

On the Importance of Cognitive Evaluation as a Determinant of Interpersonal Attraction

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Three studies examined a model of attraction in which the cognitive evaluation of the target individual was the primary determinant of interpersonal attraction. In Study 1, the cognitive evaluation of the target individual mediated the influence of attitude similarity on interpersonal attraction. In Study 2, a path analysis revealed significant indirect effects of (a) similarity on cognitive evaluation via the valence of information implied by attitudes and (b) the valence of information implied by attitudes on attraction via cognitive evaluation of the target. Study 3 provided empirical and theoretical support for the uniqueness of interpersonal attraction from cognitive evaluation. The implications of these data for existing attraction theory are discussed, and a new model of interpersonal attraction is described.

One of the most robust phenomena in social psychology is the similarity–attraction effect (Byrne, 1997). Across a variety of populations and for countless different manipulations of similarity, increased similarity to a target is associated with interpersonal attraction to the target (hereafter we refer to this phenomenon as the *similarity effect*). The similarity effect has been observed with schoolchildren (Byrne & Griffitt, 1966; Gaynor, 1971; Tan & Singh, 1995), undergraduates (Clore & Baldridge, 1968; Pilkington & Lydon, 1997), and married couples (Murstein & Beck, 1972; Rogers, 1999; Russell & Wells, 1991) and is robust for a number of different types of information including, but not limited to, personality traits (Carli, Ganley, & Pierce-Otay, 1991; Singh, 1973; Steele & McGlynn, 1979), attitudes (Bond, Byrne, & Diamond, 1968; Byrne & Blaylock, 1963; Byrne & Clore, 1970), demographic characteristics (Gillis & Avis, 1980; Spuhler, 1968; Susanne & Lepage, 1988), and physical attractiveness (Hill, Rubin, & Peplau, 1976; Peterson & Miller, 1980; Stevens, Owens, & Schaefer, 1990; for a review, see Montoya, Horton, & Kirchner, 2004).

Despite the apparent power of similarity, there are situations in which the similarity effect is diminished or nonexistent. For in-

stance, the similarity effect is weaker for personality traits than it is for attitudes (Montoya et al., 2004), for peripheral attitudes compared with central attitudes (Byrne, London, & Griffitt, 1968; Clore & Baldridge, 1968; Horton & Montoya, 2003), and in field studies compared with laboratory studies (Montoya et al., 2004; Sunnafrank, 1992). Moreover, similarity does not produce interpersonal attraction for negative traits (e.g., Ajzen, 1974; Novak & Lerner, 1968). The dominant explanation of the similarity effect, the reinforcement–affect model of attraction (Byrne, 1971; Byrne & Clore, 1967), has difficulty explaining the inconsistent effects of similarity on attraction (Ajzen, 1974; Montoya et al., 2004; Sunnafrank, 1992). In this article, we use the similarity effect paradigm as an anchor for investigation to describe and test empirical predictions of a theoretical model for interpersonal attraction that may account better for the inconsistencies in the existing literature.

Explanations of the Similarity Effect

Reinforcement–Affect Model

In an effort to explain the similarity effect, Byrne and Clore (1967) suggested that a target who possesses similar attitudes is reinforcing because the target's attitudes confirm the legitimacy and accuracy of one's own attitudes (i.e., provide consensual validation). This consensual validation, in turn, nurtures the *effectance motive*, the basic need for a consistent, logical, and accurate interpretation of the world. In contrast, dissimilar others offer no such consensual validation and thus create need-threatening inconsistency and uncertainty regarding the self. In short, Byrne and Clore argued that similar people make us feel good, and dissimilar people make us feel bad, both about ourselves and about our world. Interpersonal attraction flows directly from these affective states. Unfortunately, the effectance motive does not explain ad-

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equately the inconsistencies observed in the similarity effect. Although the effectance motive addresses the issue of central versus peripheral attitude similarity (validation of one's central attitudes satisfies the effectance motive to a greater extent than does validation of one's peripheral attitudes and thus creates more positive affect), the effectance motive has difficulty generalizing to other findings related to similarity. As an example, consider similarity between the self and another on negative qualities. According to the reinforcement-affect model, similarity on negative qualities should satisfy the effectance motive just as effectively as does similarity on positive qualities and thus should lead to attraction. However, similarity to another on negative qualities does not lead to attraction (e.g., Ajzen, 1974; Novak & Lerner, 1968). Similarly, the reinforcing ability of attitudes does not predict attraction in field studies (Montoya et al., 2004).¹ Given this mixed support, it is important to note that other models have attempted to explain these diverse findings.

Information Integration Model of Attraction

The information integration approach (e.g., Kaplan & Anderson, 1973) critiques the reinforcement model by arguing that similarity is only reinforcing when the individual is aware of the relationship between reward and similarity (e.g., DeNike & Leibovitz, 1969; Insko & Cialdini, 1969; Sachs & Byrne, 1970; Uleman, 1971). For example, pairing a reinforcing photograph (e.g., of a friend) with a nonsense syllable only increases attraction to the nonsense syllable when the participant is aware of the relationship between the photograph and the stimulus (Lott & Lott, 1969). Given that the influence of affective processes is profound with and without conscious awareness, the failure to find reinforcement effects in the absence of awareness suggests that other, possibly cognitive, processes must be operating when individuals express attraction to similar targets (Fishbein & Ajzen, 1972).

The information integration model's approach to the similarity effect is dependent on the notion that individuals hold attitudes and personality traits that they believe to be good and correct. Indeed, there is theoretical and empirical evidence that people regard more favorably personality traits and attitudes that are self-descriptive than those that are not self-descriptive (Alicke, 1985; Stallings, 1970; Wetzel & Insko, 1982). As a result of the inherent positivity with which individuals regard themselves and their attitudes, Ajzen (1974) reasoned that an evaluator would infer favorable information about a target from the target's similar attitudes. Consequently, the similarity effect was a result of the compilation of this evaluative information and not of the reinforcement value of similarity. Consistent with this idea, a number of researchers have found that similarity does not predict attraction once one controls for the positivity of the stimuli attributed to a target (Lydon, Jamieson, & Zanna, 1988; McLaughlin, 1970). Moreover, Ajzen manipulated both the valence and similarity of personality traits attributed to a target and found that only the valence of the personality traits predicted attraction to the target. These findings suggest that the positivity of the information one infers about a target plays a crucial role in the similarity effect.

As an extension of this idea, Kaplan and Anderson (1973) noted that individuals also infer from attitudes and personality traits additional information about a target. In Kaplan and Anderson's words, "When we are told that X has similar attitudes, we like him

not because that information acts as an unconditioned stimulus, but because it leads us to expect that he has various positive aspects to his personality" (p. 304). In short, others who hold attitudes that are similar to ours are believed to possess positive personality qualities that those who disagree with us do not. In turn, we will feel more affection for similar, rather than dissimilar, others. In support of this emphasis on the information implied by similar and dissimilar attitudes, Horton and Montoya (2003) found that a target who was described with positive and informative traits (traits that were regarded favorably and that conveyed additional information about a person's character, e.g., cooperative, independent) was more attractive than a target who was described with equally positive, but uninformative traits (e.g., broadminded, prompt). An emphasis on the information implied by an attitude—information that may take the form of specific traits held by the target other (e.g., caring, compassionate), other attitudes (e.g., attitude toward the death penalty, abortion), or values (e.g., life values)—provides a parsimonious resolution to discrepancies in the similarity literature. For instance, because of differences in the amount of implied information, central attitude similarity (e.g., attitude toward abortion, capital punishment, religion) should lead to more interpersonal attraction than peripheral attitude similarity (e.g., attitude toward reading, discotheques), and attitude similarity should lead to more attraction than personality trait similarity (e.g., compassionate, caring). Negative trait similarity should not lead to interpersonal attraction because the valence of the information implied by negative traits is unfavorable. The first goal of the current project was to investigate the possibility that the similarity effect results from the positive information that one infers about a target from the target's similar attitudes.

An additional goal of this project was to investigate the proximal determinant of interpersonal attraction within the similarity-attraction paradigm. As discussed above, information integration models (Anderson, 1971; Kaplan & Anderson, 1973) suggest that attraction results from a weighted composition of the information one compiles regarding a target (whether the information takes the form of attitudes, personality traits, or inferences derived from attitudes and personality traits). However, we argue that an assessment of the cognitive quality of the individual precedes the judgment of attraction. That is, individuals create cognitively a composite of the information implied by the attitudes or personality traits attributed to a target. This composite guides a cognitive evaluation of the quality of the target, which in turn is the basis for interpersonal attraction.

This proposed model, which includes the addition of a cognitive composite of the available information, differs from information integration and reinforcement models in subtle but distinct ways. Compared with information integration theories (e.g., Anderson, 1971; Kaplan & Anderson, 1973), this proposed model of attraction shares the emphasis on information inferred from target characteristics (attitudes or personality traits) but differs in its sugges-

¹ Byrne (1992) presented a series of arguments for the reasons why the similarity effect does not translate well into the field. However, most of the identified factors (situational factors that contribute to the interpersonal attraction process but that are unrelated to the reinforcing ability of attitudes) relate to the reduction of increased affect from prolonged initial interactions (Montoya et al., 2004).

tion of an intermediate evaluative step: The cognitive evaluation results from the valenced information acquisition and precedes, and guides, interpersonal attraction. We argue that a cognitive composition is generated before the assessment of interpersonal attraction, whereas the information integration models make no such assumption. With respect to the reinforcement model, the proposed model differs in that the reinforcement model suggests either that a cognitive evaluation and the experience of interpersonal attraction occur simultaneously (Byrne, Rasche, & Kelley, 1974) or that the experience of interpersonal attraction precedes our cognitive evaluation (e.g., Byrne & Clore, 1970; Clore & Gormly, 1974).

