



Is smart sexy? Examining the role of relative intelligence in mate preferences[☆]



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ABSTRACT

There has been a recent surge of research on the role of intelligence in mate preferences. To advance this area of research, in two online studies ($N = 743$), we manipulated relative, as opposed to absolute, intelligence and examined desirability in long-term and short-term relationships. In Study 1, we also examined the role of mate value towards understanding differences in desirability and, in Study 2, we also manipulated target's level of physical attractiveness. The sexes found less intelligent partners less desirable, a more intelligent partner was no more desirable than partner who was equal in intelligence, and intelligence was particularly valued as a long-term mate. In addition, mate value was correlated with rejecting less intelligent mates and desiring more intelligent ones in women only. And, last, we found that once men and women found sufficient rates of attractiveness for their short-term partners, they care about the intelligence of their partner.

1. Introduction

Intelligence is likely to have played a role in ancestral problem-solving (e.g., food-finding, animal hunting) and to the degree to which this would have improved Darwinian fitness, selection would have acted upon men and women's psychological systems to shape mate preferences in that trait (Prokosch, Coss, Scheib, & Blozis, 2009). That is, those individuals who had a mate preference for intelligent partners would have made more offspring (who made more offspring on average over generations) characterized by the psychological systems that bias individuals towards finding intelligence attractive (i.e., directional selection). An intelligent mate is likely to have a brain that works better at solving important adaptive and social tasks (Greengross & Miller, 2011; Miller, 2000) and work in behavioral genetics shows that the majority of variance in intelligence (i.e., IQ) is driven by genetic, not environmental factors (Bouchard Jr, Lykken, McGue, Segal, & Tellegen, 1990). Beyond Darwinian concerns, intelligence has implications for success with the ordinary demands of modern life like banking, using maps, and interpreting news stories (Gottfredson, 1997; Lam & Kirby, 2002) all of which may serve as important features of modern life that are relevant to mate choice. Therefore, we build on a recent surge of work on this topic (e.g., Gignac, Darbyshire, & Ooi, 2018; Park, Young, & Eastwick,

2015) to provide new details about the role of intelligence in mate choice.

Research on the role of intelligence in mate choice is characterized by several limitations. The work often fails to consider the role of mating context (Park et al., 2015), is often about perceptions of intelligence in mates (Karbowski, Deja, & Zawisza, 2016), is correlational as opposed to experimental (DiPrete & Buchmann, 2006; Stone, Shackelford, & Buss, 2012), adopts “creative” ways of investigating the role of intelligence, but may have incidentally created confounds (Park et al., 2015), used intelligence to juxtapose it to other mate preferences, but was less interested in intelligence in mate choice itself (Li, Bailey, Kenrick, & Linsenmeier, 2002; Li & Kenrick, 2006), used naturally occurring groups like lawyers and medical students (Townsend, 1989; Townsend & Roberts, 1993), and may fail to consider that intelligence is rated relative to one's intelligence as people typically do not have access to formal IQ scores for their potential partners (Gignac et al., 2018; Prokosch et al., 2009). In two experiments, we attempt to address these problems by assessing desirability of target mates for short-term and long-term relationships as a function of (1) mating context, (2) target's relative intelligence and physical attractiveness (Study 2), and (3) participant's sex and mate value (Study 1).

[☆] The order of authorship after Jonason was determined randomly; each co-author contributed equally to this project. We thank David Lewis for reviewing this paper prior to submission.

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1.1. Are brains “sexy”?

It might seem obvious that people will want a mate who is smart. Being intelligent is a socially desirable, psychosocially useful, and Darwinian adaptive feature of human existence. However, there is considerable variability in people's intelligence and mate selection likely operates on that variability with some people mating (by choice or default) with individuals who differ in intelligence. However, because intelligence is somewhat obscured, people may adopt a simple, self-referential heuristic when evaluating the desirability of potential mates based on intelligence. A person with a high school degree is likely to view someone with a college degree as more than sufficiently intelligent, but a person with a Ph.D. is likely to evaluate that same person as insufficiently intelligent. For example, women who have more advanced education (e.g., medical students) struggle to find partners whereas men who are similarly educated experience a glut of mating opportunities (Kruger & Fitzgerald, 2011; Townsend & Levy, 1990; but see Stanik & Ellsworth, 2010). This effect is usually interpreted as men with more status (via their heightened education) are more attractive to women leading to more mating opportunities, but as women tend to want to commit hypergamy women with high levels of education experience a ceiling effect in who they consider desirable. That is, it is not that men reject smart women, as some claim (e.g., Park et al., 2015), but smart women (and generally women with more mate value; Jonason, Garcia, Webster, Li, & Fisher, 2015) are more discerning in their mate choice than those with less intelligence. However, another way of interpreting this effect is that men and women make judgments of the desirability of others based on their own intelligence. This means that people may evaluate potential mates based on whether they are less, equal, or more intelligent than they are, which then influences mate choice.

