


# (Psychological) Distance Makes the Heart Grow Fonder: Effects of Psychological Distance and Relative Intelligence on Men's Attraction to Women

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## Abstract

Interpersonal attraction may be shaped by (a) one's psychological distance from a target (the subjective experience that a target is close to or far from the self) and (b) the perceived standing of a target on a trait relative to the self (as better or worse than the self). We propose that when evaluating a psychologically distant target, individuals may rely on abstract schemas (e.g., the desirability of a partner's traits) and prefer targets who possess more (vs. less) desirable qualities than themselves. However, when evaluating psychologically near targets, concrete contextual details of the environment (e.g., how a target's behavior affects self-evaluations in the moment) may determine individuals' attraction toward targets. Six studies revealed that when evaluating psychologically distant targets, men showed greater attraction toward women who displayed more (vs. less) intelligence than themselves. In contrast, when targets were psychologically near, men showed less attraction toward women who outsmarted them.

## Keywords

psychological distance, social comparison, attraction, construal level, self-evaluation

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Imagine Joe is anticipating a blind date. His friend describes her as fun and athletic—someone who could inspire Joe to hit the gym more regularly. Now, fast-forward to the date. After dinner, Joe and his date head to the local sports complex for a game of miniature golf and a few rounds in the batting cages. To his surprise, she beats him by several strokes in minigolf and crushes his batting average in the cages. Joe feels deflated and decides not to see her again. This example, although somewhat cliché, illustrates a broader principle of psychological distance: When an event is psychologically distant (in time, space, or hypotheticality), individuals rely on abstract, schematic representations of the event. However, as psychological distance decreases, individuals focus on more concrete, proximal aspects of the environment to determine how to think, feel, and behave (Trope & Liberman, 2010).

The present research applies basic principles of psychological distance to study interpersonal attraction—a domain in which abstract, hypothetical partners and live interaction partners do not always elicit the same interpersonal evaluations and behavior (Eastwick, Hunt, & Neff, 2013; Eastwick, Luchies, Finkel, & Hunt, 2014). Integrating research on construal-level theory (CLT; Trope & Liberman, 2010) with the self-evaluation maintenance model (SEM; Tesser, 1988),

the present research generates novel predictions about conditions under which people are attracted or not to others. Specifically, we propose that attraction is affected by two key features of the social environment: (a) *psychological distance*, or the distance between oneself in the here and now and one's mental construal of a target from an egocentric vantage point; and (b) *the perceived standing of a target relative to the self*, or how a target fares on some dimension relative to oneself.

We suggest that when individuals are psychologically distant from a target, they may be attracted to targets that possess more (vs. less) desirable qualities than themselves. However, as psychological distance decreases, attraction to targets may be influenced more by situational cues, such as how the target makes one feel at the moment. To illustrate these processes, the current studies examined men's attraction

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to women who outperformed (vs. underperformed) them in the domain of intelligence. We predicted that when evaluating psychologically distant targets (e.g., in hypothetical or spatially distant interactions), men would find a woman appealing if she possessed more (vs. less) desirable qualities than themselves (e.g., was more intelligent than them).

In contrast, when evaluating psychologically near targets (e.g., in real interactions, spatially near interactions), men may be *less* attracted to women who outperform them, and this could be due to momentary shifts in their self-evaluations (e.g., feeling less masculine from being outsmarted by a woman). This synthesis of CLT and SEM contributes to a growing body of research that identifies differences in psychological processes in hypothetical versus live contexts—a critical distinction that pervades social psychological research (Eastwick et al., 2013).

### Construal-Level Theory

A hallmark of being human is the ability to mentally represent objects and events in time and space. According to CLT (Trope & Liberman, 2010), mental representations vary depending on the psychological distance between oneself and a target (an object, event, person, or action). As psychological distance increases, people adopt higher levels of mental construal that represent information about a stimulus using abstract, prototypical features. As psychological distance decreases, people form more concrete, detailed representations of the stimulus, incorporating secondary features into their representations. Psychologically near stimuli are thus construed in terms of peripheral, local features, such as one's momentary experience, to determine how one feels in low-level construal situations. Because individuals often have less available or reliable information for psychologically distant events, they typically form abstract representations of events. This association—between greater psychological distance and high-level construal—is thought to be overgeneralized, leading to a reliance on higher level construal processes for distant events and lower level construal processes for proximal events, even in situations where one has the same information about distal and proximal events.

A large body of research supports these ideas (Liberman & Trope, 2014). Targets that are portrayed in the distant (vs. near) future are perceived using higher level construals that focus on central, schematic features of targets. For example, when making future-related judgments, people place greater weight on general, decontextualized traits to predict others' behavior than on situation-specific states (Nussbaum, Trope, & Liberman, 2003). As an event becomes more distant in time, superordinate concerns influence decisions more than incidental features or subordinate concerns. For example, ideological values drive people's behavioral intentions when considering a distant future versus an impending event (Ledgerwood, Trope, & Chaiken, 2010). In terms of spatial distance, individuals spontaneously infer abstract traits from

the same behavioral information about others when they are presented as being far versus close (Rim, Uleman, & Trope, 2009). They also attribute others' behavior to enduring dispositions versus situational demands when the behavior is described as spatially distant (Henderson, Fujita, Trope, & Liberman, 2006).

Based on these ideas, we suggest that when people evaluate a distant target, they are especially likely to make trait-based inferences about the target; their evaluations of distant targets will therefore be strongly tied to the positive or negative implications of the target's traits. In contrast, traits are less likely to be inferred from behaviors as a target gets closer, which leaves more room for people's evaluations of a target to incorporate contextual features of the situation, such as momentary affective reactions or self-evaluations.

One might wonder whether the direct perception of a physically present target in the "here and now" requires construal at all. In fact, CLT should be applicable to any situation in which an individual forms a mental representation of a stimulus; objects of direct perception are construed as long as the perceiver forms a mental representation of the object (Bruner, 1957). Indeed, classic research on person perception demonstrates that humans spontaneously form impressions of others—impressions that require the formation of a mental representation of a person and their associated traits (Uleman, Saribay, & Gonzalez, 2008). Thus, participants who directly perceive a physically present person are construing that person, albeit at a very low level of construal.

Research by Liviatan, Trope, and Liberman (2008) is especially relevant to the present work. Their studies examined the effects of social distance (i.e., interpersonal similarity) on mental representations and judgments of others. Drawing on CLT, they expected individuals to rely more on subordinate, secondary features—and less on superordinate, primary features—in perceiving targets' actions when they were construed as socially close (similar vs. dissimilar). As predicted, participants who were made to feel similar to a target showed more lower level relative to higher level construals in their judgments of the target's actions and assigned greater weight to subordinate features in judging the target's ability and performance.

The current research expands on these ideas by examining how social comparison processes intersect with CLT to predict interpersonal attraction. Specifically, we extend beyond judgments of others' actions to examine how a target's intelligence, relative to one's own, affects attraction when evaluating psychologically near versus distant targets that vary in other types of distance (e.g., hypotheticality, spatial distance).

A recent study applied CLT to examine the distinction between interpersonal contexts that involved hypothetical versus real interactions (Eastwick, Finkel, & Eagly, 2011). This study found that when participants evaluated a potential partner's written profile (a high-level, abstract context), they reported greater romantic interest when the partner's traits matched (vs. mismatched) their idiosyncratic ideal partner

preferences (i.e., abstract traits that participants used to describe their ideal partner). However, after a live interaction with the partner (a low-level, concrete context), the extent to which the partners' traits matched participants' ideals did not predict romantic interest.