This conceptualization of the cognitive process and the experience of attraction can be conceptualized via the classic model of attitudes (see Eagly & Chaiken, 1993, 1998). The tripartite model of attitudes (e.g., Katz & Stotland, 1959; Rosenberg, Hovland, McGuire, Abelson, & Brehm, 1960) postulates that an *attitude*, an evaluation of a particular object, includes three components: affective (emotional response toward the attitude object), cognitive (thoughts and beliefs about the attitude object), and behavioral (tendency to act in a particular way toward the attitude object). Although interpersonal attraction is sometimes perceived as an attitude toward another person, *interpersonal attraction* is most commonly defined conceptually as an affective evaluation of another person (e.g., Ajzen, 1974, Byrne, 1971; Fishbein & Ajzen, 1972; Foa & Foa, 1974). It is important to note, however, that attraction is most frequently measured using both behavioral and affective items (Byrne, 1971; Fishbein & Ajzen, 1972). There seem to be two reasons for this: First, there is a near-perfect correlation between the affective and behavioral components of attraction ($r = .85$; Byrne, 1971), and second, there is traditionally a stronger correlation between the affective and behavioral components of attraction than between the cognitive and either of the other two components (Breckler, 1984; Breckler & Wiggins, 1989; Woodmansee & Cook, 1967). Whether attraction is defined conceptually or empirically, we suggest that attraction is principally determined by a cognitive evaluation of another person.

Of course, the notion that a cognitive evaluation precedes and predicts other evaluative responses is not new. Devine (1989) demonstrated that the amount of prejudice one feels for an out-group (one's affective response toward a group) is dependent on one's stereotype of the group (one's cognitive component). Other researchers have spoken to the importance of distinguishing between the cognitive and other components of attitudes (see Miller & Tesser, 1986), yet such distinctions have yet to be investigated rigorously in the attraction literature.

As an example of our proposed model, take the hypothetical persons Chris and Mary. When Mary expresses to Chris a pro-life attitude, Chris's attitude regarding abortion will determine (a) his evaluation of the attitude and (b) the positivity or negativity of the information that this attitude implies about Mary. If Chris is pro-life, he might regard the pro-life attitude positively, and he may infer that Mary holds other conservative attitudes, which he regards positively (e.g., being for the death penalty or for increased defense spending), and that Mary possesses certain positive personality characteristics, such as being conservative, religious, and compassionate. From this information, Chris will arrive at a cognitive evaluation of Mary (a positive one in this case) and will, in turn, feel attracted to her. Thus, Chris is not attracted to Mary

because she shares his pro-life beliefs, *per se*. He is attracted to her because (a) Mary's pro-life attitude suggests to Chris that she possesses other positive qualities, and (b) such positive inferences about Mary guide a positive cognitive evaluation of her.

Purpose of the Studies

The goal of this research was to investigate the proposed model of interpersonal attraction. The model, as illustrated in Figure 1, suggests that the similarity effect proceeds in two stages: (a) Attitudes imply information, which guides the cognitive evaluation of the quality of the target person, and (b) the cognitive evaluation of the target person guides attraction to the target. In other words, we argue that cognitive evaluation of the quality of the target mediates the impact of similarity on attraction and that the information implied by attitudes mediates the impact of similarity on cognitive evaluation.

We conducted three studies to assess the model. Study 1 assessed whether or not cognitive evaluation mediates the similarity effect. Study 2 replicated Study 1 and tested the notion that the similarity effect is doubly mediated by (a) the valence of the information implied by attitudes attributed to a target and (b) one's cognitive evaluation of the quality of the target. Study 3 investigated whether or not interpersonal attraction and cognitive evaluation are unique and distinguishable.

Study 1

Study 1 examined the possibility that the cognitive evaluation of a target person mediates the similarity effect. We used Byrne's (1971) phantom-other technique to manipulate attitude similarity and to assess cognitive evaluation of and interpersonal attraction to the target person.

The principal objectives of this study were (a) to replicate the similarity effect such that attitude similarity increases interpersonal attraction to a target, (b) to investigate temporal relations between interpersonal attraction and cognitive evaluation, and (c) to investigate the potential mediation of this similarity effect by cognitive evaluation of the target. The second objective warrants further explanation.

The proposed model suggests that the influence of cognitive evaluation on interpersonal attraction is particularly pronounced when the assessment of cognitive evaluation, which precedes attraction, is made salient. In this case, cognitive evaluation of the target influences interpersonal attraction most directly. We manip-

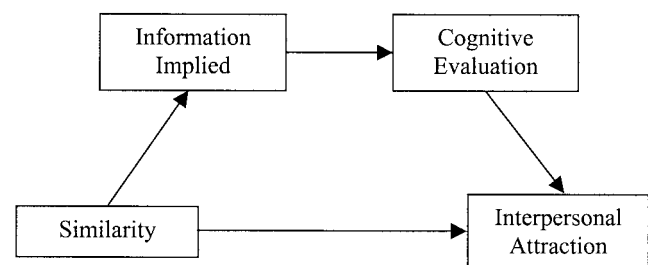


Figure 1. Hypothesized model: Similarity predicts information about the individual, which then determines cognitive evaluation, which predicts attraction toward the target other.

ulated cognitive evaluation salience by having half of the participants assess the overall quality of the other prior to the interpersonal attraction assessment (evaluation salient) and half of them assess the quality of the other following the interpersonal attraction assessment (evaluation not salient). As a reminder, we believe that similarity influences attraction via one's cognitive evaluation of the target. Thus, we predicted an interaction between similarity and evaluation salience, such that interpersonal attraction to a similar other should be greater when evaluation is assessed prior to, rather than immediately following, interpersonal attraction.

Method

Participants

Eighty-one participants (34 men and 47 women) at the University of North Carolina at Chapel Hill participated in this study in partial fulfillment of an introductory psychology class requirement. Participants were assigned randomly to one of six experimental conditions created by a 2 (evaluation salience: salient vs. not salient) $\times$ 3 (similarity condition: similar vs. dissimilar vs. control) factorial design.²

Materials

Cognitive Evaluation Questionnaire. Participants completed 7 items (e.g., "In general, how good a person do you think your partner is?"), each on a 9-point scale, to express their cognitive evaluation of the target person. The 7 items were embedded within 12 filler items and were averaged to form an index of cognitive evaluation ($\alpha = .84$). A complete list of items is displayed in the Appendix.

Interpersonal Attraction Questionnaire. Participants completed nine items, each on a 9-point scale, to express their attraction to the target person. Adapted from Byrne and Wong's (1962) Interpersonal Judgment Scale, this measure included three affective attraction items and six behavioral attraction items. Ratings on the nine items (e.g., "How much do you think you will like your partner?") were averaged to form an index of interpersonal attraction ($\alpha = .93$). For the complete list of items, see the Appendix.

Procedure

Participants reported for the experimental session in groups of between 3 and 6 persons. As participants arrived, they were seated separately in private rooms. Care was taken to avoid verbal and visual contact between participants before the experiment. The experimenter initiated a cover story by informing participants that the study would take place in two sessions. According to this cover story, during the first session participants would (a) complete an attitude assessment, (b) obtain information about another participant (their partner for the second session), and (c) form an impression of their partner. The second session was to involve the participant interacting with the partner on a problem-solving task.

In the first experimental session, participants completed a brief attitude questionnaire. The survey included 11 attitude items adapted from Byrne's (1971) list. Items included primarily central attitudes: belief in God and attitudes toward smoking, acting on impulse, premarital sex, money, the "one true religion," novels, strict discipline of children, the nuclear arms race, dancing, and men's adjustment to stress. Each attitude was rated on a 7-point scale ranging from *I strongly disagree* to *I strongly agree*. For each item, participants indicated their attitude by checking the statement that most closely described their own attitude. On completion, the experimenter collected the attitude surveys, and participants completed a booklet of filler tasks while the experimenter prepared the manipulated attitude surveys.

We followed Byrne's (1971) protocol for manipulating similarity. For both the similar and dissimilar condition, the experimenter created a bogus attitude survey by marking attitudes that differed from the participant's attitudes by varying degrees (e.g., *I strongly agree* differs from *I agree* by one degree). In the similar condition, the experimenter marked three attitudes that were the same response that the participant had marked, three attitudes that differed from the participant's attitudes by one degree, two attitudes that differed by two degrees, and one attitude that differed by three degrees. In the dissimilar condition, the experimenter marked three attitudes that differed from the participant's by three degrees, three attitudes that differed by two degrees, two attitudes that differed by one degree, and one attitude that was the same as that which the participant had marked. In the control condition, participants received no feedback about their future partner, and thus, no surveys were prepared.

After preparing the manipulated surveys, the experimenter showed the survey to the participant with the explanation that it was the survey that had been completed by his or her future partner. One third of participants saw a survey that included attitudes similar to their own, one third saw a survey that included attitudes dissimilar to their own, and one third saw no survey (control participants). After reviewing the manipulated surveys (or in the control condition, immediately after completing the filler task), participants completed the cognitive evaluation of their partner and the interpersonal attraction assessment. To manipulate evaluation salience, half of the participants completed the Cognitive Evaluation Questionnaire prior to the Interpersonal Attraction Questionnaire; the remaining half completed the Interpersonal Attraction Questionnaire prior to the Cognitive Evaluation Questionnaire. After participants completed the two outcome measures, the experiment concluded with a full debriefing.

