



Strategic regulation of mimicry effects by implementation intentions[☆]



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HIGHLIGHTS

- Mimicry effects are difficult to regulate as people are not usually aware of their influence.
- In two studies, planning with implementation intentions regulated mimicry effects.
- Planning how to be unprejudiced strengthened the mimicry–liking effect for unlikable others.
- Planning how to be thrifty weakened the persuasive effects of being mimicked on spending.
- Mere goal intentions to be unprejudiced or thrifty did not regulate mimicry effects.

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ABSTRACT

Although mimicry generally facilitates social interaction, sometimes mimicry effects can hamper pursuit of focal goals. Two studies tested whether the self-regulation strategy of forming implementation intentions (i.e., planning in advance the when, where, and how of one's goal striving) can be used to regulate mimicry effects. In Study 1, implementation intentions to be non-prejudiced ensured that mimicking increased attraction even for an unlikable person. In Study 2, implementation intentions to be thrifty reduced participants' susceptibility to the persuasive effects of being mimicked. Mere goal intentions to be non-prejudiced and to be thrifty did not suffice to regulate mimicry effects. We conclude that the strategic automaticity accomplished by implementation intentions allows people to intentionally strengthen (Study 1) and weaken (Study 2) mimicry effects in line with their goals. Implications for the effective self-regulation of mimicry effects are discussed.

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Introduction

Behavioral mimicry is pervasive in human interaction and has been shown to powerfully affect thoughts, feelings, and actions (reviews by Chartrand & Lakin, 2013; Chartrand & van Baaren, 2009). It has been defined as two or more people engaging in the same behavior (i.e., motor movements like mannerisms, gestures, and postures) at the same time (Chartrand & Lakin, 2013). When working together on a joint photograph description task, for example, participants have been observed to shake their foot more often when with a foot-shaking rather than a face-touching confederate, and to touch their face more often when with a face-touching rather than a foot-shaking confederate (Chartrand & Bargh, 1999, Study 1). Most of the time, people mimic others or are being mimicked by others without being consciously

aware of this mimicry. And even if they are consciously aware of such mimicry, they are often unaware of its downstream consequences (Chartrand & Lakin, 2013).

The automaticity of mimicry and its downstream effects are commonly considered to be unproblematic as mimicry has positive downstream consequences on social relations and cooperation. For example, being mimicked by others and mimicking others promote affiliation and interpersonal rapport (e.g., LaFrance, 1979; Lakin & Chartrand, 2003; Stel & Vonk, 2010) as well as people's prosocial behavior such as donating money to charities (e.g., van Baaren, Holland, Kawakami, & van Knippenberg, 2004). At other times, however, the downstream effects of mimicry might interfere with the pursuit of personal goals. For instance, it was observed that people who mimicked an unfriendly person were consequently rated as less competent than people who did not mimic him/her (Kavanagh, Suhler, Churchland, & Winkielman, 2011). Moreover, being mimicked by another person enhances stereotype-threat effects on performance (e.g., women performed worse on a math test when a confederate had mimicked them before taking the test; Leander, Chartrand, & Wood, 2011). Given that the effects of mimicry may at times interfere with people's wants and wishes, successful goal

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pursuit may sometimes require the effective self-regulation of mimicry effects. Strengthening or weakening of mimicry effects may be called for, depending on the situation at hand. For example, when one's conversation partner is not liked much from the beginning, one might like to strengthen the facilitating effects of mimicry in order to support a constructive conversation in such a difficult social interaction (e.g., Leighton, Bird, Orsini, & Heyes, 2010; Likowski, Mühlberger, Seibt, Pauli, & Weyers, 2008; Stel et al., 2010). Alternatively, when a salesperson is likely to bias one's attitudes towards a product by mimicking, one might like to weaken the persuasive effects of mimicry in order to support unbiased consumer decisions in such a manipulative social interaction (Jacob, Guéguen, Martin, & Boulbry, 2011; Tanner, Ferraro, Chartrand, Bettman, & Van Baaren, 2008; see also Bailenson & Yee, 2005; Maddux, Mullen, & Galinsky, 2008; van Baaren, Holland, Steenaert, & van Knippenberg, 2003).

But how can people effectively regulate mimicry effects, given that mimicking and its downstream effects are characterized by features of automaticity (e.g., efficiency; Dalton, Chartrand, & Finkel, 2010; see also Bargh, 1994)? The present research explores whether people can intentionally regulate the influence of mimicry on their goal pursuits by forming implementation intentions (i.e., planning in advance the when, where, and how of one's goal striving), even though these influences stay outside of awareness. As implementation intentions have been shown to create automatic action control on the spot (reviews by Gollwitzer, Bayer, & McCulloch, 2005; Gollwitzer & Oettingen, 2011), we wondered whether people can use implementation intentions to counter (i.e., outrun) the automatic effects of mimicry.

