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Self-monitoring and mimicry of positive and negative social behaviors ☆

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Abstract

This study examined the role that self-monitoring plays in behavioral mimicry. Participants were exposed to videotaped targets who were laughing, yawning, frowning, or neutral in their expression. Participants' behavioral mimicry while viewing the targets was recorded. It was hypothesized that higher self-monitors would show greater mimicry than lower self-monitors. It was also hypothesized that participants would respond differently to positive and negative target expressions. Participants who scored higher in self-monitoring did mimic the targets' behaviors more often, and participants showed less mimicry of frowns than of laughs or yawns.

Keywords: Self-monitoring; Mimicry; Yawning

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1. Introduction

While engrossed in conversation, do you find yourself yawning because your conversational partner yawns? Smiling because they're smiling? Or perhaps frowning because they're frowning? If so, have you ever thought it odd that you seemed to "catch" the other person's behavior? Are some people more prone to this phenomenon than others? Do we mimic yawning the same way we mimic other expressive behaviors, or does yawning mimicry perhaps follow a different pattern? One way to explore this phenomenon is to examine the relationship between individual differences and mimicry of different types of expressive behaviors, including yawning, that convey different states to one's communication partner.

Researchers have demonstrated that mimicry plays an important role in social interactions (van Baaren, Holland, Kawakami, & van Knippenberg, 2004), that it is often quite automatic and effortless (Chartrand, Maddux, & Lakin, 2005), and that it can be observed even in very small children (de Oliveira & Krause, 1989). These findings indicate that mimicry behaviors are some of the most basic examples of humans' behaving in response to information present in their environment. The fact that young children are capable of mimicking so readily suggests that these behaviors are outside of conscious control and may be "hard-wired" in the human brain.

Although adults often mimic spontaneously, there is evidence that they are rarely aware that they are doing so (Chartrand et al., 2005). In other words, performing the same behaviors as those with whom we are interacting appears to be a natural and easy task. As Chartrand and colleagues (2005) write, "Mimicry is a manifestation of the perception-behavior link at its most fundamental level. It is no more than copying another's observables and requires only the ability to perceive the behavior in the other person and the ability to form the behavior oneself" (p. 335). For instance, when hearing background laughter during a television program, viewers tend to laugh in response even if they know the laughter is "canned" (Provine, 2000).

Why might we be so readily predisposed to perform mimicry? Some writers argue that mimicry is both adaptive and functional insofar as it enhances affiliation and creates social bonds (Chartrand et al., 2005; Lakin & Chartrand, 2003). Evidence exists that mimicry leads to improved interpersonal rapport (and vice versa) (Chartrand & Bargh, 1999), and that it increases when affiliation goals are primed (Lakin & Chartrand, 2003). Presumably, the more concerned one is with smooth and positive social interactions, the more likely one will be, perhaps even outside of one's awareness, to mimic the behavior of one's interactional partners.

Clearly, before a behavior can be "caught," it must first be perceived. Early work examining this issue supports the idea that individuals differ in their perceptual selection and sensitivity depending on their interests, needs, and values (Goldstein, 1962; Haigh & Fiske, 1952; Postman, Bruner, & McGinnies, 1948). More recently, there is evidence that perspective-taking ability (Chartrand & Bargh, 1999) and an interdependent self-construal, or how important one views one's relationships with others to be (van Baaren, Maddux, Chartrand, de Bouter, & van Knippenberg, 2003), are both linked to mimicry behaviors. Self-monitoring is another well-studied individual difference that has effectively predicted how people behave during social interactions, and because behavioral mimicry must, by definition, involve some degree of social interaction, self-monitoring is an attractive candidate to be examined in conjunction with mimicry behavior.

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Self-monitoring is defined as the degree to which one is attuned to the way one presents oneself in social situations and the degree to which one adjusts one's performance to create a desired impression (Ickes & Barnes, 1977; Lennox & Wolfe, 1984; Snyder, 1974). Individuals scoring high in self-monitoring better perceive socially-relevant stimuli than their low self-monitoring counterparts (Baumeister & Twenge, 2003). These studies indicate that high self-monitors use the information present in their social environment to adjust their self-presentation. A variety of behaviors and speech techniques can be used to adjust one's self-presentation in different social situations, but one simple means of adjusting self-presentation is to copy the behavior of others.

