

Original Article

Rejection Hurts: The Effect of Being Dumped on Subsequent Mating Efforts

Christine Stanik, Department of Psychology, University of Michigan, Ann Arbor, MI, USA. Email: cstanik@gmail.com (Corresponding author).

Robert Kurzban, Department of Psychology, University of Pennsylvania, Philadelphia, PA, USA, and Chapman University, Orange, CA, USA.

Phoebe Ellsworth, Department of Psychology, University of Michigan, Ann Arbor, MI, USA.

Abstract: Many of the qualities that people seek in a long-term partner are not directly observable. As a consequence, information gathered through social learning may be important in partner assessment. Here, we tested the hypothesis that finding out potential partners were rejected by their last partner would negatively affect participants' desire to pursue a romantic relationship with them. Results support this hypothesis, and this effect was, as predicted, greater when the target was being evaluated for a potential long-term relationship compared to a sexual relationship. In a more exploratory vein, we tested the effect of the target having rejected their last partner and failing to disclose how their last relationship ended. These scenarios produced intriguing sex differences, such that men's ratings of women fell after learning she had rejected her last partner, but women's ratings of men increased after the same information was introduced. Failing to disclose information about a past relationship was unappealing to both men and women, though particularly so for women.

Keywords: social learning, romantic relationships, partner assessment, relationship dissolution

Introduction

Choosing a mate is among the most important adaptive tasks facing members of sexually reproducing species. In humans, this task is particularly complex given that beyond their indirect genetic investment, both males and females invest directly in the care and survival of offspring. Therefore, there are a large number of characteristics relevant to others' value as a mate, many of which are not immediately perceivable, such as

personality, kindness, and intelligence (Buss, 1989, 1994). These potentially important traits (Miller, 2000) must be inferred from behavior, a process that necessarily entails costs: time spent gathering information about a possible partner is time lost doing other activities, including gathering information about alternatives. The complexity of the problem and the time requirements of gathering data to solve it makes using others' assessments to inform one's own especially valuable (Boyd and Richerson, 1985).

People get many different kinds of information from others, and this information varies in terms of its reliability – people can be wrong, lie, etc. – and diagnosticity – some information is more relevant than others. One potentially useful piece of information – and the one investigated here – is information about how a potential mate has fared on the dating market in the past. The ending of relationships is potentially information rich because the decision to terminate a relationship entails a loss of investment from someone with a great deal of information about the person in question. Dumping can be seen as similar to selling a car; as Akerlof (1970) pointed out, sellers have a lot of information about their cars, and the fact that they are selling it is itself information that buyers ought to take into account.

Here we test the hypothesis that participants will lower their initial ratings of a target person being evaluated as a potential romantic partner after learning the person was rejected by his or her last partner. We also expect that learning a potential partner was dumped will have a more negative influence on participants' ratings when they are considering the target for a *long-term* relationship for which desired traits (e.g., personality, kindness, and intelligence) are often opaque, compared to a *short-term* sexual relationship. Because qualities desired in a short-term mate tend to be directly visible (e.g., size and strength in men; Buss and Schmitt, 1993; Gangestad and Simpson, 1990; Symons, 1979), socially transmitted information is less relevant.

The Complexity of Human Mate Choice

Variety of traits

In many non-human species, the quality of a mate depends on traits that are quickly and reliably observed, such as size or easily detectible ornaments (Zahavi and Zahavi, 1997). Preferences for these traits are explained by Darwin's (1879) theory of sexual selection, along with subsequent refinements (Fisher, 1930). Organisms that have heritable traits that are preferred by members of the opposite sex will leave, on average, more offspring, leading to the propagation of both the trait and the preference for it (Fisher, 1930). A similar process might have driven human cognitive traits (e.g., intelligence, quick-wit) and personality characteristics (e.g., kindness, loyalty; Miller, 2000), along with certain physical features (e.g., symmetrical features, clear skin, and good muscle tone). However, unlike physical features, these traits are often hard to discern and require multiple interactions across time and circumstance to be able to confidently assess.