In an ideal world, everyone would mate with someone who was the most of everything, including intelligence (Buss & Shackelford, 2008). Having the most attractive, the most intelligent, and the most generous mate sounds good, but the people who can “afford” such a mate is one who is also likely to be high in these traits as well (Buston & Emlen, 2003; Figueredo, Sefcek, & Jones, 2006; Kirsner, Figueredo, & Jacobs, 2003). Instead, mate selection is characterized by a process of trade-offs (Li et al., 2002; Li & Kenrick, 2006). Mating with someone who is low in intelligence likely comes with costs. Such a person may have relatively worse genetic material related to cognitive development and have made more questionable life choices, both of which impose Darwinian and psychosocial costs on the partner. However, mating with someone with relatively more intelligence may also come with costs. With more intelligence, a potential partner has more value on the mating market. This may translate into the smarter partner being more likely to leave the partnership for another relationship and being poached by extrapair parties. Instead, the most satisficing solution may be to partner with someone who is equal in intelligence. The balancing of these costs and benefits may be responsible for the well-documented homogamy in mate selection for intelligence (Bereczkei, Gyuris, Kovcs, & Bernath, 2002; Buss, 1985; Thiessen & Gregg, 1980), but suggests homogamy is an emergent effect of competing interests instead of something sought out *a priori* (Watson et al., 2004). To test this satisficing hypothesis, we predict that (1) less intelligent partners will be the least desirable *but* (2) more intelligent partners will not be any more desirable than partners who are equal in intelligence.

1.2. Some like it smart?

To understand mate preferences, it is essential to examine the interplay between biological sex (Bech-Sørensen & Pollet, 2016; Furnham, 2009; Townsend & Roberts, 1993) and the duration of the relationship (Buss & Schmitt, 1993; Li et al., 2002; Li & Kenrick, 2006; Stewart, Stinnett, & Rosenfeld, 2000). For mammals, females are more obligated to offspring than males are; a pattern that can be seen in

people as well (Trivers, 1972). This asymmetry has acted as a recurrent selection pressure influencing the sexual psychology of men and women differently. Because women have more obligation to offspring (i.e., risk) than men do for engaging in sex, they tend to be more cautious, more discriminating, and to desire mates who have traits that are likely to help them rear offspring. In contrast, men are not so obligated and sometimes can benefit from engaging in casual sex in ways women cannot and, thus, are more willing to engage in casual sex and may be less discriminating in who they have sex with but are equally picky as women are for long-term partners. This is not to say that women do not engage in casual sex nor do they lack reasons to do so or that men are not interesting in or willing to commit. Instead, there are different cost-benefit payouts in each sex that will have, overtime, shaped the mate preferences and sexual behavior in men and women to not be monomorphic.

We propose that a mate's intelligence functions as a heritable indicator of her/his access to resources and ability to survive adaptive challenges (Miller, 2000). However, the degree to which the sexes need a partner to have those qualities differs by the duration of the relationship. Because women have a greater and generalized obligation to their offspring relative to men, they should maintain high standards in the intelligence of their partners regardless of context. That is, because across contexts, women are physiologically obligated to offspring in a way that men are not, their preferences should be insensitive to differences in relationship context (Regan, Levin, Sprecher, Christopher, & Gate, 2000; Prokosch et al., 2009). In contrast, men may devalue intelligence in the short-term but not the long-term context relative to women. In the latter, men have good reason to want a partner who can build a good relationship and offspring because he is pursuing a quality over quantity approach to mating, like women's typical approach. In the short-term, however, men are not obligated to their offspring and partners in the same way. In this case, men may prioritize physical attractiveness over intelligence (Li et al., 2002; Li & Kenrick, 2006) because it acts as a genetic insurance policy in a way intelligence might not.

