Evolutionary Psychological Science
https://doi.org/10.1007/s40806-018-0156-6

RESEARCH ARTICLE

The Effect of Mate Value Discrepancy on Hypothetical Engagement Ring Purchases

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Abstract

Few material goods entail as high a cost and carry as little practical value as an engagement ring. Despite their obvious signaling value, engagement ring expenditures have rarely been studied. The purpose of the current study was to experimentally manipulate a discrepancy in the physical attractiveness of romantic partners to determine its effect on hypothetical engagement ring purchases. We predicted that (1) men would purchase larger, more expensive engagement rings when imagining themselves mated to a more attractive rather than less attractive woman and (2) women would desire larger, more expensive engagement rings when imagining themselves mated to a less attractive rather than more attractive man. We further predicted a positive correlation between women's self-ratings of attractiveness and the size and cost of the engagement ring women chose, regardless of target attractiveness. Results supported all three predictions. Data about the cost and quality of actual engagement rings was also collected to explore their correlations with age and attractiveness discrepancies in real-world couples; however, we failed to find a consistent pattern whereby more desirable women received more expensive and higher quality engagement rings. Results from the experimental portion of the current study show that men invest greater resources in attractive women and that increased resource investment can compensate for decreased physical attractiveness within the domain of women's mate preferences.

Keywords Assortative mating · Mate preferences · Physical attractiveness · Consumer behavior

Though the principles of evolutionary psychology have been deployed to better understand gift giving behavior (for a review, see Saad and Gill 2003), relatively little work has examined the purchase and bestowal of engagement rings specifically. This is remarkable considering that engagement rings are one of the most expensive gifts given and received. According to *The Knot*'s 2017 Jewelry and Engagement Study ("Only 1 in 3," 2017), which surveyed over 14,000 engaged or recently married men and women from the USA, couples spent an average of $6351 on an engagement ring. In addition, a substantial percentage of engagements in the American population—84% according to the Diamond Information Center (Gassman 2007)—involves the purchase of a diamond engagement ring. Engagement rings serve as an honest signal of many traits (e.g., romantic commitment; Zahavi 1975), but the focus of this paper is their resource-signaling quality. The purpose of the current study was to explore how discrepancies in the physical attractiveness of romantic partners can be resolved by increased resource investment as signaled by an engagement ring.

A process of assortative mating characterizes most relationships. Assortative mating refers to the fact that romantic partners tend to be more similar to one another across a variety of dimensions (e.g., intelligence, political orientation) than would be predicted by chance (Watson et al. 2004). Of particular relevance to the current study is the observation that most romantic partners are roughly equivalent in mate value (Buss 1985; Buss and Barnes 1986). It is often the case that a mismatch in the desirability of a given trait in one partner's favor is balanced by a mismatch in another trait in the other partner's favor so that the average desirability of both partners is comparable. For instance, an individual may be more physically attractive than his or her partner. In such cases, the less attractive partner is expected to contribute other desirable traits (e.g.,

This research was presented at the 94th Annual Meeting of the Western Psychological Association; Portland, OR and the 27th Annual Meeting of the Human Behavior and Evolution Society; Columbia, MO.

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Published online: 10 July 2018

social status) or invest more heavily into the relationship—financially or otherwise—to compensate for the discrepancy in attractiveness level. Although trait incongruities likely fluctuate over the course of a relationship, the economics of the mating market dictate that romantic partners must perceive their own and their partner's overall desirability as roughly equivalent to remain satisfied.

One consequence of assortative mating is that only highly desirable men and women are able to acquire highly desirable mates, particularly for long-term relationships (Buss and Schmitt 1993; Symons 1979). A majority must relax some mate preferences in order to maintain a long-term relationship with someone who reciprocates their romantic interest. Li et al. (2002) sought to determine which traits men and women would be least willing to compromise on using a method in which participants designed their ideal marriage partner by purchasing various traits with three different budgets—low, medium, or high—simulating how selective people of varying mate value can afford to be in their mate choice. Their results showed that men tended to prioritize a mate's physical attractiveness, whereas women tended to prioritize a mate's social and financial standing, particularly in the low-budget condition when choices were most constrained. Thus, these traits (among others; e.g., kindness) are considered to be necessities in a potential mate (see also Buss 1989).