Two-sided market

Also, in contrast to many other species, in which one sex advertises value with colorful ornaments (e.g., peacocks) and the other chooses on the basis of them (e.g.,

peahens), in humans, both men and women seem to advertise various traits, and, at least in some modern contexts, exercise some degree of choice (for an alternate perspective, see Puts, 2010). Thus, on its surface, the human mating market can be described as two-sided (Todd, 1997), with some degree of cross-cultural variation in the amount of relative choice that men and women can express (Chagnon, 1997; Daly and Wilson, 1984). Because both sexes choose mates, we would expect that both men and women can gain by, and thus attend to, socially transmitted information.

Pluralistic mating strategies

Although bi-parental investment results in advantages to human reproductive success (e.g., Hed, 1987; Reid, 1997) and long-term pair-bonds between men and women are very common across human societies, members of both sexes can gain advantages by seeking short-term partners as well. Short-term sexual relationships confer advantages to men in a straightforward way, because male reproductive success is typically limited by sexual access to females (Trivers, 1972). Women, too, however, can gain advantage, often through the genetic benefits that might be available from individuals other than their primary mate (e.g., Greiling and Buss, 2000). Because of this, when seeking a short-term partner women prefer men who convey good genetic quality through physical traits such as symmetrical and dominant features, whereas men seek availability and willingness (Clark and Hatfield, 1989; Gangestad and Thornhill, 1997; Mueller and Mazur, 1997; Perrett et al., 1998). Although the specific traits that men and women prefer in this context differ, they are similar in that the qualities both sexes seek in a short-term partner are readily observable behavioral and physical features.

Using social information

People cannot spend an infinite amount of time getting to know possible partners before making a commitment; neither can they expect to make an accurate assessment of a person's value as a partner in only a brief time. One way to streamline this process of deciding who to pursue is by attending to cues of how others who may have more information about the person have evaluated his or her worth. Broadly, Deutsch and Gerard (1955) described the process of using the behavior and opinions of others as *Informational Social Influence*, and Boyd and Richerson (1985) discussed the utility of acquiring information by watching and copying the behavior of others. Consistent with this, rather than relying on first-hand experiences with individuals, people often use gossip when assessing the reputation of others (Dunbar, 2004) and carefully regulate their trust in information based on its source(s) (Hess and Hagen, 2006).

Sherif (1936), and also Deutsch and Gerard (1955), have noted that people are most likely to use social information when they have a strong desire for accurate information and when the situation and thus the "correct" answer are somewhat ambiguous. It has also been suggested that social learning may be particularly adaptive under circumstances where the cost of individual learning is high (Boyd and Richerson, 2005). Given the profound consequences of mate choice on reproductive success, we expect that the pursuit of a romantic partner is a context when people might be especially attuned to information they can obtain from others.

Previous Evidence

Evidence that social information is used in mate choice has been found in experiments with non-human species. In a series of studies exploring mate choice copying in guppies, Dugatkin (1992) found that female guppies preferred to mate with males who had recently been viewed interacting with another female compared to those who were alone. Dugatkin and Godin (1992) found that viewing a male interacting with another female was so powerful that it could also reverse female choice of a male they had previously not preferred. Similar results were obtained by Galef and White (1998) in a series of studies examining the influence of social information on the mate preferences of female Japanese quail. After clearly demonstrating a preference for one male over another, focal females saw their non-preferred male mate with a model female while their preferred male remained alone. In post-tests, the majority of focal females then demonstrated a preference for the males they had seen court and mate with the model female, reversing their initial choice.

Mate choice copying has also been studied in humans. For example, Waynforth (2007) had women rate the attractiveness of men when pictured alone. Later, the women were asked to rate the same men pictured with a female partner. Simply being partnered with another female was not sufficient to raise ratings of the men's attractiveness; ratings increased when the man was pictured with a highly attractive female, but decreased when he was pictured with an unattractive partner. Additionally, Uller and Johannson (2003) found that women rated men as less desirable when they were wearing a wedding ring compared to when they were not.

