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## Mimicry or Responsiveness? Verifying the Mimicry-as-a-Social-Glue Hypothesis

**Abstract:** Mimicry has been proven to be responsible for many social consequences linked to social bonding: improved trust, liking, and rapport. This accumulating empirical evidence has mostly been based on experimental designs focused on comparisons between two conditions: an experimental condition involving mimicking behavior versus a control condition in which any movement or direct verbal reaction is withdrawn. Thus, it is unclear whether the observed differences stem from a potential increase in liking, trust, or rapport in the mimicry condition or a decrease thereof when naturally occurring gestures are not present during the interaction. To address this potential confound, we included an additional control condition involving responsiveness (but not mimicry) aimed at increasing both internal and external validity. We found significant differences between the mimicry condition and both control conditions, thereby lending support to the original mimicry-as-a-social-glu hypothesis.

**Keywords:** *behavioral mimicry, responsiveness, chameleon effect, liking, facial expressions of emotions*

People enjoy the company of individuals who behave in a similar way. Chartrand and Bargh (1999) were the first to describe imitation in social interactions as the „chameleon effect” and demonstrated that it is a powerful source of attraction making interpersonal interactions smooth and enjoyable (Chartrand & Bargh, 1999). In their studies, participants unconsciously performed certain mannerisms (smiling, face-touching, leg-moving) after their interlocutor did (Experiment 1), and liked those who imitated them more (Chartrand & Bargh, 1999, Experiment 2). Other research has shown that mimicking others leads to a higher tendency to offer assistance to the mimicker (Van Baaren et al., 2004), to grant her/him higher tips (Van Baaren et al., 2003) and that it shapes consumer decisions (Tanner et al., 2007).

Stemming from Chartrand’s and Bargh’s original procedure (1999) in all the above experiments and many others (e.g., Jacob et al., 2011; Van Baaren et al., 2004; Van Swol et al., 2003) the confederates in the mimicry condition mirrored posture and body orientation (e.g., leaning forward vs. backyard), movements (the position of the legs, arm) or verbal expressions of participants, while in the control condition the confederates did not respond in any way.

After more than 20 years of studies showing how beneficial mimicry is, the mimicry-as-a-social-glu hypothesis was postulated (Dijksterhuis, 2005; Lakin et al., 2003). In these works, it is claimed that mimicry is responsible for starting and maintaining social relationships in dyads, with further recommendations for other fields of psychology (e.g., clinical psychology; Paulick et al., 2018; Ramseyer & Tschacher, 2011).

Two caveats, of an interpretive and methodological nature, may be identified in past work. Firstly, the interpretive problem pertains to the fact that the observed effect of mimicry on liking may not be generated by the positive impact of the imitation (experimental condition). In fact, it may be the unresponsiveness (standard control condition) that decreases liking as the lack of any reaction may be a signal to halt further interaction (McIntosh et al., 2006). With only two conditions to compare, that possibility cannot be ruled out (e.g., Lemay et al., 2007). Moreover, the timing of imitation was not systematically controlled for. Similarly, when participants’ tendency to imitate was measured, only an overall number of imitative reactions was counted, and researchers failed to report whether they counted only the reactions that happened

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right after the imitated behavior or at any point in the interaction. Secondly, from a methodological point of view, there is the possibility of a significant inter/trans-situational changeability in the confederate's behavior. A confederate who is supposed to imitate the other person over the course of consecutive interactions may become an expert (e.g., imitating with higher accuracy), or the confederate's performance may decrease (e.g., not noticing an expression that should be copied).

In our study, we attempted to address both of these issues. In order to eliminate inter/trans-situational changeability, we used a recently established new method of basic emotion imitation (Bocian et al., 2018; Kulesza et al., 2015). Participants were asked to facially express emotions that were supposed to be guessed by the second person visible on the computer screen, while in fact her responses were prerecorded. Moreover, we added a third condition, in which the confederate was responsive as she performed the same expressions as participants did, but in an uncoordinated fashion, providing a point of reference for whether mimicry increases or a lack thereof decreases liking.

