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Abstract

Similarity between partners entails positive consequences for cooperative interactions. But do people rely on this assumption to construe egocentric judgments about others? Five experiments examined the possibility that people project onto their partners because they believe that similarity to the self leads to success in cooperation. Studies 1a and 1b show that people hold an egocentric similarity belief in cooperation. Studies 2a and 2b test the existence of this belief in more indirect ways. The next three studies manipulate the applicability of the similarity belief and investigate its impact on projection. Study 3 finds that cooperation no longer leads to projection when participants expect a low probability of success. Study 4 replicates this effect in a real cooperative setting. Finally, Study 5 shows that projection occurs only when participants expect their characteristics to be responsible for the success of cooperation. The negative consequences of overestimating similarities in cooperation are discussed.

Keywords

egocentric, similarity belief, interpersonal projection, cooperation, success

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When it comes to social interactions, similarity often appears to be an asset. Whether a relationship is located within a professional context or concerns more intimate aspects, the opportunity to build on common ground often comes as a blessing. Two potential industrial partners who share the same views about their business expansion will have an easier time making a deal. Two spouses coming from the same socioeconomic background will meet with fewer problems when making a number of decisions over the course of their marital life. As a matter of fact, a substantial amount of work suggests that similarity entails a number of positive consequences in social interactions.

But do social perceivers actually rely on the working assumption that similarity is beneficial to cooperation when judging their partners? And, more importantly, what type of similarity are we talking about? In light of people's well-established egocentric tendencies, should we not expect people to approach this similarity advantage in a rather partisan way, namely, by hoping that their partner will resemble them? The present article aims to test the hypothesis that people have an egocentric similarity belief that leads them to project their characteristics onto their partner when anticipating cooperation. First, we conjecture that people believe that cooperation is more likely to meet with success when their partner resembles them rather than when they resemble their partner. Second, we argue that because people have this egocentric belief, they tend to see their partner as similar to themselves in cooperative settings. Below, we discuss the theoretical rationale and empirical context for our predictions. We then report five studies that examined these conjectures.

The Dividends of Similarity in Cooperative Settings

Empirical evidence suggests that similarity entails a number of positive consequences. As a matter of fact, cooperation often occurs as a result of interaction between similar partners (Nowak, 2006). Partner similarity has been found to induce interpersonal attraction (Byrne, 1971), affiliation (Lakin & Chartrand, 2003), altruistic behavior (Cunningham,

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1986), and trust (Zak & Knack, 2001), and all of these are important elements responsible for successful cooperation. Using computer simulations, Riolo, Cohen, and Axelrod (2001) showed that cooperation can arise between two agents who are sufficiently similar in some arbitrary characteristics. In a prisoner's dilemma game, creating pairs of people who perceive each other as being similar has been shown to predict cooperation (Fischer, 2009). In sociobiology, individuals sharing a gene that leads to a visible tag (e.g., a green beard) tend to help each other more (Traulsen, 2008).

All forms of similarity have been found to be associated with favorable social outcomes: Similarity in race increases helping and cooperation (Gaertner & Dovidio, 1977), similarity in attitudes increases cooperation in social dilemmas (Van Vugt & Hart, 2003), physiognomic similarity induces political cooperation (Heschl, 1993), and similarity in personality, values, and goals leads to cooperation in organizations (Bretz & Judge, 1994). Clearly, thus, people are attracted more to and cooperate more readily with similar rather than dissimilar others.

Egocentric Similarity Belief

It may well be that partner similarity leads to positive consequences, but is it the case that people know this and orient their judgment in light of this belief? People entertain a wide variety of beliefs, sometimes called lay beliefs, to make sense of their social environment (Anderson & Lindsay, 1998). The influence of lay beliefs on people's perceptions of others has, in fact, long been a central concern in the study of social judgment (e.g., Heider, 1958; Ross & Nisbett, 1991). What is particularly important about these beliefs is that they exert a strong influence on perception, expectations, and judgments (Dweck, Chiu, & Hong, 1995; Wegener & Petty, 1998). On observing the same person, social perceivers holding different beliefs do not "see" exactly the same person.

But how do people elaborate such beliefs? Many lay beliefs are learned primarily through direct experience (Anderson & Lindsay, 1998). In the present case, the exposure to different cooperative situations may have led people to infer that working with similar partners may be highly beneficial. Different individuals remember different situations, but what is important here is that people usually have in mind instances that reflect favorably on the self. There is growing evidence that people entertain self-serving theories about success and competence (Dunning, Leuenberger, & Sherman, 1995), that they have self-serving conceptions of traits and abilities (Dunning & Cohen, 1992), and, more generally, that they define the social reality in a way that puts themselves and their conceptions of life under a favorable light (Dunning & Hayes, 1996). Self-serving biases have been found across numerous domains: People perceive themselves as more fair (Messick, Bloom, Boldizar, & Samuelson, 1985), more competent (Yan & Gaier, 1994), more successful (Urban & Witt, 1990), and more socially responsible than others (White & Plous, 1995). Moreover, people attribute responsibility for outcomes more to themselves than to others (Ross & Sicoly, 1979; Savitsky, 2007), and they give themselves credit in cases of success but not in cases of failure (Mark, Mutrie, Brooks, & Harris, 1984; Miller & Ross, 1975). People are motivated to think well of themselves, and this motive may influence their judgments of others. Research has shown that people tailor their judgments of others to maintain and bolster their egocentric beliefs about themselves and their self-worth (Beauregard & Dunning, 1998).

In the research reported here, we propose that another egocentric tendency people may have is to believe that their partner's similarity to themselves predicts successful cooperation. Two arguments support this proposal. First, in line with the idea that the self is a habitual reference point in judgments, Holyoak and Gordon (1983) found that people see more similarity of the other with the self than of the self with the other. Second, and even more importantly, work on motivated inference (Kunda, 1987) suggests that people believe that their own attributes, more than those of others, are desirable to achieve positive outcomes. Therefore, if people consider their attributes as valuable for cooperation, they may find it justified to see similarity to the self as a guarantee of success in this context.

Similarity Beliefs and Social Projection

A logical consequence of holding beliefs associating similarity with success is that people would prefer to associate with more similar partners. Moreover, in light of the well-established fact that human beings are egocentric creatures, an intriguing consequence of this belief is that people may see their partner as similar to themselves whenever they find themselves in a cooperative setting.

It is widely known that people tend to overestimate self–other similarity when making predictions about other people's behavior (Ross, Greene, & House, 1977), personality (Krueger, 1998), or attitudes and preferences (Katz & Allport, 1931). Of interest, research indicates that the latter tendency is magnified under cooperation, with more social projection observed for people working in cooperative contexts (Riketta & Sacramento, 2008). For instance, Toma, Yzerbyt, and Corneille (2010) showed that people see their partner as more similar to themselves when they anticipate cooperation rather than competition. Of note, however, little is known about what may drive social projection in cooperation.