People's use of social information when forming an opinion of others has also been examined in a series of studies by Graziano et al. (1993). Participants were asked to rate several aspects of personality and physical attractiveness in opposite sex individuals. They were given rating sheets that they believed had been previously filled out by their fellow participants; these ratings strongly influenced participants' judgment.

One difficulty of mate copying studies in humans is the existence of social mores against pursuing a man who is "taken." Additionally, studies such as these, which look only at women rating men, neglect the fact that human mating is a two-sided market in which both men and women exercise mate choice. Finally, although the design of Graziano et al. (1993) allowed for a high degree of experimental control, a drawback is that it did not reflect the actual nature of social interactions. When people are searching for cues to a potential partner's character, they are not given the opinions of others in such a direct and organized manner; more often they must look for subtle or indirect information. The design of the current study, detailed in the following section, avoids these difficulties.

Present Study and Hypotheses

The aim of the present study is to examine whether information about how a person's last relationship ended influences evaluations of him or her for a potential sexual or romantic relationship. Using an on-line dating paradigm, we built on previous work on social learning in human mate choice by both maintaining experimental control and

delivering social information to participants in a way they might encounter during real (modern) dating experiences. Participants are introduced to each target in a generally positive “about me” paragraph written to resemble those found on popular dating web-sites, and asked to rate their desirability for both long-term and short-term relationships. They then view more of the target’s profile, including the critical information about how his or her last relationship ended, and are asked to make a second set of desirability ratings. This design has two virtues. First, the source of the social information is the target, who, in real life dating contexts, might be the only person with such information. Second, by measuring impressions twice, before and after break-up information is presented, we can determine whether this information is sufficient to change an initial impression quickly.

Our hypotheses are as follows: First, we expect that participants’ initial impressions of targets’ desirability for a romantic relationship will decrease after learning the targets were dumped by their last partner. Second, this difference will be greater than changes in ratings resulting from participants learning targets initiated their last break-up or failed to disclose how their last relationship ended. Third, we expect that this information will be especially potent when participants are considering a long-term romantic relationship. We also examine the effects of learning potential partners rejected their last partner or chose to keep silent about how that relationship ended. The ideas sketched above generate no clear predictions in these cases.

Materials and Methods

Participants

Two-hundred fifteen participants were recruited from the University of Michigan’s Introductory Psychology Subject Pool and in compensation for their participation earned partial credit towards a course requirement. From this initial sample, data from 17 subjects were dropped (two due to computer error, eight due to missing data on at least one of the main dependent variables, and seven due to reporting a homosexual dating orientation) leaving a final sample of 198 (102 women, 96 men). The mean age (*SD*) of the women was 18.75 (.99), of the men 18.95 (1.03). The majority of participants in the study were Caucasian (75%) in addition to 22% Asian, 12% Black, and 3% Indian.

Procedure

Participants were brought into the lab in groups and seated at individual computers; they did not interact for the entirety of the data collection session. After written consent was obtained, all remaining components of the study, including presentation of stimuli and response collection, were carried out on the computer. To bolster authenticity and retain participants’ interest, they were told that all the profiles they were about to see had been posted on-line by people who lived in the local area and ranged in age from 18 to 22.