Self-regulation by goals and implementation intentions – effects and processes

One might argue that being committed to the focal goal (i.e., “I want to achieve goal X!”) would suffice to regulate mimicry effects. However, accumulated evidence indicates that there is a substantial gap between even strong goal commitment and subsequent goal attainment (e.g., Sheeran, 2002; Sheeran & Webb, 2012; Webb & Sheeran, 2006). For instance, a medium-to-large change in goal commitment led to only a small-to-medium change in behavior in Webb and Sheeran's (2006) meta-analysis. Moreover, although automatic processes can contribute to action control by goal intentions (e.g., the induction of mindsets; Gollwitzer, 1990, 2012; Wyer & Xu, 2010), action control by goal intentions mainly depends on effortful reflective processes (e.g., Ajzen, 1991; Fishbein & Ajzen, 1975, 2010) which are known to be slow (Strack & Deutsch, 2004) and easily depleted (Baumeister, Bratslavsky, Muraven, & Tice, 1998), and thus are unlikely to effectively counter fast and efficient influences like mimicry effects (Adriaanse, Gollwitzer, De Ridder, de Wit, & Kroese, 2011). Clearly, therefore, an alternative strategy is needed to help people close the gap between their commitment to and their enactment of their personal goals.

One effective strategy is to form an implementation intention (meta-analyses by Adriaanse, Vinkers, De Ridder, Hox, & De Wit, 2011; Bélanger-Gravel, Godin, & Amireault, 2013; Gollwitzer & Sheeran, 2006). It is known that action control by implementation intentions is fast and efficient; this should make it possible to effectively shield a focal goal pursuit from the fast and efficient processes underlying the effects of mimicry. Implementation intentions spell out the when, where, and how of goal striving in advance using the format of an if (*critical situation*)–then (*goal-directed response*) plan. For instance, if someone holds the goal of saving money, she could form the if–then plan, “And if I am tempted to buy something, then I will tell myself: I will save my money for important investments!” to shield her saving goal from the effects of being mimicked by a salesperson. Thus, rather than just committing to a desired end-state (i.e., forming a strong goal intention), making an if–then plan commits the person to performing

a goal-directed behavior when the specified critical situation is encountered.

Implementation intentions facilitate the attainment of personal goals through psychological mechanisms that pertain to the specified situation in the if-part, and to the mental link forged between the if-part and the specified goal-directed response in the then-part of the plan (Gollwitzer & Oettingen, 2011). Because forming an implementation intention entails the selection of a critical future situation, the mental representation of this situation becomes highly activated and hence more accessible. This heightened accessibility of the if-part of the plan has been observed in several studies using different experimental tasks (e.g., cue detection, dichotic listening, cued recall, lexical decision, flanker; e.g., Aarts, Dijksterhuis, & Midden, 1999; Achtziger, Bayer, & Gollwitzer, 2012; Parks-Stamm, Gollwitzer, & Oettingen, 2007; Webb & Sheeran, 2004, 2008; Wieber & Sassenberg, 2006). Forming implementation intentions not only heightens the activation (and thus the accessibility) of the mental representation of the situational cue specified in the if-component, but it also forges a strong associative link between the mental representation of this cue and the mental representation of the specified response. These associative links are quite stable over time (Papies, Aarts, & de Vries, 2009), and ensure that the critical situational cues specified in the if-component will activate the mental representations of the responses specified in the then-component (Webb & Sheeran, 2007, 2008).

The upshot of these strong associative links between the if-part (situational cue) and the then-part (goal-directed response) created by forming implementation intentions is that—once the critical cue is encountered—the initiation of the goal-directed response exhibits features of automaticity. These features include immediacy, efficiency, and redundancy of conscious intent (Bargh, 1994). Compared to goal intentions, implementation intentions have been found to facilitate the immediate initiation of goal-directed responses (e.g., presenting counterarguments to racist comments more quickly; Gollwitzer & Brandstätter, 1997, Study 3) and to help people to deal more efficiently with cognitive demands (i.e., speed-up effects are still evident under high cognitive load; e.g., Brandstätter, Lengfelder, & Gollwitzer, 2001). Moreover, action control by implementation intentions does not need a conscious intent to act in the critical moment (e.g., implementation intention effects are still evident when the critical cue is presented subliminally or when the respective goal is activated outside of awareness; Bayer, Achtziger, Gollwitzer, & Moskowitz, 2009; Sheeran, Webb, & Gollwitzer, 2005). This strategic automation hypothesis (i.e., in a conscious act of will the person delegates action control to situational cues that produce fast and efficient action initiation without the need for further conscious intent) has recently received further support by brain studies on the localization and timing of action control by implementation intentions and by studies addressing the modification of already existing automatic responses.

The localization of action control by implementation intentions was addressed by Gilbert, Gollwitzer, Cohen, Oettingen, and Burgess (2009) in a functional magnetic resonance imaging (fMRI) study. They observed that participants with mere goal intentions showed activation in the brain regions used by top-down, goal-driven action control that is slow and effortful, whereas the brain activity of participants with implementation intentions was observed in regions known for bottom-up, stimulus-driven action control that is fast and effortless. The timing of action control by implementation intentions was addressed by Schweiger Gallo, Keil, McCulloch, Rockstroh, and Gollwitzer (2009, Study 2) in an EEG study. They demonstrated that individuals with spider phobia who furnished their goal not to get frightened with the implementation intention “And if I see a spider, then I will ignore it!” reported significantly less negative affect after viewing spider pictures than both no-intention and goal intention spider phobic controls. Importantly, spider phobic participants with implementation intentions exhibited as little fear as a group of control participants that did not suffer from spider phobia. Dense-array EEG data showed that this

suppression effect is operative as early as 120 ms after stimulus presentation (see also Webb, Schweiger Gallo, Miles, Gollwitzer, & Sheeran, 2012).