We suggest here that people in a cooperation context project onto their partner because they hold the belief that interacting with partners who resemble them leads to success. In other words, by projecting the self onto the partner, social perceivers may think (sometimes erroneously) that the cooperation will turn out to be a success. In the context of a prisoner's dilemma

game, if one of the two suspects decides not to confess, he or she may project the same tendency onto the other suspect in the hope that this should lead to a release or a minimum punishment. If social projection is enhanced in cooperative contexts due to the aforementioned egocentric belief, then projection should be reduced when people no longer expect to reach a successful outcome in a cooperation setting. Furthermore, projection should also be reduced when people doubt that their characteristics may engender successful cooperation.

Overview of the Studies

Past research shows that similarity often facilitates cooperation. We argue that people, building on direct and indirect cooperative experiences, hold the belief that similarity to the self is beneficial for cooperative success. As a result, and combined with the egocentric tendencies that characterize social perceivers, we predict that this belief will make them project their own characteristics onto their partner. In Study 1a, we examine whether people hold the belief that similarity leads to positive outcomes in cooperation, and Study 1b tests whether this belief is indeed egocentric. In Studies 2a and 2b, we test the existence of this belief in a more indirect way. Overall, the goal of these studies is to confirm the existence of a belief linking similarity to successful outcomes in cooperation in a rather egocentric way.

Building on this evidence, Studies 3, 4, and 5 examine the implications of this belief for social projection. In Study 3, we manipulated the applicability of this belief by varying the probability of success in cooperation. We predict that projection onto partners occurs only when participants expect that the probability of success is high. In Study 4, we tested whether this effect is replicable in a real cooperative task. Finally, in Study 5, we test the possibility that projection occurs only when people are led to think that their own characteristics are conducive to success in cooperation.

Studies 1 and 2: Do People Hold an Egocentric Similarity Belief?

Study 1a

People seem to be able to report on their beliefs. As a matter of fact, measuring such theories has been and can be done in a rather direct manner (Wegener & Petty, 1998). In this first study, we asked our participants directly whether they thought that they would succeed better in cooperation with a similar than with a dissimilar partner.

Method

Participants. A total of 25 participants (8 females) were recruited on the campus to participate in this study. Their age ranged from 19 to 40 years ($M = 23.5$, $SD = 4.88$).

Procedure. Participants were asked to imagine a cooperative situation and to choose the partner with whom they would like to cooperate. Participants responded to five questions in which they indicated on a 9-point scale ranging from −4 (*very dissimilar*) to 4 (*very similar*) the type of partner who would allow them to succeed in the cooperation situation and the type of partner that they would like to choose in this context. Four questions referred to the prediction of performance ("To succeed in cooperation, my partner should be"; "To avoid failure in cooperation my partner should be"; "Cooperative tasks are difficult to perform if my partner is"; "I can work better in cooperation if my partner is"), $\alpha = .73$. An additional question ("The partner I would choose in cooperation should be") referred to participants' preference between a rather dissimilar and a rather similar partner in the context of cooperation.

Results and Discussion. We hypothesized that people believe that success in a cooperative task is better served by having to face a similar rather than a dissimilar partner. They should thus be more willing to choose a similar rather than a dissimilar partner for cooperation. Calculating a t test against the midpoint of the scale for both performance ($M = 1.71$, $SD = 1.08$), $t(24) = 7.88$, $p < .001$, and choice of the partner ($M = 1.84$, $SD = 1.90$), $t(24) = 4.82$, $p < .001$, confirmed this prediction. A similar study with 25 participants showed that people do not hold the same belief in other interdependent situations like competition: $M = 0.46$ and $SD = 1.81$, $t(24) = 1.27$, $p = .22$, for performance and $M = -0.12$ and $SD = 2.55$, $t(24) = -0.23$, *ns* for the choice of the partner.

Study 1b

The results of Study 1b suggest that people believe that having a similar partner increases their chances of success in a cooperative situation. The important question here is whether people generate this belief in a rather egocentric way so that they think their partner should resemble them more than they should resemble their partner. Therefore, this study was expected to conceptually replicate the results of Study 1a this time with a manipulation of the target of similarity. Participants were asked whether their partner should be like them or they should be like their partner for cooperation to succeed.

Method

Participants and design. A total of 60 participants (9 males) were recruited on campus to participate in this study. Their age ranged from 18 to 23 years ($M = 19.47$, $SD = 1.25$). Participants were randomly assigned to the experimental conditions (self vs. partner).

Procedure. Participants were asked to imagine a cooperative situation and to respond to the same questions as in Study 1a. The difference was that the target of similarity was either the self (e.g., "To succeed in cooperation, my partner should be" on a 9-point scale from −4 [*different from me*] to 4 [*like me*]) or the partner (e.g., "To succeed in cooperation, I should be" on a 9-point scale from −4 [*different from my*

partner] to 4 [*like my partner*]). All these questions referred to the prediction of success in cooperation (α = .79).

Results and Discussion. Participants in the *similarity to the self* condition had a higher score on the predicted success of cooperation (M = 1.33, SD = 1.43) than participants in the *similarity to the partner* condition (M = 0.07, SD = 1.22), $t(58) = 2.12$, $p < .001$. Moreover, only the score in the *similarity to the self* condition was different from the midpoint of the scale, $t(29) = 5.08$, $p < .001$ ($t < 1$ in the *similarity to the partner* condition). This suggests that only similarity to the self is thought to be associated with success in cooperation.

Studies 2a and 2b

Studies 2a and 2b further test the hypothesis that similarity to the self is believed to be associated with success in cooperation by using an indirect method. Specifically, we provided participants with a partner whose profile of traits (Study 2a) or preferences (Study 2b) was similar or dissimilar to their own and asked them to predict how successful a cooperative interaction between themselves and their partner would be. We hypothesized that participants would predict more cooperation and expect more success with a similar than with a dissimilar partner.

Method

Participants and design. A total of 39 participants (22 females) took part in Study 2a, and 35 participants (20 females) took part in Study 2b. They were students in various majors, and they ranged in age from 19 to 37 years (M = 22.15, SD = 3.38) in Study 2a and from 18 to 26 years (M = 21.51, SD = 2.09) in Study 2b. Participants took part in a study of judgment and cooperation in exchange for 5 Euros. They were randomly assigned to the experimental conditions, that is, similarity versus dissimilarity.

Procedure. In Study 2a, participants were first presented with a list of 18 personality traits selected from the Big Five personality test, and they were asked to select those 8 traits that best characterized them. Half of these traits were positive and half were negative. Participants were then invited to take part in an unrelated experiment that took about 15 min. In Study 2b, participants were first presented with a list of 20 activities (e.g., reading, hiking, going to the cinema, cooking), and they were asked to choose 10 activities that they like most. During this time, the experimenter created for each participant a profile of a partner that was designed so as to be either similar or dissimilar to their own. In the similarity condition, the experimenter filled in a questionnaire by randomly choosing 6 traits/8 activities among the 8 traits/10 activities selected by the participants, and 2 traits/activities among the remaining 10 traits/activities not selected by the participant. In the dissimilarity condition, the experimenter filled in a questionnaire by randomly choosing 2 traits/activities among the 8 traits/10 activities selected by the participants, and 6 traits/8 activities among the remaining 10 traits/activities not selected by the participant.