Underlying this shift in the predictive validity of partner ideals is that participants took contextual factors into account in the live interaction and reinterpreted the meaning of the partner's traits. For example, participants who did not like the trait "outspoken" in an ideal partner were likely to interpret this trait to mean "tactless" in the hypothetical context. However, on meeting and liking an opposite-sex partner in the live interaction, participants were likely to reinterpret the partner's trait "outspoken" to have the more positive connotation "frank." Thus, in real, face-to-face interactions, people use low-level experiential information (e.g., the momentary affect that the partner inspires) to reinterpret the meaning of high-level, abstract information about partners, which then influences their evaluations of those partners.

### Self-Evaluation Maintenance Model

According to CLT, increasing psychological distance leads people to rely on abstract, superordinate information in forming impressions, whereas decreasing psychological distance leads people to rely on more concrete, contextualized information to determine how to think and feel. Together, these ideas may be relevant to understanding the impact of others on the self and on interpersonal attraction.

According to the SEM model (Tesser, 1988), others' performance shapes self-evaluations based on (a) the self-relevance of the comparison dimension, (b) the target's performance on the dimension relative to oneself, and (c) the degree of closeness with the target. In the present research, we kept self-relevance equivalent across studies—by framing the test as a test of intelligence—and varying target's performance relative to the self when the target was psychologically near versus distant.

When a close (but not distant) other outperforms the self, this adversely affects self-evaluations via upward social comparison processes (Festinger, 1954). "Close other" is typically defined as someone who shares a psychologically meaningful connection to the self, akin to unit-relatedness; friends are closer than strangers, similar others are closer than dissimilar others, and so on (Tesser, 1988). In past SEM research, "closeness" has usually been defined in terms of preexisting relationships, such as friends, siblings, established romantic relationships, or to perceptions of self-target similarity (Lockwood, Dolderman, Sadler, & Gerchak, 2004; Ratliff & Oishi, 2013; Tesser & Campbell, 1982). Whereas these conceptualizations treat closeness as a static, preexisting property, even brief psychological closeness created in the lab may lead individuals to act in ways that parallel how they might act in established relationships. We therefore suggest that the concept of closeness may be extended to

encompass broader forms of psychological distance, such as hypotheticality and spatial distance.

### Desiring Intelligence in Oneself and in One's Partner

When evaluating psychologically distant targets (e.g., hypothetical, spatially distant targets), men may be more attracted to partners who outperform (vs. underperform) them on a self-relevant task. However, the opposite is expected to emerge in psychologically near contexts in which the target is construed as close to the self (e.g., in real, spatially near interactions). In these latter situations, men may be *less* attracted to targets who outshine them in intelligence, and this may be due to momentary shifts in affective experiences (e.g., feeling less masculine from being outsmarted by a woman). The current studies focus on relative intelligence, which is relevant to the population under study (college students). Being intelligent may be especially important to men, given that key aspects of intelligence, such as analytical ability, are presumed to be stereotypically masculine (Diekmann & Eagly, 2000).

Intelligence is not only a desirable personal trait but is preferred in romantic partners as well, at least in the abstract. Supporting this idea, pilot data ( $N = 55$  male undergraduates) revealed that 86% of men reported that they would feel comfortable dating partners who were smarter than themselves (i.e., they selected a 4 or 5 on a scale from 1 = *strongly disagree* to 5 = *strongly agree*;  $M_{\text{full sample}} = 3.92$ ,  $SD = 0.88$ ), and this mean differed significantly from the midpoint of the scale,  $t(54) = 7.83$ ,  $p < .001$ . Such findings are consistent with research showing that people prefer their ideal romantic partner to possess more favorable personality traits and to have higher mate value than themselves (Figueredo, Sefcek, & Jones, 2006). Accordingly, we expected that men would be attracted to psychologically distant targets who possessed more (vs. less) desirable qualities (e.g., intelligence) than themselves.

However, are men attracted to women who demonstrate intelligence when they are psychologically near? A recent study found that in cases where men perceived their female speed-dating partner to be more intelligent than themselves, their perception of her intelligence was negatively related to their romantic interest in her (Fisman, Iyengar, Kamenica, & Simonson, 2006). That is, in a face-to-face interaction, men found a woman's intelligence appealing up to a point, but once her intelligence outstripped his, his romantic interest waned. Beyond these findings, no other studies to our knowledge have examined the impact of relative intelligence in evaluating psychologically near versus distant targets.

### Overview of Current Research

Focusing on men's romantic evaluations of women, we conducted six studies to examine interpersonal attraction as a function of shifting features of the environment. In Studies

1a and 1b, we examined attraction to targets who were psychologically distant (i.e., hypothetical, spatially distant) and outperformed (vs. underperformed) them on an intelligence test. Studies 2a and 2b examined attraction to targets who were psychologically near (i.e., real, spatially near), and Studies 3a and 3b manipulated both psychological distance and relative performance to examine attraction and a potential mediator, feelings of masculinity.

We included design features throughout these studies to strengthen the basis of the conclusions drawn and to rule out alternative explanations. For example, we administered different types of tests to determine whether the domain of intelligence mattered. We also included a no performance feedback condition and compared reactions with a female versus male target (Study 1b) to determine whether men's desire to interact with others varied by target's sex. We also included manipulation checks of psychological distance (Study 3b) and assessed romantic attraction in conceptually similar, yet methodologically varied ways, by using both self-report and behavioral measures (e.g., chair distance).

## Study 1a

In Study 1a, we expected men exposed to a psychologically distant target (i.e., a hypothetical woman) to form favorable impressions and to show greater romantic interest in her when she displayed more (vs. less) intelligence than themselves. To determine whether the domain of performance mattered, we manipulated the test in which the woman outperformed or underperformed participants (math vs. English).

### Participants and Procedure

One hundred five male undergraduates ( $M_{age} = 19.29$ ) participated in a "Study of Social Experiences" in exchange for psychology course credit.<sup>1</sup> Participants read a hypothetical scenario about a female student in their class who had outperformed or underperformed them in a math or English class (see methodology file for all materials). They were instructed to imagine themselves in the situation and to consider how they would think, feel, and behave. Next, participants rated their impressions of the target's social skills (e.g., "warm," "friendly") on a scale from 1 (*not at all*) to 7 (*extremely*; 10 items,  $\alpha = .91$ ; Rudman & Glick, 1999) and her desirability as a romantic partner (e.g., "How desirable is she to you as a prospective long-term romantic partner?") from 1 = *not at all* to 7 = *extremely*; 3 items,  $\alpha = .89$ ; Hill & Buss, 2008).

### Results and Discussion

Results of a two-way ANOVA with target performance (outperform vs. underperform) and domain (math vs. English) as the independent variables (IVs) revealed a significant main effect of target performance in predicting perceptions of the target's social skills,  $F(1, 101) = 4.50, p = .04, d = 0.42, 95\%$

confidence interval (CI) = [0.02, 0.75]; no other effects or higher order interaction were significant. Men rated targets who outperformed them ( $M = 4.37, SD = 0.93$ ), regardless of domain, as more socially skilled than targets who underperformed them ( $M = 3.98, SD = 0.94$ ). For desirability as a romantic partner, there was a significant main effect of target performance,  $F(1, 101) = 4.98, p = .03, d = 0.44, 95\%$  CI = [0.06, 0.97]; men found targets who outperformed them ( $M = 5.21, SD = 1.11$ ) to be more desirable partners than targets who underperformed them ( $M = 4.69, SD = 1.26$ ). No other effects were significant.

Study 1a revealed that when men imagined being outperformed (vs. underperformed) by a woman in a hypothetical scenario, they rated her more favorably and showed greater romantic interest in her. The domain did not matter; regardless of whether men imagined themselves being outperformed by a woman in math or English, they perceived her to be more socially skilled and desirable as a romantic partner when she displayed more (vs. less) intelligence than themselves.