Over human evolutionary history, men's reproductive success—more so than women's—was primarily limited by access to healthy, fertile mates (Symons 1979). Thus, motivational systems evolved in men to attend to cues of health (e.g., smooth skin; Fink et al., 2001) and fertility (e.g., low waist-to-hip ratio; Singh 1993) and find such traits attractive (for a review, see Sugiyama 2005). In contrast, women disproportionately faced the adaptive problem of procuring the resources necessary for offspring survival (Hrdy 1999) and are consequently sensitive to cues that men are able and willing to invest those resources (Buss 1989; Waynforth and Dunbar 1995). In the modern environment, this preference manifests as a desire for men who are wealthy or who show promising earning potential. Women also value physical attractiveness in a potential mate given that many traits (e.g., symmetry; Thornhill and Gangestad 1994) are predictive of good genes for their offspring; however, they prioritize it less than men do (Buss 1989; Li et al. 2002). Thus, while there is substantial overlap in men's and women's mate preferences (e.g., intelligence), sex differences in the importance of physical attractiveness and resource control make it routine for relationships to be formed between women who are physically attractive, but not necessarily wealthy, and men who are wealthy, but not necessarily physically attractive. This arrangement—referred to in sociological research as the "beauty-status exchange" (McClintock 2014)—is frequently evidenced in popular culture with examples like Hugh Hefner (1926–2017) married to Crystal Harris (b. 1986) and Donald Trump (b. 1946) married to Melania Trump (b. 1970). In such cases, women strategically sacrifice obtaining some degree of physical attractiveness (and possibly other traits as well; e.g., kindness) in exchange for greater access to resources.

Miller (2000) proposed that engagement rings might serve as an honest signal of a man's current financial status. Indeed, one of the few studies on engagement ring expenditures found that the greatest predictor of the cost of an engagement ring was the male partner's income (Cronk and Dunham 2007). Another key finding was that younger women were given more expensive engagement rings. This pattern is consistent with the notion that men are willing to invest greater resources in attracting desirable women. There are few additional studies of engagement rings in the psychological literature; however, also within this small body of research is the finding that both men and women expected men to spend more money on an engagement ring when made to believe that women were relatively scarce in their local environment (Griskevicius et al. 2012). Together, these findings suggest that the financial investment men are expected and willing to make increases as mating opportunities become more desirable or unlikely.

The purpose of the current study was to evaluate how a discrepancy in the physical attractiveness of romantic partners affects hypothetical engagement ring purchases. The attractiveness of male and female target individuals was experimentally manipulated to produce a discrepancy between participants' self-perceived attractiveness and perceptions of the target's attractiveness. We predicted that (1) men would purchase larger, more expensive engagement rings when imagining themselves mated to a more attractive rather than less attractive target woman and (2) women would desire larger, more expensive engagement rings when imagining themselves mated to a less attractive rather than more attractive target man. We further hypothesized that desirable women would expect to receive larger, more expensive engagement rings than less desirable women. Thus, we predicted a positive correlation between women's self-ratings of attractiveness and the size and cost of the engagement ring women chose, regardless of target attractiveness. Finally, a secondary purpose of this study was to collect data about the cost and quality of actual engagement rings to explore their correlations with age and attractiveness discrepancies in real-world couples.

Method

Participants

The sample consisted of 611 participants from the USA who were recruited via Amazon's Mechanical Turk. Data from 21 participants who did not identify as heterosexual were

excluded, resulting in a dataset of 590 participants (337 men, 253 women) with an average age of 29.33 years ($SD = 6.78$). The majority of participants reported being in a committed romantic relationship (63.56%, $n = 375$). Of those engaged or married ($n = 189$), most participants purchased or received an engagement ring (78.84%, $n = 149$).

Materials and Procedure

Participants indicated their sex and were randomly presented with a facial photograph of a member of the opposite sex whose attractiveness was pre-rated on a 1 (extremely unattractive) to 10 (extremely attractive) scale to be relatively high (female target: $M = 7.21$, $SD = 1.80$; male target: $M = 7.63$, $SD = 1.84$) or low (female target: $M = 5.10$, $SD = 1.93$; male target: $M = 4.72$, $SD = 2.12$). The same vignette accompanied each photograph and briefly described the depicted individual's hometown and interests (e.g., hiking; see Appendix). Participants were instructed to imagine themselves as the boyfriend or girlfriend of the depicted individual and rate his or her physical attractiveness on a 10-point scale (1 = extremely unattractive; 10 = extremely attractive).

