The effect of mate value feedback on women’s mating aspirations and mate preference

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1. Introduction

Many, if not all, patterns in thought and behavior have likely evolved because they conferred an adaptive advantage that increased the frequency of the organism’s genetic material in the population in the evolutionary past (e.g., Tooby & Cosmides, 1990). Therefore, mate preferences can be viewed as adaptations that should promote successful reproduction and there is likely an evolved adaptive advantage underlying anything that is generally found attractive. The Immunocompetence Handicap Hypothesis (Folstad & Karter, 1992) theorizes that sexually dimorphic (i.e., masculine) traits in men are likely an honest indicator of health, as testosterone actively suppresses the immune system so that only healthy males can afford to develop prominent masculine traits. Indeed, women typically prefer a male face that is more masculine than average (Johnston, Hagel, Franklin, Fink, & Grammer, 2001; but see discussion in DeBruine, Jones, Crawford, Welling, & Little, 2010). Facial sexual dimorphism also occurs in its coloration (Rowland & Perrett, 1995). Compared to men, women tend to have darker eyes and lips relative to the rest of their face (i.e., higher contrast), and male faces with lower contrast are rated more attractive (Russell, 2009). There is also significant sexual dimorphism in body composition characterized by lower body fat and higher muscle mass among men (e.g., Kirchengast, 2010), a greater discrepancy between the measurements of the waist and hips (i.e., waist-to-hip ratio [WHR]) of women relative to men, and a greater difference between the chest/shoulders and hips/waist (waist-to-chest ratio [WCR] or shoulder-hip-ratio [SHR], respectively) of men relative to women (e.g., Braun & Bryan, 2006).

In addition to considering sexually dimorphic traits when evaluating a potential partner, people consider other personal qualities. Although physical attractiveness is a particularly important trait in a partner for men and status/resources is particularly important for women, kindness and intelligence are reported as necessary traits in a partner for both sexes (Edlund & Sagarin, 2010; Li, Bailey, Kenrick, & Linsenmeier, 2002). The most recent and arguably most extensive attempt at formulating a taxonomy of mate preference traits was conducted by Schwarz and Hassebrauck (2012). Using a participant pool of nearly 24,000 adults between the ages of 18 and 65, these authors established 12 areas of mate preference that encompass both physical (e.g., attractiveness) and personal (e.g., reliability) traits. Thus, both physical and personal characteristics are prized in a potential partner and influence evaluation of their overall value as a mate.

A person’s mate value can be theoretically surmised as the sum of the “values” of each of their mating-relevant qualities. In real-world situations, individuals tend to mate with someone of a similar mate value to themselves (Russ, 2009). This pattern of mating has been well-established for physical attractiveness, known as the matching principle (e.g., Berscheid, Dion, Walster, & Walster, 1971). Certainly, although people tend to desire highly attractive partners, mate selection is constrained by a person’s own attractiveness (e.g., Van Straaten, Engels, Finkenauer, & Holland, 2009). However, mating patterns found...
in humans may largely be a product of tradeoffs between different, but comparatively valued, sex-linked qualities that lead to a pattern of matching based on overall mate value (Buss & Barnes, 1986). For instance, physical attractiveness in women can sometimes be seen to be “matched” to financial resources in men (reviewed in Buss, 2009). Ellis and Kelley (1999) randomly assigned participants a number to represent their mate value and placed this number on their forehead so it was unknown to them but visible to other participants. The participants’ goal was to wordlessly pair with another participant with as high a “mate value” as possible. There was a high correlation between paired values, suggesting that the experiences of acceptance and rejection within the game causes participants to match according to assigned mate value.

