportunity to taste the drink and provide written feedback about it at the end of the session.

The interview was designed both to resemble a genuine market research interview and to lead to a relatively scripted interaction, with minimal potential for tangential discussion. This was done to ensure that the level of interaction between participant and facilitator was consistent across participants. The facilitator first asked participants a series of eight preference elicitation questions concerning their patronage and opinions of soft drinks in general and sports drinks in particular (e.g., "How many soft drinks do you consume a week?" and "Where would you be most likely to buy a sports drink?"). Second, he explained three beneficial features of the supposed new sports drink (e.g., "People's sense of taste changes when they work out—hence Vigor has been checked to ensure that its flavor is still enticing when people are active. This is quite important because one of the reasons people do not drink enough when working out is the flavor of the beverage. Have you ever noticed that things taste different when you work out?"). The explanation of each feature was always followed by a single related question, which was again designed to lead to a tightly controlled interaction.

Next the facilitator informed participants that it was time to taste the drink. He placed both a filled cup and a pitcher on the table and invited them to drink as much as they wanted. The actual drink used was Gatorade Ice, a clear version of Gatorade. This ensured that the drink was highly unlikely to be visually recognized and yet would taste like a genuine sports drink. To continue the cover story, participants were told that Vigor was in the final prototype stage and that the coloring had not yet been added but that the flavor was finalized. Finally, the facilitator handed participants a feedback packet about the drink that contained the

<sup>1</sup>Since only five of the 39 participants were male, we did not include gender in the model for experiment 2.

dependent measures (described below). He then left the room to allow participants to complete the survey on their own. Once the survey had been completed, participants completed a funnel debrief and were paid and dismissed.

The mimicry manipulation was carried out as follows. In the mimic condition the confederate mirrored the participants' mannerisms after a short 1–2 second delay (Chartrand and Bargh 1999). Mirroring occurs when the mimicker performs the same action as the person being imitated but on the opposite side of the body. Given the angle between facilitator and participant, this creates an effect for the person being mimicked that is somewhat akin to looking in a mirror. Mimicked actions included posture and body angle, leg crossing, leg and foot movements, and arm and hand movements such as hair or face touches. In the no-mimic condition the facilitator anti-mimicked (Dabbs 1969). That is, he took on the opposite of the major body positions and posture of the participants. For instance, if the participant slouched, the facilitator sat up straight. If the participant crossed her legs, the facilitator kept both of his feet flat on the floor. This ensured that the posture and mannerisms of the participant and facilitator would not be similar in the no-mimic condition (which might otherwise be the case given the automatic nature of mimicry).<sup>2</sup> Of note, the actions required of the facilitator in the no-mimic condition are much more limited than in the mimicry condition (since they are restricted to major body positions only) and should not be considered as a truly reciprocal or opposite activity to mimicry itself. In sum, the no-mimic condition was designed only to ensure an absence of automatic mimicry rather than to create a situation where the participants felt excessively out of synch with the facilitator.

In addition to this physical mirroring process, verbal mimicry was carried out via the facilitator repeating back the key elements (using the same syntax) of the participant's response for every other item in the script. For example, if a participant said that, "I tend to drink Coke and Sprite mostly," then the facilitator would reply, "So you drink Coke and Sprite mostly." In the no-mimic condition, the confederate used general confirmatory phrases to respond to participant responses to the items mimicked in the opposing condition. For example, if a participant said "I tend to drink Coke and Sprite mostly," the facilitator would reply, "Ok, I got your views on that one." Verbal responses were designed to be of approximately equal length to participants' responses in the mimic condition. These steps were taken to minimize the risk of possible confounds with either the depth of interaction with the facilitator or affirmation of participant preferences by the facilitator across conditions.