Stimuli for the study included three brief fictional dating advertisements written to resemble those posted on popular dating web-sites. Although users of popular dating sites generally include a photograph along with their profile, to provide a clean test of our hypotheses in this initial study we provided only written text. After choosing their preference to date men or women, participants were presented with an ad (four sentences)

that contained relatively innocuous information about the target (e.g., “I am: easygoing, funny, adventurous, and independent, but can be shy and soft-spoken depending on the situation”) and were asked to rate how much they would like to date, be in a serious relationship with, and have sex with the person who placed the ad on a scale from one (not at all) to nine (very much). Subjects then viewed additional information from the profile which contained trivial information (favorite ice-cream flavor and favorite color) plus the critical information; a response to the prompt, “My last relationship ended because ...” The target’s last breakup was varied to show the person as having initiated the break-up (“*my last partner was great, but I thought I could find someone closer to my ideal*”), rejected (“*I was in love with my last partner, but he/she dumped me*”) or non-disclosing (“*the person who placed this ad chose not to respond to the question*”). Participants were then asked to again rate the desirability of the target for the three types of relationships. All subjects viewed all three personal advertisements in the same order. The order of the break-up information was counterbalanced across three randomly assigned conditions. Thus all participants saw all three ads and all three types of break-up information; the pairing of the ad and the break-up information varied across condition. After completing the main dependent variables for the study, participants provided basic demographic information. Upon completion of the study participants were fully debriefed and thanked for their time.

Results

Our first hypothesis was that participants’ ratings of potential partners would significantly decrease after they learned that the person was rejected by his or last romantic partner. First, we combined ratings for ads that had been paired with information depicting the target as rejected. To test our prediction we used an ANOVA with time as a within-subjects repeated factor. We entered participant sex as a between-subjects factor and, to ensure there were no anomalies of the specific ad, we also entered condition as a between-subjects factor. As expected, both male and female participants’ ratings of how much they would like to date the person who wrote the ad decreased significantly after learning he or she had been rejected, $F(1,192) = 124.75, p < .001$ (descriptive statistics are presented in Table 1). Interactions between time and condition, $F(2,192) = .81, p > .05$, time and participant sex, $F(1,192) = 1.61, p > .05$, and time, condition, and participant sex, $F(2,192) = .8, p > .05$, were all non-significant. Results were similar for ratings of how much the participants wanted to be in a serious relationship with the target. Again, ratings significantly decreased after participants learned the target had been rejected, $F(1,192) = 93.04, p < .001$. Interactions between time and condition, $F(2,192) = 1.15, p > .05$, time and participant sex, $F(1,192) = 1.3, p > .05$, and time, condition, and participant sex, $F(2,192) = .76, p > .05$, were all non-significant.

Table 1. Mean (*SD*) participants' ratings of personal advertisements before and after information depicting the target as rejected

		Before	After
Dating	Women	5.79 (.24)	4.27 (.27)
	Men	6.37 (.24)	4.46 (.28)
Serious relationship	Women	4.83 (.25)	2.57 (.25)
	Men	5.25 (.26)	3.64 (.26)

Note: All ratings were reported on a 9-point scale, with higher numbers indicating greater desire.

Our second hypothesis was that the difference between time 1 (before break-up information was introduced) and time 2 (after break-up information was introduced) would be the greatest when ads were paired with the rejected break-up information relative to when they were paired with information portraying the target as rejecting or non-disclosing. Because we were interested in comparing the magnitude of the differences, we computed difference scores, subtracting initial ratings for the ads from ratings made after the critical break-up information was introduced. Next, we submitted these scores to a 2 (sex of participant) and 3 (condition) Multivariate Analysis of Variance (MANOVA). Descriptive statistics are reported in Table 2. There was a significant main effect of condition, $F(12,376) = 9.15$, $p < .001$. Neither the main effect of participant sex, $F(6,187) = 1.02$, $p > .05$, nor the interaction between condition and participant sex, $F(12,376) = 1.74$, $p > .05$, were significant. Simple between subjects' comparisons revealed that difference scores were the greatest when an ad was paired with information that depicted the target as rejected (p 's ranged from .01 to $< .001$). Thus, in support of our prediction, across all ads, the greatest difference in ratings were when an ad was paired with information portraying the target as rejecting compared to when the same ad was paired with the other two types of break-up information.