## Study 1b

Psychological distance can be conceptualized not just in terms of hypotheticality but in terms of spatial distance as well. In Study 1b, participants believed they would be interacting with a target that was in a room down the hall. As in Study 1a, we manipulated relative performance, such that targets performed better or worse than participants on an intelligence test. To determine whether interpersonal impressions varied as a function of the target's sex, participants believed they would be interacting with either a male or female target. We expected men to rate targets more favorably when they displayed more (vs. less) intelligence than themselves. We further examined whether participants' desire to interact was specific to female targets or extended to male targets.

### Participants and Procedure

One hundred fifty-one male undergraduates ( $M_{age} = 18.99$ ) participated in a "Study of Performance and First Impressions" in exchange for psychology course credit. Participants were told that the study had two parts. First, they would complete an intelligence test and then they would interact with a partner who was in a room down the hall (see online supplement for all materials and scripts used across studies).

Participants then completed a test that presumably assessed their intelligence and was framed as a predictor of future academic success. The computerized test consisted of 15 Graduate Record Examination (GRE) math questions that were to be completed in 12 min. After the time elapsed, participants submitted their test to be "graded" by the computer. Participants saw a screen flash "Calculating your test score . . ." followed by their results. All participants were led to believe they got 8/15 questions correct. Next, participants were told they would exchange background information with

their partner prior to the interaction. They were told that the amount of information exchanged was randomly assigned so that some participants would know more or less about their partner.

All participants then completed a Partner Information Handout where they reported their gender and test score. The experimenter then took the handout and left the lab, ostensibly to deliver it to their partner down the hall. After a few moments, the experimenter returned with a form, supposedly completed by their partner, indicating that their partner was a man or a woman and that he or she got 12/15 questions correct (outperformance condition) or 4/15 questions correct (underperformance condition). Participants then completed a First Impressions Questionnaire in which they rated their partner's social skills using the same measure as in Study 1a ( $\alpha = .93$ ) and reported their interest in interacting with their partner (e.g., "I would like to interact with my partner"; three items,  $\alpha = .75$ ) from 1 (*not at all*) to 7 (*very much*); items were standardized and then averaged. The experimenter then explained that there was not enough time for the interaction, so participants were debriefed and dismissed.

## Results and Discussion

For perceptions of target's social skills, a two-way ANOVA with target performance (outperform vs. underperform) and target sex (male vs. female) as the IVs revealed a marginally significant main effect of target performance,  $F(1, 147) = 3.13, p = .08, d = 0.30, 95\% CI = [-0.02, 0.46]$ ; no other effects or interaction were significant. Men tended to rate targets who outperformed them ( $M = 4.05, SD = 0.75$ ) as more socially skilled than targets who underperformed them ( $M = 3.84, SD = 0.74$ ).

For desire to interact, there were significant main effects of target sex,  $F(1, 147) = 12.87, p < .001, d = 0.57, 95\% CI = [0.20, 0.69]$ , and target performance,  $F(1, 147) = 5.86, p = .02, d = 0.36, 95\% CI = [0.05, 0.54]$ , qualified by a significant Target sex  $\times$  Target performance interaction,  $F(1, 147) = 8.76, p = .004$ . Men reported greater desire to interact with the female target when she outperformed ( $M = 0.55, SD = 0.76$ ) versus underperformed them ( $M = -0.11, SD = 0.71$ ),  $F(1, 147) = 21.87, p < .001, d = 0.90, 95\% CI = [0.31, 1.01]$ . Men who expected to interact with a male target did not differ in their desire to interact as a function of performance condition (outperformance:  $M = -0.25, SD = 0.84$ ; underperformance:  $M = -0.19, SD = 0.70; p = .70$ ). In addition, men who were outperformed showed greater interest in interacting with the female versus male target,  $F(1, 147) = 14.19, p < .001, d = 1.00, 95\% CI = [0.47, 1.15]$ , whereas this difference was not significant when the target performed worse than participants.

In sum, Study 1b demonstrated that when men expected to interact with a partner who was spatially distant (i.e., down the hall), they perceived targets who demonstrated more (vs. less) intelligence than themselves as being more

socially skilled, regardless of the target's sex. Furthermore, men reported greater desire to interact with female (vs. male) targets who displayed more (vs. less) intelligence than themselves. One interpretation of these latter findings is that because men value intelligence in romantic partners, they expressed greater interest in interacting with women (but not men) who showed higher levels of intelligence than themselves. An alternative explanation is that, because male targets are more similar to men than female targets, men felt more threatened by male targets who outperformed them, and thereby distanced themselves from male (but not female) targets. This explanation seems unlikely, however, given that men did not derogate male targets' social skills when they were outperformed.

## Study 2a

Studies 1a and 1b involved targets that were psychologically distant (i.e., a hypothetical target; expecting to interact with a partner who was down the hall). These studies revealed a pattern of responses consistent with high-level construals, or abstract schemas about qualities desired in a romantic partner. In particular, men formed favorable impressions of targets who demonstrated more (vs. less) intelligence than themselves and showed greater attraction and liking toward women who possessed this desirable trait.

In the next set of studies, we examined reactions to a female confederate who was psychologically near (i.e., real; spatially near). In these proximal situations, being outperformed was expected to be a highly salient, immersive experience that might lead men to distance themselves from women who surpassed them in intelligence. Such findings would be consistent with those of Liviatan and colleagues (2008), who found that targets who were socially close (in terms of similarity) were judged more in terms of concrete, subordinate features compared with abstract, superordinate features.

## Participants and Procedure

Ninety male undergraduates participated in a "Study of Interpersonal Attitudes" in exchange for psychology course credit. Nine participants were excluded because they were suspicious of the confederate or did not believe the test feedback; the final sample consisted of 81 participants ( $M_{\text{age}} = 18.81$ ). On arrival at the lab, the participant was seated in a room off of the lab corridor. Shortly thereafter, there was a knock at the main door. The experimenter brought a female confederate into the room and sat her down next to the participant. Participants were told the study had two parts: an intelligence test, followed by an interpersonal interaction. Specifically, participants were told that researchers were interested in factors that influence attraction so they would be asked to recreate aspects of a typical date. The participant and confederate were then left alone to introduce themselves (see online supplementary material).

Next, the participant and confederate were given 15 min to complete a paper-and-pencil version of a math GRE test while sitting side by side. With 30 s of the test remaining, the experimenter picked up one of two chairs that was located in the main lab corridor and dragged it across the floor (to be overheard by the participant) into the adjacent room. After the chair was placed in the designated spot, the timer went off. The experimenter then returned to the room where the participant and confederate were seated, collected their tests, and then left to ostensibly grade them in another room. Next, the confederate engaged in a semiscripted conversation with the participant by asking general background questions (e.g., “What year are you?” “Where are you from?”); she was trained to keep the conversation neutral and on track. Her cover story was that she was an 18-year-old undeclared freshman from the local area.

After a few minutes, the experimenter returned with the “graded” tests and announced their scores while handing back the tests. Participants always got 12/20 questions correct. In the Outperformance condition, the confederate got 18 correct; in the Underperformance condition, she got 6 correct. All exams had the score written in red ink at the top of the page with the predetermined number of questions marked as incorrect. Next, the experimenter explained that everyone would complete a First Impressions Questionnaire prior to the interaction.

Before doing this, however, the participant was asked to set up the chairs for the upcoming interaction while the experimenter loaded the questionnaires onto the computers. Specifically, the participant was instructed to take his chair (located in the main lab corridor) and place it across from his partner’s chair. The experimenter later measured the distance, in inches, between the participant’s chair and confederate’s chair as a behavioral measure of attraction. After the participant left the room to move the chair, the experimenter loaded the participant’s questionnaire onto a computer, moved the confederate to a computer on the other side of the room, and loaded her questionnaire. When the participant returned to the room, he rated how attractive and desirable (four items,  $\alpha = .84$ ) the target seemed from 1 (*not at all*) to 7 (*extremely*) and reported his interest (*yes/no*) in talking about a series of topics with his partner in the upcoming interaction. Two of the topics reflected romantic interest: (a) plan a future date with your partner and (b) exchange contact information, which were embedded among a list of filler topics.