*Measures.* The survey completed by the participants at the end of the study asked participants to rate their agreement

with the following statements: "I really enjoyed the taste of Vigor"; "I would buy Vigor when it goes on sale"; and "I would expect Vigor to be successful when it is launched." All scale items were measured on 11-point scales anchored from strongly disagree (0) to strongly agree (10). We chose these measures in an attempt to assess participants' underlying preference for the drink across a number of dimensions and to triangulate around an action tendency that marketers would be interested in. Thus the enjoyment measure provides an affective measure, belief about future success is more cognitive in nature, and likelihood to buy captures behavioral intent. In addition to this last behavioral intent measure, when the participants had finished their survey packet, we recorded the number of grams of the beverage consumed to provide a direct behavioral measure and an implicit measure of liking.

## Results and Discussion

To test our main prediction, a multivariate analysis of variance (MANOVA) was conducted on the enjoyment, likelihood to buy, expectations of success, and weight consumed variables with mimicry (mimic vs. no-mimic) as the independent variable. As expected, there was an overall effect of mimicry across the four dependent measures ( $F(4, 34) = 3.46, p = .02$ ). The means of the individual measures are shown in table 1. All effects were in the hypothesized direction, with participants being more positive toward Vigor when the facilitator mimicked them than when he did not.

### EXPERIMENT 3

Experiment 2 provides initial evidence for our contention that mimicry can lead to more favorable attitudes toward a product presented by the mimicker. We have argued that this effect is driven by mimicry-induced prosociality influencing the behavior of mimicked participants, such that those who are mimicked will respond more positively to a product associated with the mimicker. However, experiment 2 did not directly manipulate the degree to which the facilitator expressed needing help. We expect any prosociality-driven effect to be more acute for a mimic who more clearly exhibits a need. Experiment 3 provides a direct manipulation of the

**TABLE 1**  
EXPERIMENT 2: MEANS FOR VIGOR PREFERENCE  
MEASURES BY MIMICRY

	No Mimic	Mimic
Enjoyment <sup>a,**</sup>	6.2	7.8
Likelihood to buy <sup>a,**</sup>	3.8	6.5
Expectations of success <sup>a,+</sup>	5.8	6.8
Weight consumed <sup>b,**</sup>	70	111

<sup>a</sup>Strongly disagree (0) to strongly agree (10) scale.

<sup>b</sup>Weight in grams.

<sup>+</sup>Univariate  $p < .10$ .

<sup>\*\*</sup>Univariate  $p < .01$ .

<sup>2</sup>Although not reported in the current research, we ran a study similar to this one but with a condition in which the facilitator sat in a neutral position (e.g., feet flat on the floor, sitting straight up) throughout the interaction with the participant. That study produced a similar pattern of results, indicating that it is not the anti-mimicry behavior that is driving the results of the current study.

extent to which the facilitator was invested in the outcome; in essence, the facilitator's need is more transparent. The facilitator either states that he will directly benefit from the success of the product and marketing messages or that he is not directly associated with the manufacturer of the product. The greater evidence of need, as expressed by the statement of a direct benefit, should lead to a more positive response to the product than when no explicit benefit is stated. In addition, experiment 3 was designed to rule out a possible mood-based explanation for the results of experiment 2 (i.e., that the effect of mimicry on product preference is mediated by positive mood). The experiment used a 2 (mimicry: mimic vs. no mimic)  $\times$  2 (facilitator need: invested vs. independent)  $\times$  2 (gender: male vs. female) between-subject design.

## Method

**Participants.** Fifty-seven undergraduates from Duke University completed the study in return for a payment of \$5.00. Two participants who expressed suspicion that their interaction with the facilitator was central to the study and three who suspected that their consumption of the product was being measured were excluded from the subsequent analyses. Thus, data from 52 participants remained in the final analyses.