Table 2. Mean (*SDs*) difference scores for personal advertisement ratings (after critical information – before critical information) as a function of condition, relationship type, and participant sex

	Men		Women	
	Dating	Serious Relationship	Dating	Serious Relationship
Advertisement 1				
C1 (Rejected)	-2.18 (2.04) ^a	-1.57 (1.73) ^a	-1.24 (1.96) ^a	-0.92 (2.03) ^a
C2 (Rejecting)	-0.97 (1.94) ^b	-1.00 (1.88) ^a	0.03 (1.19) ^b	-0.06 (1.22) ^b
C3 (Non-disclosing)	-0.08 (0.82) ^c	-0.21 (1.04) ^b	-0.72 (1.22) ^{a,b}	-0.70 (1.45) ^{a,b}
Advertisement 2				
C1 (Rejecting)	-0.57 (1.85) ^a	-0.39 (1.64) ^a	0.24 (1.16) ^a	0.46 (1.35) ^a
C2 (Non-disclosing)	-0.30 (1.73) ^a	-0.27 (1.68) ^a	-0.76 (1.30) ^b	-0.64 (1.11) ^b
C3 (Rejected)	-1.57 (2.37) ^b	-1.58 (2.32) ^b	-1.38 (2.18) ^b	-1.03 (1.82) ^b
Advertisement 3				
C1 (Non-disclosing)	-0.46 (1.23) ^a	-0.46 (1.29) ^a	-0.70 (1.18) ^a	-0.70 (1.45) ^a
C2 (Rejected)	-1.97 (2.31) ^b	-1.67 (2.56) ^b	-1.93 (1.97) ^b	-1.85 (1.86) ^b
C3 (Rejecting)	-0.21 (1.30) ^a	0.03 (1.37) ^a	0.03 (1.43) ^a	0.44 (1.46) ^c

Note: ^{a,b,c} - means within advertisement are significantly different at $p < .05$

Our third hypothesis was that participants' ratings of a potential partner would be more swayed by information portraying the person as rejected when they were evaluating the person as a long-term romantic partner rather than a short-term sexual partner. Because the break-up information functioned similarly for all three advertisements, we collapsed data across advertisement. There was a high correlation between the difference scores for participants' ratings of a dating relationship and a serious relationship, $r = .78, p < .001$, so we created a composite variable of romantic relationships. We conducted an ANOVA entering difference scores for relationship type (sexual and romantic) as a within-subjects repeated factor. Participant sex was entered as a between-subjects factor. To ensure that there were no effects of the specific ad that had been paired with the rejected break-up information, condition was also entered as a between-subjects factor.

The main effect of relationship type was significant, $F(1,192) = 61.80, p < .001$. As predicted, ratings decreased more when participants were evaluating the target for a potential romantic relationship ($M = -1.58, SD = .14$) compared to a sexual relationship ($M = -.75, SD = .12$). Interactions with the repeated factor and participant sex, $F(1,192) = 1.79, p > .05$, condition, $F(1,192) = .98, p > .05$, and the interaction between the three, $F(2,192) = .60, p > .05$, were all non-significant.

Turning to the case in which break-up information depicted the individual as rejecting, we again collapsed across ad and averaged date and serious relationship. Individual analyses consisted of an ANOVA with time (before and after break-up information) as a within-subjects repeated measure. Participant sex was entered as a between-subjects factor. To ensure that condition (indicating with which ad the participant saw that type of break-up information) did not influence the results, it was also entered as a

between subjects factor.

Rejecting targets

When participants were rating the desirability of a target for a sexual relationship and they found out the person had initiated his or her last break-up, the main effect of time, $F(1,192) = .34, p > .05$, and the interaction between time and condition, $F(2,192) = .01, p > .05$, were not significant. There was a significant interaction between time and participant sex, $F(1,192) = 6.31, p = .01$. The interactions between time and condition, and time, condition, and participant sex, $F(2,192) = 1.13, p > .05$, was not significant. To break down the significant interaction, we ran the same analysis separately for men and women. For women, finding out a man had rejected his last partner significantly increased her desire to have a sexual relationship with him, $F(1,99) = 6.91, p = .01$. For men, finding out a woman had rejected her last partner did not affect his desire to have sex with her $F(1,93) = 1.38, p > .05$.