Results

We had three primary goals in our analysis of these data: (a) to replicate the similarity effect, (b) to investigate an interaction between evaluation salience and similarity, and (c) to assess the mediational role of cognitive evaluation in the similarity effect.

Cognitive Evaluation Versus Interpersonal Attraction

To assess the overlap between our outcome measures, we subjected all of the items of the Cognitive Evaluation Questionnaire and the Interpersonal Attraction Questionnaire to a maximum-likelihood principal-components analysis with a varimax rotation. This analysis resulted in a two-factor solution that accounted for 63.7% of the variance. Important to this analysis, each of the affective attraction and behavioral attraction items loaded on the interpersonal attraction factor, whereas five of the seven of the cognitive evaluation items loaded on the second factor (see Table 1 for factor loadings). These loadings and an investigation of the scree plot suggest that cognitive evaluation and interpersonal attraction are distinct but correlated ($r = .68$) factors.

To further assess the overlap of affective and behavioral components of attraction, we measured the correlation between an affective attraction composite (the average of the affective items in our attraction assessment) and a behavioral attraction composite (the average of the behavioral items in the assessment). As ex-

² Across the three studies, there were no significant gender differences for interpersonal attraction or cognitive evaluation. Moreover, for both interpersonal attraction and cognitive evaluation, there were no significant interactive effects of gender and any other independent variable.

Table 1
Factor Pattern for Interpersonal Attraction and Cognitive Evaluation Items: Varimax Rotation

Item	Interpersonal attraction	Cognitive evaluation
Interpersonal attraction items		
I would like to meet my future interaction partner.	.806	.234
To what extent do you want to work on the upcoming task with your partner?	.843	.234
I would probably dislike talking with my future interaction partner at a party.	.667	.324
I would enjoy discussing controversial topics with my future interaction partner.	.567	.220
My future interaction partner would probably not make a good friend to me.	.654	.245
How much do you think you will like your partner?	.766	.402
I would like to get to know this person better.	.853	.236
I think I would enjoy my future interaction partner's company.	.840	.309
To what extent are you looking forward to meeting your partner?	.898	.187
Cognitive evaluation items		
My future interaction partner is probably well-respected.	.402	.645
My future interaction partner is probably good at everything that s/he does.	.133	.790
In general, how good a person do you think your partner is?	.417	.703
My future interaction partner will probably be successful in life.	.305	.759
My future interaction partner probably achieves all of his/her goals.	.190	.745
My future interaction partner could help me accomplish my goals.	.520	.331
I think that my future interaction partner would make a good leader.	.656	.434

Note. Boldface type indicates loadings greater than .50.

pected, these components were strongly correlated, $r(78) = .82$, $p < .05$.

Similarity Effect

We assessed the influence of similarity by subjecting cognitive evaluation and interpersonal attraction to separate 2 (evaluation salience: salient vs. not salient) $\times$ 3 (similarity: similar vs. dissimilar vs. control) analyses of variance (ANOVAs).

Interpersonal attraction. Consistent with previous research, the main effect for similarity was significant, $F(2, 75) = 7.10$, $p < .05$, $\eta^2 = .16$.³ The similar-versus-dissimilar contrast (hereafter referred to as the *critical contrast*) was of primary theoretical interest; however, we included the second contrast (control vs. similar/dissimilar) in the analysis in order to fully represent the three-level factor. Preplanned orthogonal contrasts revealed that participants were more attracted to similar, rather than dissimilar, partners, $t(78) = 4.38$, $p < .05$. The combination of the similarity and dissimilarity condition did not differ from the control, $t(78) = 0.83$, $p = .40$. There was no main effect for evaluation salience, $F(1, 75) = 0.12$, $p = .72$, $\eta^2 = .002$.

The critical Evaluation Salience $\times$ Similarity interaction was significant, $F(2, 75) = 3.25$, $p < .05$, $\eta^2 = .08$. The interaction suggests that the effect for similarity was larger when the evaluation was salient rather than not salient. Table 2 displays the mean interpersonal attraction ratings as a function of evaluation salience and the three similarity conditions. When interpersonal attraction was assessed before the cognitive evaluation, similarity did not exert a significant influence on attraction, $F(2, 33) = 0.96$, $p = .79$, $\eta^2 = .02$. In contrast, the similarity effect was significant when the cognitive evaluation preceded the assessment of interpersonal attraction, $F(2, 44) = 12.34$, $p < .05$, $\eta^2 = .29$.

Cognitive evaluation. With respect to cognitive evaluation, the expected main effect for similarity was significant, $F(2, 75) = 12.49$, $p < .05$, $\eta^2 = .25$. Table 2 displays the mean cognitive evaluation ratings as a function of the three similarity conditions and evaluation salience. The data pattern for this effect was identical to that reported for interpersonal attraction: Participants evaluated similar targets significantly more favorably than they did dissimilar targets, $t(78) = 5.21$, $p < .05$, whereas a combination of the similarity and dissimilarity conditions did not differ from the control condition, $t(78) = 1.43$, $p = .14$. No other effects, including the Evaluation Salience $\times$ Similarity interaction, $F(2, 75) = 0.78$, $p = .45$, $\eta^2 = .02$, reached significance.⁴

Mediational Analysis

To represent accurately the three-level similarity factor, both of the orthogonal contrasts were included as predictors in these analyses, even though only the first contrast (similarity vs. dissimilarity) is relevant to our mediation expectations. We assessed the potential mediation of the similarity effect by cognitive evaluation using Baron and Kenny's (1986) four-step model. According to this model, mediation is established when (a) the independent variable (IV) influences significantly the dependent variable (DV);

³ All p values are based on two-tailed tests; effect sizes are reported as η^2 .

⁴ We replicated the basic analysis for cognitive evaluation after removing the two items that loaded heavily on the interpersonal attraction factor. Consistent with original analysis, the main effect for similarity was significant, $F(2, 75) = 8.69$, $p < .05$. Neither the main effect for evaluation salience, $F(1, 75) = 0.24$, $p = .62$, nor the Evaluation Salience $\times$ Similarity interaction, $F(2, 75) = 0.41$, $p = .66$, reached significance.

Table 2
Mean Ratings of Cognitive Evaluation and Interpersonal Attraction as a Function of Attitude Information

Dependent variable	Cognitive evaluation first			Interpersonal attraction first			Total		
	Similar	Control	Dissimilar	Similar	Control	Dissimilar	Similar	Control	Dissimilar
Interpersonal attraction									
<i>M</i>	7.25 _a	6.35 _b	5.16 _c	6.51 _a	6.45 _a	6.08 _a	6.93 _a	6.41 _b	5.48 _c
<i>SD</i>	1.08	1.26	1.02	1.18	0.95	1.10	1.16	1.11	1.06
Cognitive evaluation									
<i>M</i>	6.76 _a	5.53 _b	4.95 _b	6.56 _a	5.63 _b	5.52 _b	6.68 _a	5.58 _b	5.15 _b
<i>SD</i>	0.81	1.20	0.95	1.16	1.03	0.58	0.95	1.11	0.87

Note. $N = 81$. Means ranged between 1 and 9 for both dependent measures. Higher values corresponded to greater levels of either interpersonal attraction or cognitive evaluation. In each row, means sharing common subscripts do not differ at $p < .05$.

(b) the IV influences significantly the proposed mediator; (c) the proposed mediator predicts significantly the DV; and (d) including the proposed mediator and the IV as predictors of the DV, the influence of the proposed mediator remains significant, whereas the influence of the IV is reduced significantly. With respect to conducting the mediational analysis for Study 1, the significant Evaluation Salience $\times$ Similarity interaction for interpersonal attraction stresses the importance of the sequence of the mediator and outcome variables. As a result, the mediational analysis includes only those participants who completed the cognitive evaluation prior to the attraction assessment.

The results of the mediational analysis are presented in Figure 2. The first three mediation conditions were assessed and satisfied (cf. Baron & Kenny, 1986; Judd & Kenny, 1981): Participants were more attracted to similar, rather than dissimilar, partners (Step 1), $\beta = .54$, $t(48) = 4.38$, $p < .05$; participants evaluated similar partners more favorably than dissimilar partners (Step 2), $\beta = .59$, $t(48) = 5.04$, $p < .05$; and cognitive evaluation predicted interpersonal attraction (Step 3), $\beta = .71$, $t(48) = 6.91$, $p < .05$.

Most important, when cognitive evaluation and the similarity contrasts were included as predictors of attraction, cognitive evaluation predicted attraction significantly, $\beta = .60$, $t(48) = 4.72$, $p < .05$, whereas the critical similarity contrast was reduced to nonsignificance, $\beta = .18$, $t(48) = 1.42$, $p = .16$. The indirect effect (Kenny, Kashy, & Bolger, 1998) of the similarity contrast on interpersonal attraction via cognitive evaluation reached significance ($z = 3.71$, $p < .05$); the path between similarity and

interpersonal attraction was reduced significantly when cognitive evaluation was included in the model.

Because we were interested in investigating a temporal relationship between cognitive evaluation and interpersonal attraction, it was also important to test the plausibility of the alternative model, that interpersonal attraction mediates the effect of similarity on one's cognitive evaluation. Consistent with the reasoning of the previous analysis, we retained only those participants who assessed interpersonal attraction before cognitive evaluation. This alternative model also satisfied all of the prerequisites of a mediational analysis. However, an investigation of the indirect effect of similarity on cognitive evaluation revealed that interpersonal attraction did not reduce the effect of similarity reliably ($z = 1.35$, $p = .17$).