In both studies, once participants were done with the unrelated experiment, they were presented again with their own profile and the profile of another participant, who allegedly had completed the same questionnaire in another session. Participants were given the opportunity to compare their own ratings with those of this unknown partner. Participants were then led to imagine that they would have to engage in a cooperative task for which the unknown participant would be their partner. More specifically, they had to imagine working with another student for a final year collaborative project, and they were told that they could both obtain a good grade if they coordinate their efforts and competences for a high-quality project. Participants were then asked to answer a series of questions. These questions referred either to participants' predicted performance with their partner (α = .89; "With this person, I will succeed in cooperation"; "With this person, chances are that I will fail in cooperation [reverse-scored]"; "I will work efficiently in cooperation with this person"; "The cooperative task will be difficult to perform with this person [reverse-scored]") or to participants' desire to work with their partner (α = .89; "I would choose to work in cooperation with this person").

Finally, two questions checked whether participants considered their partner's profile as being similar or dissimilar ("This person has a personality profile that is different from mine [reverse-scored]," "This person is like me"; r = .87). All questions were answered on a scale ranging from 1 (*not at all*) to 9 (*very much*). Once they had completed the questionnaire, participants were debriefed, thanked for their participation, and dismissed.

Results and Discussion

Manipulation checks. Participants in the similarity condition perceived their partner as being more similar to themselves (M = 6.73, SD = 1.41) than did participants in the dissimilarity condition (M = 2.65, SD = 1.12), $t(37) = 9.99$, $p < .001$ (Study 2a). The same was found in Study 2b, $t(33) = 13.54$, $p < .001$ (M = 7.47 and SD = 1.23 for the similarity condition and M = 2.32 and SD = 0.99 for the dissimilarity condition).

Predicted performance and choice. In Study 2a, participants in the similarity condition expected to perform better with their partner (M = 6.56, SD = 1.31) than did participants in the dissimilarity condition (M = 5.20, SD = 1.93), $t(37) = 2.56$, $p < .05$. Moreover, participants chose to cooperate more with a partner presented as being similar to themselves (M = 5.84, SD = 1.95) than with a partner presented as being dissimilar to themselves (M = 3.60, SD = 2.30), $t(37) = 3.27$, $p < .01$.

Similarly, in Study 2b, participants in the similarity condition expected to perform better with their partner (M = 7.91, SD = 0.62) than did participants in the dissimilarity condition (M = 5.85, SD = 1.74), $t(33) = 4.71$, $p < .001$. Moreover, participants chose to cooperate with a partner presented as being

similar to themselves more ($M = 7.44$, $SD = 1.09$) than with a partner presented as being dissimilar to themselves ($M = 3.00$, $SD = 1.22$), $t(33) = 4.44$, $p < .001$.

These results indicate that participants tend to believe that a similar, as opposed to a dissimilar, partner would allow them to better succeed in cooperation. Moreover, they expressed a preference for a similar rather than a dissimilar person to engage with in the cooperative task. This was the case for profiles based on similarity of traits or similarity of preferences.

We decided to use both traits and preferences because the use of personality traits may raise some questions with respect to perceived similarity. Some of the personality traits used here appeared highly desirable in the context of future cooperation (e.g., sociable, conscious, creative, trustful), and therefore it was possible that participants chose these traits more than other traits because of this reason and not because these traits were similar to those that participants perceived in themselves. Moreover, although half of the traits presented to the participants were positive and half were negative, participants predominantly chose the positive traits for their own profile. Among the eight traits selected for their own profile, participants chose an average of 4.54 ($SD = 1.21$) positive traits, $t(38) = 2.78$, $p < .01$. For this reason, a profile designed to be similar was perceived not only as similar but also as more desirable and positive. Because the similarity in terms of preferences was also shown to shape real-word relationships (Jamieson, Lydon, & Zanna, 1987), the convergence of results on both studies provides a strong test of our hypothesis.

As a set, the studies presented so far show that people believe that similarity is beneficial in cooperation and that this belief is egocentric. People may therefore project their characteristics onto their partner in cooperation because they believe that their own attributes are more likely than other attributes to facilitate desired outcomes (Kunda, 1987). This specific hypothesis is tested in the following studies.

Studies 3 to 5: Implications of the Similarity Belief for Social Projection

Building on the above findings, our second central question deals with the consequences of people's egocentric belief that similarity to the self leads to success in cooperation. Specifically, the question is whether people are also more willing to perceive their partners as similar when they expect to succeed in cooperation. Our next three studies address this issue by manipulating the contextual conditions that disrupt (or not) the applicability of the similarity belief and examining its impact on interpersonal projection. This manipulation is in line with methodological approaches suggesting that, to test a mechanism hypothesis, one should compare a condition that is expected to disrupt the proposed mechanism with a condition that is expected not to (Spencer, Zanna, & Fong, 2005). In the case of the present research, the use of the similarity belief should be disrupted if participants expect to fail in cooperation or if the partner's characteristics rather than their own characteristics are expected to be responsible for the success. We therefore manipulated the expected outcome of cooperation either in an imagined scenario (Study 3) or in a real cooperative learning task (Study 4). Study 5 manipulated participants' expectations that their characteristics (or those of the partner) facilitate the success of cooperation.

Study 3

This study examines whether people will project the self onto their partner when they doubt the success of cooperation. Clearly, if people are convinced that the cooperation will not lead to success, the similarity belief is of no use and therefore participants should not be tempted to see their partner as similar to themselves. To examine this question, we manipulated the expected outcome of cooperation by varying the probability of success. We hypothesized that projection should be observed only when participants are told that there is a high, as opposed to low, likelihood of success.

Method

Participants and design. A total of 46 participants (35 females), all students in various disciplines, took part in a study of spontaneous impression formation. They ranged in age from 18 to 24 years ($M = 20.20$, $SD = 1.58$). Participants were randomly assigned to one of two experimental conditions (low vs. high probability of success).

Procedure. On the first page of the questionnaire, participants rated themselves on a list of 16 personality traits (8 positive and 8 negative). These traits were borrowed from Riketta and Sacramento (2008), who showed them to be unrelated to cooperation in a pretest. Participants had to indicate the extent to which each of the traits (e.g., progressive, silent) characterized them on a 9-point rating scale ranging from 1 (*not at all*) to 9 (*very much*).

On the second page, participants read a scenario in which they had to imagine being employed in a new software company. In this company, they would have to team up with an unknown person (the target). They learned that the top manager of this company would offer a bonus trip to the Caribbean if they managed to sell more than 10,000 copies of computer software during the first 6 months. The relationship with the target was presented as being cooperative. Participants were told that both they and their partner could win the trip, so that they should help each other to sell, together, the 10,000 copies of the computer software. Depending on the condition, participants were told that by working this way, 95% (vs. 5%) of the teams previously succeeded in selling more than 10,000 copies of computer software during the first 6 months.

On the third page of the questionnaire, participants were asked to rate the target on the same list of traits that they had

used to rate the self. Because the valence of the traits could vary as a function of their attribution to the self (Krueger, 1998; Sinha & Krueger, 1998), participants were also asked to rate the valence of each personality trait, using a 9-point scale ranging from −4 (*rather negative*) to +4 (*rather positive*).

Finally, as a manipulation check, participants were asked whether their chances to succeed in cooperation were high or low. All participants answered correctly. When all tasks had been completed, participants were debriefed, thanked, and dismissed.

