

Kavanagh, P, Ellis, B & Robins, S 2010, 'The mating sociometer: a regulatory mechanism for mating aspirations ', *Journal of Personality and Social Psychology*, vol. 99, no. 1 (July 2010), pp. 120-132, <http://doi.dx.org/10.1037/a0018188>

This article may not exactly replicate the final version published in the APA journal. It is not the copy of record.

© 2010 American Psychological Association

Running head: MATING SOCIOMETER

The Mating Sociometer:

A Regulatory Mechanism for Mating Aspirations

Keywords: sociometer theory, evolutionary psychology, self-esteem, social rejection, mate choice, levels of aspiration

Abstract

Two studies ($Ns = 80$ and 108) tested hypotheses derived from Kirkpatrick and Ellis' (2001) extension and application of sociometer theory to mating aspirations. Experiences of social acceptance-rejection by attractive opposite-sex confederates were experimentally manipulated, and the impact of these manipulations on self-esteem, mating aspirations, and friendship aspirations was assessed. Results indicated that social acceptance-rejection by members of the opposite-sex altered mating aspirations; that the causal link between social acceptance-rejection and mating aspirations was mediated by changes in state self-esteem; and that the impact of social acceptance-rejection by members of opposite-sex was specific to mating aspirations and did not generalize to levels of aspiration in approaching potential sex-sex friendships. This research supports a conceptualization of a domain-specific mating sociometer, which functions to calibrate mating aspirations in response to experiences of romantic acceptance and rejection.

The Mating Sociometer:

A Regulatory Mechanism for Mating Aspirations

One of the most striking features of human evolution is its intense group orientation. Available evidence suggests that humans evolved in small bands that ranged in number from 50-100 members (Tooby & DeVore, 1987). Intense group living meant that the social arena and relationships became an important locus of both fitness opportunities and fitness costs. All group members, however, do not equally experience such opportunities and costs. A fact of group life is that members differ in value (i.e., in the fitness benefits and costs that they can potentially confer or inflict on others). Through selective formation and maintenance of social relationships, individuals can potentially maximize the benefits and minimize the costs of group living. Consequently, members of all social species face the critical adaptive problems of discriminating between conspecifics who differ in value, selectively affiliating with and gaining acceptance from group members who are likely to generate fitness benefits, and selectively avoiding or eliminating group members who represent fitness costs (see especially Kurzban & Leary, 2001).

Arrays of information-processing and emotional-motivational systems are needed to solve these adaptive problems effectively. The current research investigates the role of the self-esteem system in mediating relations between experiences of acceptance or rejection by members of the opposite sex and setting aspiration levels in approaching new relationships.

Although people often idealize and desire highly attractive partners, actual mate selection processes are constrained by a number of factors, including availability of potential mates, personal histories of acceptance and rejection by mates (Kirkpatrick & Ellis, 2001; Todd, 2007), associated self-assessments of attractiveness, popularity, and other dimensions of mate value (Penke, Todd, Lenton, & Fasolo, 2008; Regan, 1998a). Mate selection processes also involve meeting minimum standards (Regan, 1998b) and fitting “budget” constraints (Li, Bailey,

Kenrick, & Linsenmeier, 2002; Li & Kenrick, 2006). Given these realities, how do individuals set aspiration levels in approaching and developing new sexual and romantic relationships?

Employing an evolutionary framework, Penke et al. (2008) provide an overview of how self-assessments can guide human mating decisions. A key component within this framework is the *mating sociometer* (Kirkpatrick & Ellis, 2001, 2006).

Sociometer Theory

A functional model of the self-esteem system—sociometer theory—has been proposed by Mark Leary and colleagues (Leary & Baumeister, 2000; Leary & Downs, 1995; Leary, Tambor, Terdal, & Downs, 1995). Leary et al. note that few have asked the fundamental questions of (1) What exactly *is* self-esteem?, and (2) what is its *function*? Their answer is that self-esteem is not a free-floating goal state that people are motivated to enhance and protect. Rather, it is an internal index or gauge—a *sociometer*—designed to monitor our success with respect to other adaptive goals. Leary et al. argue persuasively that the domain monitored by the sociometer is that of interpersonal relationships. Consistent with many other theorists such as Cooley (1902) and Rosenberg (1979), they suggest that self-esteem reflects in a large part one's perceptions of how others feel about them. More specifically, they argue that the function of the sociometer is to monitor the degree of one's level of *social inclusion* or *acceptance* versus *social exclusion* or *rejection*. They argue further that this sociometer represents an adaptation designed by natural selection for this purpose. A crucial adaptive problem faced by our ancestors, they maintain, was to be accepted by others as part of "the group," as rejection would pose a significant threat to survival and loss of the many well-documented benefits of group living. The sociometer's function is to alert one, through negative affect, when their level of social inclusion is dangerously low, and to motivate corrective action to restore inclusion-acceptance to a favorable level.

The Mating Sociometer

In an extension of sociometer theory, Kirkpatrick and Ellis (2001, 2006) have proposed that there are multiple sociometers associated with functionally distinct social-psychological systems, and that these sociometers have multiple functions (in terms of guiding day-to-day decision-making and behavioral strategies). One of these proposed functions is guiding adaptive relationship choices.

In the context of developing social relationships in different social domains (e.g., the mating domain, the friendship domain, the work domain), individuals face the problem of adaptively calibrating their levels of aspiration. Natural selection should act against individuals who either: a) invest too heavily in social relationships that are substantially lower in value than they can command on the social marketplace (and thus fail to get a fair return on the value they bring to the relationships); or b) waste investment pursuing social relationships that are higher in value than what they can realistically obtain and protect. Accordingly, Kirkpatrick and Ellis (2001) have hypothesized that an important function of self-esteem is to guide individuals to approach social relationships that are of relatively high quality yet defensible given one's own social value. Their model posits that experiences of social acceptance and rejection feed into domain-specific sociometers, causing alterations in state self-esteem in the relevant social domain, which in turn affect aspiration levels in approaching new relationships in that domain.

Consider the operation of the mating sociometer. Individuals who experience a series of rejections by potential mates should experience decrements in self-esteem, which should in turn cause them to lower their aspiration levels in selecting mates. Conversely, a flurry of interest from potential mates should bolster self-esteem and cause individuals to raise their mating aspirations. These calibrations of the mating sociometer are consistent with the hypothesis that self-esteem reflects, at least in part, self-evaluations of mate value (for example, Dawkins, 1982;

Kenrick, Groth, Trost, & Sadalla, 1993; Todd & Miller, 1999; Wright, 1994). The current conceptualization also concurs with extant correlational (non-experimental) data showing that individuals with higher self-perceived mate value express higher standards in selecting mates (Buston & Emlen, 2003; Kenrick et al., 1993; Pawlowski & Dunbar, 1999; Penke et al., 2008; Regan, 1998a, 1998b).

Domain-General vs. Domain-Specific Effects

Most previous theories emphasizing the domain-specificity of self-esteem have retained the construct of global self-esteem or self-worth (e.g., Crocker & Wolfe, 2001; Harter, Waters, & Whitesell, 1998; Kirkpatrick & Ellis, 2001). Because the various dimensions of self-esteem are invariably correlated (e.g., Crocker, Luhtanen, & Sommers, 2004; Harter et al., 1998), global self-esteem has often been regarded as a higher-order construct in a hierarchical model under which specific self-evaluations are nested. An implication of this view is that experiences of acceptance and rejection, or inclusion and exclusion, will have overall effects on feelings of self-worth and self-esteem (i.e., not just effects in the social domain that is being activated/manipulated). Indeed, a large body of research has shown that experiences of social exclusion not only result in overall decreases in perceived belongingness and self-esteem (Buckley, Winkel, & Leary, 2004; Leary et al., 1995; Sommer, Williams, Ciarocco, & Baumeister, 2001; Williams, Cheung, & Choi, 2000) but also provoke a variety of other negative feelings (e.g., pain, distress, sadness, anger, loss of control; reviewed in Williams, 2007). Kirkpatrick and Ellis (2001) and Hill and Buss (2006) have suggested that positive correlations across multiple dimensions of self esteem reflect the fact that certain characteristics (e.g., intelligence, athleticism, high status) are valued in the context of many different relationship domains. Thus, different sociometers may themselves be interconnected within our psychological architecture. In total, the effects of social acceptance-rejection on self-esteem and

relationship aspirations should display both domain-generalality (extending across domains) and domain-specificity (strongest within the activated domain).

Crocker (2002; Crocker & Wolfe, 2001) offers an alternative model of domain-specific self-esteem based on contingencies of self-worth. Self-esteem, Crocker contends, is based on successes and failures in domains that are important to an individual, especially when doubts have been raised about one's worth or value in those domains. Similar to sociometer theory, the contingencies of self-worth model would predict that perceived changes in mate value (acceptance and rejection by potential mates) would result in changes in mating self-esteem, but only if mate value was an important facet of an individual's identity. For such individuals, changes in mating self-esteem have motivational consequences, modulating the amount of effort devoted to mating activities. Although the Kirkpatrick and Ellis (2001) model is not inconsistent with this conceptualization, the evolutionary approach provides a theoretical basis for identifying the specific domains of self-esteem and the conditions under which each is most relevant. Further, Kirkpatrick and Ellis link variations in social acceptance-rejection and self-esteem to aspiration levels in approaching social relationships, rather than calibration of effort per se.

The Current Research

The general idea that people base their social aspirations on their subjective likelihood of realizing those aspirations, and that this process is influenced by past successes and failures in relevant social domains, accords with common sense and some past social-psychological theories (e.g., expectancy-value theory [Feather, 1982]; self-efficacy theory [Bandura, 1993]).