Regarding the modification of an automatic response, the horse race metaphor (e.g., Dunbar & MacLeod, 1984) suggests that the cognitive advantage of the unwanted habitual response over the wanted response needs to be outrun in order to win the race. In support of this metaphor and the strategic automation hypothesis, Adriaanse, Gollwitzer et al. (2011) found that implementation intentions strengthened the associative link between the specified cue and the specified response and, at the same time, inhibited the habitual cue-response link; in combination, these effects eliminate the advantage of the habitual over the specified means once the race has started. Thus, implementation intentions—but not mere goal intentions—have been shown to enable participants to decrease their habitual consumption of unhealthy snacks (Adriaanse, de Ridder, & de Wit, 2009) and their habitual waste disposal (Holland, Aarts, & Langendam, 2006), to overcome the automatic effects of the spatial location in a Simon task (Cohen, Bayer, Jaudas, & Gollwitzer, 2008), and the automatic activation (Stewart & Payne, 2008) and behavioral expression (Mendoza, Gollwitzer, & Amodio, 2010) of stereotypes.

Together, these findings suggest that implementation intentions indeed lead to strategic automation of the specified goal-directed response when the critical cue is encountered, as much longer time periods are needed for conscious, effortful response initiation (i.e., at least 300 ms; see Bargh & Chartrand, 2000). As mimicry effects qualify as automatic processes (Chartrand & Lakin, 2013), implementation intentions—but not mere goal intentions—are expected to successfully regulate mimicry effects. Moreover, as controlling mimicry effects needs to be accomplished in social contexts involving other people, and such situations are commonly associated with high cognitive load, showing that implementation intentions can effectively control mimicry effects would go beyond the usual demonstrations of the power of implementation intentions to regulate automatic processes, as past demonstrations mostly limited themselves to nonsocial situations (e.g., controlling the Simon effect; Cohen et al., 2008; controlling the effects of priming the goal to drive fast; Gollwitzer, Sheeran, Trötschel, & Webb, 2011).

The present research

The present research investigates the regulation of mimicry effects by implementation intentions. Study 1 focused on the strengthening of mimicry effects. Participants were asked to mimic an unlikable individual: a domineering, self-serving fellow student. We then assessed how successful participants were in their goal pursuit to be unprejudiced in judging this fellow student. Study 2 focused on the weakening of the effects of being mimicked. A confederate mimicked the participants. The dependent variable indexed participants' adherence to the goal of saving money as indicated by participants' responsiveness to a request for financial support by the person who had mimicked them.

In both studies, we established a mere goal intention condition and a goal intention plus implementation intention condition. We predicted that participants who had furnished their goal intention with an implementation intention would regulate the effects of mimicry more effectively than participants who had formed mere goal intentions. Thus, if-then planners should be more effective in attaining their focal goals than participants who did not form respective plans.

Study 1: realizing the goal of being unprejudiced

Mimicking another person is known to enhance liking of the mimicked person without the mimicker being aware of it (e.g., Stel & van Knippenberg, 2008; Stel et al., 2010). Researchers have used this phenomenon to reduce prejudice towards outgroup members. Inzlicht, Gutsell, and Legault (2012) had White participants mimic the

movements of a Black person and found that implicit and explicit prejudice were reduced as a consequence. However, this promising route to prejudice reduction turns out to be limited by the initial level of attraction to the target person: Research by Stel et al. (2010) point out that initial disliking of the to-be-mimicked person moderates the beneficial effects of mimicking on liking. Only when the mimicker likes the mimicked person to begin with does mimicry increase liking; when the mimicked person is initially disliked, liking is not increased by mimicking (Stel et al., 2010). The aim of Study 1 was to determine whether implementation intentions could emancipate people from this restriction of mimicry effects. In particular, we test whether forming implementation intentions can help people to use mimicry to attain their goal of being non-prejudiced. In other words, can people who form if-then plans benefit from mimicry even when the mimicked person is initially disliked?

To answer this question, we presented a description of a person that our student participants would not like (using a procedure adapted from Stel et al., 2010). Participants were then asked either to form the goal intention to be non-prejudiced in their person perception and to furnish this goal with an if-then plan, to form the goal intention alone, or they were given irrelevant information on person perception research. Subsequently, participants were asked to view a video recording of this person, and either to mimic him or to remain motionless (no-mimicry condition). We predicted that mimicry would enhance participants' liking of the target person — but only when participants had formed implementation intentions on how they would judge the target person in a non-prejudiced manner.

Method

Participants and design

One-hundred-fifteen university students (72 females, no psychology students) with a mean age of 22.99 years ($SD = 4.20$) participated in the study. A 2 between (Mimicry: yes vs. no) \times 3 between (Intention: implementation intention vs. goal intention vs. information control) factorial design was established. Liking in the second assessment (after the intention and mimicry manipulations) adjusted for covariation by liking in the first assessment (before the intention and mimicry manipulations) served as the dependent variable.

Procedure and materials

Participants were tested individually. First, participants rated their liking of a young White male presented in a color picture; he was seated on a sofa looking into the camera with a neutral facial expression. The accompanying text depicted him as possessing a host of negative personal attributes in the eyes of our participants (i.e., German humanities students). The description tried to capitalize on the investment banker stereotype and read as follows:

“Michael is a third year student in the finance department. Fellow students describe him as domineering. To pay for his studies, he works for a mobile phone company selling long-term contracts that people cannot easily terminate. Before he enrolled as a student, he worked for a hedge fund manager for more than nine months. After his graduation, he wants to gain a PhD degree and then make money as an investment banker.”