In contrast, there may be reason to predict that less intelligence can be desirable as well. Intelligence may also play a role in decisions about casual sex partners. First, in the short-term context, a partner who is too intelligent might be too hard-to-get, making them unappealing for casual sex (Jonason & Li, 2013). Second, the function of casual sex is primarily to gain sexual gratification (Jonason, 2013) and intelligence may not translate into a pleasure-inducing quality for a casual relationship because it is likely evidenced over time and repeated interactions. Indeed, people are not particularly good at judging intelligence by facial attractiveness (Zebrowitz, Hall, Murphy, & Rhodes, 2002) which is the primary cue people have access to at zero-acquaintance. Third, the costs of being involved with a less intelligent partner may be muted in casual sex relationships given their temporary nature translating into lower intelligence being rated especially poorly in the long-term, compared to the short-term, context. This effect should be pronounced in women given the greater risks they run for making mating mistakes (Jonason et al., 2015), whereas men (as a default response) may be more willing to have short-term relationships with women who are lower in intelligence given their generally greater willingness to engage in casual sex (Buss & Schmitt, 1993).

While biological sex and relationship context matter, there are other factors to consider when trying to understand mate preferences for intelligence. The first of these is that intelligence is just one of many traits one uses when assessing potential partners for suitability (Buss, 1989; Li et al., 2002). Typically, research allows individuals to indicate their level of interest in a given trait without any considerations about how people make tradeoffs between essential traits and traits that would be nice to have (Buss, 1989), but some research has used multiple characteristics of potential mates (Li et al., 2002; Li & Kenrick, 2006) and details how various traits might interact to produce individual differences in desirability (Miller & Todd, 1998). Nevertheless,

this work is still limited in that it takes an actor-only perspective (i.e., it rarely manipulate traits of the target and is more concerned with how actors make their mate choices) and does not consider how intelligence (and other traits) may vary and how they may jointly predict mate choice. Instead, what might be called for is to manipulate a target mate's quality in terms of intelligence and physical attractiveness and then assess the sex's long-term and short-term mate preferences (Fletcher, Tither, O'Loughlin, Friesen, & Overall, 2004).

While it is true that individuals differ in the degree to which they desire different traits in their mates as noted above, these traits are not all considered to hold the same value in people's minds when making mating decisions. Some traits appear to be more important than others. For instance, early cross-cultural work suggested that both sexes want long-term mates who are characterized by various socially desirable traits like kindness and sense of humor (Buss, 1989) and more modern work is consistent with that whereby the primary reasons long-term mates are rejected center on personality conflicts (Jonason et al., 2015). In short-term and long-term mating contexts (Li et al., 2002; Li & Kenrick, 2006), people attempt to acquire sufficient rates of physical attractiveness before considering other, less essential traits. If this is true, we expect that level of intelligence will play a role in mate choice when the target's physical attractiveness is "sufficient." However, this effect is likely to be strongest in the short-term mating context where physical attractiveness plays the largest role in dictating mate choice (Li & Kenrick, 2006).

And last, we explore the role of mate value in attempting to understand individual differences in mate preferences for intelligence in one's partners (Ben Hamida, Mineka, & Bailey, 1998; Miner, Starratt, & Shackelford, 2009). It is commonly assumed that the reason men do not want to date smart women is because, for instance, they lack self-esteem (Park et al., 2015).¹ To test this possibility, we examine how individual differences in mate value—a mating-specific way of capturing self-esteem (Braise & Guy, 2014; Goodwin et al., 2012)—are correlated with desirability ratings. Mate value reflects how desirable people think they are on the mating pool and influences mate choice (Jonason et al., 2015) and should, therefore, influence decision-making about relative intelligence. If the stereotype is correct, we expect men with lower mate value to rate women who are equal or greater in intelligence as less desirable. However, we have reason to suspect that mate value may function more strongly in women than it does in men as a means of rejecting romantic and sexual partners. Men with more mate value have more opportunities to engage in relationships (Townsend, 1989; Townsend & Roberts, 1993), but women have more to lose for making bad mating choices than men do (Jonason et al., 2015). While all women should reject low quality mates because of this, it is women with especially high (self-perceived) mate value who should be especially likely to reject such partners. In contrast, the costs of mating mistakes are lower in men than women leading them to be relatively less likely to reject lower quality mates. That is, women with more mate value may attempt to commit hypergamy because they think they can afford to reject partners now for potentially better-yet-delayed mating opportunities.