## EXPERIMENT

### Method

#### *Participants and Design*

Sixty-two local university students (among them 44 identified as women, and 18 as men) ranging in age from 19 to 41 ( $M_{\text{age}} = 23.60$ ,  $SD_{\text{age}} = 4.08$ ) participated in the experiment. A preliminary statistical analysis demonstrated that the gender distribution was unequal ( $\chi^2(1, N = 62) = 10.9$ ,  $p = .001$ ). Participants were randomly assigned to one of three between-subject conditions: no-mimicry ( $n = 21$ ; females = 12, males = 9), responsiveness ( $n = 20$ ; females = 16, males = 5) and mimicry ( $n = 21$ ; females = 16, males = 4). Participants received course credit for their participation. No participants were removed from the analysis.

#### *Procedure*

This experiment employed the procedure designed by Kulesza and colleagues (2015). Participants were seated in front of the computer with a built-in camera and were informed that the purpose of the experiment was to replicate studies showing that basic emotions (anger, disgust, fear, happiness, sadness, and surprise) were universally recognized (e.g., Ekman, 1999; 1972).

Participants were then instructed to facially express the emotion verbally identified by a male voice. The new command appeared every 9 seconds for 7 minutes. Participants were informed that the task of the person they saw on the computer screen was to recognize the emotions expressed by them without hearing the actual commands. In reality, they saw a prerecorded film featuring a professional actress (not known to the participants), who ostensibly wrote down her guesses. Participants were unable to read her answers. In the mimicry condition, before writing down her guess, the

actress unobtrusively and in a natural manner revealed the facial expression that the participant had just been instructed to express. In the responsiveness condition, before writing down her guess, she displayed one of the basic emotions, but always a different one than the participant had been instructed to express. In the control condition (no-mimicry) the actress did not display any facial movements, she just wrote down her guess. For a more extensive description of these procedures, please see Kulesza et al. (2015).

Participants were then asked to report how much they liked the actress using a six-item measure (e.g., "I like this person", "This person is nice"; Cronbach's  $\alpha = .86$ ,  $M =$ ,  $SD =$ ; Kulesza et al., 2022). The respondents rated their answers on 7-point scales (1 = *fully disagree*, 7 = *fully agree*).

At the end of the study, participants were asked a number of control questions regarding the interaction and the experimental situation. None of the participants reported noticing anything unnatural about the interaction, neither in the control, nor in the experimental conditions. Finally, participants were thanked and debriefed.

## RESULTS

In order to verify the effect of mimicry/responsiveness on liking, we ran an ANCOVA, with the between-subject factor (no-mimicry, responsiveness, mimicry), dependent variable — liking, and (since gender distribution between the experimental condition was unequal) participant gender as the covariate. Levene's test indicated that variances did not differ,  $F(2, 59) = 0.18$ ,  $p = .839$ .

The results of the ANCOVA indicated that the covariate (participant gender) was not significantly related to actress liking,  $F(1, 58) = 0.55$ ,  $p = .462$ . However there was a significant effect of condition on actress liking after controlling for the effect of participant gender (the covariate),  $F(2, 58) = 5.23$ ,  $p = .008$ ,  $\eta_p^2 = .15$ , 90% CI [0.02, 0.28] (*post-hoc* power:  $1 - \beta = .84$ ). Planned contrasts revealed significant differences between the mimicry and no-mimicry condition,  $t(58) = 3.23$ ,  $p = .002$ , Cohen's  $d = 0.96$ , 95% CI [0.36, 1.57]. There were no statistical differences between the responsiveness and mimicry condition,  $t(58) = 1.54$ ,  $p = .127$ , as well as between the responsiveness and no-mimicry condition,  $t(58) = 1.74$ ,  $p = .086$ . Please see Table 1 for descriptive statistics.