**Procedure.** The participants were brought to the room and briefed about the experiment in the same way as in experiment 2. As a cover story for this study, participants were told that its purpose concerned the impression formation process and marketing of unfamiliar products. The product in question was spicy cheese straws, which participants were told were under consideration for national roll-out by the manufacturer. Cheese straws were chosen based on their relatively niche status, which was consistent with the national roll-out cover story. Participants were told that a trained facilitator would be questioning them about their snack product preferences and soliciting their impressions of various marketing messages that were under consideration to market the cheese straws in a potential national launch.

Following the format of experiment 2, the facilitator first asked participants a series of preference elicitation questions concerning their snack preferences. The facilitator then read three promotional messages for the cheese straws for each participant to assess (e.g., "The first two ingredients of the cheese straws are real cheese and real flour—not processed or reconstituted ingredients. Please take a moment to consider how persuasive you find this. Is this message appealing to you? Do you typically look at the ingredients of snacks you buy?"). Each promotional message was similarly followed by two questions, one about its persuasive appeal and the second a general domain-relevant question, both designed to encourage a tightly controlled conversation, as in experiment 2. Next the confederate informed participants that it was time to taste the cheese straws and placed a full cup of cheese straws on the table and invited them to have a taste. A further series of questions about the flavor and texture of the cheese straws followed. Finally, the confed-

erate handed participants a feedback packet about the cheese straws, invited them to eat as many as they wished, and left the room. Once the survey had been completed, participants completed a funnel debrief and were paid and dismissed.

The mimicry manipulation was carried out exactly as in experiment 2. The facilitator need manipulation was designed to alter participant perceptions of the extent to which the facilitator was invested in their appraisal of the product. In one set of conditions (termed "invested"), the confederate told participants the following as part of the introduction to the study: "In the interest of full disclosure, I should tell you that I am helping the cheese straw manufacturer come up with improved marketing messages to use in advertising the cheese straws. The more persuasive the cheese straw company thinks the marketing messages are, the more I get paid." In the other set of conditions (termed "independent"), the following phrase was substituted: "Just so you know, I am not affiliated with the cheese straw manufacturer in any way. We randomly chose cheese straws as a product to test various ideas about impression formation and marketing of unfamiliar products."

**Measures.** The measures used were identical to those in experiment 2. The survey about the product completed by the participants at the end of the study asked participants to rate their agreement with the following statements: "I enjoyed the taste of the cheese straws"; "I would buy the cheese straws"; and "I think the cheese straws could become successful in the market." All scale items were captured on an 11-point scale anchored from "strongly disagree" (0) to "strongly agree" (10). As in experiment 2, the amount of the cheese straws consumed was discretely measured to provide an implicit measure of liking. Additionally, participants rated their mood on an 11-point scale anchored from "really bad" (-5) to "really good" (5). Finally, two manipulation checks were collected (both collected on 11-point scales). Participants were asked how motivated the facilitator appeared to be during the interview (to help rule out the possibility that the facilitator behaved differently when mimicking) and how invested in the success of the product and marketing messages they believed he was (to check the efficacy of the persuasive intent manipulation).

## Results and Discussion

**Manipulation Checks.** Participants reported the facilitator in the invested condition to be more invested in the product and marketing messages ( $M = 4.5$ ) than did those in the independent condition ( $M = 3.0$ ;  $F(1, 49) = 4.4$ ,  $p = .04$ ). However, they perceived no difference in his motivation levels in the interview across conditions ( $F < 1$ ). Thus, although participants believed that the facilitator had more self-interest in the invested condition, they did not observe any differences in his apparent motivation across persuasion conditions.

**Main Analysis.** A multivariate analysis of variance (MANOVA) was conducted on the enjoyment, likelihood

to buy, expectations of success, and weight eaten variables, with gender, mimicry, and facilitator need as independent variables and mood as a covariate. The means of the individual measures are shown in table 2. A main effect of gender was observed ( $F(4, 40) = 3.48, p = .02$ ), which was largely due to male participants eating substantially more cheese straws than female participants. No interactions with gender were observed, so that is not discussed further. Additionally, the mood covariate did not interact with any other variable ( $F$ 's  $< 1.0$ ). Once again, there was a marginally significant effect of mimicry across the four dependent measures ( $F(4, 40) = 2.45, p = .06$ ).