We sought to understand the mating dynamics around individual differences in intelligence in two online experiments. Importantly, and relatively uniquely, we examine the role of relative intelligence as opposed to absolute intelligence to test our assortative mating hypothesis derived from an evolutionary paradigm. We expect both sexes will prefer targets who are similar in intelligence to avoid less intelligent mates, but not prefer a target who is more intelligent than they are compared to one who is similar (H1), but we expect matched-intelligence to be particularly strong in long-term mating contexts (H2) and women (H3), and men may devalue intelligence in their short-term mating partners than women will (H4). We also expect that without

sufficient amounts of a physical attractiveness, intelligence will not influence mate choice (H5), especially for men in the short-term context (H6). And last, we explore the role of mate-value in accounting for men and women's mate preferences as a function of mating context and intelligence levels of targets.

1.3. Study 1: are "brains" desirable?

In Study 1, we test an emergent assortative mating hypothesis (i.e., satisficing) regarding intelligence and mating desirability; that is homogamy is the result of not the cause of mate choice. In this case, the emergent pattern is created by people trading off competing problems while trying to maximize benefit. In contrast to most work on the role of intelligence in mate choice, we focus on relative intelligence, sex differences, and contextual effects. And last, because evolutionary models are inherently economics models (see Jonason & Li, 2013), we examine the role of participant's mate value in accounting for differences in desirability of potential mates who differ in relative intelligence. Mate value serves as a person's buying power in a mating market and influences their selectivity and preferences in their mates.

2. Method

2.1. Participants and procedure

The sample consisted of 476 heterosexual Americans (45% female) who were paid (US\$0.50) through Amazon Mechanical Turk to complete an online experiment advertised as "mate preferences for intelligence".² On average, the participants were 36.33 years old ($SD = 11.00$, $Range = 18-75$), in a committed relationship (67%),³ white/European (77%),⁴ and had a Bachelor's degree (43%).⁵ Participants were informed of the nature of the study, completed a mating desirability task in reference to opposite-sex targets who differed on their relative level of intelligence, and completed a series of personality assessments. The sample size minimum was set at twice as large as the amount (i.e., 250) needed to stabilize correlations (Schönbrodt & Perugini, 2013) given the correlational and experimental tests we planned to run and the average effect size in social psychology ($r \approx 0.20$). Upon completion, participants were thanked and debriefed.

We manipulated relative intelligence by creating three sex-specific (i.e., John, Jess) targets (no pictures provided) who differed relative to the participants in their level of intelligence (i.e., less, equally, or more intelligent). For instance, one condition asked about the desirability of a target described as: "John is less intelligent than you [the participant] are." Men and women completed two randomized, single-items (Buss & Schmitt, 1993) assessing mating desirability (1 = *Extremely undesirable*; 5 = *Extremely desirable*) for a short-term mate (e.g., a casual sex partner) and a long-term mate (e.g., marriage partner) for members of the opposite-sex. They were instructed that even if they were in a relationship now or not looking for that kind of relationship to answer the questions as if they were to offset individual differences in relationship status and sociosexuality.

Individual differences in self-reported mate value were assessed with a 20-item mate value scale (Li, 2017). It captures variance in short-term mate value (e.g., "My physical attractiveness is the main reason

² We had to remove 105 people from our full sample for providing substantial missing data.

³ Results did not differ as a function of this individual difference; therefore, results are collapsed across it.

⁴ African/Black (9%), Hispanic/Latino (5%), Asian (6%), Middle Eastern (1%), and "other" (2%).

⁵ High School Degree (25%), Associates Degree (20%), Master's Degree (10%), and Doctorate (Ph.D., M.D., J.D.) (3%). Given this reasonable normal distribution, we treated this as a continuous measure in analyses but it proved unrelated to desirability across the various conditions.