Discussion

Two findings supported our prediction of the critical role of cognitive evaluation in the similarity effect on attraction. First, our mediation analysis was consistent with the hypothesis that cognitive evaluation mediates the influence of attitude similarity on attraction. Furthermore, it is important to note that the opposite mediational pattern (mediation of similarity–evaluation link via attraction) was not significant. Second, similarity only influenced attraction when cognitive evaluation was measured prior to assessment of attraction (when the evaluation was salient). This result establishes a cognitive evaluation as the proximal determinant of attraction and suggests that attitude similarity/dissimilarity impacts attraction indirectly via cognitive evaluation of the target.

Study 2

The results of Study 1 conformed to predictions; however, Study 1 did not assess directly the information implied by similar or dissimilar attitudes. Without such assessment, a full explanation of the similarity effect via the proposed model is incomplete. The principal aim of Study 2 was to assess and investigate the mediational role of the information implied by similar and dissimilar attitudes. We expected the valence of the information implied by similar and dissimilar attitudes to mediate the impact of similarity on cognitive evaluation, which would, in turn, mediate the impact of similarity on attraction. More specifically, we expected similar attitudes to imply positive information about a target. This infor-

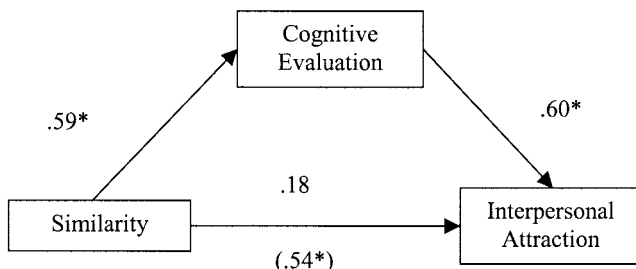


Figure 2. Cognitive evaluation as a mediator of interpersonal attraction from similarity in Study 1. The number in parentheses indicates the direct effect of similarity on attraction prior to the inclusion of cognitive evaluation in the regression equation. $*p < .05$.

mation should, in turn, be the foundation for the cognitive evaluation of the target, which guides attraction to that target.

To investigate this additional component to the model, we conducted Study 2. Study 2 was methodologically similar to Study 1. As in Study 1, participants expressed various attitudes, were presented with the attitudes of a future partner, and then expressed their interpersonal attraction to and cognitive evaluation of their future partner. However, Study 2 also expanded on Study 1 in an important way: Participants returned 1–2 weeks after the initial session to complete the final stages of the experiment. At that time, participants (a) wrote down information that they would infer about an individual based on the attitudes attributed to their partner and (b) rated the valence of this information.⁵

Method

Participants and Experimental Design

Sixty-nine introductory psychology students at the University of North Carolina at Chapel Hill participated in partial fulfillment of a course option. Participants were assigned randomly to one of three similarity conditions (similar, dissimilar, or control).

Procedure

The first session of this study was exactly the same as Study 1. Participants completed an 11-item attitude survey, received an attitude survey that was ostensibly completed by a partner (one third of the participants saw similar attitudes, one third saw dissimilar attitudes, one third saw no survey), and then completed assessments of cognitive evaluation and then interpersonal attraction. Note that we made the cognitive evaluation salient for all participants in Study 2. On the basis of the results of Study 1, it seemed clear that the role in the similarity effect of the information implied by attitudes could be assessed most effectively in the context of a salient cognitive evaluation.

To prepare for Session 2, the experimenter created an attitude questionnaire that was idiosyncratic for each participant. This questionnaire included the 11 attitudes that had been attributed in Session 1 to the participant's partner as well as 5 filler attitudes irrelevant to the experiment. In Session 2, participants were asked to (a) consider independently each of the attitudes listed and (b) list information that they would infer about an individual on the basis of the knowledge that this individual possessed each attitude. Control participants (who received no information about their partner in Session 1) were assigned randomly to generate information about attitudes that were either similar or dissimilar to their own. After generating information, participants completed three items assessing the valence of the information they wrote down for each attitude (e.g., "How would you evaluate the information that you just listed?"; 1 = *very negative*, 9 = *very positive*). Session 2 concluded with a full debriefing of experimental procedures.

Results

We calculated composite indices for interpersonal attraction ($\alpha = .81$) and cognitive evaluation ($\alpha = .89$). With respect to the information valence index, we first averaged the three items that assessed the positivity of the information implied by each of the 11 attitudes (all α s > .90). This procedure left us with 11 subcomposite scores that assessed the positivity of the information implied by each of 11 attitudes. We next formed the information valence composite by averaging these 11 subcomposites ($\alpha = .79$).

We subjected the interpersonal attraction, cognitive evaluation, and information valence composite indices to one-way (similarity condition: similar vs. dissimilar vs. control) ANOVAs. We then performed preplanned orthogonal contrasts comparing (a) similar condition with dissimilar condition and (b) control condition with the combination of similar and dissimilar conditions.

We continued by assessing the mediation of the influence of similarity on attraction via cognitive evaluation. This analysis was an effort to replicate the critical Study 1 result. Using regression analyses (and the aforementioned orthogonal contrasts), we followed the four-step procedure outlined by Baron and Kenny (1986) for establishing mediation and computed indirect effects consistent with each mediational relation.

Finally, we constructed with LISREL 8.50 (Jöreskog & Sörbom, 2001) a path analysis for the proposed model of attraction. We used the path coefficients from this analysis to compute the indirect effects of (a) similarity on interpersonal attraction via both information valence and cognitive evaluation, (b) similarity on cognitive evaluation via information valence, and (c) information valence on attraction via cognitive evaluation. For both the regression analyses described above and for the path analyses described here, we included both of the orthogonal contrasts as predictors in order to represent accurately the three-level similarity factor.

Univariate Influences of Similarity

There was a significant effect of similarity on attraction, $F(2, 66) = 6.62, p < .05$; cognitive evaluation, $F(2, 66) = 9.23, p < .05$; and information valence, $F(2, 65) = 12.58, p < .05$. Table 3 displays the means for cognitive evaluation, interpersonal attraction, and valence of the implied information in each of the three similarity conditions. Preplanned orthogonal contrasts revealed that participants were more attracted to similar rather than dissimilar partners, $\beta = .50, t(65) = 3.62, p < .05$; evaluated similar partners more favorably than dissimilar partners, $\beta = .57, t(65) = 4.25, p < .05$; and evaluated the information derived from similar attitudes as more positive than the information derived from dissimilar attitudes, $\beta = .66, t(64) = 5.07, p < .05$.

Additional Analysis on Information Valence

To investigate the possibility that participants' Session 2 information valence ratings were influenced by receiving information about their partner in Session 1, we subjected the ratings to a 2 (Session 2 attitudes: similar vs. dissimilar) $\times$ 2 (Session 1 information condition: information vs. control) ANOVA. This analysis revealed only an effect of Session 2 attitudes, $F(1, 64) = 19.81, p < .05$. Participants rated information implied by similar attitudes ($M = 6.48, SD = 1.02$) as more positive than information implied by dissimilar attitudes ($M = 5.14, SD = 1.11$). Receiving information about the partner in Session 1 did not influence, solely or interactively, information ratings in Session 2: Session 1 informa-

⁵ A 1–2-week latency between sessions was included to reduce the likelihood that participants would rate the attitudes as consistent with their previous rating either (a) to appear consistent to themselves or the experimenter (Davidson & Jaccard, 1979; Norman, 1975; Schwartz, 1978) or (b) as a result of demand characteristics (Orne, 1962; Orne & Scheibe, 1964).

Table 3
Mean Ratings of Interpersonal Attraction, Information Valence,
and Cognitive Evaluation as a Function of Attitude Information

Dependent variable	Attitudinal information		
	Dissimilar	Control	Similar
Interpersonal attraction			
<i>M</i>	5.09 _a	5.58 _b	6.49 _b
<i>SD</i>	1.55	1.20	1.21
Information valence			
<i>M</i>	4.94 _a	5.92 _b	6.54 _b
<i>SD</i>	0.89	1.32	0.98
Cognitive evaluation			
<i>M</i>	5.61 _a	6.02 _a	7.10 _b
<i>SD</i>	1.42	1.08	1.11

Note. *N* = 69. Means ranged between 1 and 9 for both dependent measures. Higher values corresponded to greater levels of either interpersonal attraction or perceptions of quality. In each row, means sharing common subscripts do not differ at $p < .05$.

tion main effect, $F(1, 64) = 0.54, p < .50$; Session 2 Attitude $\times$ Session 1 Information interaction, $F(1, 64) = 2.04, p < .30$.

Mediation of Similarity–Attraction by Cognitive Evaluation

In accordance with Baron and Kenny's (1986) first two mediational requirements, the similarity contrast predicted interpersonal attraction and cognitive evaluation significantly (see above). Participants were more attracted to similar partners and evaluated them more favorably than dissimilar partners. Addressing the third mediational requirement, cognitive evaluation predicted significantly attraction to the partner, $\beta = .64, t(67) = 6.80, p < .05$. Finally, when including the two similarity contrasts and cognitive evaluation as predictors of attraction, the predictive power of cognitive evaluation on attraction remained significant, $\beta = .57, t(64) = 5.30, p < .05$, and the influence of similarity was rendered nonsignificant, $\beta = .18, t(64) = 1.35, p < .19$. The indirect effect of similarity on attraction via evaluation was significant ($z = 3.28, p < .05$). As in Study 1, our mediation analyses were consistent with our prediction that cognitive evaluation mediates similarity's influence on interpersonal attraction.