As predicted, this main effect of mimicry was qualified by the expected interaction between mimicry and facilitator need ( $F(4, 40) = 2.54, p = .05$ ). Across our four dependent variables, the effect of mimicry appeared to be more acute when participants believed that the facilitator was invested in the success of the product and wanted them to like the product and its marketing messages. Experiment 3 thus extends experiment 2 by providing the first demonstration that the positive effects of mimicry on attitudes are enhanced when the mimicker is openly invested in the product in question.

Taken together, experiments 2 and 3 demonstrate clear support for the mimicked consumer path. In both cases participants who were behaviorally mimicked displayed stronger preferences for products introduced by a dyadic interaction partner than did participants not mimicked. Further, directly supporting a prosocial explanation, this effect was enhanced when the mimicking facilitator was transparently invested in the participant's attitude toward the product.

## GENERAL DISCUSSION

The current research demonstrates that both consumption and preferences can be influenced by behavioral mimicry. We examine two related paths by which such influence might be expected to operate. The mimicking consumer path considers the consequences resulting from mimicry of observed consumption behaviors. The mimicked consumer path is concerned with the consumption implications of a consumer being mimicked in a dyadic interaction. We found support for both paths. Experiment 1 demonstrated that individuals' preferences and consumption can be influenced by their automatic mimicry of the consumption behaviors of people they observe. Of note, this influence on preferences manifested only for participants who could mimic the consumption behavior and not for those who merely observed the consumption. Mediation analyses supported this causal pathway.

Experiments 2 and 3 investigated the mimicked consumer path. The results from experiment 2 showed that participants who had been behaviorally mimicked subsequently displayed more positive attitudes toward a sports drink that had been discussed during the interaction. Experiment 3 replicated the findings of experiment 2 and additionally showed that the effect of the mimicry was particularly acute when the mimicking facilitator was perceived as being invested

TABLE 2

EXPERIMENT 3: MEANS FOR CHEESE STRAW PREFERENCE BY MEASURES BY MIMICRY AND PERSUASIVE INTENT

	Independent		Invested	
	No Mimic	Mimic	No Mimic	Mimic
Enjoyment <sup>a</sup>	5.3	5.5	4.8	6.5**
Likelihood to buy <sup>a</sup>	3.5	4.8	2.7	5.7**
Expectations of success <sup>a</sup>	4.2	5.3	5.1	5.4
Weight eaten <sup>b</sup>	8.5	12.7	7.7	10.3

<sup>a</sup>Strongly disagree (0) to strongly agree (10) scale.

<sup>b</sup>Weight in grams.

\*\*Univariate  $p$  (invested condition)  $< .01$ .

in the success of the product in question. This result is consistent with previous findings that people who are mimicked are more likely to help others in need (van Baaren et al. 2004). As mentioned earlier, one might have expected that a person who is aware that a salesperson is trying to affect her behavior may try to guard against this influence, thereby being less likely to respond positively toward the product promoted by the facilitator. Instead, the prosociality engendered by mimicry led to more helping when the facilitator was highly invested. Thus, in this case there was in fact an observed disassociation between the conscious desire to guard against persuasion and the nonconscious tendency to be prosocial.

Thus mimicry can influence product consumption and appraisal. As a result of mimicry, we consistently observed increased product preferences across a variety of self-report measures. In experiment 1, the product that individuals chose to consume, and later preferred to a greater extent, was influenced by their automatic mimicry of a confederate whom they observed but with whom they did not interact. This finding suggests that behavioral mimicry is a subtle mechanism by which consumers may inadvertently influence each other. In experiments 2 and 3, individuals mimicked by a person introducing a new product reported liking the product more, expressed higher intent and willingness to purchase and recommend the product, and consumed more of the product. These data suggest that mimicry has the potential to be a valuable tool in interpersonal persuasion, even, and perhaps particularly, in those cases where the underlying motivations and persuasive intent of the persuader are transparent to the target individual whom he or she is desirous of persuading. The sales domain is one that has much promise in this regard.