¹ <https://medium.com/iron-ladies/are-men-threatened-by-intelligent-women-94297b36cc5d>.

why people are romantically interested in me.”), long-term mate value (e.g., “My friends are proud to recommend me to others as a long-term relationship partner.”), and general undesirability (e.g., “Getting a desirable girlfriend/boyfriend seems hopeless to me.”). Participant reported their agreement (1 = *Strongly Disagree*; 5 = *Strongly Agree*). Items were averaged to create composites of long-term mate value (Cronbachs' $\alpha = 0.84$), short-term mate value ($\alpha = 0.88$), and general undesirability ($\alpha = 0.84$).⁶

2.2. Results and discussion

We tested a 2 (participant's sex) \times 3 (relative intelligence) \times 2 (within-subjects mating duration) mixed model ANOVA and found a weak threeway interaction ($F(2, 475) = 3.02, p < .08, \eta_p^2 = 0.01$), an interaction of mating duration by participant's sex ($F(1, 475) = 16.21, p < .01, \eta_p^2 = 0.03$), and an interaction of mating duration by target's intelligence ($F(1, 475) = 25.32, p < .01, \eta_p^2 = 0.10$). The threeway interaction (Fig. 1) suggests that men found women who were less intelligent than they were more desirable ($t = 3.18, p < .01$) for a short-term than a long-term relationship (H4), women found men who were equal in intelligence more desirable ($t = -5.71, p < .01$) for a long-term than a short-term relationship, and women found men were more intelligent more desirable ($t = -5.12, p < .01$) for a long-term than a short-term relationship. There was also a small sex difference indicating women ($M = 3.06, SD = 1.16$) found the less intelligent target more desirable ($t = -2.06, p < .05$) than men did ($M = 2.73, SD = 1.51$) for the long-term which may merely reflect women's greater interest in these kinds of relationships (Buss & Schmitt, 1993).

In Table 1 we report within and between mating context effects in men and women. Regardless of the relative level of intelligence of the target, people, especially women, found long-term relationships more desirable than short-term relationships (H3). Regardless of participant's sex, an especially high premium was placed on equal/greater relative intelligence as opposed to lower for long-term relationships whereas in short-term relationships, people only preferred equally intelligent targets (H1). In addition, there was a main effect (H2) of mating duration ($F(1, 475) = 3.02, p < .05, \eta_p^2 = 0.01$), suggesting participants found long-term relationships ($M = 3.68, SE = 0.08$) more desirable than a short-term relationship ($M = 3.40, SE = 0.08$) and a main effect for level of intelligence ($F(2, 475) = 11.65, p < .01, \eta_p^2 = 0.05$) suggesting that participants found the target equal in intelligence the most desirable ($M = 3.93, SE = 0.12$), followed by the target who is more intelligent ($M = 3.58, SE = 0.12$), and last, the target who is less intelligent ($M = 3.11, SE = 0.12$).

Last, we tried to account for the variance in desirability by understanding the role of participant's mate value. On their own, all three measures of mate value were uncorrelated with desirability in either mating context, in male and female participants, and across differences in target's intelligence. We crossed target's relative intelligence with participant's sex and examined the correlations between mate value and desirability. We found no effects in male participants. When women evaluated a man who was not as smart as she was, if she had more short-term mate value, she found that man less desirable for a short-term relationship ($r(69) = -0.26, p < .05$). When women evaluated a man who was smarter than she was, their short-term mate value ($r(75) = 0.34, p < .05$), long-term mate value ($r(75) = 0.31, p < .05$), and general undesirability ($r(75) = -0.24, p < .05$) were correlated with short-term desirability and long-term mate value was correlated with long-term desirability ($r(75) = 0.33, p < .01$).

⁶ While presently an unpublished measure, it is an improvement from other measures of mate value (e.g., Kirsner et al., 2003) because it (1) teases out the fundamental distinction of long-term and short-term mating context, and (2) is not merely a taxonomy of desirable traits. More details are available upon request.

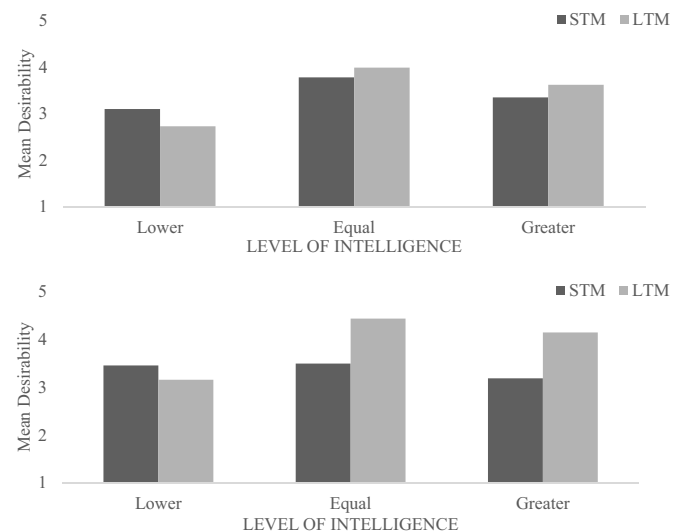


Fig. 1. Men (top panel) and women's (bottom panel) long-term and short-term mate preferences as a function of target's level of intelligence (Study 1). Note. STM = short-term mating; LTM = long-term mating.