Results. Because the ratings of personality traits were nested within participants, the data were analyzed by means of multilevel modeling. The traits were our Level 1 variable, and the expected outcome was our Level 2 variable. The analysis used the ratings of the target as our criterion and the self-ratings and valence of traits as predictors at Level 1. The expected outcome of cooperation (low vs. high probability of success) was included as a moderator variable at Level 2.

Our hypothesis was that the variation of the Level 1 slopes (i.e., the relationship between self-ratings and target ratings) would be influenced by our Level 2 variable (expected outcome) and that this effect would occur independently of trait valence. In other words, we predicted the presence of a significant cross-level interaction between self-ratings and the expected outcome. To test our prediction, we implemented the following model:
Level 1 model:

$$\text{Target}_{ij} = \pi_{0i} + \pi_{1i}\,\text{Self} + \pi_{2i}\,\text{Valence} + \pi_{3i}\,\text{Self} \times \text{Valence} + \varepsilon_{ij}$$

Level 2 model:

$$\pi_{0i} = \beta_{00} + \beta_{01}\,\text{Outcome} + u_{0i}$$

$$\pi_{1i} = \beta_{10} + \beta_{11}\,\text{Outcome} + u_{1i}$$

$$\pi_{2i} = \beta_{20} + \beta_{21}\,\text{Outcome} + u_{2i}$$

$$\pi_{3i} = \beta_{30} + u_{3i}$$

with π_{0i}, β_{00}, β_{10}, β_{20}, β_{30} as intercepts; π_{1i}, π_{2i}, β_{01}, β_{11}, β_{21} as slopes; and ε_{ij}, u_{0i}, u_{1i}, u_{2i}, u_{3i} as residuals. Target_{ij} is the response variable of individual i measured for the trait j. Expected outcome was coded −1 for low probability and +1 for high probability. β_{01} refers to the extent to which the target is judged differently as a function of the expected outcome. β_{10} denotes the extent to which the self is used to judge the target. The critical parameter for our hypothesis is β_{11}, because it denotes the extent to which the tendency of the self-ratings to predict the target ratings (i.e., π_{1i}) varies as a function of expected outcome. β_{20} refers to the extent to which the valence ratings affect target ratings. β_{21} is the parameter that allows us to control for the impact of valence on the interaction between self and expected outcome. This is because the interaction between self-ratings and expected outcome is not adjusted for valence simply by controlling for trait valence. As a matter of fact, one may also need to control for the interaction between the moderator (expected outcomes) and the variable that covaries with trait valence (self; see Yzerbyt, Muller, & Judd, 2004). Self-ratings were centered at the mean of each participant's ratings. It is important to note that parameters in this model (especially β_{10} and β_{11}) reflect the importance of self–target covariance rather than correspondence. The method of estimation is restricted maximum likelihood, and the covariance matrix is unstructured. These specifications also apply to the subsequent models.

Confirming the presence of projection, participants projected the self onto the target (B_{10} = .12, SE = .05, t = 2.35, $p < .05$). As predicted, the relationship between self and target ratings (self–target projection) depended on the expected probability of success, B_{11} = .11, SE = .05, t = 2.28, $p < .05$, after controlling for the main effect of valence as well as for the Self × Valence and Condition × Valence interactions. Importantly, the relationship between self-ratings and target ratings was positive and significant when the probability of success was high, B_{11} = .23, SE = .07, t = 3.33, $p < .01$, and nonsignificant when the probability of success was low, B_{11} = .001, SE = .07, $t < 1$. In other words, participants projected their personality traits onto the target when they had a high chance of succeeding in cooperation but not when they had a low chance of succeeding (see Figure 1). Valence did not affect projection, B_{20} = −.001, SE = .01, $t < 1$. This study shows that people used their similarity belief to judge their partner as similar to themselves only when they expect to succeed in cooperation. When the chances of success of cooperation seem slim, people do not infer any similarity between themselves and their potential partner.

Study 4

The aim of Study 4 was to replicate the findings of Study 3, this time using an actual cooperative task. In this study, participants faced a real partner (a confederate) with whom they expected to succeed or to fail in a cooperative learning task. If participants project their characteristics more in a complex cooperative task requiring coordination with a real partner when the likelihood of success is high rather than low, then this finding would rule out the possibility that the previous results were solely due to the absence of a concrete partner in the task.

Method

Participants and design. A total of 41 students in psychology (34 females) took part in a study investigating the effect of cooperation on performance. They ranged in age from 18 to 23 years (M = 19.79, SD = 1.34). Participants were randomly assigned to one of two experimental conditions (low vs. high probability of success).

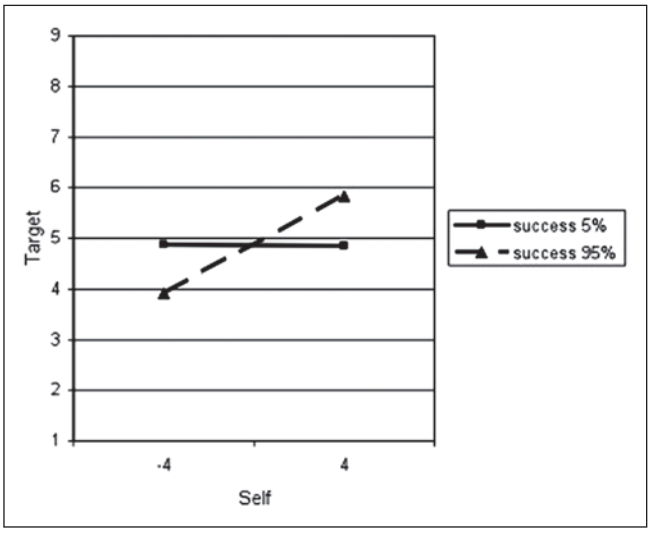

Figure 1. Relationship between self-ratings and target ratings by expected outcome, controlling for trait valence (Study 3)

Procedure. The cooperative learning procedure was adapted from Buchs and Butera (2009). Before the experimental session, participants registered on a participation list that required two persons per slot. Participants thus expected to meet another person for the cooperative task. In reality, one of the two registered participants was always the confederate. The confederate's name was written by the experimenter, who used a different name each time.

Each participant arrived at the laboratory at the same time as the confederate. The confederate was always a 25-year-old female student dressed the same way and with the same hairstyle throughout the entire experiment. First, participants were invited to take place in different rooms where they were asked to evaluate themselves on the same list of traits as in Study 3. Then, the naive participant joined the confederate in the next room where they were sitting face to face for about 5 min. During this time, the experimenter explained the cooperative task in detail. The two partners were informed that they would work together on a cooperative learning task in which they needed to try their best to promote their own learning and that of their partner. The two partners received two social psychology texts: one text on conformity for the naive participant and one text on cognitive dissonance for the confederate. They were informed that each of them would read his or her own text for 10 min and then he or she would summarize the content to their partner for 8 min. The partners were told that the efficiency of the cooperative learning will be evaluated using a multiple-choice test, including questions from the two texts studied during the learning session. They were also informed that they would have to complete the multiple-choice test together and that only the joint performance would be taken into account. Depending on the condition, participants were told that this test was very easy/difficult and that 95% (vs. 5%) of the previous teams succeeded/failed in answering all the questions correctly.