## Theoretical Contribution

The current research extends our existing knowledge of mimicry in a number of important ways. First, experiment 1 highlights the importance of considering the downstream consequences on those automatically mimicking others, as opposed to solely focusing on the impact of being mimicked. This research is the first to show that mimicking consump-

tion behaviors influences preferences for the items consumed. We demonstrate that people mimic the consumption behaviors of others and that this mimicry in turn can influence one's own preferences toward the consumed items. Mediation analyses and the results from the no-food conditions support our view that mimicry behavior affects preferences.

Second, much of the recent research on the prosocial consequences of mimicry has focused on the interpersonal consequences of being mimicked (e.g., greater liking, smoother interactions, and more helping behavior; Chartrand and Bargh 1999; van Baaren et al. 2004). Experiments 2 and 3 extend our understanding of mimicry's effects by investigating the potential for mimicry to influence non-social outcomes. We demonstrate that the effect of mimicry extends beyond explicitly social outcomes to encompass influences on product preferences and choice.

Third, research on the consequences of being mimicked has to date held constant the characteristics of the mimicker. It is likely that many features of the mimicker could influence the downstream consequences. For instance, perhaps whether the mimicker is likeable or a member of an ingroup may influence the extent to which the mimicry leads to smooth interactions. Experiment 3 is the first study to test whether characteristics of the mimicker moderate the downstream consequences of mimicry. We found that greater transparency of facilitator need did indeed lead to a larger effect of mimicry. There are, of course, many other features of the mimicker that could be manipulated in future work that might moderate the consequences of mimicry.

### Implications for Marketing

These findings add to a growing body of research suggesting that consumer behavior can be driven by processes that occur outside of awareness, intent, and control. Although consumers may think that they understand the reasons for the choices they make, they are nonconsciously influenced by factors as diverse as environmentally activated goals, mere measurement, Web-page wallpapers, head nodding, and behavioral mimicry (Chartrand 2005; Chartrand et al. 2007; Ferraro, Bettman and Chartrand 2007; Fishbach and Dhar 2005; Fitzsimons et al. 2002; Mandel and Johnson 2002; Morwitz and Fitzsimons 2004). We are only at the beginning of exploring the routes by which consumers can be influenced without their knowledge. Our primary aim in this research was to investigate the effect of mimicry on consumption.

Although we believe that the data indicate that mimicry can significantly influence consumer behaviors, it is important to recognize potential roadblocks to mimicry's relevance in consumer settings. First, we note that the current studies took place not in chaotic retail stores but in controlled laboratory environments. The studies created sustained interplay (observational in experiment 1, interactive in experiments 2 and 3) in environments carefully designed to facilitate either mimicking of confederate behaviors by participants (experiment 1) or behavioral mimicking of participants by the facilitator

(experiments 2 and 3). Many retail interactions, such as a consumer inadvertently observing the consumption behaviors of another consumer or a customer talking to a salesperson about a television in a store, may be of too brief a duration and/or involve a style of interaction that would render less applicable the mimicking techniques used in the current research. However, one can envision that the current work may be directly relevant to domains where more sustained interactions are commonplace, such as the negotiation of a car purchase while seated opposite the salesperson in a dealership office or in a less chaotic business-to-business sales environment. We could also examine dependent variables that are more directly tied to the purchase of an item, such as willingness to pay, rather than general feelings or preferences toward the item.