Next, the experimenter explained there would not be enough time for the interaction; instead, participants responded to the following questions in written form: “What do you think this experiment was about? Was there anything odd or suspicious about this experiment? If yes, what?” Responses were later coded for whether participants mentioned (a) that their partner was not real or part of the study or (b) thought their test score was fake. Participants who reported suspicion on one or more of these items were excluded from analyses.

## Results and Discussion

Results of a one-way ANOVA with target performance (outperform vs. underperform) as the IV showed a significant main effect in predicting chair distance,  $F(1, 79) = 4.02$ ,  $p = .05$ ,  $d = 0.44$ , 95% CI = [0.02, 7.08]. Men placed their chair further away from the female confederate’s chair when she outperformed ( $M = 32.58$ ,  $SD = 7.48$ ) versus underperformed them ( $M = 29.03$ ,  $SD = 8.46$ ). For perceived attractiveness, there was a marginally significant main effect of target performance,  $F(1, 79) = 3.68$ ,  $p = .06$ ,  $d = -0.42$ , 95% CI = [-0.69, 0.01]; men tended to rate the female confederate as less attractive when she outperformed ( $M = 5.12$ ,  $SD = 0.79$ ) compared with when she underperformed them ( $M = 5.46$ ,  $SD = 0.81$ ).

For romantic interest, we dichotomized this variable so that responses of “yes” to both romantic interest items were recoded as 1 = *interested in discussing romantic topics*; 0 = *not interested in discussing romantic topics* (20% of participants reported “yes” to both items). Results of a binary logistic regression with romantic interest as the categorical dependent variable (DV) yielded a significant effect of performance condition,  $B = -.72$ ,  $SE = .31$ , Wald = 5.23,  $p = .022$ ,  $\text{Exp}(B) = .49$ , 95% CI = [0.26, 0.90].

Men who were outperformed by a female confederate distanced themselves more from her, tended to rate her as less attractive, and showed less desire to exchange contact information or plan a date with her. These findings are in contrast with those of Studies 1a and 1b, which found that men formed favorable impressions and showed greater interest in women who displayed more (vs. less) intelligence than themselves. The primary difference is that in the current study, men interacted with a woman who was psychologically close (i.e., real, spatially near), whereas in the previous studies the woman was psychologically distant (i.e., hypothetical, spatially far).

## Study 2b

Study 2b sought to extend the findings of Study 2a by (a) including a control condition in which participants received no performance feedback to determine whether men are distancing from women who outperform them or drawing closer to women who underperform them and (b) varying the domain to determine whether being outperformed in specific domains differentially affects men’s attraction toward women in a real, spatially near (i.e., face-to-face) interaction.

## Participants and Procedure

Seventy-three male undergraduates ( $M_{\text{age}} = 18.95$ ) participated in a “Study of Interpersonal Attitudes” in exchange for psychology course credit. The study followed similar procedures as in Study 2a with a few exceptions. First, we included a no feedback (control) condition; after taking the test, participants simply moved on to the next part of the study. We also manipulated test type, such that participants took either

a GRE math or verbal test. In addition to examining chair distance as an indicator of attraction, participants reported their desire to interact with their partner using the same measure as in Study 1b ( $\alpha = .80$ ).

## Results and Discussion

A two-way ANOVA with target performance (outperform vs. underperform vs. control condition) and test type (math vs. verbal test) as the IVs showed a marginally significant main effect of target performance in predicting chair distance,  $F(2, 67) = 2.46, p = .09$ ; the effect of test type and its interaction with target performance were not significant. Pairwise comparisons revealed that men put their chair farther away from the female confederate's chair when she outperformed them ( $M = 33.82, SD = 9.65$ ) versus the no feedback (control) condition ( $M = 28.25, SD = 7.14, p = .03, d = -0.66, 95\% CI = [0.50, 10.74]$ ). Men also tended to put their chair farther away from the female confederate's chair when she outperformed versus underperformed them ( $M = 30.36, SD = 9.40$ ), although this difference was not significant.

For desire to interact, there was a significant main effect of target performance,  $F(2, 67) = 3.30, p = .04$ ; the main effect of test type and its interaction with target performance were not significant. Overall, men reported less desire to interact with the female confederate when she outperformed ( $M = -0.29, SD = 0.72$ ) versus underperformed them ( $M = 0.16, SD = 0.96, p = .05, d = 0.53, 95\% CI = [-0.92, 0.00]$ ) or received no performance feedback ( $M = 0.26, SD = 0.73; p = .02, d = -0.76, 95\% CI = [-1.03, -0.09]$ ).

Consistent with Study 2a, Study 2b found that in a spatially near context (face-to-face interaction), men distanced themselves more from a woman when she outperformed (vs. underperformed) them on a test of intelligence, regardless of the domain. Importantly, the effects of being outperformed on chair distance and desire to interact differed from a no feedback condition, whereas the underperformance condition did not differ from the control condition for any of the dependent measures. Thus, compared with when they received no feedback, men distanced themselves more from women who outperformed them, rather than drawing closer to women who underperformed them and were psychologically near.

## Study 3a

Whereas Studies 1a and 1b found that men were attracted to a hypothetical woman who surpassed them in intelligence, Studies 2a and 2b revealed the opposite pattern when men interacted with a woman who was psychologically near (i.e., a real interaction that was spatially near/face-to-face); in this case, men showed *less* interest in women who outsmarted them. To ensure that this reversal does not reflect an incidental artifact of the study designs or samples used across studies, the final set of studies sought to document both effects simultaneously. Specifically, we manipulated whether

a woman outperformed or underperformed male participants and whether or not the woman was psychologically distant or near. Based on our previous studies, we expected that men would show greater romantic interest in the outperforming (vs. underperforming) woman in a psychologically distant condition but would show *less* interest in the outperforming woman in a psychologically near condition. In short, we expected to find a Psychological distance  $\times$  Target performance interaction.

We also examined a potential mediator in these studies: men's self-ratings of masculinity. Research on precarious manhood suggests that feelings of masculinity can be undone by public failures and transgressions (Bosson & Vandello, 2011). Because being competent and competitive are especially important to men (Cross & Madson, 1997), being outperformed by a woman might threaten men's feelings of masculinity. This effect may be heightened in the psychologically near (i.e., face-to-face) condition, when men receive feedback in the presence of a woman who has bested him, and thus, the threat is both public and vivid. Feelings of masculinity, in turn, should predict romantic interest and desire to interact, based on research showing that feelings of confidence and power—constructs that are related to masculinity—inspire romantic desire (Finkel & Eastwick, 2009) and romantic overtures (Kunstman & Maner, 2011).

Specifically, we expected the Psychological distance  $\times$  Target performance interaction to predict feelings of masculinity, such that being outperformed (vs. underperformed) would predict threatened masculinity in the psychologically near (vs. distant) condition. Feelings of masculinity, in turn, were expected to predict romantic interest and desire to interact; thus, the direct effect of the Psychological distance  $\times$  Target performance interaction on romantic interest and desire to interact may be mediated by masculinity (i.e., mediated moderation).

## Participants and Procedure

Eighty-two male undergraduates participated in a "Study of First Impressions" in exchange for psychology course credit. Eleven participants were excluded because they were suspicious of the confederate or did not believe the test feedback, leaving a final sample of 71 participants ( $M_{age} = 19.28$ ).

**Near condition.** On arrival at the lab, participants were seated in a room off of the lab corridor. Soon afterward, a female confederate knocked at the door and was seated next to the participant. As in previous studies, participants were told they would first take an intelligence test followed by an interaction with their partner—the female confederate. The participant and confederate then filled out a Partner Information Handout that asked their name, gender, relationship status, age, year in school, and other information (see online supplementary material). The confederate always provided the same answers (e.g., Jillian, female, single, 19 years old,

sophomore). The participant and confederate then took turns reading their personal information aloud to each other, with the participant always going first.