## DISCUSSION

The goal of the present study was to investigate whether behavioral mimicry (same action—same reaction pattern) compared to mere responsiveness (simple action—reaction pattern) is what truly stands behind mimicry's effect on liking. By including an additional control condition of behavioral responsiveness, we aimed to increase both the internal and external validity. Replicating past work (e.g., Chartrand & Bargh, 1999; Kulesza et al., 2022; Muniak et al., 2021), the results of the experiment

**Table 1.** Descriptive Statistics for Liking as a Function of the Condition and Participant's Gender

Condition	N	M	SD	Me	Mo	Min.	Max.	Sk.	Kurt.	Shapiro–Wilk	
										S-W	p
Mimicry											
males	4	6.00	0.31	6.00	5.67	5.67	6.33	0.00	-3.30	.95	.714
females	16	5.74	1.12	5.92	3.33	3.33	7.00	-1.78	1.01	.87	.028
collectively	20	5.79	1.01	5.92	5.83	3.33	7.00	-1.39	2.02	.86	.007
Responsiveness											
males	5	5.00	0.43	4.83	4.67	4.67	5.67	1.21	0.58	.85	.207
females	16	5.44	0.88	5.58	4.33	4.17	6.83	-0.09	-1.47	.92	.188
collectively	21	5.33	0.81	5.33	4.67	4.17	6.83	0.22	-1.23	.94	.208
No-mimicry											
males	9	4.61	1.08	4.83	5.17	2.83	6.50	-0.08	0.42	.96	.774
females	12	4.92	0.88	4.67	4.00	4.00	6.33	0.43	-1.51	.88	.080
collectively	21	4.79	0.96	4.83	4.00	2.83	6.50	0.03	-0.33	.98	.868

presented here revealed a significant difference between the mimicry and no-mimicry condition. Importantly, no statistically significant difference between the responsiveness and no-mimicry condition was observed. These results replicate and extend the literature by showing that a lack of mimicry does not decrease liking (in comparison to mere behavioral responsiveness).

Rather than the lack of mimicry naturally occurring in social interactions being responsible for the decrease in liking, we found that it is indeed mimicry that is responsible for the increase in liking. This pattern lends support to the original social glue hypothesis (Dijksterhuis, 2005; Lakin et al., 2003).

This study is not free from limitations. Firstly, we have to acknowledge that our sample was rather gender-biased with more women than men participating in our study. Indeed, some researchers (Arnold & Winkielman, 2020; Seibt et al., 2015) have mentioned gender differences in mimicry, however, the literature also shows a critical reflection on these findings (Genschow et al., 2018). In a similar vein, all the participants interacted with a professional actress (rather than an actor). Taking into account that most participants identified as female, the results of our study suggest that at least within same-gender interactions, it is the mimicry, rather than mere responsiveness that drives the effect of liking. Future studies would do well to address this limitation and recruit equal numbers of women and men or verify this effect among male participants interacting with confederates representing different genders.

Secondly, while we relied on a method that creates the illusion of a real-time interaction with a person who is mimicking (or not) participants' facial expressions (Bocian et al., 2018), the mimicking behavior was actually prerecorded. Future studies could replicate these findings

in a lab experiment with real interaction partners in a classical way (e.g., Chartrand & Bargh, 1999; Muniak; 2021).

Finally, the experimental design used by us lacks a control condition involving a complete lack of activity (typical for designs verifying the Chameleon effect; cf. Chartrand & Bargh, 1999), with the actress not moving at all. In fact, the actress in our no-mimicry condition was still moving in order to maintain the illusion of a real-life interaction.

## CONCLUSION

In conclusion, the present results replicated the effect of behavioral mimicry on liking using a method of facial expression mimicry (Bocian et al., 2018; Kulesza et al., 2015). Importantly, this work extends the literature by showing that a lack of behavioral mimicry (same action –same reaction pattern) does not decrease liking in comparison to behavioral responsiveness (simple action –reaction pattern).

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