Table 1

Long-term and short-term mating desirability as a function of participant's sex and level of intelligence of the target (Study 1).

	M (SD)		t	d
	LTM	STM		
Participant's sex				
Overall	3.65 (1.74)	3.39 (1.64)	-3.91**	-0.36
Male	3.44 (1.83)	3.41 (1.78)	-0.34	-0.04
Female	3.92 (1.58)	3.38 (1.45)	-5.02**	-0.69
t	-3.04**	0.21		
d	-0.27	0.02		
Relative intelligence				
Lower	2.91 (1.38)	3.26 (1.59)	3.50**	0.55
Equal	4.19 (1.75)	3.66 (1.69)	-5.10**	-0.81
Greater	3.87 (1.82)	3.28 (1.62)	-4.87**	-0.77
F	25.32**	3.07*		
η_p^2	0.10	0.01		

Note. d is Cohen's d for effect size; LTM = long-term mate, STM = short-term mate.

* $p < .05$.

** $< .01$.

2.3. Study 2: beauty or “brains”?

While Study 1 provided some evidence for our “satisficing” hypothesis, another important consideration is how interest in intelligent partners functions relative to other traits like physical attractiveness. In Study 2, we conducted a brief, person-perception experiment where we crossed level of partner intelligence with level of physical attractiveness and measured short-term and long-term mating desirability. We examined sex differences and context effects to examine the role of intelligence in mate choice.

3. Method

3.1. Participants and procedure

Volunteers ($N = 267$; 29% female)⁷ were solicited through Australian Reddit sites (e.g., Sydney, University of Wollongong) and

⁷ The five participants who indicated an “other” sex, were excluded from related analyses.

Facebook (via snowballing). The average participant was 29.63 years old ($SD = 9.45$, $Range = 18–65$),⁸ white/European (74%),⁹ heterosexual (86%),¹⁰ in a committed relationship (53%),¹¹ educated to the level of a Bachelor's degree (47%),¹² and from Australia (64%).¹³ The sample size minimum was set like in Study 1. Participants were asked to partake in a 2-minute study on the role of intelligence in mate choice. They were provided a link that redirected them to a Qualtrics site containing the between-subjects questionnaire described below. Participants were informed of the nature of the study. If they consented, they progressed through the study, completed a brief demographics questionnaire, and were thanked and debriefed about the nature of the study.

Participants were randomly assigned to rate the short-term (e.g., a casual sex partner) and long-term (e.g., marriage partner) desirability (1 = *Extremely undesirable*; 5 = *Extremely desirable*) of a person (gender-neutral) who they might be interested in having sex with or dating (order of presentation randomized). They were instructed that if they had a current partner or were not interested in either of the relationships now, to answer the questions as if they were. Participants were given descriptions of mates who differed in relative intelligence (i.e., less, same, more; $\approx 33\%$ each) and physical attractiveness (i.e., insufficient, sufficient; abundantly; $\approx 33\%$ each).

3.2. Results and discussion

We tested a 2 (participant's sex) \times 3 (relative intelligence) \times 3 (level of attractiveness) \times 2 (short-term and long-term mating desirability) mixed ANOVA. We found a threeway interaction of mating context, level of intelligence, and level of attractiveness ($F(4, 244) = 3.90$, $p < .01$, $\eta_p^2 = 0.06$). To understand this interaction, we ran a 2 (participant's sex) \times 3 (relative intelligence) \times 3 (level of attractiveness) ANOVA for short-term and long-term desirability independently.