Mate value is a relatively stable individual difference variable, with one study finding that 72.25% of the initial variance in self-perceived mate value could be accounted for at re-test a month later (Edlund & Sagarin, 2014). However, like most psychological individual difference variables — such as personality (e.g., Chaplin, John, & Goldberg, 1988), anxiety (Spielberger, 2010), self-esteem (Heatherton & Polivy, 1991), and financial satisfaction (Nelson & Morrison, 2005) — there is also a clear state component with room for a significant shift in self-perception. Indeed, self-perceived mate value can be temporarily influenced by cues and feedback from the environment. For example, researchers have successfully lowered participants’ self-perceived mate value from opposite-sex rejection cues via a scene-priming task (Zhang, Liu, Li, & Ruan, 2015) and through false feedback in a speed-dating paradigm (Ruan & Zhang, 2012; Zhang et al., 2015). This research shows that opposite-sex rejection has a unique impact on self-perceived mate value, given that a comparable same-sex rejection prime did not impact self-perceived mate value, although both same-sex and opposite-sex rejection influenced perception of social acceptance.

Human evolution likely involved managing “tradeoffs” during mate selection with the aim of selecting an attainable mate that will most increase the individual’s reproductive success. In line with a domain-specific model of human cognitive mechanisms, Kirkpatrick and Ellis (2001) proposed a mating sociometer (among other domain-specific sociometers) overlying the mechanisms that drive matching, whereby humans adaptively calibrate their mating aspirations in line with their mate value by establishing a compromise between ideal mates and realistic/attainable mates. Those who invest too heavily in partners of lower value than what they are capable of attracting are at an evolutionary disadvantage as they fail to achieve a fair return relative to the value that they contribute to a relationship. Likewise, people who ineffectively pursue individuals of higher mate value than what they can realistically attain are similarly at a disadvantage.

Sociometer theory proposes that self-esteem evolved as multifaceted regulatory systems aimed at enabling people to form and maintain beneficial relationships by monitoring the world for cues that are relevant to social domains (e.g., Kavanagh & Scrutton, 2015). The sociometer systems can be conceptualized as a cluster of domain-specific gauges of social functioning. There is some debate on the number of sociometer systems (Kavanagh & Scrutton, 2015), but a devoted mating sociometer is likely given the direct link between mating and reproductive success. Indeed, experimentally induced experiences of rejection or acceptance by attractive opposite-sex confederates influences mating aspirations (Kavanagh, Robins, & Ellis, 2010), and relationship satisfaction and commitment among partnered participants (Kavanagh, Fletcher, & Ellis, 2014), but does not influence friendship aspirations/dedication. These effects are mediated by changes in state self-esteem, which is supportive of an underlying sociometer system. Furthermore, the significant drop in self-perceived mate value after a mate-rejection prime is mediated by a drop in general self-esteem (Ruan & Zhang, 2012). Thus, a mating sociometer appears to be somewhat distinct from a more general social inclusion sociometer, under the broad umbrella of global self-esteem.

The present study will focus on the interplay between mate value relevant feedback, mating aspirations, and mate preferences in women. As women are limited in the number of offspring they can produce in their lifetime by the biological commitment required (e.g., nine months of pregnancy, childbirth, up to four years of lactation; Trivers, 1972), the adaptive costs of pursuing inappropriate mating opportunities are implicitly greater than for men and so the effective calibration of mating aspirations are arguably more crucial to women’s reproductive success. The present study aims to assess the influence of acceptance versus rejection cues (supposedly from members of the opposite-sex) on preferences for sexually dimorphic traits in faces (shape and coloration) and bodies (WCR and muscle mass), and on preferences for traits outlined in Schwarz and Hassebrauck’s (2012) taxonomy.

2. Method

2.1. Participants

Heterosexual adult women (N = 66) were recruited from a large public university in the United States in return for course credit. Two participants were excluded for correctly identifying the deception (see below) and one participant was removed for biased responding (i.e., selecting the mid-point response for every item), leaving a total of 63 participants (49.2% Caucasian, 38.1% Black, 12.7% Hispanic; Age: M = 19.65 years, SD = 1.53, range: 18–24).

2.2. Procedure

The participants were told that the purpose of the research was to imitate the experience of online dating in a controlled experiment with the aim being to investigate the effect of various traits, attitudes, and preferences on the quality of interaction between two opposite-sex people. Participants created a short online profile that would ostensibly be viewed and rated by a group of male participants on dating desirability. They were led to believe that they would later take part in a short conversation with one of these men in an online chat room via a web-cam and would be asked to provide feedback on this interaction. However, there was actually no group of male participants.