Initial liking. Initial liking of the target person was assessed by five items accompanied by rating scales ranging from 1 (*not at all*) to 7 (*very much*). These items were adopted from the Reysen (2005) scale. Reliability of the scale was high (Cronbach's $\alpha = .84$). The five items read: “Do you think you would like this person? Do you think you would get along with this person? Do you think this person is friendly? To what extent would you like to meet this person? To what extent

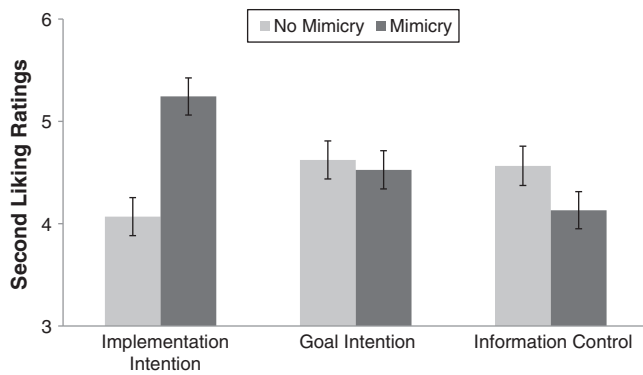


Fig. 1. Second liking ratings of the target person adjusted for covariation by the initial liking by mimicry and intention conditions. Standard errors are represented in the figure by the error bars attached to each column (Study 1, $N = 115$).

would you like to collaborate with this person if you worked in the same company?"

Intention manipulation. After the initial liking rating, participants read a short paragraph on the importance of being non-prejudiced. Participants in the goal intention condition were then asked to commit to the following statement: "I want to judge people in a fair manner! I will abandon all prejudice!" Participants in the implementation intention condition committed to a statement that was formed into an if-then plan: "I want to judge people in a fair manner! And if I have to judge a person, then I will abandon all prejudice!" Participants in the control condition received one page of general information concerning person perception (e.g., "Person perception is a research area within the field of social psychology. It explores how people form impressions of other persons.").

Mimicry manipulation. Thereafter, participants read that they will now see a short video featuring a male person before they will answer some questions assessing their impression of this person. In the no-mimicry condition, participants were then asked to remain motionless while watching the video; supposedly to avoid distractions. In the mimicry condition, they were then asked to mimic the body postures and movements of the person shown in the video recording; supposedly to increase the realism of the simulated social interaction. The following video showed the man whose picture they had just seen sitting with his legs crossed; he played with a pen and shook his foot while he spoke (these behaviors were adapted from van Baaren, Fockenberg, Holland, Janssen, & van Knippenberg, 2006; see also Stel et al., 2010). The video lasted for about 1 min and had no sound.

Second liking rating. Once the video was over, participants indicated again how much they liked the target person on the same five-item scale used for the initial rating (Cronbach's $\alpha = .93$).

Control variables. Participants also rated their current mood on the short form of the Profiles of Mood Scale (POMS; Lorr & McNair, 1982) and filled in three-item scales assessing their implicit theories regarding the stability of people's personality, intelligence, and morality (Chiu, Hong, & Dweck, 1997). The reliability of each of these scales was high (Cronbach's $\alpha > .81$). Finally, participants were asked for their demographic data (i.e., age, gender, year of college, and native language), thanked for their participation, fully debriefed, and compensated with four Euros (\$5). Debriefing indicated that none of the participants guessed the true purpose of the study (i.e., that mimicking was supposed to increase attraction to the target person).

Results

Control variables

A series of Mimicry \times Intention ANOVAs revealed no main or interaction effects on the initial liking of the target person, the averaged mood subscale scores, or implicit theories, all $F_s < 1.37$, $p_s > .25$, and $\eta_p^2 < .03$ (liking, grand $M = 4.05$, $SD = 0.90$; anger, grand $M = 1.47$, $SD = 0.87$; hopelessness, grand $M = 1.64$, $SD = 0.94$; sorrow, grand $M = 2.01$, $SD = 1.14$; fatigue, grand $M = 2.99$, $SD = 1.28$; positive mood, grand $M = 3.61$, $SD = 1.16$; stability of personality, grand $M = 2.88$, $SD = 0.92$; stability of morality, grand $M = 3.74$, $SD = 1.12$; and stability of intelligence, grand $M = 3.77$, $SD = 1.22$).

Liking of the mimicked person

The liking ratings of the target person from the second assessment were submitted to a Mimicry \times Intention ANCOVA using the liking ratings from the initial assessment as covariate. No main effect of mimicry or intention was observed, both $F_s < 2.02$, $p_s > .158$, and $\eta_p^2 < .019$, but the expected Mimicry \times Intention interaction effect was highly significant, $F(2, 108) = 10.35$, $p < .001$, and $\eta_p^2 = .161$ (see Fig. 1).