When examining short-term desirability, we found a weak main effect of level of intelligence ($F(2, 261) = 2.87$, $p < .06$, $\eta_p^2 = 0.02$), a main effect of level of attractiveness ($F(2, 261) = 67.11$, $p < .01$, $\eta_p^2 = 0.36$), and an interaction of attractiveness and intelligence ($F(4, 261) = 2.63$, $p < .05$, $\eta_p^2 = 0.04$). Short-term desirability was insensitive to the distinction of equal or greater intelligence, but both were more desirable than a partner who had less intelligence ($p < .05$). An insufficiently attractive partner was particularly unappealing relative to the other two ($p < .01$) whereas the abundantly and sufficiently attractive partners differed less ($p < .05$). It appears that it was only in the sufficiently attractive partner condition (not the other two) that intelligence mattered (H5 and 6) in accounting for short-term mating desirability ($F(1, 90) = 8.03$, $p < .01$, $\eta_p^2 = 0.15$) such that the partner who was greater ($M = 3.94$, $SD = 0.85$) and equal ($M = 4.13$, $SD = 0.88$) in intelligence did not differ in short-term desirability, but the equal target was more ($t = -3.82$, $p < .01$) was more appealing than the less intelligent ($M = 3.28$, $SD = 0.84$) partner (H1). This also means that attractiveness was the necessity whereas, because the value of intelligence was dependent on meeting the attractiveness threshold, we replicated the former's status as a necessity and the latter's status as a luxury.

When examining long-term desirability, we found a weak main

effect of participant's sex ($F(1, 261) = 2.98$, $p < .08$, $\eta_p^2 = 0.01$), a main effect of level of intelligence ($F(2, 261) = 52.79$, $p < .01$, $\eta_p^2 = 0.31$), a main effect of level of attractiveness ($F(2, 261) = 30.27$, $p < .01$, $\eta_p^2 = 0.20$), and an interaction of attractiveness and participant's sex ($F(4, 261) = 3.89$, $p < .05$, $\eta_p^2 = 0.03$). Men ($M = 3.41$, $SE = 0.70$) reported slightly more long-term mating desirability directed to the target than women did ($M = 3.17$, $SE = 0.11$). Long-term desirability was insensitive to the distinction of equal or greater intelligence, but both were more desirable than a partner who had less intelligence ($p < .01$) with a similar but weaker effect in the short-term context ($p < .05$). The same was true for physical attractiveness, such that people made little distinction between being sufficiently and abundantly attractive (H1), but both were rated as more desirable as a long-term mate than a partner who was insufficiently attractive ($p < .01$). And, the interaction suggests the sexes find the insufficiently attractive target undesirable; men have a slight bias towards thinking the sufficiently attractive target is more attractive than women did ($t = -1.96$, $p < .06$), and men ($M = 3.94$, $SD = 1.20$) found the abundantly attractive target more desirable than women ($M = 3.24$, $SD = 1.39$) did ($t = -2.19$, $p < .05$).

We found a twoway interaction of mating context by level of intelligence ($F(2, 244) = 26.56$, $p < .01$, $\eta_p^2 = 0.18$) suggesting the less intelligent target was more desirable for short-term than a long-term partnership ($t = 5.82$, $p < .01$) but the equal ($t = -3.54$, $p < .01$) and more intelligent ($t = -2.23$, $p < .05$) targets were more desirable for long-term partnerships (Fig. 2, top panel). We also found a twoway interaction of mating context by level of attractiveness ($F(2, 244) = 11.58$, $p < .01$, $\eta_p^2 = 0.09$) suggesting only an abundantly attractive partner was more attractive ($t = 2.56$, $p < .05$) for short-term than the long-term relationships (Fig. 2, bottom panel). This confirms the primacy of attractiveness in short-term contexts (Li & Kenrick, 2006) and how intelligence may drive long-term mating motivations when in equal/greater amounts but short-term mating in lesser amounts.

We found main effects for level of intelligence ($F(4, 244) = 28.31$, $p < .01$, $\eta_p^2 = 0.19$) and level of attractiveness ($F(4, 244) = 64.38$, $p < .01$, $\eta_p^2 = 0.35$) such that the target who was less intelligent ($M = 2.73$, $SE = 0.10$) was less desirable ($p < .01$) than the targets who were equal ($M = 3.63$, $SE = 0.10$) and more intelligent ($M = 3.60$, $SE = 0.10$) which were themselves equal and the target who was insufficiently attractive ($M = 2.40$, $SE = 0.10$) was less desirable ($p < .01$) than the targets who were sufficiently ($M = 3.74$, $SE = 0.09$) and abundantly attractive ($M = 3.82$, $SE = 0.10$). Last, we found one (weak) main effect of participant's sex ($F(1, 244) = 3.02$, $p < .08$, $\eta_p^2 = 0.01$) suggesting men ($M = 3.42$, $SE = 0.06$) may be generally more willing to rate female targets who differed in intelligence and attractiveness as desirable than women did ($M = 3.22$, $SE = 0.10$) are.