Female participants were then asked, "if this man were to propose to you after an extended period of dating, what is the *smallest* size engagement ring that you would be satisfied with him giving to you?" To make their decision, participants saw five identical engagement rings that differed only by carat weight and cost, ranging from 0.50 carats ($500) to 1.50 carats ($9000), and their selection was recorded (see Fig. 1). Male participants were presented with the same set of engagement rings but were asked, "if you decided to propose to this woman after an extended period of dating, which ring would you buy to propose to her?" Before making their selection, they were told to imagine that they earn $36,000 annually (i.e., $3000 per month) to mitigate variability in male participants' actual income.

Following the experimental portion of the survey, participants were asked to provide information about their age, sexual orientation, and relationship status. They were also instructed to rate their self-perceived facial, bodily, and overall attractiveness on a 10-point scale (1 = extremely unattractive; 10 = extremely attractive) relative to others of the same sex and age. Engaged or married participants were asked questions about their partner's age and his or her facial, bodily, and overall attractiveness on a 10-point scale relative to others of the same sex and age. This allowed the researchers to calculate a difference score between the participants' age and the participants' partner's age, as well as a difference score between the participants' self-perceived attractiveness ratings and the participants' ratings of their partner's attractiveness. For the purpose of creating a difference score, ratings of participants' self-perceived attractiveness and those of their partner's attractiveness were summed across facial, bodily, and overall attractiveness scales. Finally, participants were asked whether their engagement involved the purchase of a ring. If so, they were subsequently asked questions about the approximate cost, size (e.g., ¾ carat), color grade (e.g., near

Fig. 1 Participants chose among five identical engagement rings that differed only by carat weight and cost, ranging from .50 carats ($500) to 1.5 carats ($9000)

colorless), and clarity grade (e.g., slightly included) of the engagement ring. Engagement ring cost was estimated by participants in an open-ended format; whereas size, color grade, and clarity grade were coded on ordinal scales, such that higher values represented greater size and quality. Informed consent was obtained from all individual participants included in the study.

Results

A 2 (participant sex: male vs. female) × 2 (target attractiveness: high vs. low) × 2 (participant relationship status: single vs. mated) analysis of variance was conducted to test the following predictions: (1) men would choose larger, more expensive engagement rings to propose to the more attractive target than the less attractive target and (2) women would desire larger, more expensive engagement rings from the less attractive target than the more attractive target. Participants' relationship status was included as a variable to explore the possibility that target attractiveness affected the ring choice of single and mated participants differently.

There were no main effects for participant sex or target attractiveness (p's ≥ .32); however, a main effect for participant relationship status emerged, such that single participants (M = 0.84 carats, SE = 0.02 carats) selected larger engagement rings than mated participants (M = 0.78 carats, SE = 0.02 carats), $F(1, 578) = 5.94$, $p = .02$, $\eta^2 = 0.01$. This main effect was qualified by an interaction between participant sex and relationship status, $F(1, 578) = 4.52$, $p = .03$, $\eta^2 < .01$. Single men (M = 0.83 carats, SE = 0.02 carats) and mated men (M = 0.82 carats, SE = 0.02 carats) selected engagement rings of similar size, whereas single women (M = 0.86 carats, SE = 0.04 carats) selected larger engagement rings than mated women (M = 0.74 carats, SE = 0.02 carts).

An interaction between participant sex and target attractiveness emerged, $F(1, 578) = 10.75$, $p = .001$, $\eta^2 = .02$. Men chose larger, more expensive engagement rings to propose to the more attractive target (M = 0.86 carats; SE = 0.02 carats) than the less attractive target (M = 0.78 carats; SE = 0.02 carats), confirming the first prediction. In addition, women indicated that the smallest size engagement ring that they would be satisfied with receiving was larger and more expensive when given by the less attractive target (M = 0.86 carats; SE = 0.03 carats) than the more attractive target (M = 0.75 carats; SE = 0.03 carats), confirming the second prediction (see Fig. 2). No other interactions emerged (p's ≥ .68).