Next, we undertook planned comparisons of the effect of mimicry at different levels of intention. Consistent with predictions, control and goal intention participants who mimicked the target ($M = 4.13$, $SE = 0.18$; $M = 4.53$, $SE = 0.19$, respectively) did not differ in their second liking ratings from control and goal intention participants who did not mimic the target ($M = 4.57$, $SE = 0.19$; $M = 4.62$, $SE = 0.19$, respectively), both $F_s(1, 108) < 2.70$, $p > .103$, and $\eta_p^2 < .025$. These findings replicate the classic effect that mimicking an unlikeable person does not lead to increased liking (Stel et al., 2010). However, implementation intention participants who mimicked the target ($M = 5.24$, $SE = 0.18$) exhibited greater liking compared to implementation intention participants who did not mimic the target ($M = 4.07$, $SE = 0.19$), $F(1, 108) = 20.28$, $p < .001$, and $\eta_p^2 = .158$.

Planned comparisons of the intention factor within both levels of the mimicry factor revealed a significant effect of intention for the mimicry condition, $F(2, 108) = 9.56$, $p < .001$, and $\eta_p^2 = .15$. Computing ANCOVAs to compare the different intention conditions revealed the expected pattern. In the mimicry condition, implementation intention participants rated their liking of the person at the second assessment higher ($M = 5.24$, $SE = 0.18$) compared to both goal intention participants ($M = 4.53$, $SE = 0.19$), $F(1, 36) = 5.72$, $p = .022$, and $\eta_p^2 = .137$, and control participants ($M = 4.13$, $SE = 0.18$), $F(1, 37) = 16.65$, $p < .001$, and $\eta_p^2 = .310$. In the no-mimicry condition, the effect of intention was not significant, $F(2, 108) = 2.66$, $p = .075$, and $\eta_p^2 = .047$. Comparing goal intention and control participants revealed no differences in liking ratings in either of the mimicry conditions, all $F_s < 1.39$, all $p_s > .246$, and all $\eta_p^2 < .038$.

Discussion

In line with previous research (Stel et al., 2010), Study 1 showed that mimicking an initially unlikeable target person fails to enhance liking of this person. This finding only held true, however, for participants in the information-only (control) and goal intention conditions. When participants formed an if-then plan to supplement their goal to be non-prejudiced, it became possible for mimicking to engender greater liking. Thus, the undermining effect of initial dislike of the target on the mimicry-liking link was overcome when the no-prejudice goal was furnished with an implementation intention. Apparently, the strategic automaticity in implementation intentions effectively overrode the limiting effect of target appeal on the mimicry-liking relationship (Stel et al., 2010).

Study 2: realizing the goal of being thrifty

In addition to goals that call for the strengthening of mimicry effects, there are also goals that call for the weakening of mimicry effects. Study 2 examines the pursuit of the goal to be thrifty and whether implementation intentions can reduce the persuasive effects of being mimicked on spending. Just as mimicking a likeable person can lead to increased liking of the target, being mimicked by a person can increase liking of the mimicker (Chartrand & Lakin, 2013). This 'being mimicked increases liking' effect can be exploited, however. For example, being mimicked altered students' preferences for a product that was supposedly favored by the mimicking interaction partner; participants became more willing to buy the product, and consumed more of the product when they were asked to taste it (Tanner et al., 2008). Similarly, being mimicked prompted restaurant customers to give their waitress larger tips (van Baaren et al., 2003) and retail customers to buy more and show greater compliance to sales clerks' suggestions during the selling process (Jacob et al., 2011). Moreover, being mimicked increased students' agreement with a controversial campus security policy that would require carrying identification (Bailenson & Yee, 2005), and compliance with an explicit but unjustified request for help (Guéguen, Martin, & Meineri, 2011). That these effects can be unwanted by the mimicked individuals is clearly demonstrated by studies in which people's higher-order goals were threatened. For example, being mimicked by a confederate interfered with female participants' goal to perform well on a math test (i.e., being mimicked enhanced stereotype-threat effects; Leander et al., 2011, Study 2). In the present study, we therefore examine whether people can effectively weaken the unconscious persuasive effects of being mimicked by using implementation intentions to support their focal goal.

Participants first formed the goal to be thrifty and to save their money for important investments, and then added a respective implementation intention or not. Participants were told they would be surveyed in 4 weeks' time about their thriftiness. Next, in an ostensibly unrelated interview, the experimenter either mimicked participants or did not, and then asked whether they would be willing to spend their payment for participation in the experiment (4 Euros; \$5) on chocolate bars or coffee vouchers, thereby challenging their thriftiness goal. As mimicry enhances liking and therefore compliance (e.g., not only did customers buy more in a store when they have been mimicked by the sales clerk but they did also report higher liking of the clerk and the store; Jacob et al., 2011), being mimicked by the experimenter was expected to increase the amount of money participants were willing to give her. We therefore predicted that mere goal intention participants (i.e., participants who had set a goal to be thrifty) would give away more money when they were mimicked compared to not mimicked. However, implementation intention participants (i.e., participants who in addition specified a plan on how to stick to their goal) would be just as thrifty when they were mimicked as when they were not mimicked.

Method

Participants and design

Eighty-four university students (50 females) with a mean age of 23.50 years ($SD = 4.76$) participated in the study. The study used a 2 between (Mimicry: yes vs. no) \times 2 between (Intention: goal intention vs. implementation intention) factorial design. The amount of money participants spent on food items promoted by the experimenter (i.e., coffee vouchers, chocolate bars) served as the dependent variable.