Next, participants were again invited to sit in different rooms and were asked to rate the partner on the same list of traits that they had used to rate the self, and they also rated trait valence. Finally, as a manipulation check, participants were asked whether their chance of succeeding on the test was low, from 1 (*not at all*) to 9 (*very much*). When all tasks had been completed, participants were debriefed, thanked, and dismissed.

Results. Two participants were excluded from the analyses due to incomplete responses for self-ratings.

Manipulation check. Participants in the low probability of success condition more readily agreed that their chance of succeeding in cooperation would be low ($M = 4.21$, $SD = 1.84$) than participants in the high probability of success condition ($M = 3.00$, $SD = 1.52$), $t(37) = 2.24$, $p < .05$. This result confirms the success of our manipulation.

Projection. As in Study 3, we predicted that the relationship between the self-ratings and the target ratings would be influenced by the probability of success, and that this effect would emerge regardless of trait valence. As predicted, the relationship between self-ratings and target ratings (self–target projection) depended on the probability of success, $B_{11} = .12$, $SE = .05$, $t = 2.29$, $p < .05$, after controlling for the main effect of valence as well as for the Self × Valence and Condition × Valence interactions. Importantly, the relationship between self-ratings and target ratings was significantly positive in the high probability of success condition, $B_{11} = .15$, $SE = .07$, $t = 2.06$, $p < .05$, and nonsignificantly negative in the low probability of success condition, $B_{11} = -.08$, $SE = .07$, $t = -1.15$, $p = .25$. Overall, the self was not projected onto the target, $B_{10} = .03$, $SE = .05$, $t < 1$. Also, valence only marginally affected the projection of self-ratings, $B_{20} = -.02$, $SE = .01$, $t = -1.89$, $p = .06$, with participants tending to project more on negative than on positive traits.

Discussion. Studies 3 and 4 strongly suggest that the egocentric similarity belief may have led people to project their self-view onto their partner. Participants projected their characteristics onto the partner only when they expected cooperation to be successful. This effect is even clearer in Study 4 where participants were facing a real partner and were expecting to collaborate on a real cooperative learning task. Study 4 minimizes the possibility that participants in Study 3 projected for the sole reason that they received no concrete information about their partner and were thus constrained by the artificial nature of the method.

Another important message emerging from these results is that, although some studies observed projection mainly on positive traits (Stathi & Crisp, 2008), we found projection to occur independently of the valence of the traits.

Study 5

Studies 3 and 4 provide consistent evidence that the anticipation of success is necessary for social projection to be observed in cooperation. However, given that people generally infer that cooperation is likely to meet with success, one might argue that people always project when anticipating cooperation. Therefore, the aim of Study 5 is to show that the success of cooperation is not a sufficient condition for social projection to occur in cooperation. People may well use their similarity belief as an antecedent for projection but only when they expect to succeed *and* are led to believe that it is their own characteristics that engender this success.

Study 1b showed that people believe that the similarity of the partner to the self, more than the similarity of the self to the partner, leads to positive outcomes in cooperation. This suggests the possibility that people are prone to believe that their personal characteristics are conducive to success, and so they generally want their personal characteristics to be shared by their partner. If this is the case, then social projection may be disrupted when it is made clear that the characteristics of the partner rather than those of the self led to success.

Study 5 addresses this possibility by keeping constant the anticipated success across conditions. However, this time, we manipulated whether participants expected that success in the task was due to both the self and the partner, only to the self, or only to the partner. Our prediction was that social projection should occur when participants are led to believe that their characteristics are conductive to success but should be disrupted when participants are led to believe that their partner's characteristics are conductive to success.

A second aim of this study was to examine whether the latter projective effects are observed for attributes that are irrelevant to cooperation. We know from Study 2b that people readily consider the similarity of general preferences to be a good predictor of people's success in cooperation. It would be most important if we could show that people project general preferences that are irrelevant to success in the task onto their partner, at least when they believe it is their characteristics that are responsible for the success of cooperation.

Method

Participants and design. A total of 69 participants (51 females), all students in various disciplines, took part in a study of spontaneous impression formation. They ranged in age from 18 to 37 years ($M = 21.49$, $SD = 3.07$). Participants were randomly assigned to one of three experimental conditions (success both, success self, success partner).

Procedure. On the first page of the questionnaire, participants rated themselves on a list of 20 activity preferences. Participants had to indicate the extent to which they liked each of the 20 activities (e.g., reading, hiking, going to the cinema, cooking) on a 9-point rating scale ranging from 1 (*not at all*) to 9 (*very much*).

On the second page, participants read a scenario in which they had to imagine cooperating with another student (the target). They learned that they were about to finish a final year project with a target student. Participants were told that obtaining a very good grade for this project was of utmost importance because they would like to pursue an MA program. Therefore, both they and their partner combined their efforts, shared their entire information, and spent an equal amount of time preparing this project. Participants were then informed that the final project was highly likely to be successful and were assigned to one of the three conditions (success both, success self, or success partner). In the *success-both* condition, participants were told that the professor in charge of the evaluation of the project praised their qualities, and he or she publicly affirmed that both partners' qualities were expected to contribute to the success of cooperation. In the *success-self* condition, participants were told that the professor in charge of the evaluation of the project only praised the participant's own qualities, and he or she publicly affirmed that the participant's qualities, more than those of their partner, were expected to contribute to the success of cooperation. In the *success-partner* condition, participants were told that the professor in charge of the evaluation of the project only praised their partner's qualities, and he or she publicly affirmed that their partner's qualities, more than their own qualities, were expected to contribute to the success of cooperation. Participants were then asked to imagine the partner with whom they would cooperate in this situation.

Next, participants were asked to rate the target on the same list of activity preferences that they had used to rate the self. Finally, as a manipulation check, participants were asked whether the success in the situation described was due to both partners, only to the self, or only to their partner. All participants answered correctly. When all tasks had been completed, participants were debriefed, thanked, and dismissed.

Results. Our hypothesis held that the relationship between the self-ratings and the target ratings should be influenced by our Level 2 variable (*attribution of success*). The *attribution of success* variable was represented by two orthogonal contrasts (C1 and C2). A contrast analysis is particularly recommended here because it allows a powerful and unambiguous test of specific hypotheses (see Rosenthal, Rosnow, & Rubin, 2000). In the present context, the C1 contrast (0, +1, −1) compared the condition in which the self versus only the partner was expected to be responsible for the success, whereas the C2 contrast opposed the success-both condition to the other two conditions (2, −1, −1). The order of conditions for these two contrasts was success both, success self, and success partner. As we used C1 and C2 to describe the *attribution of success* variable, and because activity preferences were not characterized by valence (as in previous studies), we estimated the following multilevel model.