Next, they were told they would be taking an intelligence test and would find out how well they did. The participant and confederate were then seated at computer desks on opposite sides of the room and completed a GRE test (10 math and 10 verbal items). After 15 min had elapsed, the computer prompted participants to submit their tests for grading. The experimenter then left the room and returned with printouts of their supposed test scores. Both the participant's and confederate's scores, along with their first names, appeared on the printout. Participants always got 12/20 items correct. In the Outperformance condition, the confederate got 18 items correct; in the Underperformance condition, she got 6 correct. In both conditions, the experimenter announced their scores aloud while handing back the printouts.

Next, participants completed a First Impressions Questionnaire that contained items assessing their romantic interest in their partner (e.g., "In general, how desirable do you find your partner?") from 1 (*not at all*) to 7 (*very much*; 5 items,  $\alpha = .88$ ) and desire to interact with their partner using the same measure as in Studies 1b and 2b ( $\alpha = .72$ ). They then reported the self-descriptiveness of stereotypically masculine qualities (e.g., "competitive," "analytical," 12 items,  $\alpha = .80$ ; Diekmann & Eagly, 2000) from 1 (*not at all*) to 7 (*extremely*). Finally, the experimenter informed them that there would be no interaction; participants were then probed for suspicion and debriefed.

**Far condition.** Participants in the Far condition followed the same procedures as the Near condition, except they never interacted with the female confederate; instead, her presence was implied throughout the study. Specifically, the participant heard a knock at the door at the start of the session, and the experimenter supposedly led the female confederate into an adjacent room. During the information exchange task, the experimenter took the participant's completed Partner Information Handout to the other room and returned with a completed form containing the same information as in the Near condition. The participant then read over this information while the female confederate ostensibly read the participant's information.

Next, the experimenter read the test instructions to the participant and then went to the other room to read the same instructions (ostensibly, to the female confederate), which could be overheard by the participant. The experimenter also did this when announcing the test scores. Participants then completed the same dependent measures as in the Near condition and were then told that no interaction would occur. Thus, the only difference between the Near and Far conditions is that participants in the Far condition never interacted with the female confederate at any point during the study.

## Results and Discussion

To examine effects of Psychological Distance (near vs. far) and Target Performance (outperform vs. underperform) on the primary DVs, we conducted a series of two-way ANOVAs. For romantic interest, there was a marginal main effect of target performance,  $F(1, 67) = 3.74, p = .06, d = 0.37, 95\% \text{ CI} = [-0.72, 0.01]$ , qualified by a significant Psychological distance  $\times$  Target performance interaction,  $F(1, 67) = 9.02, p = .004$ ; no other effects were significant.

Table 1 reports descriptive statistics. As predicted, when the female confederate was near, men showed significantly less romantic interest in her when she outperformed versus underperformed them,  $F(1, 67) = 11.01, p = .001, d = -0.95, 95\% \text{ CI} = [-1.46, -0.36]$ . When the woman was far, there was no effect of performance on men's romantic interest in the confederate.<sup>2</sup> For desire to interact, there was only a significant Psychological distance  $\times$  Target performance interaction,  $F(1, 67) = 5.89, p = .02$ . When the female confederate was near, men tended to report less desire to interact with her when she outperformed versus underperformed them,  $F(1, 67) = 2.99, p = .09, d = -0.56, 95\% \text{ CI} = [-1.05, 0.07]$ . When she was far, men tended to report greater desire to interact with her when she outperformed versus underperformed them,  $F(1, 67) = 2.90, p = .09, d = 0.60, 95\% \text{ CI} = [-0.07, 0.95]$ .<sup>3</sup>

For self-rated masculinity, there was only a significant Psychological distance  $\times$  Target performance interaction,  $F(1, 67) = 9.99, p = .002$ . When the woman was near, men felt less masculine when she outperformed versus underperformed them,  $F(1, 67) = 7.21, p = .009, d = -1.03, 95\% \text{ CI} = [-1.48, -0.22]$ . When she was far, men felt marginally more masculine when the woman outperformed versus underperformed them,  $F(1, 67) = 3.04, p = .09, d = 0.53, 95\% \text{ CI} = [-0.07, 1.07]$ .<sup>4</sup>

**Mediated moderation.** To test whether self-rated masculinity was a significant mediator, we conducted two mediated moderation analyses using the Hayes (2013) PROCESS macro for SPSS. Specifically, we input  $Y$  (the DV: romantic interest; desire to interact, respectively),  $X$  (target performance condition, coded as 1 = *outperform*, -1 = *underperform*),  $M$  (the mediator of self-rated masculinity, centered), and  $W$  (the moderator, psychological distance, coded as 1 = *near*, -1 = *far*) into Hayes' Model 8. This model automatically enters  $X$  (performance condition) and  $W$  (distance condition) as covariates and computes the interaction between these variables.  $B$ s reported below reflect unstandardized betas.

In the first model, which examined *romantic interest* as the DV, (a) the IV (Psychological distance  $\times$  Performance interaction) significantly predicted the mediator (self-rated masculinity;  $B = -.34, p = .002$ ), (b) self-rated masculinity significantly predicted romantic interest ( $B = .26, p = .01$ ) with the Psychological distance  $\times$  Performance interaction included in the model, and (c) the effect of the IV on romantic interest ( $B = -.28, p = .004$ ) was reduced ( $B = -.19,$



**Table 1.** Descriptive Statistics for Studies 3a and 3b.

Measure	Study 3a						Study 3b								
	Outperform/near			Performance/distance condition			Outperform/near			Performance/distance condition					
	M	SD		M	SD		M	SD		M	SD				
Romantic interest	-0.42	1.03	0.07	0.67	0.49	0.88	0.46	0.81	0.15	0.81	0.85	0.81	0.15	0.81	0.85
Desire to interact	-0.19	0.82	0.19	0.82	0.30	0.92	0.64	0.75	0.17	0.75	0.64	0.75	0.17	0.75	0.64
Self-rated masculinity	3.65	0.78	4.50	1.11	4.50	0.86	4.00	4.66	4.49	4.66	4.78	4.51	4.49	4.51	4.78

Note: Romantic interest and desire to interact measures reflect scores after standardizing and averaging the relevant items.

$p = .05$ ) when masculinity self-ratings were included in the model.

We then used bootstrapping analyses based on 5,000 resamples to test the indirect effect of the Psychological distance  $\times$  Performance interaction on romantic interest through self-rated masculinity. The bias-corrected CI for the size of the indirect effect for romantic interest excluded zero, 95% CI =  $[-0.475, -0.012]$ , indicating a significant indirect effect of self-rated masculinity on romantic interest. The percentile CI for bootstrapped mediated moderation analyses was  $[-0.444, -0.001]$ .

In the second model, which examined *desire to interact* as the outcome variable, the (a) IV (Psychological distance  $\times$  Performance interaction) significantly predicted the mediator (self-rated masculinity;  $B = -.34, p = .002$ ), (b) masculinity significantly predicted desire to interact ( $B = .23, p = .03$ ), and (c) the effect of the IV on desire to interact ( $B = -.23, p = .02$ ) was reduced ( $B = -.15, p = .13$ ) when masculinity was included in the model. Bootstrapping analyses based on 5,000 resamples revealed that the bias-corrected CI for the size of the indirect effect for desire to interact excluded zero, indicating a significant indirect effect of masculinity on desire to interact, 95% CI =  $[-0.393, -0.009]$ ; the percentile CI fell short of significance  $[-0.374, 0.001]$ .<sup>5</sup>

We also tested the mediational role of masculinity when distance was far versus near by examining conditional indirect effects based on Hayes Model 8. When distance was far, there was no significant indirect effect of  $X$  (performance condition) through masculinity on romantic interest (effect =  $.07$ , 95% CI =  $[-0.002, 0.236]$ ) or desire to interact (effect =  $.06$ , 95% CI =  $[-0.003, 0.186]$ ). However, when distance was near, there was a significant indirect effect of performance through masculinity on romantic interest, effect =  $-.11$ , 95% CI =  $[-0.312, -0.005]$ , and desire to interact, effect =  $-.10$ , 95% CI =  $[-0.270, -0.004]$ .