Procedure and materials

At the beginning of each individual participant's session, the experimenter handed out written instructions. The first page contained a short passage on the importance of holding on to one's money as the key to

short- and long-term prosperity. Next, participants indicated their commitment to the goal of being thrifty on the five-item scale developed by Klein, Wesson, Hollenbeck, Wright, and DeShon (2001). Example items are "I am strongly committed to pursuing this goal" and "It wouldn't take much to make me abandon this goal" (reverse coded). Possible responses on the seven-point answer scales ranged from 1 (*not at all*) to 7 (*very much*). Reliability of the scale was high (Cronbach's $\alpha = .76$).

Participants then received a supposed exercise to support thriftiness. In fact, they were randomly assigned to either a mere goal intention condition ("I want to be thrifty with my money! I will save my money for important investments!"), or an implementation intention condition ("I want to be thrifty with my money! And if I am tempted to buy something, then I will tell myself: I will save my money for important investments!"). Participants were told that they would be asked to complete an online questionnaire after four weeks to assess the success of their thriftiness intention.

Thereafter, in an ostensibly unrelated study concerning students' satisfaction with their university, the same experimenter either mimicked the participants or not while interviewing them. The interview took about 5 min. An example question was "Why did you enroll in this university?" Adapting the classic mimicry manipulation by Chartrand and Bargh (1999), the experimenter either imitated participants' foot and arm postures during the interview (mimicry condition) or simply sat straight with her feet on the ground and her shoulders fixed straight (no-mimicry condition).

Next, the experimenter thanked the participants for their support, and put the participants' payment (4 Euros; \$5) and the payment receipt on the desk. Then she asked participants for a favor: "I have a quick question to ask you: We have many coffee vouchers for the campus cafe and chocolate bars left over from a prior study that we have to use up before they expire. Would you be willing to accept coffee vouchers or chocolate bars instead of the four Euros? You can have each coffee voucher and chocolate bar for the price that we paid for it, that is, 1.30 Euros. You can buy as many vouchers and chocolate bars as you like. Your support would be greatly appreciated as we have to use up our vouchers and chocolate bars quickly." Once participants had been compensated by money and/or coffee vouchers and chocolate bars (as they preferred), the experimenter handed out a final questionnaire that contained a funneled debriefing starting with the following questions: "What was the intention of this study in your opinion? Did the experimenter act in an unusual way? Did you notice anything special during the interview?" Also, the following socio-demographic data were assessed: age, gender, field of study, year of study, and native language. Finally, participants were probed for suspicion, fully debriefed, and thanked for their participation. The funneled debriefing indicated that all participants were unaware of the hypotheses under investigation. In particular, participants neither suspected that they were being mimicked (or not) nor that such mimicry (or lack of mimicry) could influence their willingness to comply with the experimenter's request.

Results

Control variables

Commitment to the thriftiness goal was subjected to a Mimicry \times Intention ANOVA. Neither the main effects nor the interaction term was significant, all F s < 1.51 , p s $> .20$, and $\eta_p^2 < .03$. The grand mean of 5.25 ($SD = 0.96$) suggests that participants were highly committed to the goal.

Buying vouchers and chocolate bars

The amount of money participants spent on food items was subjected to a Mimicry \times Intention ANOVA. The main effects of mimicry, $F(1, 80) = 3.66$, $p = .059$, and $\eta_p^2 = .044$, and intention approached significance, $F(1, 80) = 3.02$, $p = .086$, and $\eta_p^2 = .036$. Mimicked participants ($M = 0.90\text{€}$, $SD = 1.33$) tended to spend more money than non-mimicked participants ($M = 0.43\text{€}$, $SD = 0.94$), and

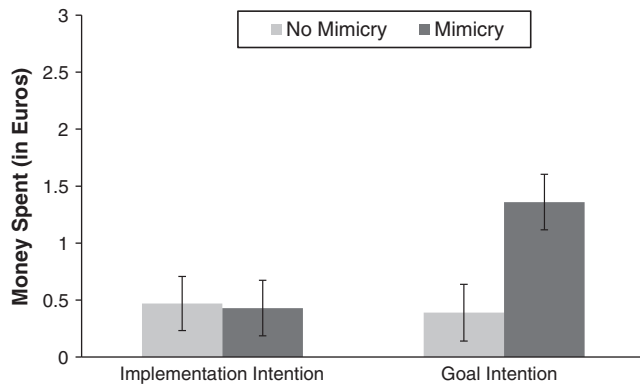


Fig. 2. Mean amount of money spent on food items by mimicry and intention conditions. Standard errors are represented in the figure by the error bars attached to each column (Study 2, $N = 84$).

implementation intention participants ($M = 0.43\text{€}$, $SD = 0.47$) tended to spend less money on food items than goal intention participants ($M = 0.87\text{€}$, $SD = 0.61$). Most importantly, however, these trends were qualified by the expected Mimicry \times Intention interaction effect, $F(1, 80) = 4.31$, $p = .041$, and $\eta_p^2 = .051$ (see Fig. 2).

Simple effects analyses revealed a significant effect of mimicry in the goal intention condition, $F(1, 80) = 7.78$, $p = .007$, and $\eta_p^2 = .089$, but not in the implementation intention condition, $F(1, 80) = 0.13$, $p = .908$, and $\eta_p^2 = .000$. Whereas mimicked participants in the goal intention condition spent more money on food items than non-mimicked participants ($M = 1.36\text{€}$ and 0.39€ , $SD = 1.56$ and 0.61 , respectively), no difference in spending between mimicry conditions was observed for implementation intention participants as they were thrifty in both mimicry conditions ($M = 0.43\text{€}$ and 0.47€ , $SD = 0.86$ and 1.17 , for the mimicry and no-mimicry conditions, respectively).