Path Analysis

We constructed a path analysis to investigate the proposed model of attraction. We began by predicting attraction, cognitive evaluation, and information valence with the two orthogonal similarity contrasts. As expected, the contrast comparing similar versus dissimilar condition was a significant predictor of each outcome measure: attraction, $\beta = .76, t(67) = 3.80, p < .05$; cognitive evaluation, $\beta = .83, t(67) = 4.63, p < .05$; and information valence, $\beta = .86, t(67) = 5.26, p < .05$. Next, we specified paths consistent with the proposed model of attraction: Similarity contrasts predicted information valence, information valence predicted cognitive evaluation, and cognitive evaluation predicted attraction. As expected, the control contrast predicted information valence significantly, $\beta = .86, t(67) = 5.26, p < .05$; information valence predicted cognitive evaluation significantly, $\beta = .54,$

$t(67) = 4.79, p < .05$,⁶ and cognitive evaluation predicted attraction significantly, $\beta = .68, t(67) = 6.68, p < .05$. Specifying the proposed model of attraction rendered the similarity–attraction path nonsignificant, $\beta = .26, t(67) = 1.32, p = .18$, and the indirect effect of similarity on attraction via information valence and cognitive evaluation was significant, $\beta = .32, t(67) = 3.13, p < .05$. Information valence and cognitive evaluation mediated the influence of similarity on attraction.

To investigate further the proposed model of attraction, we assessed the critical components of the model. More specifically, we computed the indirect effects of (a) similarity on cognitive evaluation via information valence (i.e., the mediation of the similarity–cognitive evaluation by information valence) and (b) information valence on attraction via cognitive evaluation (i.e., the mediation of the information valence–attraction link by cognitive evaluation). As stated above, similarity predicted significantly both information valence and cognitive evaluation when no link between the two outcomes was specified. When specifying the path from information valence to cognitive evaluation, information valence predicted cognitive evaluation, $\beta = .38, t(67) = 2.92, p < .05$, and the path from similarity to cognitive evaluation, $\beta = .50, t(67) = 2.50, p < .05$, was reduced significantly (indirect effect: $z = 2.53, p < .05$). Information valence partially mediated the link between similarity and cognitive evaluation.⁷

Speaking to the indirect effect of information valence on attraction via cognitive evaluation, information valence predicted significantly cognitive evaluation, $\beta = .54, t(67) = 4.79, p < .05$, and attraction, $\beta = .66, t(67) = 5.74, p < .05$. When specifying the path from cognitive evaluation to attraction, cognitive evaluation predicted attraction significantly, $\beta = .50, t(67) = 4.55, p < .05$, and the path from information valence to attraction, $\beta = .39, t(67) = 3.34, p < .05$, was reduced significantly (indirect effect:

⁶ One might wonder about the overlap of information valence and cognitive evaluation: The data do not suggest collinearity. The correlation between the two measures, although significant, was of moderate magnitude (Cohen, 1992), $r(67) = .51, p < .001$.

⁷ An additional analysis was conducted to determine if the mediation of the similarity–cognition evaluation link by the implied information was the result of the participant's attempt to generate responses at Session 2 that were similar to their Session 1 responses. To investigate this possibility, we assigned 19 participants to a "no-rate" control condition. These participants underwent the same procedures as other participants with one exception: They did not rate their attraction to or their cognitive evaluation of their partner. If Session 2 ratings are a result of consistency motives activated by evaluating the partner in Session 1, information ratings by no-rate participants should differ significantly from those of rate participants. We subjected information ratings to a 2 (similarity condition: similar vs. dissimilar) $\times$ 2 (information condition: information vs. control) $\times$ 2 (rating partner: rate vs. no rate) ANOVA. This analysis revealed only a main effect of similarity condition, $F(1, 79) = 26.46, p < .001$; participants rated information implied by similar attitudes ($M = 6.53, SD = 1.01$) as more positive than the information implied by dissimilar attitudes ($M = 5.11, SD = 1.01$). No other effects reached significance. Rating the partner in Session 1 did not influence information ratings in Session 2; the mediational influence of information ratings cannot be attributed to consistency motives.

$z = 3.30, p < .05$).⁸ Cognitive evaluation partially mediated the influence of information valence on attraction.⁹

Discussion

The results of Study 2 are consistent with the proposed model of attraction. First, we replicated the findings of Study 1 such that the effect of similarity on interpersonal attraction was mediated by the cognitive evaluation of the quality of the target person. Additionally, in a path analysis including all components of the proposed model of attraction, the indirect effects of (a) similarity on cognitive evaluation via information valence and (b) information valence on attraction via cognitive evaluation were both significant, suggesting partial mediation in both cases. Though these analyses of indirect effects yielded only partial, not full, mediation, it is important to note that the influence of similarity on attraction was rendered nonsignificant by the inclusion of paths consistent with the proposed model. Such findings provide substantial support for the model as well as for the notion that it is cognitive evaluation derived from the information implied by the similar attitudes that increases interpersonal attraction when one is confronted by a similar other.

One might wonder about the possibility that these data were influenced by demand characteristics (Orne, 1962; Orne & Scheibe, 1964) or by the operation of consistency motives (Davidson & Jaccard, 1979; Norman, 1975; Schwartz, 1978). If one rates a target positively, one may be likely to express attraction to the target and to generate positive information about the attitudes attributed to that target simply to avoid the appearance of inconsistency. Given the legitimate threat of such confounds, we investigated the possible mediation of the similarity–cognitive evaluation link by interpersonal attraction and included an additional control group, one that did not rate the target about whom they received information.

We found no evidence of demand or consistency bias. Interpersonal attraction did not mediate the similarity–cognitive evaluation link (as a reminder, attraction did not mediate this link in Study 1, either). Further, participants who rated a target in Session 1 generated information in Session 2 that was of similar valence to that generated by participants who did not rate a target in Session 1 (and thus were not susceptible to consistency motives or demand characteristics). If participants were motivated by consistency motives or demand characteristics, reciprocal mediations or differences between those who rated and did not rate the target would have been observed.

Study 3

Studies 1 and 2 conformed well to predictions expounded from the proposed model; however, one might argue that cognitive evaluation and interpersonal attraction are synonymous constructs within the attitude framework and that the reinforcing properties of similarity are influencing all aspects of one's attitude toward another, specifically, one's cognitive evaluation and affective evaluation of the target individual. If this notion has merit, it would be no surprise that cognitive evaluation mediates the similarity effect.

Although the possible collinearity of cognitive evaluation and interpersonal attraction is certainly worthy of consideration, we should note that although Studies 1 and 2 provide evidence for the

mediation of the similarity effect by cognitive evaluation, no evidence for the reciprocal mediation (similarity–evaluation link by interpersonal attraction) was found. In spite of this evidence against the overlap of cognitive evaluation and interpersonal attraction, we conducted Study 3 to investigate the independence or collinearity of these two concepts. We expected that the concepts would be correlated but would respond differently to a unique interpersonal situation, one of social evaluative threat. Our efforts to create an evaluative threat and nonthreat condition depended on the “pratfall effect” (Aronson, 1998; Aronson, Willerman, & Floyd, 1966) and its theoretical explanations.

In their famous pratfall study, Aronson et al. (1966) found that attraction toward a competent target was greater when the target committed an embarrassing blunder than when the target did not commit the blunder. Helmreich, Aronson, and LeFan (1970) explained that the change in attraction was principally caused by the “humanizing” effect of the pratfall. Alternatively, it may be that the blunder's impact on interpersonal attraction resulted from a change in the perceived probability that one would be evaluated negatively by the target (Stapel & Tesser, 2001; Tesser, 2000). That is, our attraction to a target (i.e., how much would you like to work, or be, with this person) is influenced by the way we expect the target to evaluate us. If we expect a person to regard us negatively (as we might expect when confronted by a flawless person), we will be less attracted to this target than to a target who is competent but who is less likely to insult us. In effect, the blunder increases interpersonal attraction toward a competent other because it alleviates the danger of a negative evaluation for one's self-esteem. Going further, whereas the potential for negative evaluation of the self should impact attraction to a target, the potential threat should not influence one's cognitive evaluation of the quality of the other person. Indeed, we propose that cognitive evaluation is a relatively selfless, cognitive process that proceeds without consideration of threat to or protection of the self.

We reason that threat is a function of the quality of the person with whom one interacts and the extent to which the person has the ability to evaluate the self, either positively or negatively. Thus, in Study 3, we manipulated threat by varying the quality of the target person (from poor to exceptional) and the intensity of the task with which participants expected to work with a partner. Half of the participants expected their contact with the partner to be minimal, thus avoiding any danger of negative evaluation. The remaining half of participants expected their work with the partner to be

⁸ The indirect effects of similarity on cognitive evaluation via information valence and of information valence on attraction via cognitive evaluation were computed with the modification of Sobel's test (reported above) and thus, are reported as z statistics. The indirect effect of similarity on attraction via information valence and overall attraction was computed by LISREL 8.50, which yields a t statistic. Despite the different statistics, interpretation of the indirect effects is qualitatively similar.