Level 1 model:

$$\text{Target}_{ij} = \pi_{0i} + \pi_{1i}\ \text{Self} + \varepsilon_{ij}$$

Level 2 model:

$$\pi_{0i} = \beta_{00} + \beta_{01}\ \text{C1} + \beta_{02}\ \text{C2} + u_{0i}$$

$$\pi_{1i} = \beta_{10} + \beta_{11}\ \text{C1} + \beta_{12}\ \text{C2} + u_{1i}$$

The parameters critical to our hypothesis are β_{11} and β_{12}. β_{11} tests whether there are differences in the projection of self onto the target between the success-self condition and the success-partner condition. β_{12} tests the differences in the projection of self onto the target between the success both and the other two conditions. This analysis revealed that self influenced target ratings overall, $B_{10} = .24$, $SE = .02$, $t = 11.97$, $p < .001$. Moreover, the interaction between self and the C1 contrast was significant suggesting that projection of the self onto the target was different in the success-self condition and in the success-partner condition, $B_{11} = .05$, $SE = .02$, $t = 2.16$, $p < .05$. The interaction between self and the C2 contrast was also significant, $B_{12} = .06$, $SE = .01$, $t = 4.92$, $p < .001$, suggesting that the projection of the self onto the target was different in the success-both condition and in the other two conditions.[1]

To probe the interaction between self-ratings and success attribution on target ratings, we tested the simple slopes representing self–target projection in each success attribution condition. The critical slope refers to self–target projection in the success-self and the success-partner conditions. If projection occurred only when the success was due to the self, but not when the success was due to the partner, this would imply that participants projected only when they thought that their characteristics were conductive to success. The results revealed that the relationship between self-ratings and target ratings was positive and significant when the success was expected to be due to both partners, $B = .43$, $SE = .07$, $t = 6.42$, $p < .001$, positive and significant when the success was expected to be due only to the self, $B = .22$, $SE = .06$, $t = 3.28$, $p < .01$, and nonsignificant when the success was attributed only to the partner, $B = .10$, $SE = .07$, $t = 1.45$, $p = .16$. These results are presented in Figure 2.

Discussion. Together, the results of Study 5 suggest that even when cooperation leads to a positive outcome, projection of the self onto the partner is disrupted if the partner is held responsible for the success. In this situation, people no longer have reasons to believe that the similarity of the other to the self is conductive to success in cooperation, and so they stop projecting onto their partner. In our study, participants only projected onto their partner when they found themselves in a situation reinforcing the belief that their personal characteristics were conducive to success.

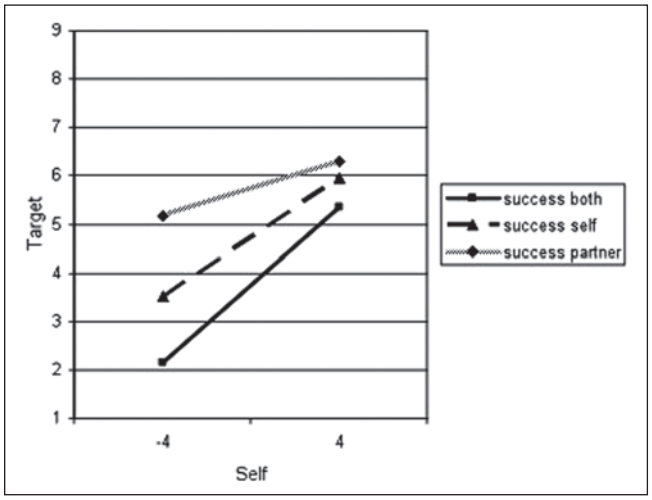

Figure 2. Relationship between self-ratings and target ratings by attribution of success (Study 5)

These results are provocative to the extent that participants projected on preference activities, namely, on characteristics irrelevant for cooperation. This pattern is consistent, however, with research showing that regardless of the type of attributes under consideration, people may come to believe that these attributes can help them to achieve desired outcomes (Kunda, 1987).

What is also noteworthy about this study is that ratings of the self were more strongly associated with ratings of the target when the success was expected to be due to both partners than when the success was expected to be due only to the self, suggesting that the common fate of success contributed to projection. Although this is consistent with research showing that the initial shared similarity enhances projection (Ames, 2004), shared similarity cannot entirely account for the effects found here.

General Discussion

A substantial amount of work suggests that similarity between partners entails a number of positive consequences for cooperation. The present research aimed to provide evidence that beyond this objective reality, people hold similarity beliefs that strongly influence their egocentric judgments about potential partners. Past work on social projection has shown that people tend to project their own characteristics onto others, especially in situations of cooperation (Riketta & Sacramento, 2008; Toma et al., 2010). However, until now, it remained unclear why people do so.

In the present research, we propose that people judge target persons to be similar to them in cooperation because they believe that similarity to the self leads to positive outcomes in this situation. Our results supported this idea. Two studies provided direct (Studies 1a and 1b) and indirect (Studies 2a and 2b) evidence that people hold an egocentric

belief according to which similarity to the self leads to success in cooperation. These studies also revealed that participants believe that both similarity in terms of personality traits (Study 2a) or general preferences (Study 2b) is beneficial in cooperation.

The next three studies (Studies 3, 4, and 5) investigated the impact of the similarity belief on social projection. Study 3 manipulated the applicability of this belief and provided evidence that participants who were convinced that the cooperation was going to lead to success projected their self-view onto their partner, whereas participants who doubted the success of cooperation stopped projecting. Importantly, Study 4 showed that this effect also occurs in a real cooperative setting in which participants actually faced a confederate partner. Finally, Study 5 showed that the anticipated success of cooperation is a necessary but not a sufficient condition for social projection. People use their similarity belief to project onto others only when they expect to possess those characteristics that are conductive to the success of cooperation.

Egocentric Beliefs in Perceived Similarity

These findings may have important implications for the domain of egocentric inferences. Past research has shown that people define social traits, categories, and abilities in egocentric ways, emphasizing those characteristics that put the self in a favorable light (Dunning & Cohen, 1992; Dunning, Leuenberger, & Sherman, 1995). People have egocentric models and beliefs about social domains because they create them in line with their own image and interests (Kunda, 1987).

The present research suggests that such egocentric inferences also occur when people think that similarity between partners facilitates cooperation. People seem to know that similarity is an asset for cooperation, but they approach this similarity in a rather partisan way, namely, by inferring that their partner should resemble them rather than they should resemble their partner. What could explain this effect? One reason could simply be that the self is an easily available example and thus a privileged reference point in judgments of similarity. In line with this idea, research done by Holyoak and Gordon (1983) showed that people tend to see others as being more similar to the self than vice versa.

Interestingly, in our studies, participants do not simply perceive asymmetric similarity, but they also associate similarity to the self with more positive outcomes than similarity to the partner. Therefore, another reason could be related to people's belief about their own abilities. It is widely known that people posses inflated views of their attributes and abilities (Alicke, 1985). At the same time, no matter what people's attributes are, they all believe that their attributes are more likely than another's attributes to facilitate the desired outcome (Kunda, 1987). Given these circumstances, people's egocentric judgment of similarity in cooperation may be a rational consequence of people's belief about their own abilities. Although Study 5 suggests this possibility, future studies should directly investigate whether people think that their attributes are more important and are more likely to facilitate effective cooperation than those of others

Social Projection, a Motivated Process?

The present empirical evidence may also have important implications for research on social projection. So far, research suggested that a focus on similarity is the default process in cooperation. That is, cooperation has been found to activate an integration mind-set in which similarities between the self and others are emphasized (Carnevale & Probst, 1998), with a resulting assimilation of the self into the other and also of the other into the self. According to the egocentric comparison model of social prediction (Mussweiler, 2003), when people find themselves in a context of cooperation, they may engage in a process of similarity testing, yielding target judgments that are consistent with the self.