To create the fake online profile, a digital photograph was taken of each participant in a natural pose using a Logitech V9000 camera at the beginning of the study and immediately uploaded into a blank online profile. This profile asked participants to report their age, height, and weight, and to comment on subjects typical of dating website profiles (“What are your interests?,” “What are your hobbies?,” “What are your plans for the future?” and “What personality traits and personal qualities do you have that would make you a good person to date?”). Participants were asked not to reveal any other personal information like their name, address, school, or marital/relationship status.

Next, participants were asked to complete some filler tasks (e.g., personality questionnaires) that were not analyzed. After “submitting” the questionnaires on the computer, participants received the following message: “An ERROR has occurred! Please contact the researcher.” When summoned, the researcher navigated to a new survey under the guise of finding the source of the error. After taking a moment as if to consider the bogus error report, the researcher then recited one of three scripts: (1) the rejection condition where participants were told that the error occurred because all the men who had viewed their profile had rated them particularly low, (2) the acceptance condition where participants were told that all men had rated them particularly high, or (3) the control condition where participants were told that the error message was just a glitch.

Following the experimental manipulation, participants were asked to complete a manipulation check and mate preference measures, including a mate preference inventory (Schwarz & Hassebrauck, 2012), a face preference task, and a body preference task. The manipulation
check consisted of four items: Two concerned typical feelings of rejection/acceptance (“I often feel rejected [accepted] by members of the opposite-sex”) and the other two concerned current feelings of rejection/acceptance (“I feel rejected [accepted] by members of the opposite-sex now”) with agreement ratings made on a 7-point scale from −3 (Strongly Disagree) to +3 (Strongly Agree). Rejection items were reverse coded to compute a Rejection-Acceptance score where negative numbers indicate feelings of rejection and positive numbers indicate feelings of acceptance. Schwarz and Hassebrauck’s measure of mate preferences includes 64 items that tap into 12 traits used to evaluate potential mates: Kind and Understanding, Dominant, Pleasant, Intellectual, Wealthy, Physically Attractive, Cultivated, Humorous, Sociable, Creative and Domestic, Reliable, and Similar Ideals/Interests (α range = 0.56–0.86). Ratings of importance were made on a 9-point scale from −4 (Extremely important that they DO NOT have this characteristic) to +4 (Extremely important that they have this characteristic).

For the preference tasks, participants were presented with two picture matrices depicting physical aspects of a person of the opposite-sex (for details, see Reeve, Kelly, & Welling, 2016). The matrices contain (1) 25 male body types and (2) 25 male face types (see Figs. 1 and 2, respectively). Each set of stimuli varied on two dimensions through five increments (a 5 × 5 matrix): Body stimuli vary on WCR and muscle

Fig. 1. Male body type stimuli presented to participants, which vary in waist-to-shoulder ratio (by row) and muscle mass (by column).
mass; face stimuli varied on shape (more masculine to more feminine) and coloration (lighter to darker eyes, lips, and cheeks relative to skin tone). Participants were instructed to review each matrix and select their preferred top three. Finally, participants were screened for suspicion and fully debriefed on the true purpose of the study.

3. Results

3.1. Manipulation check

To calculate a Rejection-Acceptance score for each participant, the two similar typical acceptance/rejection and the two similar current acceptance/rejection items were averaged separately and a difference score was calculated whereby negative number indicate feeling more rejected than usual and positive numbers indicate feeling more accepted than usual. A one-way ANOVA was conducted on the measure of Rejection-Acceptance across feedback conditions, revealing a significant main effect of feedback condition, \( F(2, 60) = 3.47, p = 0.04, \eta^2_p = 0.10 \). Pairwise comparisons indicated that reported feelings of acceptance were signifi-
cantly lower among participants in the rejection condition \( (M = 1.19, SD = 1.94, p = 0.01) \), with neither the rejected \( (p = 0.41) \) nor accepted \( (p = 0.09) \) group being significantly different from the control group \( (M = 0.38, SD = 1.20) \).