Simple effects analyses for the intention factor revealed a significant effect of intention in the mimicry condition, $F(1, 80) = 7.28$, $p = .009$, and $\eta_p^2 = .083$, but not in the no-mimicry condition, $F(1, 80) = 0.58$, $p = .811$, and $\eta_p^2 = .001$. In the mimicry condition, implementation intention participants spent less money on food items than did goal intention participants ($M = 0.43\text{€}$ and 1.36€ , $SD = 0.86$ and 1.56 , respectively), whereas no such difference was observed in the no-mimicry condition as participants were generally thrifty when they had not been mimicked ($M = 0.47\text{€}$ and 0.39€ , $SD = 1.17$ and 0.61 , for the implementation intention and goal intention conditions, respectively).

Discussion

Study 2 found that implementation intentions were effective in weakening the effects of being mimicked. Participants were more successful at protecting their goal to be thrifty from the persuasive request of a mimicker when they had formed implementation intentions than when they had formed mere goal intentions to be thrifty. The present study replicates prior findings that mimicry increases the likelihood of complying with the mimicker (Jacob et al., 2011; Tanner et al., 2008) and shows that even strong intentions in relation to the focal goal do not offer immunity against unwanted mimicry effects. Admittedly, including a no-goal intention control condition would have afforded a sterner test of the capacity of goal intentions to over-ride the impact of mimicry on compliance. However, the key point is that even compared to a conservative control condition where participants formed strong goal intentions, implementation intention participants were observed to better handle the antagonistic impact of mimicry on their goal.

General discussion

In two studies, we found that implementation intentions allowed people to regulate mimicry effects in line with their goals. In Study 1, implementation intentions supporting the goal to be non-prejudiced successfully strengthened the effect of mimicry on liking, even though the target was described as unlikable (i.e., initial dislike had been induced by activating the investment banker stereotype). Mere goal intentions to judge this person in a non-prejudiced manner failed to produce greater liking in comparison to control participants (i.e., control participants and mere goal intention participants did not differ). In Study 2, implementation intentions in support of the goal to save money successfully weakened the persuasive effects of being mimicked on a request that challenged participants' thriftiness goal. It did not matter whether implementation intention participants were mimicked or not; participants in both conditions spent the same small amount of money. This was not true, however, for mere goal intention participants; here, mimicry induced greater compliance. In fact, mimicked goal intention participants spent more than participants in each of the other three conditions. Thus, Study 2 demonstrates that implementation intentions but not goal intentions are capable of weakening the persuasive effects of being mimicked.

The funneled debriefings in the two studies made it clear that participants were not aware of how mimicry influenced their responses. Thus, it appears the social phenomena selected for study in the present research qualify as automatic in terms of lack of awareness of influence (Bargh & Morsella, 2008). Given the automaticity of the mimicry effects one might wonder how the implementation intention might have affected individuals' goal pursuit. In both studies, goal intention and implementation intention participants were assigned the same strategy to reach the goal. In the goal intention condition they were asked to commit themselves in Study 1 to "I want to judge people in a fair manner! I want to abandon all prejudice!" and in Study 2 to "I want to be thrifty with my money! I will save my money for important investments!" In the implementation intention condition they committed to "I want to judge people in a fair manner! And if I have to judge a person, then I will abandon all prejudice!" and to "I want to be thrifty with my money! And if I am tempted to buy something, then I will tell myself: I will save my money for important investments!" respectively. Given this parallel content, differences in the knowledge or information regarding the participants' goal striving strategy cannot account for the observed differences between the two intention conditions regarding the regulation of behavioral mimicry effects.

As a consequence, only the following differences remain as a potential source of the observed implementation intention effects. First, the if-then format is only present in the implementation intention condition. The if-then format has been found to make a unique contribution to the beneficial effects of planning on goal attainment (e.g., Chapman, Armitage, & Norman, 2009; Oettingen, Hönig, & Gollwitzer, 2000, Study 3), most likely by furthering the automation of cue detection and response initiation. Thus, the contingent structure of the plan should have contributed to the observed differences. Second, only implementation intention participants specified a critical situation in which they intended to act on their intentions. As critical cues included in the if-component of an implementation intention have been found to automatically attract attention (i.e., in an uncontrolled fashion, even during the pursuit of an unrelated goal; Wieber & Sassenberg, 2006), this specification of response-eliciting behavior should also contribute to the observed differences. Interestingly, improved recognition of the critical situation does not require conscious attention. In a study by Bayer et al. (2009), presenting critical cues subliminally proved effective in eliciting the actions that had been specified in the then-component of the implementation intention. Thus, although implementation intention participants should be more likely than goal intention participants to recognize the presence of the specified critical situation, conscious awareness is not necessarily required for the implementation intention effects to occur.

Future research might specifically address the question of whether specifying a critical situation that typically escapes individuals' conscious awareness in an implementation intention makes that situation more likely to be consciously recognized by individuals (i.e., to enter conscious awareness). For instance, goal-reminder implementation intentions might be examined. If one has the goal to be thrifty, one might form the following implementation intention: "And if I am tempted to buy something, then I will tell myself 'Remember your goal to be thrifty!'" Such implementation intentions serve to activate the focal goal at a critical juncture, and thus help to keep goal striving on track. Kroese, Adriaanse, Evers, and De Ridder (2011) and van Koningsbruggen, Stroebe, Papies, and Aarts (2011) found that such goal-reminder if-then plans were effective in helping people to meet their dieting goals.