⁹ We also assessed the relative fit of the proposed model versus a competing model in which cognitive evaluation preceded information valence. Because one model was not nested within the other, a statistical test of the relative fit was not possible (P. Curran, personal communication, September 14, 2003). However, we used the Akaike information criterion (AIC; Akaike, 1987) to compare the two models. Indeed, the proposed model fit the data more parsimoniously ($AIC = 37.55$) than did this competing model ($AIC = 48.01$).

intense and time consuming, thus creating the possibility of negative evaluation of the self. Because we expected interpersonal attraction to be self-interested and cognitive evaluation to be selfless, we predicted that interpersonal attraction and cognitive evaluation would be highly correlated when there was no threat to the self (when contact was minimal and when the partner was no more accomplished than the self). After all, in the absence of threat, one's attraction to a partner should be guided by one's cognitive evaluation of the partner. In contrast, in the face of threat to the self (when confronted by an exceptional other with whom one must work at length), we expected interpersonal attraction and cognitive evaluation to be relatively unrelated. In this case, one's cognitive evaluation should be a function of the quality of the individual, whereas interpersonal attraction should decrease as the potential for a negative evaluation of the self increases.

Overview

To test this proposition, participants anticipated an interaction with another participant who varied in ability from poor (low competence) to exceptional (high competence) on a given attribute. We also manipulated participants' expectations about the intensity of the interaction with their partner by informing participants that their interaction with their partner would be either intense (they would work closely together) or minimal (they would have minimum interaction with their partner). Participants then expressed their attraction to and their cognitive evaluation of their partner. Under conditions of low threat (when the other participant was no more accomplished than the self and when interaction with an exceptional partner was minimal), we expected that interpersonal attraction and cognitive evaluation would covary: As cognitive evaluation increased, so would interpersonal attraction. Under conditions of high threat (when an intense interaction with an exceptional partner was expected), we expected cognitive evaluation to be favorable but attraction to be minimal. Alternatively, we expected that in the minimal interaction condition, cognitive evaluation and interpersonal attraction should be highly correlated: As quality of the partner increased across conditions, so should attraction to the partner. In the intense interaction condition, we expected attraction and cognitive evaluation to covary for those conditions in which the other participant was not regarded as exceptional. However, in the exceptional partner–intense interaction condition, we expected participants to evaluate the partner more favorably but express less attraction than would others.

Another potential technique for assessing the role of threat was to manipulate the final component of Tesser's (2000) social comparative model—the degree to which the trait is central to the self-concept. Tesser suggests that one is more likely to experience threat when feedback implicates a dimension that is central (i.e., important) to the self-concept. We manipulated centrality by giving half of the participants feedback regarding intelligence (a central dimension) and the remaining half feedback regarding artistic ability (peripheral dimension). Feedback on a central dimension, compared with a peripheral dimension, should provide more threat and, as a result, a greater opportunity to evaluate the differentiation between attraction and cognitive evaluation. We expected an interaction such that a decrease in interpersonal attraction for an exceptional partner with whom one expected to

interact intensely would occur only when the partner was superior on a central, rather than peripheral, dimension.

Method

Participants and Experimental Design

Two hundred forty-seven participants (91 men and 156 women) from the University of North Carolina at Chapel Hill participated in this study in partial fulfillment of an introductory psychology requirement. Participants were assigned randomly to one of 16 experimental cells created by a 4 (partner ability: control vs. poor vs. average vs. exceptional) $\times$ 2 (interaction intensity: intense vs. minimal) $\times$ 2 (dimension centrality: central vs. peripheral) factorial design.

Procedure

Participants reported to the experimental session in groups of between 3 and 6 persons. As participants arrived, they were seated in individual private rooms. Participants were told that the experiment would be in three parts. First, participants rated themselves on 10 dimensions (e.g., intelligence, social skills, artistic ability, leadership ability) on 11-point rating scales.

Next, participants were told that they would complete a task with another participant and that this task would begin in a few minutes. Before the next part of the study could occur, however, the experimenter had to pair the participants in this experimental session with participants from a different experimental session that was occurring concurrently “down the hall.” Participants were told that the other session was identical to their own, with one exception: Participants in the other session were rating each other, instead of themselves, on the personality dimensions. The manipulation of threat followed this information. Participants in the intense interaction condition were told that their partner would soon come into their individual room to work closely with them on a collaborative task. In the minimal interaction condition, participants were told that their partner would remain in their own room down the hall, and that they would have limited correspondence with their partner.

Additionally, and ostensibly to facilitate the interaction, we told participants that we were going to provide to them some information about their future partner before they began the collaborative task. Participants received feedback about the intellectual ability (central trait) or artistic ability (peripheral trait) of their future partner. To manipulate ability of their future partner, participants either received no feedback at all (control participants) or were informed that their partner had scored at the 50th (poor), 75th (average), or 100th (exceptional) percentile of the given dimension.

After viewing the information (or, in the control condition, immediately after the manipulation of the degree of expected interaction), participants completed the Cognitive Evaluation Questionnaire and the Interpersonal Attraction Questionnaire. Participants were thanked for their time, debriefed, and then dismissed.

Results

We began by calculating composite indices for interpersonal attraction ($\alpha = .87$) and cognitive evaluation ($\alpha = .76$). We then subjected interpersonal attraction and cognitive evaluation to a 4 (partner ability: control vs. poor vs. average vs. exceptional) $\times$ 2 (interaction intensity: intense vs. minimal) $\times$ 2 (dimension centrality: central vs. peripheral) ANOVA.

Interpersonal Attraction

With respect to interpersonal attraction, the main effect of ability of partner reached significance, $F(3, 240) = 3.88, p < .05$,

$\eta^2 = .04$. Participants were more attracted to the exceptional partner (100th percentile) than to any other partner. This main effect was qualified by the expected Interaction Intensity $\times$ Partner Ability interaction, $F(3, 240) = 3.07, p < .05, \eta^2 = .04$. Figure 3 displays the means for interpersonal attraction as a function of interaction intensity and partner ability. Simple effects tests revealed that consistent with expectations, participants who thought they were to interact with an exceptional partner were less attracted to the partner in the face of an intense ($M = 5.90, SD = 0.96$) rather than a minimal ($M = 6.45, SD = 1.23$) interaction, $t(57) = 2.19, p < .05$. In contrast, the control group was more attracted to the target in the intense ($M = 5.99, SD = 1.21$) as compared with the minimal ($M = 5.47, SD = 0.83$) interaction condition, $t(71) = 2.05, p < .05$. Attraction did not vary as a function of interaction intensity in either the poor partner conditions ($M_{\text{intense}} = 5.70$ vs. $M_{\text{minimal}} = 5.62$), $t(57) = 0.29, p > .05$, or the average partner condition ($M_{\text{intense}} = 6.20$ vs. $M_{\text{minimal}} = 6.04$), $t(48) = 0.53, p > .05$. The main effect of threat did not reach significance, $F(1, 240) = 0.16, p < .68, \eta^2 = .00$. Unexpectedly, the Interaction Intensity $\times$ Partner Ability $\times$ Type of Feedback interaction failed to reach significance, $F(3, 240) = 2.27, p = .13, \eta^2 = .001$. Attraction to a target of exceptional ability varied as a function of interaction intensity but not as a function of the type of feedback.¹⁰

Cognitive Evaluation

With regard to cognitive evaluation, the expected main effect of partner ability was significant, $F(3, 240) = 21.29, p < .05, \eta^2 = .21$. Figure 4 displays the means for cognitive evaluation as a function of interaction intensity and partner ability. A set of orthogonal contrasts revealed that (a) the control group rated their partners less favorably than did the experimental groups, $F(1, 240) = 48.54, p < .05$; (b) participants evaluated the average and exceptional partners (combined) more favorably than they did the poor partners, $F(1, 240) = 7.78, p < .05$; and (c) the exceptional partner was rated more favorably than the average partner, $F(1, 240) = 7.40, p < .05$. As expected, neither the Interaction Intensity $\times$ Partner Ability interaction, $F(3, 240) = 0.31, p = .81, \eta^2 = .00$, nor the main effect of interaction intensity, $F(1, 240) = 0.004, p < .94, \eta^2 = .00$, reached significance. The Interaction Inten-

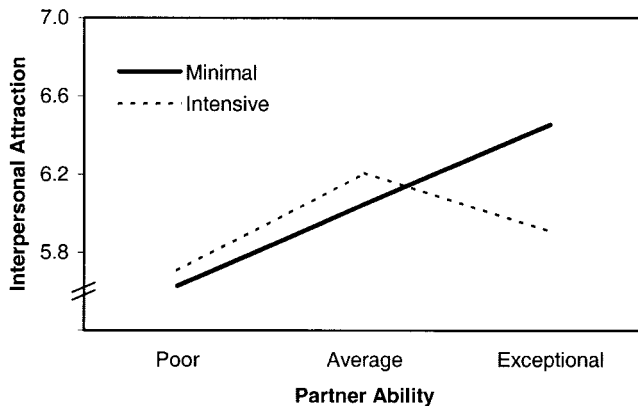


Figure 3. Relationship between interaction intensity and ability of partner on interpersonal attraction (Study 3).