3.2. Mate preference

First, a composite based on the mean of all Schwarz and Hassebrauck’s (2012) mate preference areas was computed to obtain a broad estimate of overall Choosiness. An ANOVA, revealed a significant main effect of experimental condition, \( F(2, 60) = 5.42, p < 0.01, \eta^2_p = 0.15 \), whereby participants in the rejection condition were significantly less choosy \( (M = 2.13, SD = 0.90) \) than participants in the control \( (M = 2.73, SD = 0.57, p < 0.01) \) and acceptance \( (M = 2.73, SD = 0.51 \ p < 0.01) \) conditions. There was no significant difference between the control and acceptance conditions \( (p = 0.99) \). Next, a MANOVA was conducted, with each of the 12 mate preference areas from Schwarz and Hassebrauck’s questionnaire, revealing a significant multivariate effect of condition on mate preference, \( \Theta = 0.57, F(12, 50) = 2.37, p = 0.02, \eta^2_p = 0.36 \). A series of 12 ANOVAs were then conducted as follow-up tests (see Table 1, means are shown in Fig. 3). To control for multiple comparisons, we applied a Bonferroni correction and set the critical \( p \)-value at \( p < 0.004 \). Rejected participants reported significantly lower importance for the Cultivated area of mate preference than control or accepted participants, \( F(2, 61) = 7.45, p = 0.001, \eta^2_p = 0.20 \). No other areas of mate preference yielded a significant result after the Bonferroni correction \( (p > 0.004) \). However, several other traits were significant before Bonferroni correction, including Similar Ideals/Interests \( (p = 0.006) \), Sociable \( (p = 0.01) \), Intellectual \( (p = 0.02) \),

<table>
<thead>
<tr>
<th>Trait</th>
<th>Rejection</th>
<th>Control</th>
<th>Acceptance</th>
<th>( F )</th>
<th>( p )</th>
<th>( \eta^2_p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultivated</td>
<td>1.97a</td>
<td>2.73b</td>
<td>2.78b</td>
<td>7.45</td>
<td>0.001</td>
<td>0.20</td>
</tr>
<tr>
<td>Similar</td>
<td>2.08a</td>
<td>2.98b</td>
<td>2.95b</td>
<td>5.56</td>
<td>0.006</td>
<td>0.16</td>
</tr>
<tr>
<td>Sociable</td>
<td>2.01a</td>
<td>2.81b</td>
<td>2.69b</td>
<td>4.58</td>
<td>0.01</td>
<td>0.13</td>
</tr>
<tr>
<td>Intellectual</td>
<td>2.29a</td>
<td>2.94b</td>
<td>2.95b</td>
<td>4.44</td>
<td>0.02</td>
<td>0.13</td>
</tr>
<tr>
<td>Physical Attractiveness</td>
<td>1.61a</td>
<td>2.41b</td>
<td>2.35b</td>
<td>4.08</td>
<td>0.02</td>
<td>0.12</td>
</tr>
<tr>
<td>Pleasant</td>
<td>2.69a</td>
<td>3.13b</td>
<td>3.36b</td>
<td>3.91</td>
<td>0.03</td>
<td>0.12</td>
</tr>
<tr>
<td>Kind and Understanding</td>
<td>2.44a</td>
<td>2.95b</td>
<td>3.07b</td>
<td>3.19</td>
<td>0.05</td>
<td>0.10</td>
</tr>
<tr>
<td>Wealthy</td>
<td>0.98a,b</td>
<td>1.77ab</td>
<td>1.52b</td>
<td>3.17</td>
<td>0.05</td>
<td>0.10</td>
</tr>
<tr>
<td>Reliable</td>
<td>3.25a,b</td>
<td>3.56b</td>
<td>3.73b</td>
<td>2.33</td>
<td>0.11</td>
<td>0.07</td>
</tr>
<tr>
<td>Dominant</td>
<td>2.22a,b</td>
<td>2.75b</td>
<td>2.57b</td>
<td>1.99</td>
<td>0.15</td>
<td>0.06</td>
</tr>
<tr>
<td>Humorous</td>
<td>2.47a</td>
<td>2.89b</td>
<td>3.00b</td>
<td>1.76</td>
<td>0.18</td>
<td>0.06</td>
</tr>
<tr>
<td>Creative and Domestic</td>
<td>1.23a</td>
<td>1.58b</td>
<td>1.64b</td>
<td>0.72</td>
<td>0.49</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Note: Subscripts refer to pairwise comparisons within a row. Means with different subscripts are significantly different from one another \( (p < 0.05, \text{Tukey’s LSD test}) \).
3.3. Physical mate preference tasks