Although we all can and do easily mimic others (Chartrand et al., 2005), high self-monitors may be even more likely to mimic than low self-monitors because, by definition, they reliably adapt their behavior for self-presentational purposes (Baumeister & Twenge, 2003; Lennox & Wolfe, 1984; Snyder, 1974). In addition, they are more concerned with having positive social interactions than low self-monitors (Ickes, Holloway, Stinson, & Hoodenpyle, 2006). Thus, if mimicry provides a means to positively adjust one's self-presentation or serves a rapport-building function during social interactions (Chartrand & Bargh, 1999; Lakin, Jefferis, Cheng, & Chartrand, 2003; Lakin & Chartrand, 2003), one would expect that high self-monitors would display increased rates of mimicry. Perhaps mimicry shifts from a simple, automatic stimulus-response process to a motivated and controlled rapport-building process as one moves from low to high along the self-monitoring spectrum (Ickes et al., 2006).

Although the evidence is strong that people easily mimic the behaviors of others, we also examined whether they mimic social information differing in emotional valence with equal frequency. There is a great deal of evidence, from research using a variety of methods and approaches, that negative stimuli have a greater impact and draw more attention than positive stimuli (Fiske, 1980; Pratto & Bargh, 1991; Skowronski & Carlston, 1989; Smith, Cacioppo, Larsen, & Chartrand, 2003; Vrana & Gross, 2004). When it comes to processes like impression formation and person perception, negative information yields disproportionate power. If enhanced perception leads to increased mimicry and we have enhanced perception of negative cues, we might expect greater mimicry of negative behaviors. On the other hand, if mimicry is performed primarily to build rapport, displaying negative behaviors would run counter to that goal, and therefore one might predict more mimicry of positive behaviors regardless of attention.

These two theoretical positions are clearly at odds with each other, but it should be possible to test these contrasting positions using self-monitoring as a starting point. There is evidence that high self-monitors on the whole are highly motivated to display positive affect and are concerned with maintaining smooth social interactions (Ickes et al., 2006). In other words, they are "motivated impression managers" (Ickes et al., 2006). But self-monitoring is comprised of several different dimensions, including ability to modify self-presentation ("Ability"), or how facile one is at adjusting "performance," and sensitivity to the expressive behaviors of others ("Sensitivity"), or how well one can "read" others (Lennox & Wolfe, 1984). Presumably, if there is a positive relationship between the Ability factor and mimicry, we would expect to find more mimicry of positive behaviors relative to negative behaviors because this would serve a rapport-building purpose. However, if there is a positive relationship between the Sensitivity factor and mimicry, an "enhanced perception" explanation might suffice, and one would expect to find more mimicry of negative behaviors because they are more salient than positive behaviors.

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The present study was designed to examine the relationship between self-monitoring and the mimicry of facial behaviors conveying states of differing valence. In this study, we predicted that all participants would mimic to some extent. Those scoring higher in self-monitoring were predicted to mimic more frequently overall than those with lower self-monitoring scores. Differences were also expected to depend on the valence of the targets' expressed state. If negative stimuli receive more attention and heightened attention leads to greater mimicking, participants should mimic frowns more than laughs or yawns, particularly those participants scoring higher in Sensitivity. This pattern of results would support a perceptual salience explanation. On the other hand, if the rapport-building purpose of mimicry is paramount, participants should mimic laughs more than frowns or yawns, particularly those who score high in Ability. This pattern of results would support a rapport-building explanation.

2. Method

2.1. Participants

Sixty-two undergraduate introductory psychology students (45 females) at Colby College were recruited to participate in this study in return for course credit.