The present results may suggest that social projection is a motivated process. Because our participants projected onto their partner only when they expected their cooperation to lead to success, this may imply that the participants' goal to succeed was responsible for the projection. In his review of social projection, Krueger (2007) stated that although "projection can emerge with minimal cognitive contribution . . . projection can also be engaged and suspended strategically" (p. 2). Therefore, it is reasonable to conclude that people in our studies appraised their partner in a strategic way by relying on their own characteristics when it was worthwhile to do so (see also Toma, Yzerbyt, & Corneille, 2012).

The present research is consistent with prior work suggesting that projection and perceived similarity may be goal dependent. Participants activated with a mate-search goal perceived more sexual arousal in attractive opposite-sex targets than did participants not activated with this goal (Maner et al., 2005). In romantic relationships, the desire to be close to the partner has been found to increase projection and perceived self–other similarity (Slotter & Gardner, 2009). Perceived similarity more than actual similarity has been found to be functional in that it predicts such positive outcomes as high self-esteem and relationship satisfaction (Murray, Holmes, Dolderman, & Griffin, 2000). People infer partner similarity because they believe this may contribute to their own growth and to the acquisition of new skills (Rusbult, Kumashiro, Kubacka, & Finkel, 2009). Research on social dilemmas also suggests that people's projection of their choices onto others (whether cooperative or competitive) may have a motivational source: "Subjects may feel the need to justify their decisions—defectors in order to assuage possible guilt over their decision, cooperators to avoid feeling duped" (Dawes, McTavish, & Shaklee, 1977, p. 8). Future studies should directly manipulate participants' need to justify their qualities for cooperation and participants' motivation to succeed in this situation, and to test whether these motivations would increase projection of the self onto the partner.

Implications of Social Projection in Cooperation

One reason to care about social projection in cooperation is that, when people expect others to be similar to them, this not only fosters prosocial action but, ironically enough, may also entail distortions, unwanted outcomes, and conflict. To be sure, the bulk of the literature focuses on the benefits of similarity in cooperation. Perceived similarity increases liking and attraction (Byrne, 1971), and is related to compassion (Oveis, Horberg, & Keltner, 2010) and altruistic behavior (Cunningham, 1986). Perceived self–other similarity induces willingness to act at a cost to the self (Krebs, 1975) and to forgo personal rewards (Batson, Turk, Shaw, & Klein, 1995). Still, our findings also point to the possibility that misguided perceptions of similarity may sometimes be harmful in cooperation. That is, people who overestimate the similarity between themselves and their partner may fall prey to some specific mode of solving problems or interacting with others that may prove less beneficial than if some room for divergence had been acknowledged.

For example, in decision-making settings, people who perceive others as being similar to them may limit their search for information because they wrongly assume that others possess the same information as they do. As for problem-solving situations, people who readily focus on similarities may fail in cooperative tasks that require complementary points of view. In line with these intuitions, Yzerbyt, Woltin, Corneille, and Bourgeois (2011) recently argued that a focus on similarities should not always help reaching successful negotiation outcomes. In two studies, these authors primed their participants with a dissimilarity mind-set rather than a similarity mind-set as a means of manipulating egocentric projective tendencies and found that dissimilarity rather than similarity was more effective in allowing participants to reach a mutual agreement.

Conclusion

When people anticipate cooperation, they tend to project their own characteristics onto their partner. Previous research considered that a focus on similarities is the default process in cooperative settings (Carnevale & Probst, 1998; Mussweiler, 2003). Our findings suggest that the egocentric similarity belief may well be the key factor in explaining projective tendencies in this situation. Because it remains unclear how well this conjecture of similarity fares in the context of real interactions, future work would do well to examine these issues in more detail. To be sure, self-fulfilling prophecies may enter the picture and lead to a happy conclusion for the interaction. At the same time, one should not expect projection to be associated only with positive dividends. Clarifying the negative consequences of overestimating similarities definitely stands as an important item on our research agenda.

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Note

1. We also tested the interactions between the self and the linear contrast C1 = (+1, 0, −1), and between the self and the quadratic contrast C2 = (+1, −2, +1). The Self × C1 interaction was significant, $B = .13$, $SE = .02$, $t = 5.75$, $p < .001$, while the Self × C2 interaction was not, $B = .01$, $SE = .01$, $t < 1$.

References

Alicke, M. D. (1985). Global self-evaluation as determined by the desirability and controllability of trait adjectives. *Journal of Personality and Social Psychology, 49*, 1621-1630.

Ames, D. (2004). Strategies for social inference: A similarity contingency model of projection and stereotyping in attitude prevalence estimates. *Journal of Personality and Social Psychology, 87*, 573-585.

Anderson, C. A., & Lindsay, J. J. (1998). The development, perseverance and change of naive theories. *Social Cognition, 16*, 8-30.

Batson, C. D., Turk, C. L., Shaw, L. L., & Klein, T. R. (1995). Information function of empathic emotion: Learning that we value the other's welfare. *Journal of Personality and Social Psychology, 68*, 300-313.

Beauregard, K. S., & Dunning, D. (1998). Turning up the contrast: Self-enhancement motives prompt egocentric contrast effects in social judgments. *Journal of Personality and Social Psychology, 74*, 606-621.

Bretz, R. D., Jr., & Judge, T. A. (1994). Person-organization fit and the theory of work adjustment: Implications for satisfaction, tenure, and career success. *Journal of Vocational Behavior, 44*, 32-54.

Buchs, C., & Butera, F. (2009). Is a partner's competence threatening during dyadic cooperative work? It depends on resource interdependence. *European Journal of Psychology of Education, 24*, 145-154.

Byrne, D. (1971). *The attraction paradigm*. New York, NY: Academic Press.

Carnevale, P. J., & Probst, T. M. (1998). Social values and social conflict in creative problem solving and categorization. *Journal of Personality and Social Psychology, 74*, 1300-1309.

Cunningham, M. R. (1986). Levites and brother's keepers: A sociobiological perspective on prosocial behavior. *Humboldt Journal of Social Relations, 13*, 35-67.

Dawes, R., McTavish, J., & Shaklee, H. (1977). Behavior, communication, and assumptions about other people's behavior in a commons dilemma situation. *Journal of Personality and Social Psychology, 35*, 1-11.

Dunning, D., & Cohen, G. L. (1992). Egocentric definitions of traits and abilities in social judgment. *Journal of Personality and Social Psychology, 63*, 341-355.

Dunning, D., & Hayes, A. F. (1996). Evidence for egocentric comparison in social judgment. *Journal of Personality and Social Psychology, 71*, 213-229.

Dunning, D., Leuenberger, A., & Sherman, D. A. (1995). A new look at motivated inference: Are self-serving theories of success a product of motivational forces? *Journal of Personality and Social Psychology, 59*, 58-68.

Dweck, C. S., Chiu, C., & Hong, Y. (1995). Implicit theories and their role in judgments and reactions: A world from two perspectives. *Psychological Inquiry, 6*, 267-285.