Correlational analyses were also conducted on the attractiveness discrepancy participants perceived between themselves and the target and their ring choice. Each participant's rating of the target's attractiveness was subtracted from his or her self-rating of overall attractiveness, producing a difference score in which higher values indicate that the participant

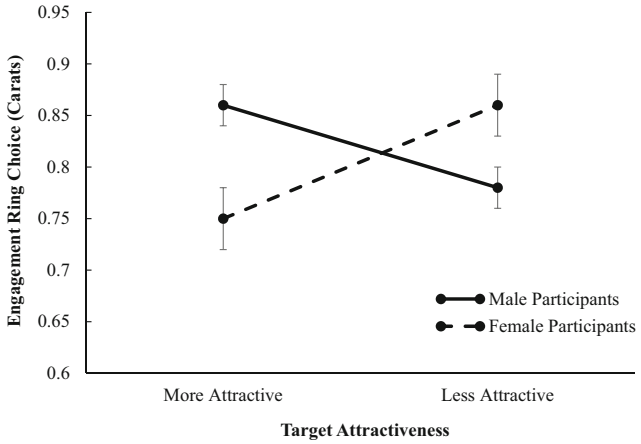


Fig. 2 Mean carat weight of engagement ring choice as a function of participant sex and target attractiveness, revealing a crossover interaction. Error bars represent standard errors

perceived his or her own attractiveness to be greater that of the target. Among male participants, a significant negative correlation emerged, $r(335) = -.12$, $p = .02$, such that as the attractiveness discrepancy increased in the target woman's favor, men chose larger, more expensive rings to propose to the target woman. In contrast, a significant positive correlation emerged among female participants, $r(251) = .27$, $p < .001$; as the attractiveness discrepancy increased in the participants' favor, women desired larger, more expensive rings from the target man.[1]

Finally, to test the prediction that desirable women would expect to receive larger, more expensive engagement rings than less desirable women, a correlational analysis was conducted on female participants' self-ratings of physical attractiveness and their ring choice. As predicted, a positive correlation emerged, $r(98) = .25$, $p = .01$, such that as self-ratings of physical attractiveness increased, women chose larger, more expensive rings.

Actual Engagement Ring Purchases

A series of correlational analyses was conducted to explore relationships between the cost and quality of real engagement rings with age and attractiveness discrepancies in participants and their actual mates (see Table 1). It was predicted that the cost and quality of engagement rings would increase the younger women were relative to their partners. Consistent with this prediction, a negative correlation was revealed for clarity grade, $r(28) = -.41$, $p = .03$, such that the younger women

[1] Correlational analyses on participants' ratings of the target's attractiveness in an absolute sense and ring choice echoed these findings. A significant positive correlation emerged among male participants, $r(335) = .28$, $p < .001$, such that as participants' perception of the target's attractiveness increased, they chose larger, more expensive rings. In contrast, a significant negative correlation emerged among female participants, $r(251) = -.21$, $p = .001$, such that as participants' perception of the target's attractiveness decreased, they desired larger, more expensive rings.

Table 1 Correlations with actual engagement ring purchases

	Age discrepancy		Women's attractiveness		Attractiveness discrepancy	
Engagement ring	*r*	*p*	*r*	*p*	*r*	*p*
Cost	.03	.77	.21	.01**	.04	.62
Size	.33	.06*	− .11	.54	− .11	.52
Color grade	− .28	.11	.06	.74	.21	.22
Clarity grade	− .41	.03**	− .06	.73	.19	.31

Positive values for the age discrepancy variable indicate that the female partner is older than the male partner. Higher values for the engagement ring variables are associated with greater cost, larger size, and better color and clarity grades. A single asterisk indicates a trend toward statistical significance, whereas a double asterisk indicates statistical significance at conventional levels

were relative to their partners, the higher quality engagement ring women received; however, a trend in the opposite direction emerged for ring size, $r(31) = .33$, $p = .06$. The older women were relative to their partners, the larger the engagement ring women received. There were no correlations between age discrepancy and the cost or color grade of engagement rings (p's ≥ .11).

Correlational analyses were also conducted to test the prediction that women's attractiveness would be positively correlated with the cost and quality of their engagement ring. Female participants' self-rated attractiveness and male participants' ratings of their female partner's attractiveness positively correlated with the cost of the engagement ring women received, $r(141) = .21$, $p = .01$; however, no correlations were found between attractiveness ratings and size, color grade, or clarity grade (p's ≥ .54). In addition, no correlations were found between attractiveness disparity across male and female partners and the cost, size, color grade, or clarity grade of engagement rings (p's ≥ .22).