2.2. Materials and apparatus

Brief (7-s) video clips of 24 different volunteer targets, 12 male and 12 female, were created for this study. Each target was recorded with a digital video camera in one of four expression conditions: neutral, laughing, frowning, or yawning. All targets were of Caucasian descent and all were college students like the participants. None attended classes at Colby College, and none of the targets should have had any previous interaction with any of the participants. Written consent to use the recordings was obtained from all targets. Three independent raters assessed the validity of each video clip in depicting the intended facial display.

The video stimuli were presented to participants on a computer screen using the Quicktime Movie Player program. Once assembled, each sequence of clips consisted of six neutral clips, six laughing clips, six frowning clips, and six yawning clips. Each clip depicted a different target. To control for target gender effects, three targets in each condition were male and the other three targets were female. Boredom, which has been linked to spontaneous yawning (Provine, 2005), was unlikely to be a factor because each clip was only 7 s long, and the total duration of the experiment did not exceed 20 min.

2.3. Procedure

Upon arriving at the lab, participants were greeted by a male experimenter who provided instructions and consent forms. Participants were told that the purpose of the study was to examine the effects of facial expression on their likelihood of helping others. This deception was used to prevent biasing participants' responses due to a heightened attention to their own mimicry behavior. In addition, because previous research indicates that high self-monitors may be more susceptible to demand characteristics than low self-monitors (Bachner-Melman, Ebstein, & Lichtenberg, 2002; Leck & Simpson, 1999), this deception reduced the possibility of confounded results.

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The laboratory space was equipped with a one-way mirror and a computer in the center of the room. The computer was positioned in a manner that allowed the experimenters to observe the participants through the mirror. The decoy rating task (a pencil and paper questionnaire) was located directly next to the computer such that participants remained facing the experimenter and their expressions could be observed unimpeded during the experiment.

Before the participants viewed the video stimuli, the experimenter explained that recent problems with the equipment made it necessary for him to observe them. Participants were then instructed to raise their hand if they should encounter any technical problems. With this deception, participants were aware that they might be watched, but by disguising the true purpose, their natural mimicry responses were not expected to be affected. Once it was clear that the participant understood the task, he or she viewed all 24 7-s video clips in one of six possible random order sequences. There were 5 s of "black" between each clip.

After viewing each clip in the series, the participants paused the sequence briefly and filled out a short decoy questionnaire about their attitudes toward helping the just-viewed target.[2] This procedure was repeated until the participant viewed all 24 clips. Having participants complete the questionnaire supported the cover story of the experiment and, more importantly, required the participant to focus on the targets and allowed the experimenters to observe any delayed behavioral mimicry.

In order to increase reliability, two experimenters independently coded the responses for all participants. Only those responses judged to be the target expressions by both experimenters were included in the analysis. Interrater reliability (Cronbach's alpha) was 0.95. All yawns, regardless of intensity, were coded as yawns. For example, suppressed yawns, which lack a gaping mouth but include deep breathing and exhalation, were coded as yawns. Also, yawns were coded as such without regard to whether or not the participant covered his or her mouth.[3] Coded mimicry behaviors in response to laughter included smiling or smirking as well as full-fledged laughter in response to a target's laugh. The participant did not have to vocalize a laugh for it to be coded as such. We considered a frown to be any furrowing of the brow and down-turning of the lips. Neutral responses were operationalized as the absence of any of the other three responses.

Following completion of the video task, all participants were given the Lennox and Wolfe revised Self-Monitoring Scale (Lennox & Wolfe, 1984). This scale has two subscales (Ability to modify self-presentation and Sensitivity to the expressive behaviors of others) that are of particular interest to the present study because of what they could reveal about the source of any relationship between self-monitoring and mimicry. If the mimicry process is driven by self-presentational concerns, we would expect that those scoring high in Ability would show the most mimicry, particularly for the more positive target expressions. On the other hand, if the mimicry process is driven by heightened perception of targets'

[2] For the decoy rating task, participants were asked a variety of questions (one question per target) about the likelihood they would help the target on a 1–4 scale (1 = very likely, 4 = not likely). Examples of the questions asked: "If this person were to drop a stack of books 10 feet in front of you, how likely would you be to help them?" and "What is the likelihood you would lend this person $5.00?"