A series of four ANCOVAs (controlling for the other dimension within each matrix; e.g., Masculine Facial Coloration was controlled for in the analysis on Masculine Facial Shape) on each of the four physical masculinity dimensions (Masculine Facial Shape, Masculine Facial Coloration, Body Muscle Mass, and Body WCR) were conducted. There was a main effect of Masculine Facial Shape, F(2, 61) = 3.16, p = 0.04, η²p = 0.11, whereby acceptance condition participants had higher preferences for facial masculinity than control and rejection condition participants (see Table 2). There were no other significant effects (all p > 0.41).

4. Discussion

By constructing a situation of mate value relevant feedback through acceptance or rejection cues supposedly from opposite-sex individuals in the specific context of dating, the present study was able to investigate the influence of a mate value relevant experience under controlled conditions. Overall, participants who received a rejection cue were significantly less selective than acceptance or control condition participants when rating the importance of a diverse selection of mate preference areas. In line with the concept of a mating sociometer (e.g., Kavanagh & Scrutton, 2015; Kirkpatrick & Ellis, 2001), this suggests that rejected participants may have adjusted their perception of their own mate value and strategically lowered their mating aspirations accordingly. Previous research has shown that rejection produces higher perceived compatibility with a less attractive target (e.g., Peters, Simmons, & Rhodes, 2008) and infidelity (Booth & Dabbs, 1993). Taken together, when considering a more masculine potential mate, women are required to make a tradeoff between the genetic advantages and the potential for lower investment.

Why, then, would women who receive an acceptance cue be more inclined towards the potential genetic advantages of masculinity? Women may follow a condition-dependent mate selection strategy based on their own mate value. Previous research has found that a woman’s self-perceived attractiveness predicts her attraction to more masculine male faces (Little, Burt, Penton-Voak, & Perrett, 2002) and that measures or estimates of a participant’s mate value are positively associated with higher demands for both physical attractiveness and commitment in a potential mate (Buss & Shackelford, 2008; Edlund & Sagarin, 2010). Moreover, women exposed to images of attractive same-sex individuals report lower self-rated attractiveness and lower preferences for male facial masculinity, whereas exposure to unattractive same-sex individuals results in higher self-rated attractiveness and preferences for masculinity (Little & Mannion, 2006). It seems likely that the current findings reflect a similar phenomenon and that women of lower self-perceived mate value benefit from avoiding high-quality men because those men are unlikely to invest in them. The concept of a condition-dependent mate selection strategy is consistent with Sexual Strategies Theory (Buss & Schmitt, 1993) in that men are more likely to adhere to a long-term mating strategy if there are additional advantages, such as if the woman is of a higher mate value. Thus, an acceptance cue may increase a woman’s perception of her own mate value and lead her to increase her preferences for high quality mates because she may feel better able to attract and retain those mates.

The current study does have certain limitations. First, we only focused on women and therefore similar research on men is needed. Second, although participants in the rejection condition reported significantly lower Rejection-Acceptance scores than those in the acceptance condition, the average score for rejection condition participants was approximately zero, which suggests that, on average, participants reported feeling no change in acceptance/rejection after receiving the rejection prime. It should therefore be acknowledged that the feedback manipulation, while effective, was not particularly strong, which could potentially account for some null findings. However, it is possible that rejection condition participants downplayed their feelings of rejection as a means of self-protection, but future research should investigate this possibility further. Such inconsistencies between a manipulation check and a broader pattern of results highlight the value of including