Nonetheless, the current theory and research covers new ground by: (1) specifically linking mating aspirations to experiences of acceptance and rejection by potential mates; (2) specifying *how* this link occurs in terms of mediation by self-esteem; (3) articulating a functional model of mate selection that explains *why* aspiration levels in approaching mates (but not other types of

relationships) specifically track a history of romantic acceptance-rejection; and, most importantly, (4) providing experimental tests of these ideas. In two studies, experiences of social acceptance-rejection by attractive opposite-sex confederates were experimentally manipulated, and the impact of these manipulations on self-esteem, mating aspirations, and, in Study 2, friendship aspirations was assessed. The following three predictions were tested: 1) Social acceptance-rejection by members of the opposite-sex causes alterations in mating aspirations; 2) the causal link between social acceptance-rejection and mating aspirations is mediated by changes in state self-esteem; and 3) the impact of social acceptance-rejection by members of opposite-sex is significantly stronger on mating aspirations than friendship aspirations.

Study 1

The purpose of Study 1 was to test the functional model of self-esteem proposed by Kirkpatrick and Ellis (2001) by assessing the impact of social acceptance-rejection by members of the opposite sex on mating aspiration levels. Because no previous work has examined the extent to which relationship aspirations are calibrated by experiences of social inclusion and exclusion, the purpose of Study 1 was to test for this hypothesized effect (i.e., to establish the proposed functional relationship).

Method

Participants

Eighty undergraduates (40 male, 40 female) were recruited from introductory psychology courses and halls of residences at a New Zealand university. All participants were Caucasian, between 17 and 24 years of age, indicated that they were heterosexual, and received payment of a \$5 lottery ticket. To increase the relevance of the mate selection exercise, participants were only included in the study if they were not currently in a long-term dating or marital relationship.

Phase One: Pre-Manipulation State Self-Esteem

At the time of recruitment, approximately 3 weeks before the study, participants completed an abbreviated version of the Resultant Self-Esteem Scale (McFarland & Ross, 1982), as adapted by Leary et al. (1995). This state self-esteem measure assesses how participants currently feel about themselves on twelve 7-point bipolar adjective scales (e.g., good-bad, competent-incompetent, useless-useful, inferior-superior). Reliability analyses revealed a low item-total correlation (.34) for one item (humble-proud). Once this item was deleted, the remaining 11 items demonstrated good reliability ($\alpha = .85$, $M = 5.11$, $SD = .73$) and were averaged to produce a pre-manipulation self-esteem score (pre-SE).

Phase Two: Experimental Manipulation

Through random assignment, 40 participants were allocated to the accepted group (20 male, 20 female) and 40 participants to the rejected group (20 male, 20 female). Participants reported for the main experimental session in staggered intervals and were informed that they would be participating in two studies designed to look at the way impressions are formed of others in the context of selecting potential dating partners. As part of the cover story, participants were told that a professor in the Psychology Department at their university had been employed by a commercial dating service as a consultant to assess how potential clients use information to make decisions about with whom they do and do not want to go on dates. Participants were then told that the first study had two goals: to examine the types of questions people ask when evaluating others as potential dates and how people use information provided by others to make dating decisions. Participants were then informed that three other people in the study (confederates) were going to make up questions to ask them. The experimenter stressed that, to maintain the privacy of everyone involved, the entire interview would be conducted over an intercom system.

The researcher then left the room and returned after the interview process was complete. The three opposite-sex confederates in the adjoining room each asked two predetermined questions, which were designed to be moderately disclosing. The questions were: What are your hobbies, now and in the past? What are you most afraid of? What is the activity you dislike doing the most? Describe some aspects of yourself that you like best. Describe some aspects of yourself you like least. What do you look for in a friend?

After the interview was completed, participants were informed that the first study was over and were thanked for their participation. They were told that, because ethics did not allow for the collection of information about others without them seeing it, they would be shown the evaluation forms completed by the interviewers. The experimenter then left to collect the forms. There were three forms, one ostensibly completed by each interviewer. Each form had the same 5 questions (Would you want to continue a conversation with the person? Would you want to introduce the person to a friend? Would you be interested in having coffee with this person? Would you be interested in going on a date with this person? Does this seem like the kind of person who you would be interested in forming a dating relationship with?). The evaluation forms included bogus answers, indicating ‘yes’, ‘unsure’ or ‘no’ to each of these questions. This served as the rejection-acceptance manipulation. Participants in the acceptance condition received predominantly ‘yes’ responses with a few ‘unsures’. To minimize the aversiveness of the manipulation, participants in the rejection condition received predominantly ‘unsure’ responses with a few ‘no’ answers. Leary et al. (1995) suggest that uncertain and ambivalent responses connote sufficient rejection for the purposes of this kind of study. Participants were handed the completed evaluation forms and were left to read them on their own.

Phase Three: Dependent Measures

Post-manipulation state self-esteem. Approximately two minutes after receiving the rejection-acceptance feedback, participants were given the same state self-esteem measure ($M = 4.95$, $SD = .69$, $\alpha = .87$) that was completed during the pre-manipulation period. Mixed into this post-manipulation measure were four additional items (liked-disliked, popular-unpopular, socially attractive-socially unattractive, and accepted-rejected) that were designed to assess feelings of social acceptance-rejection. These 4 items were appropriately reverse-scored and averaged ($M = 4.83$, $SD = .95$, $\alpha = .85$) to produce a post-manipulation measure of feelings of social acceptance. Consistent with sociometer theory, post-manipulation state self-esteem and feelings of social acceptance were highly correlated, $r(80) = .80$, $p < .001$, and were thus averaged to form the overall measure of post-manipulation self-esteem (post-SE) used in the main analyses.

The mating aspiration task. Participants were then seated in front of a computer and informed that they would be reviewing photos and personality descriptions of opposite-sex individuals who were potential clients of the dating agency. The profiles depicted individuals of high, moderate, or low mate value (social/physical attractiveness), as indicated by the social information and accompanying photograph. After viewing each profile, participants answered questions designed to assess how well matched they felt they were to the target person.

Construction of stimulus profiles: personality descriptions. Three sets of personality profiles, adapted from Kenrick, Neuberg, Zierk, and Krones (1994), were created to reflect high, moderate, and low social attractiveness. Details of the content, construction, and validation of these profiles is provided in the online supplemental materials.

Construction of stimulus profiles: photographs. Eighteen photographs (9 male, 9 female), obtained from overseas websites, were selected to represent high, moderate, and low physical

attractiveness. Details of the selection and attractiveness ratings of these photographs are provided in the online supplemental materials.

Assessment of mating aspirations. High attractiveness photos were paired with high attractiveness personality descriptions, moderate with moderate, and low with low to create the high, moderate, and low mate value profiles (3 male and 3 female profiles at each of the 3 attractiveness levels). Participants viewed and evaluated the full set of 9 randomly ordered opposite-sex profiles. This evaluation included answering five questions (Realistically, does this seem like the kind of person you would form a dating relationship with? How well matched are you to this person? How comfortable do you think you would be dating this person? Does this seem like the kind of person who you would successfully date? How likely do you think it is that this person would be interested in you?), designed to assess how well matched the participants' thought they were to each target person. The questions were responded to on 7-point scales (e.g., 1 = definitely not, 7 = definitely yes).

The 6 moderate mate profiles were used as filler profiles (i.e., no analyses were conducted using these profiles). Reliability analyses were conducted to investigate whether the five ratings of the 12 target profiles (6 high attractiveness, 6 low attractiveness) could be combined into composite measures. For each of these profiles, the alpha reliability coefficients for the five items exceeded .83 (see online supplemental materials). The five items were thus averaged to create composite measures of perceived compatibility with each of the 12 target profiles. Next, reliability analyses were conducted to examine whether these composites could be combined within mate value categories. For both males and females, ratings of both the 3 high mate value and the 3 low mate value opposite-sex profiles showed good internal consistency (coefficient alphas exceeded .74). The ratings were thus averaged to form composite measures of both women's and men's perceived mating compatibility with the high and low mate value

profiles, respectively. To the extent that individuals rated themselves as more compatible with the high mate value profiles, individuals were considered to have higher mating aspirations. Conversely, to the extent that individuals rated themselves as more compatible with the low mate value profiles, individuals were considered to have lower mating aspirations.

The global mating aspirations index. Ratings of compatibility with high and low mate value profiles were moderately negatively correlated, $r(80) = -.34, p < .01$. This inverse association enabled us to create a global index of overall mating aspirations by subtracting scores on perceived compatibility with low attractiveness profiles from scores on perceived compatibility with high attractive profiles. The global index was normally distributed ($M = 1.82$, $SD = 1.58$, range: -1.87 to 5.40), with higher scores representing higher mating aspirations.

Phase Four: Manipulation Checks and Debriefing

The experimenter then administered a manipulation check that included the following questions: Overall, how positively was your information regarded? Overall, how accepting were the other people of you? (Both responded to on 7-point scales, with higher scores indicating greater positivity or acceptance.) Did you believe that the other people were the ones who completed those ratings that you received? (yes/no). Participants were then probed for suspicion using a funnel type interview (McFarland & Ross, 1982). Finally, participants were debriefed regarding the rationale and deceptions of the study, given instructions not to discuss the contents of the study with anyone, and dismissed.

Results

Manipulation Checks

There was little or no overlap in the responses of the accepted and rejected groups to the manipulation checks. As expected, the accepted group ($M = 6.13$; $SD = 0.65$; range: 5 to 7) perceived that their information was regarded more positively than did the rejected group ($M =$

2.53; $SD = 0.75$; range: 1 to 4). Likewise, the accepted group ($M = 6.23$; $SD = 0.62$; range: 5 to 7) perceived that they were more accepted by the interviewers than did the rejected group ($M = 2.73$; $SD = 0.88$; range: 1 to 5). All but 2 of the 80 participants reported that they believed that the other people were the ones who completed the ratings they received. Analyses conducted with and without these two participants did not produce different results so these participants were consequently retained in the final sample.