[3] In most instances, covering one's mouth would be considered polite, but as it is nearly impossible to completely hide a yawn (since yawns can be seen in our eyes despite our best efforts), we do not believe that covering one's mouth is an attempt to completely hide the yawn or should be taken to mean that yawning in and of itself is truly taboo.

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expressions, we would expect that those scoring high in Sensitivity would show the greatest mimicry, particularly for the more salient target expression of frowning.

After they had completed the Self-Monitoring Scale, the participants were probed for any suspicion about the hypothesis of the study. No participants indicated an awareness of the hypothesis. Finally, participants were asked if they knew any of the targets. One participant indicated that she did, and her data were not included in the analysis. The participants were then fully debriefed and thanked for their time.

3. Results

Responses in the three expression conditions (yawning, laughing, and frowning) were included in a two-way repeated measures ANOVA, with sex as a dichotomous independent variable and self-monitoring as a continuous independent variable. There was a statistically significant effect of self-monitoring score on mimicry behavior in general, $F(1,58) = 35.25$, $p < .001$.[4] A correlational analysis revealed that the number of mimicked behaviors overall was significantly and positively correlated with self-monitoring score, $r(61) = .61$, $p < .001$. There were no differences between the males' self-monitoring scores ($M = 42.35$, $SD = 4.46$) and the females' ($M = 43.93$, $SD = 4.29$), $t(59) = -1.28$, *ns*.

Behavioral mimicry also differed significantly by expression condition, $F(1,57) = 9.36$, $p < .001$. Post hoc paired samples t tests revealed that all three expression conditions differed from each other, with the most responses coming in the yawning condition ($M = 2.05$, $SD = 1.06$), followed by the laughing condition ($M = 1.21$, $SD = 1.05$), and the frowning condition ($M = .66$, $SD = .81$). Yawns differed from laughs, $t(60) = 5.21$, $p < .001$; yawns differed from frowns, $t(60) = 8.58$, $p < .001$; and laughs differed from frowns, $t(60) = 3.39$, $p = .001$. Finally, there was a statistically significant interaction between expression condition and self-monitoring score, $F(2,57) = 14.21$, $p < .001$. When broken down by expression, overall self-monitoring score was correlated with number of both laughs, $r(61) = .38$, $p = .003$, and yawns, $r(61) = .72$, $p < .001$, but not frowns, $r(61) = .03$, *ns*. There were no main effects or interactions involving the participants' gender on mimicry behavior.

When the total self-monitoring score was broken down into scores for the two subscales, Ability and Sensitivity (Lennox & Wolfe, 1984), the results follow a similar, although not identical, pattern.[5] Thus, there were statistically significant effects of Ability, $F(1,58) = 20.09$, $p < .001$, and Sensitivity, $F(1,58) = 9.16$, $p = .004$, on mimicry behaviors in general. In addition, both subscales interacted significantly with expression condition, $F(2,57) = 10.91$, $p < .001$ for Ability, and, $F(2,57) = 3.70$, $p < .05$ for Sensitivity, although the pattern of this relationship was different. Subsidiary correlational analyses revealed that Ability was significantly correlated with number of mimicked laughs, $r(61) = .36$, $p = .004$ and yawns, $r(61) = .60$, $p < .001$, but not frowns, $r(61) = -.03$, *ns*. Sensitivity was only significantly correlated with number of mimicked yawns, $r(61) = .45$, $p < .001$, and neither laughs, $r(61) = .18$, *ns* nor frowns, $r(61) = -.05$, *ns*. There were no main effects of

[4] The same analyses were also carried out including the filler neutral responses. Little difference was found, $F(3,56) = 11.28$, $p < .001$.

[5] It is worth noting that scores on these two subscales were not significantly correlated with each other, $r(61) = .05$, $p = ns$.

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participant sex in either the Ability analysis, $F(1,58) = .023$, *ns*, nor in the Sensitivity analysis, $F(1,58) = .189$, *ns*.