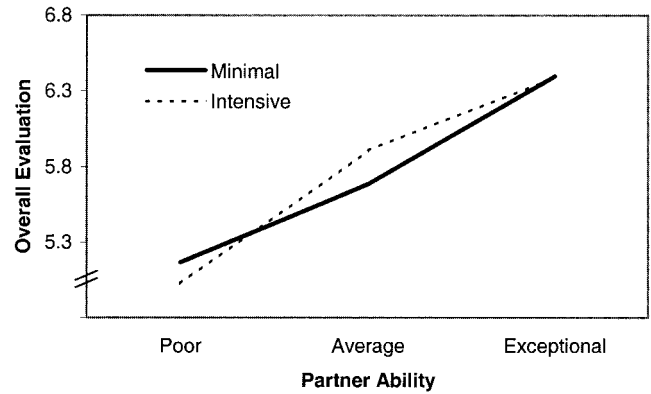


Figure 4. Relationship between interaction intensity and ability of partner on cognitive evaluation (Study 3).

sity $\times$ Partner Ability $\times$ Type of Feedback interaction failed to reach significance, $F(3, 240) = 0.40, p = .75, \eta^2 = .00$. Cognitive evaluation did not vary as a function of interaction intensity (and thus was not affected by threat to the self) but was a near-linear function of partner ability.

Correlation Between Cognitive Evaluation and Interpersonal Attraction

To further assess the relationship between cognitive evaluation and interpersonal attraction as a function of threat, we computed the correlation between cognitive evaluation and interpersonal attraction separately for the threat and no-threat conditions. We hypothesized that there would be no relationship between interpersonal attraction and cognitive evaluation when participants were confronted with a potential threat to the self (where a negative evaluation was possible): when they interacted intensely with an exceptional partner. Alternatively, we expected to find a correlation between cognitive evaluation and interpersonal attraction when participants were not confronted by a threat (i.e., when no negative evaluation was possible): when interacting minimally with a partner or when interacting intensely with a partner who was unexceptional.

As expected, the correlation between cognitive evaluation and interpersonal attraction was not significant in the threat condition (the intense interaction–exceptional partner condition), $r(41) = .14, p = .35$, but was significant in the no-threat conditions (all other conditions) combined, $r(209) = .38, p < .01$. Though this large descriptive difference did not reach standard levels of significance ($z = 1.47, p = .15$), the correlations suggest that attraction and cognitive evaluation covaried to a greater degree when the self was not threatened by the possibility of a negative evaluation.

¹⁰ One may suggest that the threat from the other person may have differentially influenced the affective and behavioral components of their attraction assessment. Under conditions of threat, the correlation between affective items and behavioral items, $r(41) = .74, p < .05$, was not different than that under conditions of no threat, $r(209) = .69, p < .05$ ($z = 0.71, p = .48$).

Mediational Analysis

We followed the procedure outlined in Studies 1 and 2 to determine if cognitive evaluation mediated the effects of quality of partner on interpersonal attraction. As a reminder, we hypothesized that cognitive evaluation should mediate the effect of partner ability on interpersonal attraction only in the face of a minimal interaction with the other participant (when there was no threat to the self). We conducted two mediational analyses, one for the minimal interaction condition and a second for the intense interaction condition.

Minimal interaction condition. To represent the four-level partner ability variable, we created three contrast variables: (a) exceptional versus control, poor, and average; (b) average versus control and poor; (c) and poor versus control. The first contrast was the contrast of interest; however, all contrasts were included in regression equations in order to represent fully the four-level partner ability factor.

Participants were more attracted to the exceptional partner than to the other partners, $\beta = .29$, $t(129) = 3.49$, $p < .05$, and evaluated the exceptional partner more favorably on cognitive evaluation than the other partners, $\beta = .38$, $t(129) = 4.79$, $p < .05$, effectively fulfilling the first two mediational requirements. With respect to the third mediational requirement, cognitive evaluation predicted interpersonal attraction significantly, $\beta = .38$, $t(129) = 4.75$, $p < .05$. Finally, when including the three similarity contrasts and cognitive evaluation as predictors of interpersonal attraction, cognitive evaluation predicted interpersonal attraction significantly, $\beta = .29$, $t(129) = 3.28$, $p < .05$, and the critical contrast remained significant, $\beta = .17$, $t(129) = 2.04$, $p < .05$. The indirect effect of partner ability on interpersonal attraction via cognitive evaluation also reached significance ($z = 2.67$, $p < .05$). Cognitive evaluation partially mediated the influence of partner ability on interpersonal attraction.

Intense interaction condition. The same contrasts were used in the analyses for the intense interaction condition. Consistent with our expectations, participants evaluated the exceptional partner more favorably than the other partners, $\beta = .40$, $t(119) = 4.93$, $p < .05$, but did not express more attraction toward the exceptional partner relative to the other partners, $\beta = .02$, $t(119) = 0.29$, $p = .77$. These results conformed to our hypotheses and effectively derailed the mediation under investigation.

Discussion

Study 3 provides support for the relative independence of the cognitive evaluation and interpersonal attraction constructs: The two measures were influenced differently by the manipulations of interaction intensity and partner ability. As expected, when participants were not faced with the possibility of a negative evaluation from the partner (e.g., in the minimal interaction condition and when faced with an intense interaction with a poor or average partner), interpersonal attraction increased as the quality of the partner increased. In contrast, when a negative evaluation was made possible by an expected intense interaction with a highly competent partner, interpersonal attraction decreased. Additionally, cognitive evaluation of the partner was unaffected by interaction intensity and increased, relatively linearly, with ability of the partner. The data confirm that interpersonal attraction and

cognitive evaluation are unique constructs; however, this uniqueness does not mean that they are completely unrelated.

In fact, consistent with Studies 1 and 2, cognitive evaluation mediated the impact of partner ability on interpersonal attraction when there was no threat to the self (in the minimal interaction condition). This result further demonstrates that interpersonal attraction is often grounded in one's cognitive evaluation of the target. However, in the face of specific self-relevant circumstances (e.g., in the presence of a potential threat to self-esteem), the two variables follow unique paths. Such findings are consistent with past research. For instance, Amabile (1983) found that although participants regarded individuals who criticized others as more intelligent, these individuals were also rated as less likable. Further, Herbst, Gaertner, and Insko (2003) found that when participants were confronted by a target whose ability exceeded that of their ideal self, they evaluated the target favorably but expressed less attraction to the target than they had to other less able targets. The current data fit with this existing literature and suggest that self-relevant motives, activated by a threat to the self, attenuate the relation between cognitive evaluation and attraction.

General Discussion

This series of studies identifies a novel mechanism that underlies the similarity effect. Whereas previous theories have tapped the reinforcement value of similar attitudes (e.g., Byrne & Clore, 1967) or the evaluative nature of the attitudes or personality traits attributed to a similar partner (Ajzen, 1974; Kaplan & Anderson, 1973), we posited that similar attitudes, though evaluated positively themselves, also imply additional positive information about a target (in the form of additional descriptive attitudes and personality traits) and that this positive information guides a favorable cognitive evaluation of the target that, in turn, drives attraction. Studies 1 and 2 provide evidence for each component of this model within the similarity paradigm: (a) Cognitive evaluation mediated the effect of similarity on interpersonal attraction, and (b) information valence mediated the impact of similarity on cognitive evaluation. It is important to note that Study 3 provides critical evidence that interpersonal attraction and cognitive evaluation are distinct constructs.

An assessment of a target via a cognitive evaluation provides a parsimonious explanation for some of the inconsistencies in the similarity literature. For instance, people are not attracted to targets who share with them characteristics that they regard negatively (e.g., Ajzen, 1974; Novak & Lerner, 1968). By our reasoning, similarity on negative characteristics would imply negative information about a target, which would make one's cognitive evaluation of the individual poor, thus not creating attraction. Additionally, attitude similarity elicits more attraction than does personality similarity (Byrne, London, & Griffitt, 1968; Clore & Baldridge, 1968). It is important to note that attitudes tend to imply more information about an individual's character than do personality traits (Horton & Montoya, 2004). Thus, given that both similar attitudes and personality traits convey positive information about a target, similar attitudes convey more positive information than similar personality traits. This additional information translates into a more positive evaluation of the target and, in turn, more attraction to the target as a result of attitude, compared with personality, similarity.

Why Should Cognitive Evaluation Be Important to Attraction?

Though we have described cognitive evaluation as an explanation for the similarity effect, cognitive evaluation is also the cornerstone of the proposed model of attraction that we believe accounts well for a number of factors that impact interpersonal attraction and close relationships. This model is similar to an information integration model. However, its uniqueness lies in the identification of cognitive evaluation as the proximal determinant of attraction and as the intermediate step between attitude–personality trait evaluation and attraction. The model’s application to other attraction and relationship variables also depends on this unique component.

For example, evolutionary psychological models have identified specific qualities or traits that lead to increased levels of interpersonal attraction (Buss & Barnes, 1986; Buss et al., 1990), and these models have identified sex differences in mate preferences that correspond to evolutionary needs. Women tend to value earning capacity, high status, and ambition in mates more than do men (Buss & Barnes, 1986; Howard, Blumstein, & Schwartz, 1987). In contrast, men, relative to women, value physical attractiveness and youth in mates. According to the theories of natural and sexual selection (Darwin, 1859; Symons, 1979), these trait preferences reflect the fundamental drive to increase genetic fitness and evolutionary success, a drive that is ideally served by different characteristics in mates dependent on sex. Mating with someone who does not possess the preferred characteristics would, theoretically, result in fewer, less fit offspring compared with mating with one who possesses such characteristics. In the language of the proposed model of attraction, the evolutionarily preferred characteristics define for each sex what is a “high-quality” mate (a mate who would be evaluated positively): Those who possess the characteristics are high quality. Those who do not are “low quality.” Men and women should be attracted to high-quality individuals in order to produce the most, and most fit, offspring.