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Table 2

<table>
<thead>
<tr>
<th>Physical trait</th>
<th>Rejection Mean</th>
<th>Control Mean</th>
<th>Acceptance Mean</th>
<th>F</th>
<th>p</th>
<th>η²p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masculine Facial Shape</td>
<td>2.76</td>
<td>2.65</td>
<td>3.36</td>
<td>3.16</td>
<td>0.04</td>
<td>0.11</td>
</tr>
<tr>
<td>Masculine Facial Coloration</td>
<td>2.48</td>
<td>2.27</td>
<td>2.44</td>
<td>0.24</td>
<td>0.79</td>
<td>0.01</td>
</tr>
<tr>
<td>Body Muscle Mass</td>
<td>3.92</td>
<td>4.22</td>
<td>4.10</td>
<td>0.88</td>
<td>0.42</td>
<td>0.03</td>
</tr>
<tr>
<td>Body WCR</td>
<td>3.16</td>
<td>3.10</td>
<td>2.97</td>
<td>0.39</td>
<td>0.68</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Note: Subscripts refer to pairwise comparisons within a row. Means with different subscripts are significantly different from one another (p < 0.05, Tukey’s LSD test).

When investigated alongside other traits, physical attractiveness is often reduced to include only one or a few broad items. The current study used picture matrices depicting images that varied in physical aspects of the face and body. Results showed that women who had received an acceptance cue from unseen men considered faces that were more masculine in shape as most attractive, whereas control or rejection group women considered faces that were relatively less masculine in shape as most attractive. Research suggests that masculine men are typically considered sexually attractive (e.g., Little, Jones, Penton-Voak, Burt, & Perrett, 2002) and may be of higher genetic quality (e.g., Thornhill & Gangestad, 1999). However, testosterone-linked masculine traits are positively associated with a short-term mating orientation (e.g., Peters, Simmons, & Rhodes, 2008) and infidelity (Booth & Dabbs, 1993). Taken together, when considering a more masculine potential mate, women are required to make a tradeoff between the genetic advantages and the potential for lower investment.

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control groups in experimental rejection/acceptance research. Had the present study thought to rely on the manipulation check measures alone to gauge the impact of the experimental manipulation rather than include a control group, the researchers may have incorrectly concluded that the rejection cue had no effect, but that the acceptance condition was instead raising acceptance. That the significant findings were driven by increased feelings of acceptance is unlikely, though, given that there were no significant differences between participants in the control group and the acceptance group in either choosiness or any specific area of mate preference tested here. 

Another limitation is that the stimuli are 3D digital meshes pictured in 2D, which may not reflect real bodies or faces. Also, the stimuli varied across only two dimensions because variation across a third dimension would have required 125 images per matrix. The dimensions included were selected as the most likely contributors to face and body sexual dimorphism based on previous research and evolutionary theory. However, future research using other relevant face and body qualities could be highly informative. For example, facial symmetry (e.g., Rhodes, 2006) and perceived health (e.g., Welling, Conway, DeBruine, & Jones, 2007) are important for judgments of attractiveness. Similarly, for our trait mate preference measure, we investigated the 12 areas of mate preference established by Schwarz and Hasebruck (2012). Although this factor structure was extensively validated by these researchers (on a sample of over 23,000), we are not aware of other research validating this structure independently. Unfortunately, because our data set was experimentally manipulated with a low sample size, factor analysis would not be appropriate here. However, future research validating this structure would be extremely beneficial for the field.

Finally, the study neglected to measure self-esteem or self-perceived mate value, which is a regrettable oversight. Given the previous research in the field of sociometers which have used rejection/acceptance cues and found that these impact state self-esteem (Kavanagh et al., 2010, 2014) as well as research showing that a mate-rejection prime triggers a significant drop in self-perceived mate value (Ruan & Zhang, 2012; Zhang et al., 2015), we feel confident that our interpretations are valid. However, a measure of self-esteem to replicate previous findings and/or a measure of self-perceived mate value to further verify the manipulation would have been ideal and therefore we suggest caution to the reader in accepting our inference. Without these measures, our interpretation of the underlying cognitive reasons for our findings are not substantiated with manipulation check data and so alternate reasons (such as social feelings of rejection) are certainly possible. Nonetheless, the findings from the present study are predominantly supportive of a mating sociometer and a context-dependent model of mate preferences, providing further insight into the mechanisms regulating women’s reproductive strategies.

References