Effects of Social Acceptance-Rejection on State Self-Esteem

Analyses were conducted to test the prediction that individuals who were socially rejected, compared with individuals who were socially accepted, would experience lower post-SE. Specifically, a 2 x 2 x 2 (manipulation [acceptance-rejection] x sex x time [pre/post]) mixed model analysis of variance (ANOVA) was conducted, with pre/post-SE as the repeated variable. The results indicated, as expected, a main effect for manipulation, with participants in the rejected condition ($M = 4.83$, $SD = 0.76$) reporting significantly lower self-esteem than those in the accepted condition ($M = 5.17$, $SD = 0.45$), $F(1,76) = 5.98$, $p < .05$, $\eta_p^2 = .07$. In addition, there was a significant main effect for time [pre/post], with significantly lower self-esteem scores reported post manipulation (post-SE; $M = 4.89$, $SD = 0.78$) than prior to experiencing the social rejection-acceptance manipulation (pre-SE; $M = 5.11$, $SD = 0.73$), $F(1,76) = 7.56$, $p < .01$, $\eta_p^2 = .09$. The two main effects are best understood by examining the significant time [pre/post] x manipulation interaction (see Figure 1). That is, as expected, individuals who were socially rejected experienced a decrease in state self-esteem (pre-SE: $M = 5.08$, $SD = 0.84$; post $M = 4.58$, $SD = 0.88$), whereas those who were socially accepted experienced a slight increase in state self-esteem (pre-SE: $M = 5.14$, $SD = 0.60$; post-SE: $M = 5.20$, $SD = 0.50$), $F(1,76) = 12.70$, $p < .001$,

$\eta_p^2 = .14$. In sum, the manipulation significantly influenced state self-esteem, in the intended fashion as predicted by sociometer theory.

Finally, the time [pre/post] x manipulation interaction was further modified by sex, with a significant time [pre/post] x manipulation x sex 3-way interaction $F(1,76) = 9.46, p < .01, \eta_p^2 = .11$. As shown in Figure 1, the effect of the manipulation on state self-esteem differed for sex, with females demonstrating a greater change pre-post than males. In total, female's self-esteem was more responsive to the laboratory experiences of social acceptance and rejection than was male's self-esteem. To further investigate this 3-way interaction, a post-hoc analysis was conducted comparing pre-SE levels in males and females assigned to acceptance and rejection conditions. The results showed a marginally significant difference for males between the accepted and rejected group on pre-SE, $t(38) = -2.00, p = .052$, with the accepted group higher in pre-SE. When the original analyses were re-run as a 2 x 2 (manipulation x sex) Analyses of Covariance (ANCOVA) with pre-SE as a covariate and post-SE as the DV, the effect size of the manipulation x sex interaction decreased by over half, $F(1,75) = 4.13, p < .05, \eta_p^2 = .05$ (down from .11). Further, although the impact of the acceptance-rejection manipulation on post-SE was still stronger in females than males after controlling for pre-SE, the direction of the effect was now the same for both sexes. Most importantly, the main effect of the manipulation strengthened, $F(1,75) = 18.00, p < .001, \eta_p^2 = .26$, with a large increase in the effect size (.07 to .26). Together these post-hoc analyses suggest that the 3-way interaction between time (pre-post), manipulation, and sex may have been an artifact of failed random assignment of males to experimental groups based on pre-SE, rather than a genuine sex difference.

Effects of Social Rejection on Mating Aspirations

Next, analyses were conducted to test the predictions that: a) experiencing social acceptance (relative to rejection) produces higher mating aspirations (i.e., greater feelings of compatibility with the highly attractive target profiles); and b) experiencing social rejection (relative to acceptance) produces lower mating aspirations (greater feelings of compatibility with the unattractive target profiles). Specifically, a 2 x 2 x 2 (manipulation [rejection-acceptance] x sex x target profiles [high/low]) mixed model ANOVA was conducted with the target profiles (high/low) as the repeated dependent variable. The results indicated a significant main effect of profile attractiveness, $F(1,76) = 115.93, p < .001, \eta_p^2 = .60$. Pairwise comparisons using Bonferroni adjustment for alpha revealed that participants reported significantly greater compatibility with the high attractiveness ($M = 4.14, SD = 1.12$) over the low attractiveness ($M = 2.31, SD = 0.79$) targets. As predicted, there was also a significant profile attractiveness by manipulation interaction, $F(1,76) = 7.96, p < .01, \eta_p^2 = .07$. Two planned comparisons were conducted to interpret this interaction. The first comparison revealed that experiencing social acceptance produced significantly greater feelings of compatibility with the highly attractive target profiles ($M = 4.42, SD = 1.04$) relative to experiencing social rejection ($M = 3.86, SD = 1.14$), $t(78) = 2.25, p < .05$. The second comparison revealed that experiencing social rejection produced significantly greater feelings of compatibility with the low attractiveness target profiles ($M = 2.51, SD = 0.87$) relative to experiencing social acceptance ($M = 2.12, SD = 0.66$), $t(78) = 2.33, p < .05$ (Figure 2).

Mediational Analyses

A bootstrap mediational analysis was conducted to test the hypothesis that state self-esteem (post-SE) mediates the association between the experience of social rejection-acceptance and aspiration levels in selecting mates. Because random assignment for pre-SE in males nearly

failed, sex was entered as a control variable at the first step in all of the following regression analysis. To increase the power of the mediational test, the more reliable global index of overall mating aspirations served as the outcome variable. The results (shown in Figure 3) confirmed a mediational model. That is, individuals who were socially accepted, compared with those who were socially rejected, experienced higher post-SE ($\beta = .40, t = 3.89, p < .001$) and higher mating aspirations ($\beta = .31, t = 2.81, p < .01$). In addition, higher post-SE was associated with significantly higher mating aspirations ($\beta = .25, t = 2.18, p < .05$). Finally, with the inclusion of post-SE in the model, the path from manipulation to mating aspirations dropped from .31 to .20 (*n.s.*), indicating partial mediation (Sobel's $z = 1.90, p = .057$). Although the test of mediation (Sobel's z) just fell short of the .05 threshold, results such as these should not be dismissed in this context (see MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher & Hayes, 2004 for a full discussion). As noted by Preacher and Hayes (2004) the p value of a standard Sobel's test assumes normality of the test distribution; however, distributions of the direct to indirect pathways are generally positively skewed, as was the case in the current analyses. Consequently, confidence intervals based on normal distributions will generally produce underpowered tests of mediation. Therefore, following Shrout and Bolger (2002), we quantified the amount of mediation in terms of the proportion of the total effect that was mediated. These calculations revealed that 33% of the total effect from the manipulation on mating aspirations was mediated by post-SE. In sum, the current results plausibly indicate partial mediation.

Summary

The main goal of Study 1 was to test the hypothesis that experiences of social acceptance-rejection influence aspiration levels in selecting mates, and that this effect is mediated by variation in state self-esteem. As predicted by the model, individuals who were socially accepted by a panel of members of the opposite sex expressed higher mating aspirations:

they rated themselves as more compatible with the highly attractive dating profiles than did individuals who were socially rejected by the panel. Conversely, individuals who were socially rejected by the panel expressed lower mating aspirations: they rated themselves as more compatible with the low attractiveness dating profiles than did individuals who were socially accepted. Further, as specified by the theory, the effect of social acceptance-rejection on overall mating aspirations was partially mediated by changes in state self-esteem. Finally, the social acceptance-rejection manipulation more strongly affected women's than men's self-esteem.

Study 2

The goals of Study 2 were to replicate the main findings from Study 1, conduct this replication using a more carefully controlled social acceptance-rejection manipulation, and extend the findings of Study 1 by conducting a test of the domain-specificity of the social acceptance-rejection effect on aspiration levels. The manipulation in Study 1, though effective, had a number of methodological limitations: the length of the interviews varied across participants (some individuals spent much more time answering questions than others); confederate behavior was not identical across participants (e.g., confederate-participant interview processes inevitably varied as a function of the participant's level of engagement and stochastic variation in confederate behavior); participants and confederates did not see each other (thus, the exchange of interpersonal information was artificially restricted); and the effects of both participants' own attractiveness and perceptions of confederate attractiveness were not measured or controlled. Further, Study 1 only tested whether being accepted-rejected in a mating context affected mating aspirations and did not assess whether the effect was domain-general (extending to other types of social aspirations) and or domain-specific (restricted to mating). The theory specifies domain-specific effects.

Study 2 addressed these limitations by shifting from live interviews with confederates to a simulated interaction paradigm, based on Simpson, Gangestad, Christen, and Leck (1999), in which participants were exposed to pre-recorded, videotaped questions from confederates. This allowed for standardization of confederate behavior across participants, measurement and control of interview length, and assessment of participants' attractiveness and their ratings of the attractiveness of confederates. In addition, to test for domain-specificity, Study 2 assessed the impact of the manipulation on both mating and friendship aspirations.

Method

Participants

One hundred and eight participants (66 male, 42 female) were recruited from the University of Canterbury through recruitment posters and emails to various undergraduate courses. The mean age of participants was 19.5 years ($SD = 2.06$ years). Ninety-three percent of the participants identified themselves as being of European origin, with the remainder predominantly Asian. Again, to increase the relevance of the mate selection exercise, participants were only included in the study if they were not currently in a long-term dating or marital relationship. Participants each received a voucher for \$7.00 for a campus café.

After running the first 25 participants, the discriminant validity instrument (friendship aspirations) was added to the study. Consequently, a reduced sample of 83 (41 males, 42 females; mean age 19.39 years, $SD = 2.09$) participated in the full discriminant validity (domain-specificity) phase of the study. There were no statistically significant differences between the initial 25 participants and the final 83 on any of the measures used in the study.

Phase One: Recruitment & Pretesting

At the time of recruitment, approximately 4 weeks before the study, participants completed the 15-item state self-esteem measure used in the post-test phase of Study 1. As with

Study 1, both the 11 items measuring state self-esteem ($M = 5.06$, $SD = .79$; $\alpha = .88$) and the 4 items measuring social inclusion ($M = 4.97$, $SD = .94$; $\alpha = .84$) demonstrated excellent reliability and were strongly correlated, $r(108) = .78$, $p < .001$. These measures were thus averaged to form a composite measure pre-test self-esteem (pre-SE).