Overall, Study 3a found that when a woman was psychologically near (in the same room as participants, interacting face-to-face), men showed *less* romantic interest and desire to interact with her when she outperformed versus underperformed them. In contrast, when the woman was psychologically distant, men did not differ in their romantic interest as a function of the woman's performance; they did show a marginal tendency, though, in wanting to interact with her when she was psychologically distant and outperformed (vs. underperformed) them.

Moreover, men felt less masculine when they were outperformed by a woman who was near versus far. Manhood is thought to be a precarious state that is difficult to earn but easily lost and must continually be validated through one's actions (Bosson & Vandello, 2011). Men who were outperformed in the current study may have felt particularly threatened when the woman was psychologically near versus far; indeed, they felt less masculine, which led them to experience less romantic interest and desire to interact with women who displayed more (vs. less) intelligence than themselves.

In contrast to Studies 1a and 1b, the current study did not find that men were significantly more attracted to women who were more intelligent than them in the psychologically distant condition. One explanation for this discrepancy is the difference in distance manipulations used across studies. In Study 1a, participants imagined being outperformed or underperformed by a fictional woman in a hypothetical scenario. In Study 1b, participants expected to interact with a woman who was in a room down the hall. In both of these studies, men were psychologically removed from the woman. In the current study, participants in the Far condition also expected to interact with the woman, but she was supposedly in the room right next to them. In fact, they heard the woman "knock" on the lab door and be escorted into the room next to them. Given that the distance between participants and the woman was smaller compared with the previous studies, this difference could have contributed to the lack of significant findings in the Far condition in the current study.

### Study 3b

A limitation of Study 3a is that participants in the Near condition always knew what the female target looked like, whereas they did not in the Far condition. To address this concern, Study 3b manipulated psychological distance while keeping the amount of information about the confederate constant across conditions. Study 3b also included performance feedback in another domain (i.e., social perceptiveness) to determine whether the effects of being outperformed were domain-specific or more general. In addition, we used a modified version of the Behavior Identification Form (Vallacher & Wegner, 1989) to assess the effectiveness of the psychological distance manipulation. If the Near versus Far condition distinction altered the experience of psychological distance, then participants in the Near condition ought to construe their partner's behaviors in more concrete, subordinate terms (and less abstract, superordinate terms) compared with the Far condition.

### Participants and Procedure

One hundred forty-nine male undergraduates participated in a "Study of First Impressions" in exchange for psychology course credit. Fifteen participants were excluded based on the suspicion check criteria used in the previous studies. The final sample consisted of 134 participants ( $M_{\text{age}} = 19.08$ ) and followed the same procedures as Study 3a, with a few notable exceptions. First, to ensure that participants in both psychological distance conditions had equivalent information about their partner, all participants saw and heard the confederate at the start of the session. Specifically, a female confederate knocked on the door, introduced herself to the experimenter, and was escorted into the lab corridor. She stood in the participant's direct line of sight, approximately 20 ft away, while interacting with the experimenter for a few moments.

In the Near condition, she was then escorted into the same room as the participant; in the Far condition, she was escorted into an adjacent room in the lab. Thus, participants in the Far condition never interacted with the confederate, but they did see and hear her speak. We did this to ensure that the Near condition—in which the participant and confederate engaged in a real, face-to-face interaction—was the major procedural difference between the two conditions.

To determine whether the domain of performance mattered, we manipulated test type so that participants took either an intelligence test (as in Study 3a) or a test from an unrelated domain—that is, social perceptiveness, “the ability to attune to others’ needs and feelings across social situations”—which was described as a predictor of future social success. For consistency, scores were distributed in percentages for both tests, rather than raw scores; participants always received 60%. In the outperformance condition, the confederate got 90%; in the underperformance condition, she got 30%.

To confirm the effectiveness of the distance manipulation, we assessed whether participants formed a more abstract, higher level construal or concrete, lower level construal of the confederate (Liviatan et al., 2008). Specifically, participants imagined the confederate engaging in 15 actions and chose which of two options best described her actions. For example, they imagined the confederate “Locking the door” and reported whether she was (a) *putting a key in the lock* (low-level construal) or (b) *securing the house* (high-level construal). High-level construal choices were coded as 1 and low-level construals as 0, then summed up such that higher numbers reflected more abstract (vs. concrete) construals of the confederate.

Participants then completed the same DVs (romantic interest,  $\alpha = .82$ ; desire to interact,  $\alpha = .70$ ) and self-ratings of masculinity ( $\alpha = .84$ ) as in Study 3a. As an added manipulation check, participants reported how physically close they were to their partner “right now” on a scale from 1 (*very far*) to 7 (*very close*).

## Results and Discussion

**Manipulation checks.** To confirm the effectiveness of the psychological distance manipulation, we conducted a three-way ANOVA with psychological distance (near vs. far), target performance (outperform vs. underperform), and test type (intelligence vs. social perceptiveness test) to examine construals of the female confederate. There was a significant main effect of psychological distance,  $F(1, 126) = 5.29, p = .02$ ; no higher order interactions were significant. As predicted, participants showed lower level construals of their partner’s behaviors when she was near ( $M = 8.29, SD = 3.27$ ) versus far ( $M = 9.52, SD = 2.50, d = -0.42, 95\% CI = [-2.16, -0.16]$ ).

Results of a three-way ANOVA examining how physically close participants felt to the confederate also revealed a significant main effect of psychological distance,  $F(1, 126) = 12.16, p = .001$ ; no higher order interactions were

significant. Participants reported being physically closer to the confederate in the Near condition ( $M = 3.45, SD = 1.21$ ) than in the Far condition ( $M = 2.68, SD = 1.35, d = 0.60, 95\% CI = [0.34, 1.22]$ ). Together, these findings confirm that the distance manipulation had the intended effects on construals and perceptions of proximity to the partner.

**Primary analyses.** Results of a three-way ANOVA examining romantic interest as the DV revealed a nonsignificant Psychological distance  $\times$  Target performance interaction,  $F(1, 126) = 0.15, p = .70$ ; this interaction was not moderated by test type,  $F(1, 126) = 0.29, p = .59$ . However, a three-way ANOVA examining desire to interact as the DV revealed a significant Psychological distance  $\times$  Target performance interaction,  $F(1, 126) = 8.36, p = .005$ ; this interaction was not moderated by test type,  $p = .85$ .

When the female confederate was in a different room (Far condition), men reported greater desire to interact with the woman when she outperformed versus underperformed them,  $F(1, 126) = 7.63, p = .007, d = 0.59, 95\% CI = [.15, .90]$  (see Table 1). When the female confederate was in the same room (Near), however, men showed less desire to interact with her when she outperformed versus underperformed them, although this finding did not reach significance,  $F(1, 126) = 1.71, p = .19, d = -0.39, d = -0.39, 95\% CI = [-0.61, 0.12]$ .<sup>6</sup>

**Self-rated masculinity.** In contrast to Study 3a, the Psychological distance  $\times$  Target performance interaction was not significant for masculinity self-ratings,  $F(1, 126) = 0.27, p = .60$ , and this interaction was not moderated by test type,  $F(1, 126) = 0.00, p = .98$ ; no other effects or interactions were significant.