4. Discussion

Given the unconscious and automatic nature of mimicry, it is not surprising that our participants showed mimicry behaviors in all of our expression conditions. What is interesting, however, is that the pattern of effects was moderated by self-monitoring and the nature of the target behaviors themselves. As predicted, those higher in self-monitoring showed greater mimicry when compared to those who scored lower in self-monitoring.

Research findings demonstrate that increased perception of a stimulus serves to increase the likelihood that one will unconsciously mimic the perceived stimulus (Chartrand & Bargh, 1999). Therefore one explanation for the high-self-monitors' increased mimicry is the greater sensitivity to social cues that are part and parcel of being a high self-monitor (Baumeister & Twenge, 2003; Lennox & Wolfe, 1984; Snyder, 1974). In this sense, enhanced perception of the target behavior increases the likelihood that participants would unconsciously mimic the perceived stimulus (Chartrand & Bargh, 1999). Note, however, that a strictly attention-based account would predict that frowns would be mimicked more than laughs or yawns, because negatively-valenced expressions should be more salient than either positive or neutral ones.

This reasoning leads us to consider the strong effects we found for the different types of expressions that were modeled. Although there is ample evidence that people pay disproportionate attention to negative social information (Fiske, 1980; Pratto & Bargh, 1991; Skowronski & Carlston, 1989; Smith et al., 2003; Vrana & Gross, 2004) and increased perception generally leads to greater mimicry (Chartrand & Bargh, 1999), our findings indicate that participants mimicked frowns less than both yawns and laughs, supporting a rapport-building explanation rather than an enhanced perception explanation. In other words, if mimicry is primarily for building rapport (Lakin & Chartrand, 2003), this relationship should be moderated by the negativity of the target behavior. Frowning at someone would presumably make rapport-building *less* likely. Therefore, it appears likely that our participants were dealing with competing motivations: to mimic in order to build rapport but to avoid frowning which might jeopardize said rapport.[6] The fact that participants scoring higher in Sensitivity also mimicked frowns less further supports this explanation.

The fact that those participants who scored relatively high on the Ability subscale showed increased mimicry of both laughing and yawning suggests some form of strategic control. The fact that Sensitivity was unrelated to laughter mimicry further suggests some sort of strategic behavior. It is possible that individuals with an enhanced ability to modify how they present themselves may be more consciously motivated to display a rapport-building expression like laughter or smiling, while inhibiting a negative expression like

[6] An alternative explanation for our finding differences by behavior type may be that our stimulus behaviors differed in potency. In other words, perhaps our targets' smiles were quite distinct while their frowns were relatively weak. While we did not directly measure expression potency, given that participants were shown 6 targets displaying each expression, it seems unlikely that potency would vary in any systematic way. In addition, all target behaviors included in this study were pre-rated as clearly showing the desired expression. Our thanks to an anonymous reviewer for suggesting this possibility.

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frowning. Those without this ability would be expected to be, and per our findings actually were, less likely to mimic laughter or frowning.

Although our 7-s video clips of targets likely reduced participant boredom, it is not clear whether increased exposure or more interactions would have strengthened the observed effects. Longer exposure might increase the amount of empathy felt towards a target, which has been shown to be positively correlated with contagious yawning (Platek, Critton, Myers, & Gallup, 2003). However, some might argue that having participants watch video clips of targets hardly constitutes a social interaction. Therefore, additional research should be conducted using a more interactive design, perhaps involving trained confederates displaying differing facial expressions rather than videotaped targets. Still, given the strong relationship between behavioral mimicry and self-monitoring in the present study despite brief exposure times and non-interactive, silent video displays, it is expected that increased exposure or more authentic interactions would only strengthen the kinds of effects that we have reported.

The present study reaffirms the frequent occurrence of behavioral mimicry while also providing additional evidence that individual differences, those related to different aspects of self-monitoring, may play a role in one's likelihood of mimicking another person's behaviors. The present findings also indicate that not all behaviors are equally likely to be mimicked. Perhaps both mimicry and self-monitoring are not as effortless and automatic as was once believed, but can be consciously directed processes that help us achieve our social interaction goals (Ickes et al., 2006).

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