Phase Two: Experimental Manipulation

The researcher used random assignment to allocate 54 participants to the accepted group (33 males, 21 females), and 54 participants to the rejected group (33 males, 21 females). Participants reported at staggered intervals to the waiting area and participated one at a time in the study. The cover story followed a similar format to Study 1 with a subtle change to reflect the use of pre-recorded (DVD) rather than live confederates.

Observer ratings of participant attractiveness. Upon entering the experimental lab, participants had their photograph taken and were administered a questionnaire packet containing demographic items and various personality measures. One hundred and eighty-six people (43 males, 143 females; mean age 26.27 years), who were independent of the main study, later rated these photographs on physical attractiveness on a 10-point scale (1 = not at all attractive; 10 = extremely attractive). The mean rating for the male participants was 3.64 ($SD = .87$; $\alpha = .99$) and the mean rating for the female participants was 4.35 ($SD = 1.28$; $\alpha = .99$).

Simulated interaction paradigm. Approximately 5 minutes before participants finished completing their questionnaires, the researcher ostensibly ‘checked’ their progress and informed them that he was going to check on the other participants in the study. The researcher returned approximately 5 minutes later and told the participant that three other people in the study (actually pre-recorded confederates on DVD) were going to ask him/her some questions as part of the trial for the dating service program, and that this would happen via a live video link. An

experimental script, adapted from Simpson et al. (1999), was read to the participant by the researcher, outlining the procedure (for the complete script, please refer to the online supplemental materials). The researcher then made it obviously noticeable that he was turning on a monitor and (decoy) camera situated in front of them and then left the room. Approximately 1 minute later the stimulus DVD started.

Stimuli Materials. Two DVDs were created (one with 3 male interviewers and one with 3 female interviewers) as stimulus material for the video interview. The DVDs were created so that participants would believe they were taking part in a live video interview with three other people (for a full description of the simulated interview procedure, see online supplemental materials). As in Study 1, the interviewers asked moderately disclosing personal questions. Because the goal was to expose each participant to a 6-minute interview process, questions were asked until approximately that amount of time had elapsed (mean interview length: 6:20 [$SD = 0.49$]; mean number of questions answered: 11.5 [$SD = 2.64$]).

Upon completion of the interview, the researcher re-entered the lab and made it obvious he was turning off the TV monitor and decoy video camera. The participant was given an Interview Evaluation Form (part of the cover story) and the photos of the interviewers, asking them to rate the interview process and the attractiveness of each interviewer (1 = unattractive, 7 = attractive). The three male interviewers received mean attractiveness ratings of 5.07 ($SD = 0.97$), 4.71 ($SD = 1.18$), and 5.26 ($SD = 0.96$) while the three female interviewers received mean attractiveness ratings of 4.52 ($SD = 1.17$), 5.14 ($SD = 0.94$), and 5.45 ($SD = 0.98$). Participants therefore perceived the opposite-sex interviewers as average to above average in attractiveness. The researcher informed participants that he was leaving to give the interviewers their participant incentives and let them go, returning approximately 3 minutes later carrying Dating Feedback Forms ostensibly completed by the interviewers.

Upon re-entering the room, the researcher collected the completed forms, informed the participant that the first study was complete, and that they would now start the second study. Participants then received three Dating Feedback Forms (placed underneath the Information Sheet and Consent Form for the second part of the study), with the explanation ethics required they have the opportunity to view all personal information about them, and that they be given the opportunity to see interviewer' ratings of them. The Dating Feedback Forms were exactly the same format as Study 1 and served as the social rejection-acceptance manipulation.

Phase Three: Dependent Measures

Post-manipulation state self-esteem. The researcher returned approximately two minutes later and informed participants that they would now begin the second study—how individuals use information provided by others to make dating and friendship decisions. Participants then received a 15-item post-SE measure (identical to the pre-SE measure in the current study) and were informed that as a matter of course more personality scores would be collected from them. The 11 items state self-esteem measure ($M = 4.97$, $SD = .89$; $\alpha = .93$) and the 4 items measuring social inclusion ($M = 4.75$, $SD = 1.17$; $\alpha = .91$) demonstrated excellent reliability and were strongly correlated, $r(108) = .86$, $p < .001$; these measures were thus averaged to form the overall measure of post-test self-esteem (post-SE).

Assessment of mating aspirations. Assessment of mating aspirations was the same as in Study 1. Reliability analyses were initially conducted to determine if a composite measure of the 5 questions regarding compatibility with each mating profile could be constructed. The alpha for the 5 items for each of the 12 profiles was greater than .88. The five items were therefore averaged to create composite measures of perceived mating compatibility with each profile.

Reliability analyses were then conducted to determine if the composite ratings could be combined within mate value categories to create high and low attractiveness group composites.

Women's ratings of both the 3 high mate value and 3 low mate value male profiles demonstrated good internal consistency ($\alpha s > .78$; refer to online supplemental materials); these ratings were thus combined to form composite measures of women's perceived mating compatibility with the high and low mate value male profiles, respectively. Men's ratings of the three low mate value female profiles also demonstrated good internal consistency ($\alpha = .78$) and were thus combined to form a composite measure of men's perceived mating compatibility with the low mate value female targets. Reliability analyses of men's ratings of the high mate value female profiles, however, revealed a low item-total correlation for one profile. After excluding that profile from the analyses, ratings of the two remaining high mate value profiles demonstrated adequate internal consistency ($\alpha = .68$) and thus were combined to form a composite measure of men's perceived mating compatibility with the high mate value female targets. As in Study 1, high mating aspirations was operationalized as the extent to which participants rated themselves as compatible with the high mate value target group. Conversely, low mating aspirations was operationalized as the extent to which participants rated themselves as compatible with the low mate value target group.

Ratings of compatibility with the low versus high mate value profiles were moderately negatively correlated, $r(108) = -.39, p < .001$). Thus, as in Study 1, a global index of overall mating aspirations was computed ($M = 1.74, SD = 1.53$, range = -3.00 to 4.87), with higher scores indicating higher aspirations.

Assessment of friendship aspirations. Presentation of the friendship aspirations task was counterbalanced across manipulation condition with presentation of the mating aspirations task.

The friendship aspirations program was identical to the mating aspirations program (i.e., using the same sets of photographs and personality descriptions), except that participants viewed same-sex rather than opposite-sex target profiles and answered questions about perceived compatibility with target persons in terms of friendship potential rather than mating potential. The high and low attractiveness friendship profiles served as the main dependent variables; moderate attractiveness profiles were again used as filler stimuli. Following the presentation of each profile, participants answered four questions designed to assess their perceived friendship compatibility with the target person: Realistically, does this seem like the type of person you would form a friendship with? Does this seem like the type of person you would feel comfortable interacting with? Does this seem like the kind of person you would tend to hang out with? Does this seem like the kind of person who would be interested in developing a friendship with you? (Responded to on 7-point scales; 1 = not at all, 7 = definitely.)

Reliability analyses were conducted to determine whether the 4 ratings could be merged. For each of the 12 target profiles (6 male, 6 female), the alpha reliability coefficients for the 4 items exceeded .84. The four items were thus averaged to create composite measures of perceived friendship-compatibility with each of the 12 target persons. We next examined whether these composite measures were internally consistent within category. For both males and females, ratings of the 3 high friendship value and 3 low friendship value same-sex profiles displayed adequate internal consistency reliability (α s ranged from .66 to .84; refer to the online supplemental materials). Ratings were thus averaged within category to form composite measures of (a) women's and (b) men's perceived friendship compatibility with both the low and high attractiveness same-sex profiles. To the extent that participants rated themselves as more compatible with the low attractiveness profiles, they were considered to have lower friendship

aspirations. Conversely, to the extent that participants rated themselves as more compatible with the high-attractiveness profiles, they were considered to have higher friendship aspirations.

Phase Four: Manipulation Checks and Debriefing

Procedures for the manipulation checks, suspicion probes, and debriefing followed the same format as Study 1.

Results

Participant Attractiveness

We calculated bivariate correlations to test for associations between participant attractiveness and the main independent and dependent variables. Results indicated significant associations ($p < .05$) with low mating aspirations ($r = -.30$), high friendship aspirations ($r = .33$), and pre-SE ($r = .28$). Given these associations, participant attractiveness was included as a covariate in all of the main analyses. Nonetheless, there was very little difference in the results when participant attractiveness was or was not included as a covariate.

Manipulation Checks

There was little overlap in the responses of the accepted and rejected groups to the manipulation checks. As expected, the accepted group ($M = 5.72$; $SD = 0.88$; range: 3 to 7) perceived that their information was regarded much more positively than did the rejected group ($M = 2.89$; $SD = 1.09$; range: 1 to 6), $F(1,105) = 220.44$, $p < .001$, $\eta_p^2 = .68$. Similarly, the accepted group ($M = 5.91$; $SD = 1.00$; range: 2 to 7) perceived that they were more accepted by the interviewers than did the rejected group ($M = 2.48$; $SD = 0.77$; range: 1 to 4), $F(1,105) = 316.27$, $p < .001$, $\eta_p^2 = .79$. One hundred and five of the 108 participants indicated that they were not suspicious of the feedback they received (the manipulation), with the remaining 3 indicating

they were suspicious. Analyses conducted with and without these 3 participants did not produce different results. Thus, the 3 participants were retained.