One might also wonder if it is possible at all to formulate an implementation intention about an automatic process that by definition unfolds without awareness. In our view, shielding an ongoing goal from unwanted interferences does not necessarily require knowledge and recognition of the automatic process that interferes with the pursuit of the focal goal. Rather, if-then planning can simply support the focal goal; specifying in advance how the focal goal will be pursued serves to stabilize goal striving and protect against unwanted influences (e.g., Gollwitzer et al., 2011; Webb, Sheeran, Gollwitzer, & Trötschel, 2012; Wieber, von Suchodoletz, Heikamp, Trommsdorff, & Gollwitzer, 2011). The present studies are in line with this idea as specifying if (situation)-then (response) plans to support the goal to be free from prejudice (Study 1) and the goal to be thrifty (Study 2) was effective in regulating automatic mimicry effects – even though participants were unaware of the need to regulate these effects.

In other cases, however, people might be aware of the potential danger or benefit of automatic processes and want to directly address the automatic process itself. For instance, a plan could be used to strengthen or weaken automatic mimicking itself rather than its downstream consequences. Regarding the strengthening, it is known that automatic mimicking is reduced in individuals diagnosed with an autism spectrum disorder (e.g., research on contagious yawning; Helt, Eigsti, Snyder, & Fein, 2010). As mimicry most often facilitates affiliation and social interaction (Chartrand & Lakin, 2013), strengthening automatic mimicry could be helpful to reduce the unwanted consequences of an autism spectrum disorder on social interactions. Regarding the weakening, it is known that people automatically mimic targets who use stereotype-consistent descriptions of others more than targets who use stereotype-inconsistent descriptions of others (Castelli, Pavan, Ferrari, & Kashima, 2009). In this case, automatic mimicking has the unwanted consequence that the use of stereotypical language is encouraged and one's goal to reduce the prevalence of social stereotyping is hindered. Moreover, automatic mimicry has been found to put people's reputation at stake. In a recent study by Kavanagh et al. (2011), participants who mimicked an unfriendly person's mannerisms were rated as less competent than participants who did not mimic the unfriendly person. Given these findings, people may be well advised to use implementation intentions to weaken mimicking itself when its consequences threaten to send their goal striving off track. With respect to the phenomenon described by Kavanagh et al., such an implementation intention could be as simple as, "If I speak to an unfriendly person, then I will keep a neutral face and stand still!" Even though people often feel that mimicking is uncontrollable (Chartrand & Lakin, 2013), it would be interesting to find out whether implementation intentions are powerful enough to achieve such control.

If-then plan specifications

In the present studies, goal intentions as well as implementation intentions were assigned to participants rather than self-selected. One could ask whether implementation intention effects would also be found when goals and implementation intentions were self-generated

rather than assigned. Two factors seem relevant when answering this question. First, commitment to the goal and the plan need to be high for implementation intention effects to occur (e.g., Achtziger et al., 2012; Sheeran et al., 2005). As commitment should be equal or even higher for goals and plans that are self-selected rather than assigned (e.g., Faude-Koivisto, Wuerz, & Gollwitzer, 2009), strong implementation intention effects should also be expected when goals are self-selected. Second, people have to be able to form effective goals and plans, requiring them to select suitable situations and functional responses. Fortunately, prior studies indicate that people can indeed identify and self-select suitable situations and functional responses (e.g., Adriaanse et al., 2009; Gollwitzer & Brandstätter, 1997). In line with these arguments, experimenter-provided and self-generated implementation intentions have been found to effectively support goal attainment (Armitage, 2009). Moreover, there is an effective strategy to identify personally-relevant critical situations and goal-directed responses that can inform the specification of implementation intentions, namely mental contrasting (e.g., Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2011; Stadler, Oettingen, & Gollwitzer, 2009). According to the mental contrasting technique, a desired future is contrasted with present reality. This way, expectancy-dependent goal commitment is established and good opportunities to act as well as functional strategies on how to respond once the situation occurs should be easily identified. Indeed, when Adriaanse, Oettingen, Gollwitzer, Hennes, de Ridder, & de Witt (2010) compared participants who had formed implementation intentions on the basis of a mental contrasting exercise with mere implementation intention participants, the participants who had formed implementation intentions without prior mental contrasting showed weaker goal attainment effects. Thus there are grounds to assume that the intentional regulation of mimicry effects should become even more effective when people are asked to engage in mental contrasting prior to forming their implementation intentions.

Conclusion

Mimicry has powerful effects on individuals' thoughts, feelings, and actions. This influence usually occurs outside of people's conscious awareness and is therefore difficult to control. Although the effects of mimicry might be mostly beneficial, individuals might at times want to strengthen or weaken mimicry effects in line with their goals. Individuals with the goal to be non-prejudiced might want to use mimicry to facilitate social interactions with disliked persons or group members. Individuals with the goal to forgo expensive optional extras when buying a vehicle might want to protect themselves from complying with a mimicking salesperson. The present research suggests an easily applicable self-regulation tool to regulate mimicry effects. It appears that the formation of simple if-then plans (implementation intentions; Gollwitzer, 1999) can be used to effectively regulate unwanted effects of mimicry on one's goal pursuits.

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