Additionally, the social psychological literature is littered with theoretical perspectives that emphasize the role of target quality for predicting attraction. Self-expansion theory suggests that mate selection is guided by efforts to expand the self. High-quality partners may provide self-expansion opportunities that low-quality partners do not (Aron, Paris, & Aron, 1995). Vicarious enhancement perspectives suggest that individuals are drawn to partners because of the social prestige or self-esteem boost they receive from identification with the partner. In this case, quality of the partner may be defined as superior attractiveness or financial security and may also be defined socially, as status or prestige.

Role of Cognition and Affect in the Attraction Process

The current findings have implications not only for the role of cognition in the interpersonal attraction process but also for the interplay between cognition and affect in attitude formation. Because this model stresses the role of a cognitive evaluation as the proximal determinant of attraction, we suggest that attraction is guided by a cognitive assimilation of the information that is available about a target. This emphasis on the cognitive bases of attraction is not only consistent with attitude models (Ajzen & Fishbein, 1977) and information integration perspectives on attrac-

tion (Anderson, 1971) but is also bolstered by a growing body of research that regards cognitive processes as primary for a number of evaluative responses. For instance, cognitive evaluation has been tapped as critical for understanding how prejudice develops from stereotypes (Devine, 1989; Hoyle, Pinkley, & Insko, 1989), for how consumer satisfaction flows from product information (Oliver, 1993), for assessing physical attractiveness from a cognitive appraisal of appearance (Kenrick, Montello, Gutierrez, & Trost, 1993), for predicting emotional attachment to a group from an evaluation of the group (Molm, Takahashi, & Peterson, 2000), and for predicting anti-Black affect from a cognitive assessment of preadult experiences (Sears & Henry, 2003; for a theoretical review, see Ajzen & Fishbein, 1977; Fishbein & Ajzen, 1972).

We should note here, as we have above, that the proposed model contrasts with models that emphasize the affective underpinnings of the similarity effect (Byrne, 1971). In fact, we cannot rule out such models with the current data. After all, in Study 3 we found that attraction, but not cognitive evaluation, was influenced by a threat to self-esteem (an affective threat). This finding suggests that, indeed, attraction involves an affective component that is influenced by affective considerations. In the face of a threat to the self, self-protective motives guide decreased attraction to an exceptional individual who could evaluate the self negatively (also see Fromkin, 1972; Sedikides, 1993; Sigall & Landy, 1973). However, it is particularly noteworthy that cognitive evaluation was the proximal determinant of attraction in all three studies reported here, mediating the similarity effect in both Studies 1 and 2 and the influence of partner ability in Study 3. Additionally, attraction did not mediate the impact of similarity on cognitive evaluation in Study 1, a result that would have been predicted by affective models of attraction. In short, even though affect has been demonstrated to be a determinant of attraction, the data suggest that one’s cognitive evaluation of the quality of the partner is a proximal determinant of attraction.

Finally, we should note that the findings reported here are consistent methodologically and empirically with much of the research conducted within the similarity paradigm. In much of this research, attraction has been operationalized as the composite of two items from the Interpersonal Judgment Scale (IJS; Byrne, 1971), one affective item (i.e., “How much do you think you will like this person?”) and one behavioral item (i.e., “How much would you want to work with this person?”). The four items that precede the attraction items on the IJS, normally regarded as filler items (Byrne, 1971), assess the participant’s evaluation of the target’s intelligence, morality, knowledge of current events, and adjustment. We would argue that these four items make up an assessment of the overall quality of the target (akin to our cognitive evaluation scale). Given the Study 1 finding that similarity impacted attraction only when evaluation was made salient, it is not surprising to us that Montoya et al. (2004) found a descriptively more powerful similarity effect in studies that used the IJS with, rather than without, those four filler items.

Limitations and Future Directions

The repeated demonstrations in this article of the influential role of cognition in the attraction process support the notion that the proposed model of attraction accounts well for laboratory-based investigations of the similarity effect. One is left to wonder,

however, whether the proposed model generalizes from the laboratory setting to actual relationships and, additionally, to other factors that predict attraction. In the absence of empirical data using actual relationships, we can only speculate about the role cognition plays in attraction outside of the laboratory. However, our model's reliance on a cognitive evaluation would seem to provide an effective foundation to generalize to a wide array of laboratory and real-world situations as well as to a variety of factors that impact attraction.

One of the primary concerns about the generalizability of our findings to actual relationships lies in our use of the phantom-other paradigm (in Studies 1 and 2). After all, this paradigm has produced a similarity effect that has proven difficult to replicate in actual relationships (see Montoya et al., 2004; Sunnafrank, 1992). Participants in the phantom-other paradigm assess attraction and evaluation as a function of one cue to quality: similarity. Alternatively, in actual relationships there are numerous sources of information that could affect attraction, including, but not limited to, physical attractiveness (Sloman & Sloman, 1988; Walster, Aronson, Abrahams, & Rottmann, 1966), behavior toward other individuals (Leahy, 1979), and the response of the target to the self (Kerr & Kaufman-Gilliland, 1994). We would argue, in fact, that these other information sources are cues to quality and help determine one's cognitive evaluation and, resultantly, impact attraction to the target. In short, the proposed model of attraction, in which a cognitive evaluation is the key precipitate to attraction, should generalize beyond the similarity effect to the variety of forces that act on attraction in actual relationships.

Bearing further on the generalizability of the proposed model is the question of whether the cognitive evaluation that guides attraction is automatic and immediate. We propose that a degree of cognitive processing occurs immediately on exposure to the stimulus and that this automatic evaluative processing can guide attraction. This proposition is supported by the ever-mounting evidence of an influential automatic component to cognitive evaluations (see Banaji, 2001; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Greenwald, McGhee, & Schwartz, 1998). As an example, Nosek, Banaji, and Greenwald (2003) found that implicit gender stereotypes regarding math (an automatic cognitive association between males and math) predicted males' and females' explicit attitudes (including their attraction) about the subject.

We must also acknowledge here that we are not the first to propose a model in which cognition precedes an affective response. As stated previously, Devine (1989) has espoused such a model for out-group attitudes, and Lazarus (1982, 1984) described a similar model in which an individual's emotional response to a given situation is initially determined by a cognitive appraisal of the situation. Such cognitive analyses should extract importance and meaning from stimuli attributed to a target (e.g., similar or dissimilar attitudes, favorable or unfavorable personality traits) and then should influence our evaluation of the individual as a whole. Given this reasoning, it seems logical that making such stimuli salient—emphasizing the characteristics or attitudes of the individual—should polarize the cognitive and, in turn, the affective responses to a target. The results of Study 1 support this contention: The similarity effect was more powerful when the participant evaluated the quality of the target before expressing his or her attraction to the other target. It seems critical to note that cognitive processes would not only occur in the laboratory setting

but in actual relationship dynamics. Future research may do well to further elucidate the relationship between affect and cognition and the temporal order between the components.

Finally, it is important to note that our cognitive evaluation measure includes a pair of items related to achievement orientation. Achievement is a fundamental human motive that is linked to interpersonal judgment (Austrian, 1965; Gruenfeld & Arbuthnot, 1969; Harackiewicz, Abrahams, & Wageman, 1987; Mowaiye, 1993), and as such, achievement is a valuable inferential proxy for positive beliefs about an individual. However, the decision to include achievement-oriented items may limit the use of our instrument to predominantly Western, individualist cultures, which value achievement orientation (see Kanungo & Bhatnagar, 1978; Niles, 1998). Cross-cultural investigation of the proposed model may require a revised cognitive evaluation measure that is not weighted by achievement items. Having said that, we contend that though the cues to quality to which one attends and the valence of evaluation that results from specific cues may vary as a function of culture, the primary link between the cognitive evaluation, whatever its source, and interpersonal attraction should be universal.

Conclusion

The current project provides evidence that one's cognitive evaluation of the quality of an individual (a) is distinct from interpersonal attraction, (b) mediates the similarity effect, and (c) is determined by the valence of information one infers from attitudes attributed to a partner. These findings offer a cognitive interpretation of the similarity effect and speak to a general model of attraction: Attraction is based on an evaluation of the quality of an individual. The quality of the individual, in turn, may be evidenced by a variety of cues: similar attitudes (as demonstrated in Studies 1 and 2), possession of positive qualities (as demonstrated in Study 3), occupational success (Byrne, Clore, & Worchel, 1966), and physical attractiveness (Sloman & Sloman, 1988; Walster et al., 1966). Finally, Study 3 suggests that affective and self-relevant considerations (i.e., threats to self-esteem) combine with cognitively derived assessments (i.e., of the target as superior to the self) to impact attraction.

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Appendix

Questionnaires Used in the Studies

Interpersonal Attraction Questionnaire

1. I would like to meet my future interaction partner.
2. To what extent do you want to work on the upcoming task with your partner?
3. I would probably dislike talking with my future interaction partner at a party. (reverse scored)
4. I would enjoy discussing controversial topics with my future interaction partner.
5. My future interaction partner would probably not make a good friend to me. (reverse scored)
6. How much do you think you will like your partner?
7. I would like to get to know this person better.
8. I think I would enjoy my future interaction partner's company.
9. To what extent are you looking forward to meeting your partner?

Cognitive Evaluation Questionnaire

1. My future interaction partner is probably well-respected.
2. My future interaction partner is probably good at everything that s/he does.
3. In general, how good a person do you think your partner is?
4. My future interaction partner will probably be successful in life.
5. My future interaction partner probably achieves all of his/her goals.
6. My future interaction partner could help me accomplish my goals.
7. I think that my future interaction partner would make a good leader.

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