Effects of Social Acceptance-Rejection on State Self-Esteem

As with Study 1, analyses were conducted to test the prediction that individuals who were socially rejected, compared with individuals who were socially accepted, would experience decreases in post-SE. Specifically, a 2 x 2 x 2 (manipulation [rejection-acceptance] x sex x self-esteem [pre/post]) mixed model analysis of covariance (ANCOVA) was conducted, with pre/post-SE as the repeated variable and participant attractiveness as the covariate. The results indicated a main effect from the manipulation on self-esteem, with participants in the accepted group reporting significantly higher self-esteem scores on average ($M = 5.25$) than the rejected group ($M = 4.60$), $F(1,103) = 20.23$, $p < .001$, $\eta_p^2 = .16$. This main effect was as expected, superseded by a large time [pre/post] x manipulation interaction. That is, participants who were socially rejected experienced a decrease in state self-esteem (pre-SE: $M = 4.88$; post-SE: $M = 4.33$), whereas those who were socially accepted experienced an increase in state self-esteem (pre-SE: $M = 5.11$; post-SE: $M = 5.39$), $F(1,103) = 34.56$, $p < .001$, $\eta_p^2 = .25$ (Figure 4). In sum, consistent with sociometer theory, the manipulation significantly affected state self-esteem in the intended fashion.

Effects of Social Rejection-Acceptance on Mating Aspirations

Next, analyses were conducted to test the predictions that: 1) experiencing social acceptance (relative to rejection) would cause participants to raise their mating aspirations (i.e., feel more compatibility with the high attractiveness profiles); and 2) experiencing social rejection (relative to acceptance) would cause participants to lower their mating aspirations (i.e., feel more compatibility with the low attractiveness profiles). Specifically, a 2 x 2 x 2

(manipulation x sex x target profiles [high, low]) mixed model ANCOVA was conducted, with the target profiles as the repeated variable, mating aspirations as the DV, and participant attractiveness as the covariate. The results indicated a significant main effect of manipulation, $F(1,78) = 6.62, p < .05, \eta_p^2 = .08$, with participants who experienced social acceptance ($M = 3.29$) reporting feeling significantly more compatible with the full set of opposite-sex profiles (high and low averaged together) than participants who experienced social rejection ($M = 3.00$). This main effect is best interpreted in light of the significant profile attractiveness by manipulation interaction, $F(1,78) = 4.90, p = .05, \eta_p^2 = .06$ (Figure 5). Two planned comparisons were conducted to interpret the interaction. The first comparison, testing the prediction that the socially accepted participants ($M = 4.33$) would display higher mating aspirations (express more compatibility with the high attractiveness profiles) than would the socially rejected participants ($M = 3.70$), was supported, $F(1,80) = 8.58, p < .01, \eta_p^2 = .10$. The second comparison, testing the prediction that the socially rejected participants ($M = 2.30$) would display lower mating aspirations (express more compatibility with the low attractiveness profiles) than would the socially accepted participants ($M = 2.24$), was not supported, $F(1,80) = 0.14, n.s.$

Domain-Specificity of the Social Rejection-Acceptance Manipulation

The previous analyses demonstrated that being socially accepted (compared to being rejected) by opposite-sex interviewers caused participants to raise their mating aspirations. The next analyses were conducted to test explicitly for the domain-specificity of this effect. Consistent with the assumption that different sociometers are interconnected within our psychological architecture (Kirkpatrick & Ellis, 2001), preliminary analyses revealed a strong positive correlation between participants' feelings of compatibility with the highly attractive mating profiles (high mating aspirations) and highly attractive friendship profiles (high

friendship aspirations), $r(83) = .64, p < .001$. To control for this covariation, high mating aspirations was simultaneously regressed on participant attractiveness, high friendship aspirations, and the acceptance-rejection manipulation. Inclusion of participant attractiveness and high friendship aspirations in the regression equation did not alter the effect of the manipulation on high mating aspirations ($\beta = .28, t = 3.45, p < .001$), indicating that this effect was not confounded by higher-order individual differences in aspiration levels that extend across social domains.

To more formally test for domain-specificity, a 2 x 2 mixed model ANCOVA was conducted (manipulation x relationship type [high attractiveness mating profiles vs. high attractiveness friendship profiles]), with relationship type as the repeated variable, and participant attractiveness as the covariate. High aspiration levels (perceived compatibility with the high attractiveness profiles) was the DV. Because mating aspirations and friendship aspirations were measured on different scales, the aspiration measures were standardized to facilitate interpretation of Figure 6. As predicted, there was a significant manipulation by relationship type interaction, $F(1,80) = 8.42, p < .01, \eta_p^2 = .10$: participants reported substantial differences in mating aspirations following social rejection ($M_z = 0.23$) versus acceptance ($M_z = -0.38$) but little difference in levels of friendships aspirations following acceptance ($M_z = .05$) versus rejection ($M_z = -.05$) (Figure 6). This result indicates domain-specific processes in reaction to the social rejection-acceptance manipulation, with significant effects revealed for mating aspirations but not for friendship aspirations.

Mediational Analyses

Bootstrap mediational analyses were conducted to test the hypothesis that state self-esteem (post-SE) mediates the association between experiencing social rejection-acceptance and

aspirations levels in selecting potential mates, while controlling for participant attractiveness. Two separate mediational analyses were conducted: the first used the global index of overall mating aspirations (high minus low) and the second using just high mating aspirations as the criterion variable. The global index was used to account for the effects of the manipulation and changes in self-esteem on the low attractiveness profiles.

The results of both analyses confirmed a mediational model. That is, when using the global index, individuals who were socially accepted, compared to those who were socially rejected, reported significantly higher post-SE ($\beta = .53, t = 6.44, p < .001$) and higher global mating aspirations ($\beta = .20, t = 2.16, p < .05$). In addition, higher post-SE was associated with significantly higher global mating aspirations ($\beta = .38, t = 3.64, p < .001$), independent of the manipulation. Finally, with the inclusion of post-SE in the model, the path from the manipulation to global mating aspirations dropped from .20 to 0 (*n.s.*), indicating full mediation (Sobel's $z = 3.17, p < .001$). Following the procedures of Shrout and Bolger (2002), we determined that 100% of the total effect of manipulation on global mating aspirations was mediated by post-SE (Figure 7).

Analysis of the high mate value profiles produced similar results. Specifically, individuals who were socially accepted compared with those who were socially rejected, reported higher post-SE ($\beta = .53, t = 6.44, p < .001$) and greater mating aspirations ($\beta = .28, t = 2.99, p < .01$). In addition, higher post-SE was associated with significantly higher mating aspirations ($\beta = .38, t = 3.63, p < .001$), independent of the manipulation. Finally, with the inclusion of post-SE in the model, the path from the manipulation to mating aspirations dropped from .28 to .08 (*n.s.*), again indicating full mediation; Sobel's $z = 3.16, p < .01$. Following Shrout

and Bolger (2002), we determined that 72% of the total effect of the manipulation on high mating aspirations was mediated by post-SE.

General Discussion

Two studies were conducted to examine relations between experimentally manipulated social acceptance-rejection, self-esteem, and aspiration levels in approaching potential relationships. The research was designed to test components of an evolutionary model of the functions of the self-esteem system (Kirkpatrick & Ellis, 2001). According to the model, this system constitutes cognitive-affective mechanisms—sociometers—that take as input cues to one's relational value to others and produce as output both changes in affective states and corresponding behavioral strategies that function to solve the relationship problem that brought the system online. In both studies, the mating sociometer was activated by evaluation of the participant as a potential dating partner by a panel of 3 members of the opposite sex. The manipulated inputs to the system were either social acceptance or rejection by these evaluators. The measured outputs included state self-esteem and aspiration levels in approaching mating relationships and friendships. We postulated and tested for functional coordination between experiences of acceptance and rejection, changes in state self-esteem, and resultant calibration of aspiration levels in approaching specific types of relationships. The central hypothesis of this research—that experiences of acceptance-rejection in a dating context would cause changes in mating aspirations, and that these changes would be mediated by state self-esteem—was supported in both studies.

The Mating Sociometer: A Regulatory Mechanism for Mating Aspirations

In both studies, experiences of social acceptance, compared with social rejection, caused individuals to raise their mating aspirations. That is, individuals who were socially accepted by the panel of opposite-sex interviewers expressed greater feelings of romantic compatibility with

the highly attractive target profiles. In Study 2, we were able to demonstrate that this effect was not an artifact of variation between participants in observer-rated attractiveness.

In addition, in Study 1, but not Study 2, experiences of social rejection, compared with social acceptance, caused individuals to lower their mating aspirations. That is, socially rejected individuals felt more romantic compatibility with the low-attractiveness target profiles. The failure to replicate this effect in Study 2 may have been due to the overall low attractiveness of the participants (means of 3-to-4 on a 1-to-10 scale) together with the relatively high perceived attractiveness of the interviewers. Unattractive individuals are likely to inhabit a mating niche of recurring rejection and limited acceptance. A single (additional) episode of rejection by attractive members of the opposite sex may converge with previous life experiences and thus have little effect. This interpretation is consistent with the observed correlations in Study 2 between participant attractiveness and both pre-test self-esteem ($r = .28$) and perceived compatibility with low attractiveness mating profiles ($r = -.30$). Accordingly, among relatively unattractive individuals, it may be relatively difficult to move already low mating aspirations (floor effect) but relatively easy to change high mating aspirations.

In both studies, variations in post-test self-esteem functioned as an intervening mechanism through which social acceptance-rejection influenced mating aspirations. Specifically, experiences of social acceptance-rejection altered state self-esteem, which in turn guided mating aspirations. Self-esteem partially mediated the impact of social acceptance-rejection on mating aspirations in Study 1 and fully mediated it in Study 2. These results suggest that reliable links between self-esteem and self-perceived mate value (Brase & Guy, 2004; Kenrick et al., 1993; Shackelford, 2001; Todd & Miller, 1999) may constitute a functionally important mechanism for calibrating mating aspirations in response to experiences of acceptance and rejection by the opposite sex. In total, the current results replicate and extend past research:

On the one hand, the present findings replicate the well-established effect of social acceptance and rejection, or inclusion and exclusion, on state self-esteem (Buckley et al., 2004; Leary, Cottrell, & Phillips, 2001; Leary et al., 2003; Leary et al., 1995; Sommer et al., 2001; Williams et al., 2000). On the other hand, the current research breaks new ground by implicating a mediating role for self-esteem in regulating aspiration levels in approaching mating relationships—a role that has substantial implications for understanding processes of mate selection (see discussion below).