On the items asking about a romantic relationship, the main effect of time was not significant, $F(1,192) = 2.97, p > .05$. There were significant interactions between time and condition, $F(2,192) = 3.23, p = .04$, and time and participant sex, $F(1,192) = 13.8, p < .001$. The interaction between time, condition, and participant sex was not significant, $F(2,192) = 1.08, p > .05$. Because participant sex significantly interacted with time, we began breaking down the interactions by conducting separate analyses for men and women. For women, the main effect of time was not significant, $F(1,99) = .88, p > .05$, indicating that women's desire for a romantic relationship with a man was not influenced by learning he had rejected his last partner. The interaction between time and condition was also not significant for women, $F(2,99) = .88, p > .05$. For men, there was a significant main effect of time, $F(1,93) = 11.44, p < .001$, such that men's desire to have a romantic relationship with a woman significantly decreased after learning she had ended her last relationship. There was also a marginally significant interaction of time and condition, $F(2,93) = 2.99, p = .06$. To further deconstruct this interaction, we computed men's difference scores for desirability over time (after break-up information – before break-up information) and submitted them to a one-way ANOVA with planned contrasts. While the overall ANOVA was only marginally significant, $F(2,93) = 2.99, p = .06$, the planned contrasts revealed that men's ratings in the third condition decreased significantly less than men's ratings in condition 1 and condition 2, $t(93) = 2.06, p = .04$.

Non-disclosing targets

After learning that targets did not disclose information about their last break-up, both men's and women's desire to have sex with the target significantly decreased, $F(1, 192) = 20.54, p < .001$. The interactions between time and condition, $F(2,192) = .33, p > .05$, time and participant sex, $F(1, 192) = 2.06, p > .05$, and time, condition, and participant sex, $F(2,192) = 2.2, p > .05$, were all non-significant.

When participants were rating non-disclosing targets for a romantic relationship, there was a significant effect of time, $F(1,192) = 36.12, p < .001$, and a significant interaction between time and participant sex, $F(1,192) = 6.35, p = .01$. The interactions between time and condition, $F(2,192) = .18, p > .05$, and time, condition, and participant

sex, $F(2,192) = .47$, $p > .05$, were not significant. To further deconstruct the significant interaction, we ran analyses separately for men and women. These revealed that the effect of time was significant for both women, $F(1,99) = 39.04$, $p < .001$, and men, $F(1,93) = 5.68$, $p = .02$. However, further analysis suggested that the decrease was greater for women ($M = -.73$, $SD = 1.16$) than men ($M = -.28$, $SD = 1.21$), $t(196) = -2.64$, $p = .01$.

Discussion

Summary and implications

We tested the hypothesis that impressions of a person as a candidate for a romantic partner would decrease after people learned that the target had been dumped by his or her last partner. Results supported this hypothesis and revealed that people quickly change their opinions of potential partners when they receive this information. Consistent with our expectations, we also found that information that a target person had been dumped had a larger impact when he or she was being assessed for a long-term relationship compared to a short-term sexual relationship. These results provide preliminary support for the idea that people are sensitive to and quickly integrate cues about how a person has recently fared on the dating market into their estimate of the person's worth as a romantic partner.

We also explored the effect of reports that targets had rejected their last partner and chose not to give any information about their last relationship. Interestingly, we found that female participants reported an increased desire to have a sexual relationship with a potential partner after learning he had rejected his last partner. However, while men's desire to have a sexual relationship with a target was not influenced by her having rejected her last partner, their desire to have a romantic relationship with her decreased significantly. On the other hand, both men and women were put off by a target failing to disclose the circumstances of his or her last break-up. However, this was more of a concern for women relative to men when considering the target for a romantic relationship.