Fischer., I. (2009). Friend or foe: Subjective expected relative similarity as a determinant of cooperation. *Journal of Experimental Psychology, General, 138*, 341-350.

Gaertner, S. L., & Dovidio, J. F. (1977). The subtlety of white racism, arousal and helping behavior. *Journal of Personality and Social Psychology, 35*, 691-707.

Heider, F. (1958). *The psychology of interpersonal relations*. New York, NY: Wiley.

Heschl, A. (1993). Physiognomic similarity and political cooperation: An exploratory investigation. *Politics and the Life Sciences, 12*, 61-68.

Holyoak, K. J., & Gordon, P. C. (1983). Social reference points. *Journal of Personality and Social Psychology, 44*, 881-887.

Jamieson, D., Lydon, J., & Zanna, M. (1987). Attitude and activity preference similarity: Differential bases of interpersonal attraction for low and high self-monitors. *Journal of Personality and Social Psychology, 53*, 1052-1060.

Katz, D., & Allport, F. (1931). *Students' attitudes*. Syracuse, NY: Craftsman.

Krebs, D. L. (1975). Empathy and altruism. *Journal of Personality and Social Psychology, 32*, 1134-1146.

Krueger, J. (1998). On the perception of social consensus. *Advances in Experimental Social Psychology, 30*, 163-240.

Krueger, J. I. (2007). From social projection to social behavior. *European Review of Social Psychology, 18*, 1-35.

Kunda, Z. (1987). Motivated inference: Self-serving generation and evaluation of causal theories. *Journal of Personality and Social Psychology, 53*, 636-647.

Lakin, J., & Chartrand, T. L. (2003). Using nonconscious behavioral mimicry to create affiliation and rapport. *Psychological Science, 14*, 334-339.

Maner, J. K., Kenrick, D. T., Neuberg, S. L., Becker, D. V., Robertson, T., Hofer, B., . . . Schaller, M. (2005). Functional projection: How fundamental social motives can bias interpersonal perception. *Journal of Personality and Social Psychology, 88*, 63-78.

Mark, M. M., Mutrie, N., Brooks, D. R., & Harris, D. V. (1984). Causal attributions of winners and losers in individual competitive sports: Towards a reformulation of the self-serving bias. *Journal of Sport Psychology, 6*, 184-196.

Messick, D. M., Bloom, S., Boldizar, J. P., & Samuelson, C. D. (1985). Why we are fairer than others. *Journal of Experimental Social Psychology, 21*, 480-500.

Miller, D. T., & Ross, M. (1975). Self-serving biases in the attribution of causality: Fact or fiction? *Psychological Bulletin, 82*, 213-225.

Murray, S. L., Holmes, J. G., Dolderman, D., & Griffin, D. W. (2000). What the motivated mind sees: Comparing friends' perspectives to married partners' views of each other. *Journal of Experimental Social Psychology, 36*, 600-620.

Mussweiler, T. (2003). When egocentrism breeds distinctness-comparison processes in social prediction: Comment on Kar niol (2003). *Psychological Review, 110*, 581-584.

Nowak, M. A. (2006). Five rules for the evolution of cooperation. *Science, 314*, 1560-1563.

Oveis, C., Horberg, E. J., & Keltner, D. (2010). Compassion, pride, and social intuitions of self-other similarity. *Journal of Personality and Social Psychology, 98*, 618-630.

Riketta, M., & Sacramento, C. (2008). "They cooperate with us, so they are like me": Perceived intergroup relationship moderates projection from self to outgroups. *Group Processes and Intergroup Relations, 11*, 115-131.

Riolo, R. L., Cohen, M. D., & Axelrod, R. (2001). Evolution of cooperation without reciprocity. *Nature, 414*, 441-443.

Rosenthal, R., Rosnow, R. L., & Rubin, D. B. (2000). *Contrasts and effect sizes in behavioral research: A correlational approach*. Cambridge, UK: Cambridge University Press.

Ross, L., Greene, D., & House, P. (1977). The false consensus phenomenon: An attributional bias in self-perception and social-perception processes. *Journal of Experimental Social Psychology, 13*, 279-301.

Ross, L., & Nisbett, R. E. (1991). *The person and the situation: Perspectives of social psychology*. New York, NY: McGraw-Hill.

Ross, M., & Sicoly, F. (1979). Egocentric biases in availability and attribution. *Journal of Personality and Social Psychology, 37*, 322-336.

Rusbult, C. E., Kumashiro, M., Kubacka, K. E., & Finkel, E. J. (2009). "The part of me that you bring out": Ideal similarity and the Michelangelo phenomenon. *Journal of Personality and Social Psychology, 96*, 61-82.

Savitsky, K. (2007). Egocentric bias. In R. F. Baumeister & K. D. Vohs (Eds.), *Encyclopedia of social psychology*. Thousand Oaks, CA: SAGE.

Sinha, R. R., & Krueger, J. (1998). Idiographic self-evaluation and bias. *Journal of Research in Personality, 32*, 131-155.

Slotter, E. B., & Gardner, W. L. (2009). Where do "You" end and "I" begin? Pre-emptive self-other inclusion as a motivated process. *Journal of Personality and Social Psychology, 96*, 1137-1151.

Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology, 89*, 845-851.

Stathi, S., & Crisp, R. J. (2008). Imagining intergroup contact promotes projection to outgroups. *Journal of Experimental Social Psychology, 44*, 943-957.

Toma, C., Yzerbyt, V., & Corneille, O. (2010). Anticipated cooperation vs. competition moderates interpersonal projection. *Journal of Experimental Social Psychology, 46*, 375-381.

Toma, C., Yzerbyt, V., & Corneille, O. (2012). Nice or smart? Task relevance of self-characteristics moderates interpersonal projection. *Journal of Experimental Social Psychology, 48*, 335-340.

Traulsen, A. (2008). Mechanisms for similarity based cooperation. *European Physical Journal B, 63*, 363-371.

Urban, M. S., & Witt, L. A. (1990). Self-serving bias in group member attributions of success and failure. *Journal of Social Psychology, 130*, 417-418.

Van Vugt, M., & Hart, C. M. (2003). *Social identity as social glue: Fostering loyalty and stability in groups*. Unpublished manuscript, University of Southampton.

Wegener, D. T., & Petty, R. E. (1998). The naive scientist revisited: Naive theories and social judgment. *Social Cognition, 16*, 1-7.

White, J. A., & Plous, S. (1995). Self-enhancement and social responsibility: On caring more, but doing less, than others. *Journal of Applied Social Psychology, 25*, 1297-1318.

Yan, W., & Gaier, E. L. (1994). Causal attributions for college success and failure: An Asian-American comparison. *Journal of Cross-Cultural Psychology, 25*, 146-158.

Yzerbyt, V., Woltin, K.-A., Corneille, O., & Bourgeois, S. (2011). *Making deals out of differences: A dissimilarity mindset facilitates joint negotiation outcomes*. Unpublished Manuscript.

Yzerbyt, V. Y., Muller, D., & Judd, C. M. (2004). Adjusting researchers' approach to adjustment: On the use of covariates when testing interactions. *Journal of Experimental Social Psychology, 40*, 423-431.

Zak, P. J., & Knack, S. (2001). Trust and growth. *Economic Journal, 111*, 295-321.