Domain-Specificity

Study 2 tested for the domain-specificity of the acceptance-rejection manipulation. Because various dimensions of self-esteem are invariably correlated (e.g., Crocker et al., 2004; Harter et al., 1998), any consideration of domain-specificity must take into account the construct of global self-esteem or self-worth. Along these lines, Kirkpatrick and Ellis (2001) proposed that different sociometers may themselves be interconnected within our psychological architecture. Consistent with this general idea, in the current research, the social acceptance-rejection manipulation caused overall changes in state self-esteem; state self-esteem correlated with observer ratings of attractiveness; and both self-esteem and attractiveness correlated with mating and friendship aspirations, which themselves were strongly intercorrelated. In short, high self-esteem, high attractiveness individuals had higher aspirations across domains.

Despite this domain-generality, rejection by members of the opposite sex in a dating context caused changes in mating aspirations but not friendship aspirations. These findings support Kirkpatrick and Ellis' (2001) evolutionary model of self-esteem, which posits the existence of a domain-specific mating sociometer, which specifically functions to calibrate levels of aspiration in pursuing sexual and romantic relationships in response to experiences of acceptance and rejection by potential mates.

Mating Aspirations: Implications and Future Directions

Mate selection is a complex process involving multiple steps, including assessment of specific cues to mate value in potential partners, processing and converting these cues into overall judgments of mate quality, and then using these judgments to search through potential mates to decide whom to pursue (Todd, 2007). This last step involves setting an aspiration level (i.e., calibrating the mating sociometer), so as not to aim too high or too low on the mating market. Setting of aspirations levels is necessary because mate search and mate choice are generally mutual: Individuals need to find and settle on each other. The fact that people generally mate with others who are similar to themselves in overall attractiveness (e.g., Feingold, 1988; Hill & Reeve, 2004; Murstein, 1986) provides prima facie evidence of this settling process.

Ellis and Kelley (1999) developed a classroom demonstration of the matching phenomenon—The Pairing Game—that provides a microcosm of the role of acceptance and rejection in mate choice. Every student is randomly assigned a number that they place on their forehead so that others can see it but the student cannot. This number represents the student's fictional mate value. The goal is to pair off with another student with as high a value as possible. Students attempt to make a pairing by extending their hand to another student, which the receiver can either accept or reject. If an offer is accepted, the students form a pair and remove themselves from the field of play. If an offer is rejected, then the search continues until a pair is successfully formed. To a large degree, individuals with the highest numbers pair off with each other first, leaving the individuals with the next highest numbers to pair off next, and so on down the line until the individuals with the lowest numbers are left to each other by default. Ellis and Kelley (1999) report that the intraclass correlation between paired values is typically around .70, indicating a high degree of matching on numeric value. In addition, at the end of the game, students attempt to guess their own number before looking at it. Ellis and Kelley (1999) report

that they typically obtain a correlation of about .65 between students' estimates and actual assigned values. This correlation indicates that students, through experiences of acceptance and rejection playing the game, are able to infer their own values with reasonable accuracy.

Extrapolating from these results, Ellis and Kelley (1999) suggested that experiences of acceptance and rejection foster development of realistic self-perceptions that may hasten the matching process by guiding individuals toward obtainable partners. Kirkpatrick and Ellis (2001) later formalized and expanded this concept in their theory of the mating sociometer. Consistent with Kirkpatrick and Ellis (2001), the current research demonstrated that experiences of social acceptance and rejection do calibrate self-appraisals and mating aspirations. According to the theory, these calibrations function to guide individuals toward potential mates whose value is comparable to their own (i.e., mates who can realistically be obtained and defended). Individuals whose aspirations are too high should be corrected by rejecting feedback from potential mates, whereas individuals whose aspirations are too low should be corrected by accepting feedback. The current research suggests that these corrections are mediated by alterations in self-esteem.

Perhaps the most pressing agenda for future research is production of a high-resolution map of the specific self-evaluations and self-feelings that mediate the impact of social acceptances and rejections on aspiration levels. The current research employed a global measure of state self-esteem. Consistent with sociometer theory, the Resultant Self-Esteem Scale (McFarland & Ross, 1982) was virtually indistinguishable from a perceived social acceptance scale. These two measures were thus combined into an overall measure of state self-esteem that was used in the analyses. Although this global measure worked in the mediational analyses, a strong test of domain-specificity would involve demonstrating that different types of social acceptance-rejection (e.g., by potential mates in a dating context vs. same-sex peers in a friendship context) cause qualitatively different self-evaluations and feelings, which in turn guide

domain-specific aspiration levels (e.g., mating aspirations vs. friendship aspirations). The current research only addressed part of this puzzle, showing that acceptance-rejection by opposite-sex interviewers in a dating context affected mating aspirations but not friendship aspirations. It would be especially valuable in future research to expose participants, in a single study, to different types of social acceptance-rejection and measure different types of self-esteem and social aspirations. Along these lines, Kirkpatrick, Webster, and colleagues (Kirkpatrick, Waugh, Valencia, & Webster, 2002; Webster & Kirkpatrick, 2006) have shown that domain-specific measures of self-esteem are more useful in predicting aggression than is a single, global measure of self-esteem. We expect that domain-specific measures of self-esteem would also be more diagnostic of social aspiration levels, as well as being more sensitive to different types of social acceptance-rejection.

Conclusion

Experiences of social exclusion and rejection have a powerful impact on human psychology and behavior, ranging from activation of biological stress responses (Blackhart, Eckel, & Tice, 2007) to induction of psychological states resembling physical pain (Eisenberger, Lieberman, & Williams, 2003; MacDonald & Leary, 2005) to increases in anger and aggression (Leary, Twenge, & Quinlivan, 2006) to decreases in prosocial behavior (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007) to increased attempts to forge new social bonds (Maner, DeWall, Baumeister, & Schaller, 2007). This last finding is particularly relevant because it highlights an organized, functional behavioral response to the problem of interpersonal rejection. Similarly, the current research suggests that experiences of acceptance and rejection by potential mates provide input to the mating sociometer, which functions to guide aspiration levels in selecting mates. By coordinating self-perceptions of mate value with personal histories of

acceptance and rejection, the mating sociometer may play an important role in development and targeting of mating strategies.

References

- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28(2), 117-148.
- Blackhart, G. C., Eckel, L. A., & Tice, D. M. (2007). Salivary cortisol in response to acute social rejection and acceptance by peers. *Biological Psychology*, 75(3), 267-276.
- Brase, G. L., & Guy, E. C. (2004). The demographics of mate value and self-esteem. *Personality and Individual Differences*, 36(2), 471-484.
- Buckley, K. E., Winkel, R. E., & Leary, M. R. (2004). Reactions to acceptance and rejection: Effects of level and sequence of relational evaluation. *Journal of Experimental Social Psychology*, 40(1), 14-28.
- Buston, P. M., & Emlen, S. T. (2003). Cognitive processes underlying human mate choice: The relationship between self-perception and mate preference in Western society. *Proceedings of the National Academy of Sciences of the United States of America*, 100(15), 8805-8810.
- Cooley, C. H. (1902). *Human nature and the social order*. New York: Scribner.
- Crocker, J. (2002). Contingencies of self-worth: Implications for self-regulation and psychological vulnerability. *Self and Identity. Special Issue: Self and identity*, 1(2), 143-149.
- Crocker, J., Luhtanen, R. K., & Sommers, S. R. (2004). Contingencies of self-worth: Progress and prospects. *European Review of Social Psychology*, 15, 133-181.

- Crocker, J., & Wolfe, C. T. (2001). Contingencies of self-worth. *Psychological Review*, 108(3), 593-623.
- Dawkins, R. (1982). *The extended phenotype: The gene as the unit of selection*. San Francisco: W.H. Freeman & Company.
- Eisenberger, N. I., Lieberman, M. D., & Williams, K. D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science*, 302(5643), 290-292.
- Ellis, B. J., & Kelley, H. H. (1999). The pairing game: A classroom demonstration of the matching phenomenon. *Teaching of Psychology*, 26(2), 118-121.
- Feather, N. T. (Ed.). (1982). *Expectations and actions: Expectancy-value models in psychology*. Hillsdale, NJ: Erlbaum.
- Feingold, A. (1988). Matching for attractiveness in romantic partners and same-sex friends: A meta-analysis and theoretical critique. *Psychological Bulletin*, 104(2), 226-235.
- Harter, S., Waters, P., & Whitesell, N. R. (1998). Relational self-worth: Differences in perceived worth as a person across interpersonal contexts among adolescents. *Child Development*, 69(3), 756-766.
- Hill, S. E., & Buss, D. M. (2006). The evolution of self-esteem. In M. H. Kernis (Ed.), *Self-esteem issues and answers: A sourcebook of current perspectives* (pp. 328-333). New York, NY: Psychology Press.
- Hill, S. E., & Reeve, H. K. (2004). Mating games: The evolution of human mating transactions. *Behavioral Ecology*, 15(5), 748-756.
- Kenrick, D. T., Groth, G. E., Trost, M. R., & Sadalla, E. K. (1993). Integrating evolutionary and social exchange perspectives on relationships: Effects of gender, self-appraisal, and

- involvement level on mate selection criteria. *Journal of Personality and Social Psychology*, 64(6), 951-969.
- Kenrick, D. T., Neuberg, S. L., Zierk, K. L., & Krones, J. M. (1994). Evolution and social cognition: Contrast effects as a function of sex, dominance, and physical attractiveness. *Personality and Social Psychology Bulletin*, 20(2), 210-217.
- Kirkpatrick, L. A., & Ellis, B. J. (2001). An evolutionary-psychological approach to self-esteem: multiple domains and multiple functions. In G. J. O. Fletcher & M. S. Clark (Eds.), *Blackwell handbook of social psychology: Interpersonal processes* (pp. 411-436). Oxford, UK: Blackwell Publishers.
- Kirkpatrick, L. A., & Ellis, B. J. (2006). The adaptive functions of self-evaluative psychological mechanisms. In M. H. Kernis (Ed.), *Self-esteem issues and answers: A sourcebook of current perspectives* (pp. 334-339). New York, NY, US: Psychology Press.
- Kirkpatrick, L. A., Waugh, C. E., Valencia, A., & Webster, G. D. (2002). The functional domain specificity of self-esteem and the differential prediction of aggression. *Journal of Personality and Social Psychology*, 82(5), 756-767.
- Kurzban, R., & Leary, M. R. (2001). Evolutionary origins of stigmatism: The function of social exclusion. *Psychological Bulletin*, 127, 187-208.
- Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 32, pp. 1-62). San Diego, CA: Academic Press.