One factor that could have affected the strength of results across studies is that participants in the current study saw their partner in both the Near and Far conditions, whereas in Study 3a, they only saw their partner in the Near condition. Perhaps in the current study, the woman in the “Far” condition was less hypothetical than in the other studies (because participants in the current study saw that a real person was involved), which may have weakened the effects.

Another explanation for the difference in results is the number of experimenters involved. Whereas Study 3a involved two experimenters, possibly providing tighter experimental control over the procedures, Study 3b involved five experimenters, which could have increased experimental noise and attenuated effects of the study manipulations. Also, participants in the current study completed the partner construal measure before completing the primary dependent measures, whereas this measure was not administered in Study 3a. Perhaps completing this questionnaire may have attenuated effects of the manipulations on subsequent measures.

## Meta-Analysis Across Studies

Studies 1a and 1b examined attraction in distant contexts, Studies 2a and 2b examined attraction in near contexts, and

Studies 3a and 3b examined near versus distant contexts simultaneously. Although the primary DVs across studies revealed similar patterns of data, the significance of the simple effects differed across the hypothesis tests. Thus, to obtain a more comprehensive depiction of the data, we conducted a meta-analysis across all six studies (Braver, Thoemmes, & Rosenthal, 2014).

We conducted two meta-analyses, one for the Far conditions (Studies 1a, 1b, 3a, and 3b) and one for the Near conditions (Studies 1a, 1b, 3a, and 3b). We calculated the effect size  $d$  for the difference between the outperformance and underperformance conditions for each DV and then averaged the  $d$ s across DVs within study to produce four  $d$ s for the Far conditions and four  $d$ s for the Near conditions. The binary DV in Study 2a was converted into a  $d$  using the formula  $B \times \sqrt{3/\pi}$  (Borenstein, Hedges, Higgins, & Rothstein, 2009). We then input these  $d$ s into the meta-analytic spreadsheet tool provided by Braver et al. (2014), which calculates the overall meta-analytic effect size after weighting each effect by the inverse of its variance (i.e., the inverse of the squared standard error of the difference in means), so that the more precisely estimated effects have a stronger influence on the aggregated effect size. We report the results of Hedges'  $g$  (which is calculated by the spreadsheet tool) as the primary standardized effect size for mean differences because  $g$  controls for biases due to small samples.

When the female target was far, men reported greater attraction to her when she outperformed versus underperformed them, Hedges'  $g = .39$ ,  $SE = .11$ ,  $z = 3.68$ ,  $p < .001$ , 95% CI = [0.18, 0.60]. When the female target was near, men reported *less* attraction to her when she outperformed versus underperformed them, Hedges'  $g = -.37$ ,  $SE = .13$ ,  $z = 2.80$ ,  $p = .005$ , 95% CI = [-0.11, -0.63]. Fixed and random effects meta-analyses produced identical results: Neither the Far-condition homogeneity statistic,  $Q(3) = 0.27$ ,  $p = .96$ , nor the Near-condition homogeneity statistic,  $Q(3) = 2.23$ ,  $p = .53$ , differed significantly from zero, and the random effects variance component ( $\sigma^2_{\theta}$ ) was null, as is often the case when the total number of studies is small (Lipsey & Wilson, 2001).

To test whether the Far condition differed significantly from the Near condition, we entered the eight effect sizes (4 for "Far" and 4 for "Near") in the program Comprehensive Meta-Analysis (Borenstein, Hedges, Higgins, & Rothstein, 2005). Results of this analysis revealed a  $Q$  statistic that tested the significance of the dummy coded condition. Consistent with the interactions demonstrated in Studies 3a and 3b, the Far-condition effect size (Hedges'  $g = .39$ ) differed significantly from the Near-condition effect size (Hedges'  $g = -.37$ ),  $Q(1) = 20.64$ ,  $p < .001$ .

Even in Studies 3a and 3b alone, which offer the most tightly controlled Near versus Far comparison, the Far-condition effect size (Hedges'  $g = .45$ ) differed significantly from the Near-condition effect size (Hedges'  $g = -.30$ ),  $Q(1) = 5.02$ ,  $p = .025$ . In sum, despite some inconsistencies across DVs, the overall pattern of data across studies is consistent with a crossover interaction pattern: Outperformance

(vs. underperformance) predicted increased liking for Far targets but decreased liking for Near targets.

## General Discussion

Whereas previous theorizing and research on CLT and SEM were conducted in isolation from each other, the present research integrates these perspectives and highlights key points of intersection. In particular, we suggest that closeness can be conceptualized not just in terms of social closeness but in terms of other forms of distance as well, such as hypotheticality and spatial distance.

In the first set of experiments (Studies 1a-1b), which involved psychologically distant situations, men showed greater attraction to women who displayed more (vs. less) intelligence than themselves. Specifically, when men imagined a hypothetical woman or expected to interact with a woman who was spatially distant, they rated her more favorably and expressed greater romantic interest and desire to interact with her when she demonstrated more (vs. less) intelligence than themselves. Such findings are consistent with past research showing that in the abstract, individuals prefer ideal romantic partners who possess more favorable personality traits and have higher mate value than themselves (Figueredo et al., 2006).

The next set of experiments (Studies 2a-2b) revealed a very different pattern of results. In these studies, women were portrayed not in an abstract sense, but in a concrete, real sense. Specifically, men interacted with a real woman who was spatially near (i.e., face-to-face interaction) who performed better or worse than them on an intelligence test. In these proximal situations, men tended to rate women who outperformed (vs. underperformed) them as *less* attractive, showed less interest in exchanging contact information and planning a date with her, and physically distanced themselves more from her.

In the final set of experiments (Studies 3a-3b), psychological distance and relative intelligence were manipulated simultaneously. In these studies, men expected to interact with a woman who outperformed or underperformed them and was psychologically distant or near. When men expected to interact with a woman who was spatially distant (e.g., in another room), they expressed greater desire to interact with her when she outperformed versus underperformed them (Studies 3a-3b). However, when men interacted with a real woman who was spatially near (e.g., in a face-to-face interaction), men showed *less* romantic interest and desire to interact with her when she outperformed versus underperformed them (Study 3a).

Moreover, a meta-analysis across the six studies confirmed that in the psychologically distant (far) condition, men showed greater attraction toward women who outperformed versus underperformed them. In contrast, when the woman was psychologically near, men showed less attraction toward her when she outperformed (vs. underperformed) them. These results qualify the commonly cited finding that

proximity leads to attraction (Festinger, Schachter, & Back, 1950). In the present research, proximity actually led men to become *less* attracted to women when they outshone them in psychologically near situations.

### *Theoretical Implications*

The present research provides a novel framework for understanding how social comparison processes intersect with psychological distance to affect interpersonal attraction. Past research has shown that individuals describe their ideal partner as possessing more favorable qualities and higher mate value than themselves (Figueredo et al., 2006). It makes sense, then, that when evaluating psychologically distant targets—when people are presumably relying on their abstract schemas and ideas of what they want in partners—men would be attracted to women who demonstrate more (vs. less) intelligence than themselves.

In contrast, when men evaluate women who are psychologically closer to the self, they appear to rely more on lower level features of the situation, such as how masculine they feel at the moment, to determine their attraction toward their partner. Indeed, men showed less attraction to women who outperformed them in psychologically near (vs. far) conditions, and this may have been due to decreased feelings of masculinity (Study 3a). Such findings are consistent with the idea that attraction is likely to be influenced by the degree of psychological distance to a target, such that low-level construal features have greater weight in determining attraction to targets who are closer to the self, whereas higher level construal features should influence attraction when others are psychologically distant (Liviatan et al., 2008).