Second, the use of deliberate mimicry as a sales technique would also clearly run the risk of being noticed by the target customer. From a persuasion knowledge perspective (Friestad and Wright 1994), targets' awareness of the mimicry would likely lead them to perceive a change of meaning in the interaction. Targets may respond by assigning increased cognitive resources to deal with the persuasion attempt or by completely detaching from the sales interaction. Future research might usefully explore how the forewarning of mimicry affects its consequences for persuasion. Finally, the confederates in all three studies were always pleasant and likeable. While this is clearly analogous to many real world scenarios, the current studies do not speak to any possible moderation of the effects by the various positive or negative characteristics of the mimicker.

### Limitations and Future Directions

The current findings suggest further questions that might be addressed by future research. First, the facilitators in experiments 2 and 3 utilized a combination of verbal and physical mimicry. While prior research (van Baaren et al. 2003; van Baaren et al. 2004) has found similar effects for these two styles of mimicry, future research could attempt to tease out any differences in the effect caused by the two mimicry types. Second, the experiment 1 finding that automatic mimicry of others can unintentionally shift one's own preferences has some interesting implications worthy of future research. For example, people may engage in potentially harmful behaviors (e.g., opting for a fattening food option) without conscious intention, which is then reinforced by a consistent preference that perpetuates that same behavior. Mimicry also may serve as a means of stabilizing and reinforcing group thinking and behavior. In a group context in which people repeatedly interact with each other, mimicry may perpetuate dominant beliefs and attitudes as group members repeatedly mimic behaviors and take on the corresponding attitudes. This may be particularly interesting with respect to approach or avoidance behavioral tendencies toward outgroup members.

The snack items used in experiment 1 were selected, in part, because they were liked by most people and were items with which most people were familiar. An interesting question

to pursue is whether mimicry, and the subsequent change in preferences, would occur if the observer's prior preferences were very low or if the item tasted bad (e.g., tasted like vinegar). Our data offer some insight for the case where participants had low prior preferences for the snack food item. In the goldfish cracker-only condition, we identified the one-third of participants who reported the lowest prior preferences for goldfish crackers, and we did similarly in the animal cracker-only condition. We reran the analysis for this subset of the participants with the lowest prior preference ratings (in the food conditions only). Even for these participants with the lowest prior preferences (the overall mean for these 16 participants was 3.4 on a nine-point scale), the pattern of results was similar to the overall findings, with those in the goldfish cracker-only condition eating a greater percentage of goldfish crackers and reporting greater postconsumption preferences for goldfish than animal crackers than did those in the animal cracker-only condition. We speculate, however, that if the item tasted extremely bad, this may trigger more conscious processing of one's own behavior, making both mimicry and change in preferences less likely. More generally, expectations of how something will taste may affect the extent to which the person focuses on the behavior in question and therefore their likelihood of mimicking.

Finally, in experiments 2 and 3, the product in question was introduced to participants by the mimicker during or following the period of active mimicry. An interesting question that the current studies did not explore is the extent to which the beneficial effects of mimicry on product appraisal would transfer to products that are not referenced by the mimicker yet are present during the mimicry. For example, if other products were present and visible to the participants in the room but were not discussed or alluded to by the mimicker, would any positive regard transfer to these products? A related question is whether a product introduced by a different individual immediately after the mimicry has taken place would be more favorably regarded. Recent research demonstrating prosocial behaviors extending to individuals other than the mimicker (van Baaren et al. 2004) suggests that this may well be the case. We leave these intriguing possibilities for future investigation.

## Conclusion

Many consumption environments can be considered social to some degree. However, little attention has been paid by consumer researchers to how behavioral mimicry between individuals might affect choice and consumption. Building on the notion that automatic mimicry can influence behavior outside of awareness (Chartrand and Bargh 1999; van Baaren et al. 2003), this article presents evidence suggesting that behavioral mimicry can indeed affect the consumption behavior of both the mimicker and the mimicked. This article, therefore, contributes to a growing body of work suggesting that we are far from being consciously aware of all the determinants of our behaviors and attitudes.

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