- Leary, M. R., Cottrell, C. A., & Phillips, M. (2001). Deconfounding the effects of dominance and social acceptance on self-esteem. *Journal of Personality and Social Psychology*, 81(5), 898-909.
- Leary, M. R., & Downs, D. L. (1995). Interpersonal functions of the self-esteem motive: The self-esteem system as a sociometer. In M. H. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 123-144). New York: Plenum Press.
- Leary, M. R., Gallagher, B., Fors, E., Buttermore, N., Baldwin, E., Kennedy, K., et al. (2003). The invalidity of disclaimers about the effects of social feedback on self-esteem. *Personality & Social Psychology Bulletin*, 29(5), 623-636.
- Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, 68(3), 518-530.
- Leary, M. R., Twenge, J. M., & Quinlivan, E. (2006). Interpersonal rejection as a determinant of anger and aggression. *Personality and Social Psychology Review*, 10(2), 111-132.
- Li, N. P., Bailey, J. M., Kenrick, D. T., & Linsenmeier, J. A. W. (2002). The necessities and luxuries of mate preferences: Testing the tradeoffs. *Journal of Personality and Social Psychology*, 82(6), 947-955.
- Li, N. P., & Kenrick, D. T. (2006). Sex similarities and differences in preferences for short-term mates: What, whether, and why. *Journal of Personality and Social Psychology*, 90(3), 468-489.
- MacDonald, G., & Leary, M. R. (2005). Why does social exclusion hurt? The relationship between social and physical pain. *Psychological Bulletin*, 131(2), 202-223.

- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, 7(1), 83-104.
- Maner, J. K., DeWall, C. N., Baumeister, R. F., & Schaller, M. (2007). Does social exclusion motivate interpersonal reconnection? Resolving the "porcupine problem". *Journal of Personality and Social Psychology*, 92(1), 42-55.
- McFarland, C., & Ross, M. (1982). Impact of causal attributions on affective reactions to success and failure. *Journal of Personality and Social Psychology*, 43(5), 937-946.
- Murstein, B. L. (1986). *Paths to marriage*. Newbury Park, CA: Sage.
- Pawlowski, B., & Dunbar, R. I. (1999). Impact of market value on human mate choice decisions. *Proceedings of The Royal Society in London, Series B*, 266(1416), 281-285.
- Penke, L., Todd, P. M., Lenton, A. P., & Fasolo, B. (2008). How self-assessments can guide human mating decisions. In G. Geher & G. F. Miller (Eds.), *Mating intelligence: Sex, relationships, and the mind's reproductive system* (pp. 37-75). New York: Lawrence Erlbaum Associates.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments & Computers*, 36(4), 717-731.
- Regan, P. C. (1998a). Minimum mate selection standards as a function of perceived mate value, relationship context, and gender. *Journal of Psychology & Human Sexuality*, 10(1), 53-73.

- Regan, P. C. (1998b). What if you can't get what you want? Willingness to compromise ideal mate selection standards as a function of sex, mate value, and relationship context. *Personality & Social Psychology Bulletin*, 24(12), 1294-1303.
- Rosenberg, M. (1979). *Conceiving the self*. New York: Basic.
- Shackelford, T. K. (2001). Self-esteem in marriage. *Personality & Individual Differences*, 30(3), 371-390.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7(4), 422-445.
- Simpson, J. A., Gangestad, S. W., Christensen, P. N., & Leck, K. (1999). Fluctuating asymmetry, sociosexuality, and intrasexual competitive tactics. *Journal of Personality and Social Psychology*, 76(1), 159-172.
- Sommer, K. L., Williams, K. D., Ciarocco, N. J., & Baumeister, R. F. (2001). When silence speaks louder than words: Explorations into the intrapsychic and interpersonal consequences of social ostracism. *Basic & Applied Social Psychology*, 23(4), 225-243.
- Todd, P. M. (2007). Coevolved cognitive mechanisms in mate search: Making decisions in a decision-shaped world. In J. P. Forgas, M. G. Haselton & W. von Hippel (Eds.), *Evolution and the social mind: Evolutionary psychology and social cognition* (pp. 145-159). New York: Psychology Press.
- Todd, P. M., & Miller, G. F. (1999). From pride and prejudice to persuasion: Satisficing in mate search. In G. Gigerenzer, P. M. Todd & the ABC Research Group (Eds.), *Simple heuristics that make us smart* (pp. 287-308). New York: Oxford University Press.

- Tooby, J., & DeVore, I. (1987). The reconstruction of hominid behavioral evolution through strategic modeling. In W. G. Kinzey (Ed.), *The evolution of human behavior: Primate models* (pp. 183-237). Albany: State University of New York Press.
- Twenge, J. M., Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Bartels, J. M. (2007). Social exclusion decreases prosocial behavior. *Journal of Personality and Social Psychology*, 92(1), 56-66.
- Webster, G. D., & Kirkpatrick, L. A. (2006). Behavioral and self-reported aggression as a function of domain-specific self-esteem. *Aggressive Behavior*, 32(1), 17-27.
- Williams, K. D. (2007). Ostracism. *Annual Review of Psychology*, 58, 425-452.
- Williams, K. D., Cheung, C. K. T., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the Internet. *Journal of Personality and Social Psychology*, 79(5), 748-762.
- Wright, R. (1994). *The moral animal: The new science of evolutionary psychology*. New York: Pantheon Books.

Figures

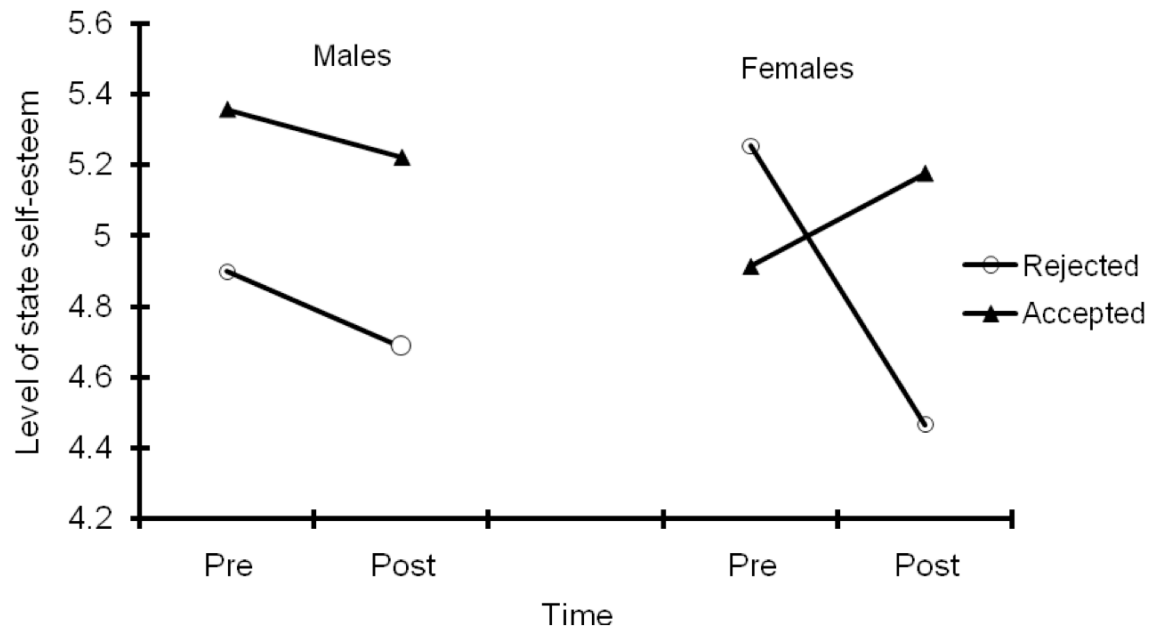


Figure 1: Effects of social rejection-acceptance manipulation on state self-esteem (Study 1). Pre (pre-manipulation); post (post-manipulation)

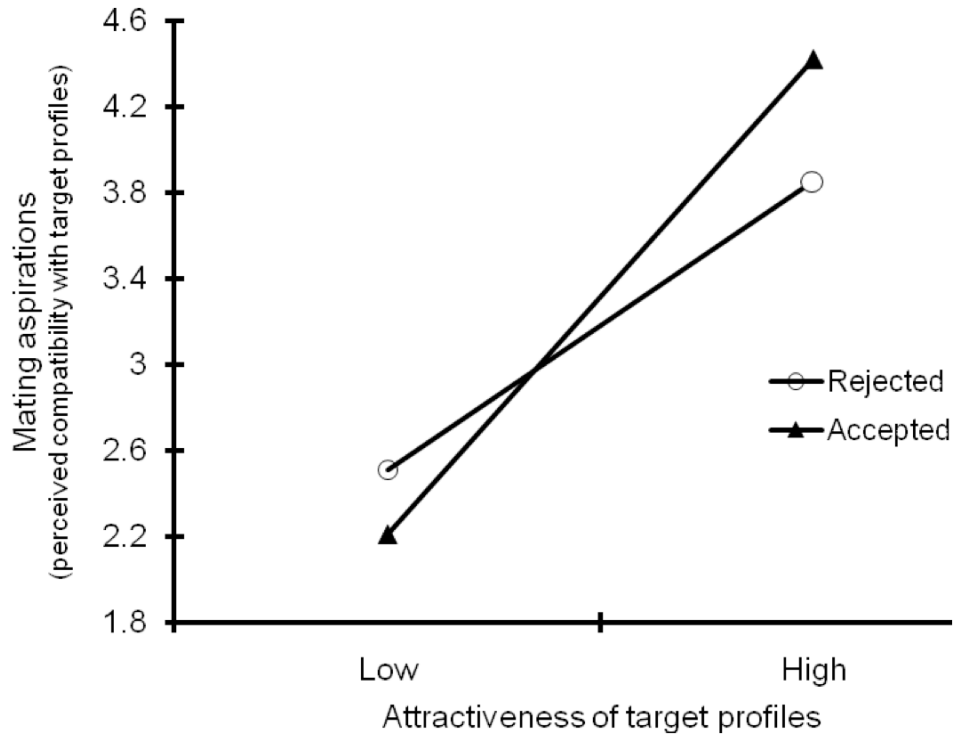


Figure 2: Effects of social rejection-acceptance manipulation on mating aspirations (Study 1).