Although there are many contexts in which psychological distance and social comparison processes could be relevant, we chose to examine the early stages of relationship formation given the paucity of research in this area. Furthermore, whereas past research on CLT and interpersonal perception focused mainly on social distance (Liviatan et al., 2008), the present research broadened this focus to examine other types of distance, such as hypotheticality and spatial distance, in shaping attraction. Our emphasis on interpersonal interaction extends research on SEM as well, which typically focuses on effects of being outperformed by strangers with no relationship potential or among individuals in preexisting relationships. Investigating the effects of psychological distance on initial attraction has received some attention (Eastwick et al., 2011) but has yet to be integrated with other extant theories that may be relevant to attraction.

The preliminary finding—that being outperformed led men in the psychologically near situation to feel less masculine (Study 3a)—is consistent with research on precarious manhood. From this perspective, men are expected to defend and uphold their sense of manhood when threatened (Bosson & Vandello, 2011). Precarious manhood is thought to have evolved from adaptations to social environments in which men competed for access to desirable mates by demonstrating

their strength and dominance (Buss & Schmitt, 1993). Accordingly, men are thought to be concerned about achieving and preserving their social status and show heightened sensitivity to status-related threats. From a social role perspective, men care about defending their status because they have historically occupied roles that encourage them to pursue power and resources, consistent with the traditional division of labor in society (Eagly & Wood, 1999). Over time, qualities such as competitiveness may have become closely linked to the idea of manhood in Western cultures.

In the present research, men reacted to a woman who outperformed them on an intelligence test (in the spatially near condition) by expressing less romantic interest in her. Men's diminished feelings of masculinity, in turn, accounted for the link between being outperformed and being less attracted to the female confederate (Study 3a). Such findings, although preliminary, are consistent with research indicating that feelings of confidence and power, which are associated with masculinity, are related to approaching and initiating romantic encounters (Finkel & Eastwick, 2009; Kunstman & Maner, 2011). Furthermore, given that being better than others is especially important to men, coupled with the societal belief that it is highly desirable for men to be intelligent (Prentice & Carranza, 2002), it makes sense that being outsmarted by a woman lowered men's feelings of masculinity when it occurred in psychologically near (vs. far) contexts. However, given that the findings for masculinity emerged only in Study 3a, further research is needed to provide a more definitive account of these effects.

### *Limitations and Future Directions*

Previous research suggests that when people interact with a potential partner in a live context (e.g., spatially near context), they rely primarily on their affective experience—positive or negative—to determine their attraction toward the target (Eastwick et al., 2014). In addition, research on SEM suggests that people experience negative feelings (e.g., jealousy) when they are outperformed in a self-relevant domain (Salovey & Rodin, 1984). Together, these two strands of research suggest that men who interacted with a female confederate in the near condition may have felt badly when they were outperformed in a self-relevant domain such as intelligence, and these feelings shaped their evaluations of the confederate. Although we did not measure feelings of jealousy in the present studies, we did assess self-rated masculinity, which produced mixed results. However, such self-report measures may be limited given that SEM processes are thought to be automatic and lie outside of conscious awareness (Tesser, Millar, & Moore, 1988).

Future research could examine additional mediators by using indirect measures to assess self-evaluative processes; for example, studies have found that being outperformed by a current romantic partner led to lower implicit, but not explicit, self-esteem for men (Ratliff & Oishi, 2013). These authors speculated that self-presentational concerns and/or a

lack of awareness of the impact of a partner's success on self-feelings could have contributed to the null findings for explicit self-esteem. Similar observations have been made in research on precarious manhood, in which men are thought to underreport feelings of threat and anxiety due to self-presentational concerns (Vandello, Bosson, Cohen, Burnaford, & Weaver, 2008). Future work could seek to confirm self-evaluative processes using indirect means, such as implicit measures or coding facial expressions and body language on receiving feedback.

Although the current studies focused on the impact of psychological distance and relative performance on men's attraction to women, the proposed framework could be expanded to examine other groups and contexts, such as women's attraction to men, or ingroup members' attraction to outgroup members. Researchers could also examine the generalizability of the findings to real-world settings, such as online dating, speed dating, or singles mixers.

The present studies examined varying degrees of hypotheticality and spatial distance as instantiations of psychological distance. Although some of our manipulations blended these two types of distance, these manipulations were intended to reflect the different partner evaluation contexts that people experience in real life. For example, individuals sometimes learn about a person they have not met (who is hypothetical and spatially distant) and sometimes evaluate a person in a face-to-face interaction (who is real and spatially near). Future research could examine whether distinctions between hypotheticality, spatial distance, and other forms of distance have unique effects on interpersonal attraction as a function of relative performance.

## Conclusion

When it comes to interpersonal attraction, how do people respond to being outperformed? Are they more (or less) attracted to potential partners who outshine them in important domains? As revealed in the current studies, the answer to this question lies at the intersection of theories of psychological distance and social comparison. Focusing on men's romantic evaluations in the present research, when men were psychologically distant from a woman (i.e., hypothetical, spatially distant interactions), men showed greater attraction toward women who surpassed them in intelligence. However, in psychologically near situations (i.e., real, spatially near, face-to-face interactions), men distanced themselves and showed less interest in women who outsmarted them.

Preliminary evidence suggested that feelings of diminished masculinity accounted for men's decreased attraction toward women who outperformed them in the live interaction context, although further research is needed to confirm the robustness of these findings. Overall, the current research contributes to a more nuanced and integrative understanding of the situational factors that shape attraction (i.e., men's attraction to women) and suggests key conditions under which self-protective concerns may trump qualities of partners that seem desirable at a distance.

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## Notes

1. In advertising the studies using the online subject pool system, we sought to recruit male participants who were "heterosexual" and "single"; some participants did not meet these criteria, but this was not discovered until after they had completed the study and the demographic form. Even after excluding the few participants who were not heterosexual or single, the results were the same; thus, we retained all participants' data across studies. Each study is powered as it is because we ran each study throughout the semester and analyzed the data once the semester was over.
2. Men who were outperformed tended to report less romantic interest in the woman when she was near versus far,  $F(1, 67) = 3.51, p = .06, d = -0.56$ , 95% confidence interval (CI) = [-1.00, 0.03]. Men who were underperformed reported greater romantic interest when the woman was near versus far,  $F(1, 67) = 5.63, p = .02, d = 0.88$ , 95% CI = [0.09, 1.15].
3. Men who were outperformed reported less desire to interact with the woman when she was near versus far although this finding did not reach significance,  $F(1, 67) = 2.03, p = .16, d = -0.46$ , 95% CI = [-0.92, 0.15]. Men who were underperformed showed greater desire to interact when the woman was near versus far,  $F(1, 67) = 4.01, p = .05, d = 0.69$ , 95% CI = [0.00, 1.09].
4. Men who were outperformed felt less masculine when the woman was near versus far,  $F(1, 67) = 8.02, p = .006, d = -0.89$ , 95% CI = [-1.45, -0.25]. The effect of distance among men who were underperformed was nonsignificant,  $F(1, 67) = 2.71, p = .10, d = 0.62$ , 95% CI = [-0.11, 1.11].
5. Mediated moderation analysis also revealed that men who were outperformed in the near condition felt less masculine because they showed less romantic interest and desire to interact with the woman. Although mediation worked both ways, our conceptualization is more consistent with previous research suggesting that masculine constructs (e.g., confidence, Finkel & Eastwick, 2009; power, Kunstman & Maner, 2011) increase romantic desire, rather than the reverse.
6. Among men who were outperformed, the effect of distance on desire to interact was nonsignificant but in the expected direction,  $F(1, 126) = 1.26, p = .26, d = -0.31$ , 95% CI = [-0.58, 0.16]. Men who were underperformed reported greater desire to interact when she was near versus far,  $F(1, 126) = 8.74, p = .004, d = 0.66$ , 95% CI = [0.18, 0.93].

## Supplemental Material

The online supplemental material is available at <http://pspb.sagepub.com/supplemental>.

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