We can at present only speculate about the source of these intriguing sex differences. One possible interpretation is that a man's willingness to end an ongoing relationship in hopes of finding someone better might be interpreted by women as a sign of status or otherwise high mate value. A man taking a dominant role in his romantic relationships may also be seen as more consistent with traditional gender roles. A dominant woman may be less acceptable for this reason, or men may just view her as picky or demanding. Additionally, perhaps women are more suspicious (for some reason) when men fail to discuss past relationships. It should also be kept in mind that, although the influence of these two types of information is significant, it is small compared to the effect of information that the target person was abandoned by his or her last partner.

Limitations and future research directions

One drawback of the current method is that people might be reacting to the person's willingness to divulge that they were rejected rather than to the information itself. Social rules might be against sharing this type of information; people could be responding to the person's lack of social grace; it might imply that the person still has feelings for their ex. Additionally, in a context such as mating, where individuals are highly invested in making

themselves desirable to others, information obtained through gossip may be considered more valuable than firsthand accounts delivered via the targets themselves. Future research should both examine the process involved in people so quickly changing their ratings and explore the effect of gossip from varying sources on individuals' reputation as a valuable mate.

Other key variables are the quality of the target and the quality of the target's last partner. Past research (Waynforth, 2007) has found that partner quality can raise or lower the perception of a man's attractiveness, and we suspect a similar pattern would emerge with our manipulation: Being rejected by someone of lower quality might be more damaging than being rejected by someone of very high quality; having rejected someone of high quality might do more for a person's desirability than having rejected someone of poor quality. With respect to the quality of the target, a high quality individual's reputation as a valuable partner may be hurt less by having been rejected than a lower quality individual. Further, understanding the reasons a person's last relationship ended may also play a part in how that person is evaluated by future partners. For instance, people might have strong reactions upon learning a person was dumped because he or she had cheated or engaged in other behaviors undesirable in a romantic partner. Additionally, future research would benefit from including an analysis of individual differences. It might be informative to explore the relationship between people's own mate value and their responses to the different types of break-up information.

Conclusion

When evaluating potential romantic partners, both men and women are influenced by information about how the target's last relationship ended. This information seems to be particularly compelling when people indicate they were dumped by their last partner. This work also provides evidence that people are attuned to a variety of cues in their social environment that aid them in the process of accurately and efficiently detecting value in potential partners.

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References

- Akerlof, G. A. (1970). The market for 'lemons': Quality uncertainty and the market mechanism. *Quarterly Journal of Economics*, *84*, 488–500.
- Boyd, R., and Richerson, P. J. (1985). *Culture and the evolutionary process*. Chicago, IL: University of Chicago Press.
- Boyd, R., and Richerson, P. J. (2005). *The origin and evolution of culture*. New York: Oxford University Press.
- Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences*, *12*, 1–49.
- Buss, D. M. (1994). *The evolution of desire: Strategies of human mating*. New York: Basic Books.