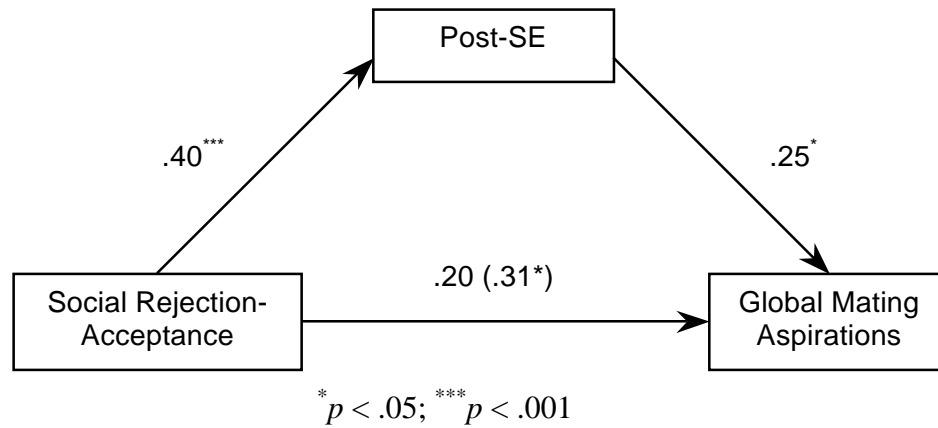


Figure 3: State self-esteem partially mediates the effect of social rejection-acceptance on global mating aspirations (Study 1).

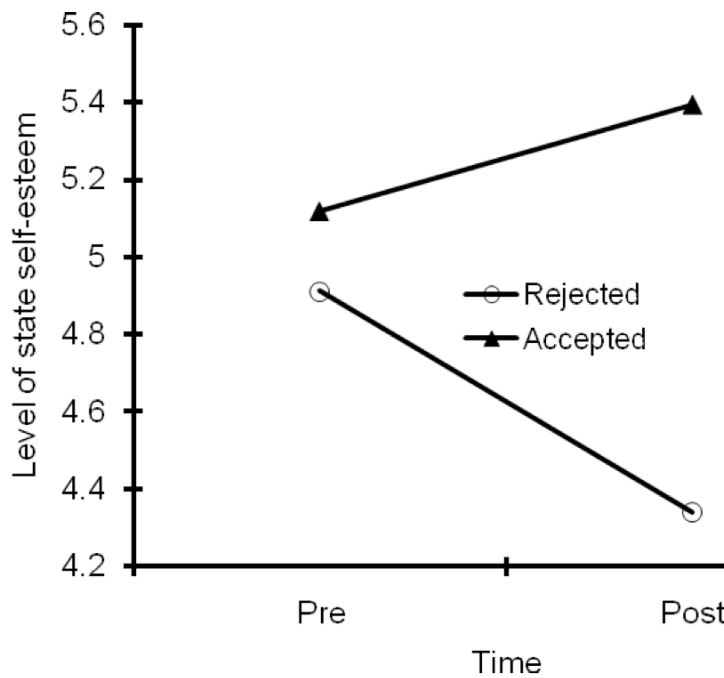


Figure 4: Effects of social rejection-acceptance manipulation on state self-esteem (Study 2). Pre (pre-manipulation); post (post-manipulation)

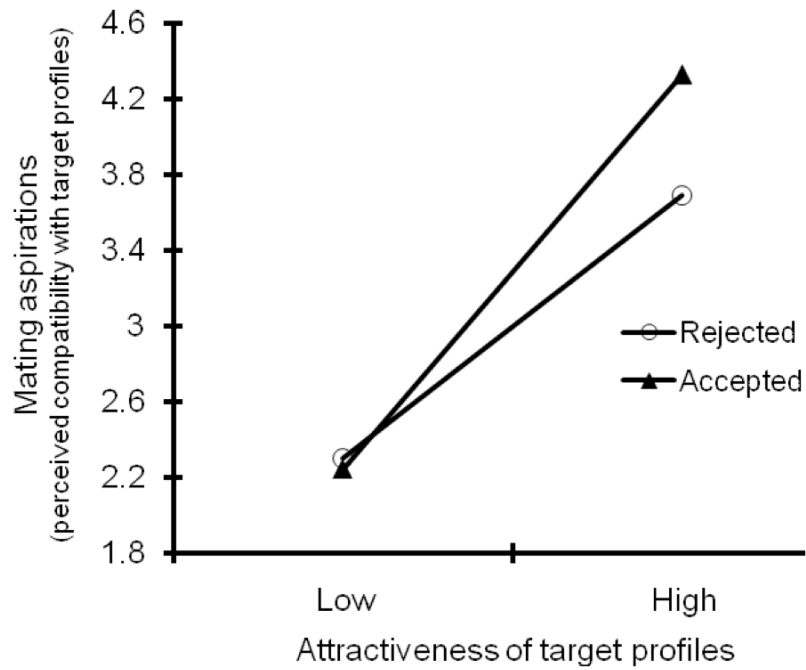


Figure 5: Effects of social rejection-acceptance manipulation on mating aspirations (Study 2).

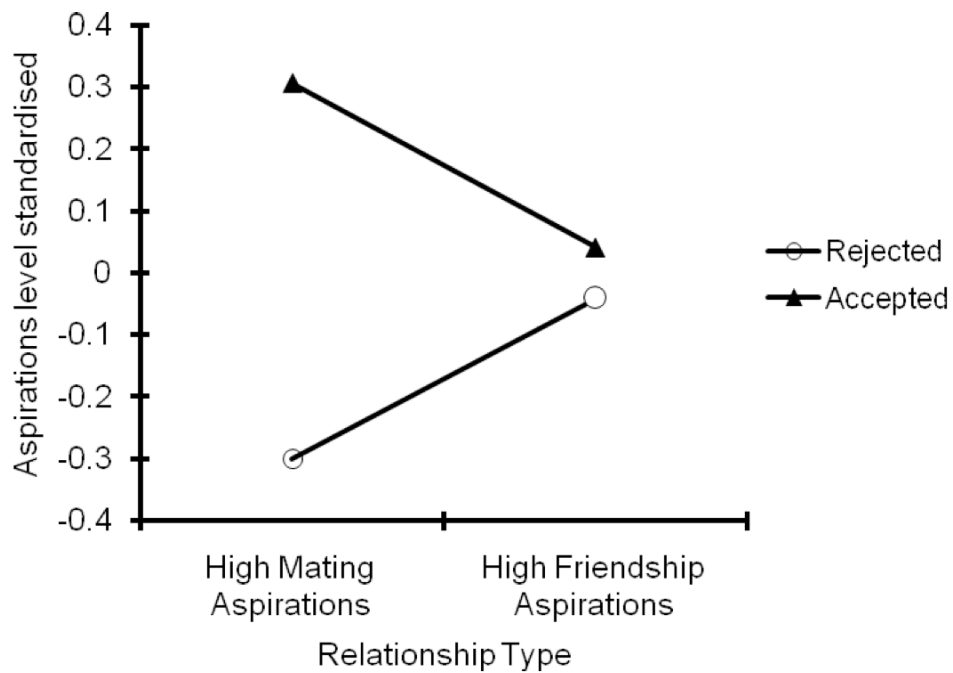


Figure 6: Effects of social rejection-acceptance manipulation on high mating versus high friendship aspirations (Study 2).

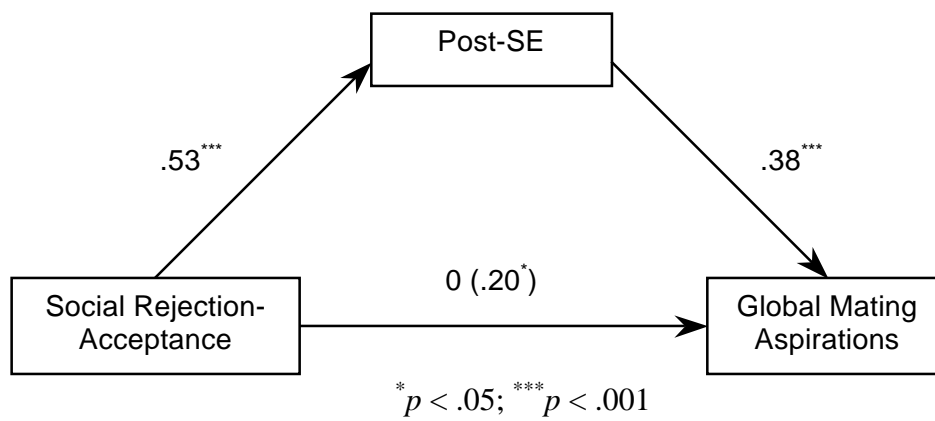


Figure 7: State self-esteem fully mediates the effect of social rejection-acceptance on global mating aspirations (Study 2).