Discussion

Results from the present study supported the prediction that men are willing to purchase larger, more expensive engagement rings when imagining themselves mated to a more attractive woman. This finding corroborates previous research on mate attraction tactics, showing that men display cues of financial success to attract desirable mates (e.g., Buss 1988). Another central prediction was that women would desire larger, more expensive engagement rings when imagining themselves mated to a less attractive rather than more attractive man. Results supported this prediction as well, providing indirect support for the premise that increased resource investment can compensate for decreased physical attractiveness within the domain of women's mate preferences. Finally, it was found that as women's self-ratings of physical attractiveness increased, women chose larger, more expensive rings, regardless of target attractiveness—a finding consistent with the notion that desirable women expect greater resource investment from their mates.

Data about the cost and quality of actual engagement rings was also collected to explore their correlations with age and attractiveness discrepancies in real-world couples. Results largely failed to support the predictions. Significant findings tended to be in the predicted direction (e.g., women's attractiveness positively correlated with the cost of the engagement ring); however, a consistent pattern whereby more desirable women received more expensive and higher quality engagement rings failed to emerge. As reflected in the small sample size of participants who provided information about the size, color grade, and clarity grade of the engagement ring ($n = 30$, approximately), this may have been due to forgotten details about the quality of the engagement ring or some participants having never been told those details (e.g., engagement ring recipients). Previous research showing that younger women received more expensive engagement rings (Cronk and Dunham 2007) sampled recently married individuals who consequently might have been better able to recall the cost of the engagement ring. Thus, future studies on engagement ring expenditures should try to capture information about the engagement ring as soon after the purchase as possible, as well as record the date of purchase to control for inflation. Finally, it is possible that women's age and attractiveness correlated with the cost and quality of their engagement ring at the time of purchase but given the likelihood that many women in the sample were proposed to years—or even decades—ago, their current age and attractiveness may reflect a lower mate value and thus, no longer correlate with the cost and quality of the engagement ring they received. In the current study, variability in the amount of time that had passed since the purchase of the engagement ring likely introduced noise into the data, reducing the magnitude of possible effects.

The purchase of an engagement ring is not only an indication of one's resources, but a signal that one is willing to commit those (and potentially future) resources to a particular person. A profitable avenue of future research may therefore be to explore how existing signals of commitment—or lack thereof—attenuate the value of an engagement ring as an additional

signal. When other signals are present (e.g., cohabiting, sharing a bank account), women are expected to demand less expensive engagement rings than when such signals are absent. Likewise, men who carry a track record of abandonment (e.g., divorce, children from a previous relationship) may be required to give more expensive engagement rings as an honest signal of their commitment to the current relationship.

The current experimental research showed that men invest greater resources in more attractive women as measured by hypothetical engagement ring purchases; however, correlational data from actual engagement ring expenditures did not robustly replicate this pattern. A particularly novel finding of this study was that women desired greater resource investment to compensate for a lack of physical attractiveness in male partners. Further work in this area is likely to reveal mismatches in other desirable traits that can be reconciled by diagnostic signals of commitment.

Acknowledgements The authors thank Mark D. Cloud, Carin Perilloux, and Zachary L. Simmons for providing helpful feedback on drafts of this manuscript.

Compliance with Ethical Standards

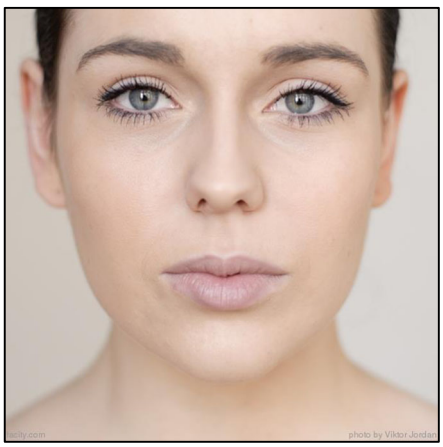
Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Conflict of Interest The authors declare that they have no conflict of interest.

Appendix

Example Experimental Photograph and Vignette

Instructions: Please imagine yourself as the boyfriend of the woman shown below. Below her picture are a few quick facts describing the woman you are dating in greater detail.



Quick Facts:

- Hometown: Bend, OR
- Hobbies: Hiking, watching movies
- Favorite Food: Pizza
- Descriptive Traits: kind, outgoing, and creative

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