- Buss, D. M., and Barnes, M. (1986). Preferences in human mate selection. *Journal of Personality and Social Psychology*, 50, 559–570.
- Buss, D. M., and Schmitt, D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review*, 100, 204–232.
- Chagnon, N. A. (1997). *Yanomamö* (5th ed.). Fort Worth, TX: Harcourt.
- Clark, R. D., and Hatfield, E. (1989). Gender differences in receptivity to sexual offers. *Journal of Psychology and Human Sexuality*, 2, 39–55.
- Daly, M., and Wilson, M. (1984). *Sex, Evolution and Behavior* (2nd ed.). Belmont, CA: Wadsworth Publishing Company.
- Darwin, C. (1871). The descent of man and selection in relation to sex.
- Deutsch, M., and Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. *Journal of Abnormal and Social Psychology*, 51, 629–36.
- Dugatkin, L. A. (1992). Sexual selection and imitation: Females copy the mate choice of others. *The American Naturalist*, 139, 1384–1389.
- Dugatkin, L. A., and Godin, J. G. (1992). Reversal of female mate choice by copying in the guppy (*Poecilia reticulata*). *Proceeding of the Royal Society of London Series B*, 249, 179–184.
- Dunbar, R. I. M. (2004). Gossip in evolutionary perspective. *Review of General Psychology*, 8, 100–110.
- Fisher, R. A. (1930). *The genetical theory of natural selection*. Oxford, UK: Clarendon Press.
- Galef, B. G., and White, D. J. (1998). Mate-choice copying in Japanese quail, *Coturnix coturnix japonica*. *Animal Behavior*, 55, 545–552.
- Gagnestad, S. W., and Simpson, J. A. (1990). Toward and evolutionary history of female sociosexual variation. *Journal of Personality*, 58, 69–96.
- Gangestad, S. W., and Thornhill, R. (1997). The evolutionary psychology of extrapair sex: The role of fluctuating asymmetry. *Evolution and Human Behavior*, 18, 69–88.
- Graziano, W. G., Jensen-Campbell, L. A., Shebilske, L. J., and Lundgren, S. R. (1993). Social influence, sex differences, and judgments of beauty: Putting the interpersonal back in interpersonal attraction. *Journal of Personality and Social Psychology*, 65, 522–531.
- Greiling, H., and Buss, D. M. (2000). Women's sexual strategies: The hidden dimension of extra-pair mating. *Personality and Individual Differences*, 28, 929–963.
- Hed, H. M. E. (1987). Trends in opportunity for natural selection in the Swedish population during the period 1650–1980. *Human Biology*, 59, 785–797.
- Hess, N. H., and Hage, E. H. (2006). Psychological adaptations for assessing gossip veracity. *Human Nature*, 17, 337–354.
- Miller, G. F. (2000). *The mating mind: How sexual choice shaped the evolution of human nature*. New York: Anchor Books.
- Mueller, U., and Mazur, A. (1997). Facial dominance in Homo sapiens as honest signaling of male quality. *Behavioral Ecology*, 8, 569–579.
- Perret, D. I., Lee, K. J., Penton-Voak, I. S., Rowland, D. R., Yoshikawa, S., Burt, D. M., et al. (1998). Effects of sexual dimorphism on facial attractiveness. *Nature*, 394, 884–

887.

- Pruett-Jones, S. (1992). Independent versus non-independent mate-choice: Do females copy each other? *American Naturalist*, *140*, 1000–1009.
- Puts, D. A. (2010). Beauty and the beast: Mechanisms of sexual selection in humans. *Evolution and Human Behavior*, *31*, 157–175.
- Reid, A. (1997). Locality or class? Spatial and social differentials in infant and child mortality in England and Wales, 1895-1911. In C. A. Corsini and P. P. Viazzo (Eds.), *The decline of infant and child mortality* (pp. 129–154). The Hague, The Netherlands: Martinus Nijhoff.
- Schmitt, D. P. (1993). Universal sex differences in the desire for sexual variety: Tests from 52 nations, 6 continents, and 13 islands. *Journal of Personality and Social Psychology*, *85*, 85–104.
- Sherif, M. (1936). *The psychology of social norms*. New York: Harper.
- Symons, D. (1979). *The evolution of human sexuality*. New York: Oxford University Press.
- Todd, P. M. (1997). Searching for the next best mate. In R. Conte, R. Hegselmann, and P. Terna (Eds.), *Simulating social phenomena* (pp. 419–436). Berlin, Germany: Springer.
- Trivers, R. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man: 1871-1971* (pp. 136-179). Chicago: Aldine.
- Uller, T., and Johansson, L. C. (2003). Human mate choice and the wedding ring effect. *Human Nature*, *14*, 267–276.
- Waynforth, D. (2007). Mate choice trade-offs and women's preference for physically attractive men. *Human Nature*, *12*, 207–219.
- Zahavi, A., and Zahavi, A. (1997). *The handicap principle*. New York: Oxford University Press.