4. General discussion

Researchers have been examining mate preferences for decades (Bech-Sørensen & Pollet, 2016; Buss & Schmitt, 1993; Fletcher et al., 2004). Much of this work takes a macroscopic view of mate preferences, documenting large lists of desirable (Buss, 1989) and undesirable (Jonason et al., 2015) qualities and examining sex differences and context effects in those preferences (Li et al., 2002; Li & Kenrick, 2006). In the present study, we focused on the issue of mate preferences in partner's relative (as opposed to absolute) intelligence in men and women, across mating context, and considered participant's mate value (Study 1) and target's physical attractiveness as well (Study 2). In so doing, we have added to the literature in the area that tends to adopt natural groups designs (Townsend, 1989; Townsend & Roberts, 1993), be correlational (DiPrete & Buchmann, 2006; Stone et al., 2012), and, is potentially, methodologically and conceptually flawed (Gignac et al., 2018; Park et al., 2015).

We made several discoveries in these studies. First, we documented

⁸ Age was uncorrelated with mating desirability.

⁹ 2% Latin/Hispanic, 10% Asian, 6% Middle-Eastern, and 5% "other".

¹⁰ 1% homosexual, 7% bisexual, and 2% other/prefer not to say.

¹¹ Ratings of desirability were unrelated to relationship status, suggesting participants responses were insensitive to this distinction. We, therefore, collapsed results across this difference.

¹² 19% High School degree, 5% Associates degree, 13% Master's degree, and 10% doctorate.

¹³ 10% Australian, 20% other. Desirability did not differ across location of participants. Therefore, we collapsed our results across this distinction.

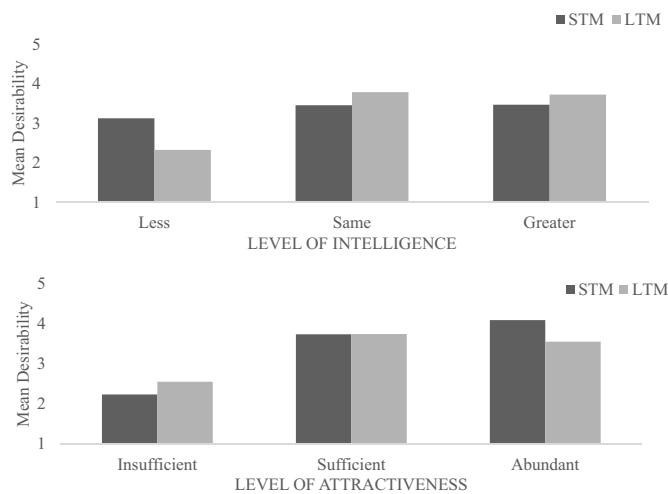


Fig. 2. Interaction of mating context and level of intelligence (top panel) and mating context and level of attractiveness (bottom panel). Note. STM = short-term mating; LTM = long-term mating.

a satisficing effect whereby participants found the unintelligent partner undesirable but found the equal and more intelligent partners similar in desirability; an effect that seems to also be present for physical attractiveness although this was not the focus on this study. We contend this reflects the costs on each end of the spectrum in intelligence when choosing mates. The less intelligent person is one to be avoided as this person will come with considerable social and even biological costs, making less relative intelligence a dealbreaker, on average. In contrast, a partner who was relatively more intelligent comes with her/his own set of costs like a greater probability of defection and even a sense of superiority, both which may also be dealbreakers. This apparently nonlinear function of level of intelligence creates a balancing point whereby people prefer partners of equal intelligence (Bereczkei et al., 2002; Buss, 1985; Thiessen & Gregg, 1980).

Nevertheless, there were sex differences in desirability that tracked the long-term/short-term distinction brought to our attention by sexual strategies theory (Buss & Schmitt, 1993). First, partners with less intelligence were not rated as totally undesirable and we found within its limited range of desirability, it was men who were more willing to have casual sex than a serious relationship with such a woman than women were with such a man. This may reflect men's willingness to lower their standards more than women are or women's overt rejection of a man who has relatively less intelligence. We suspect it is the latter, because intelligence is unlikely to play a serious role in casual sex exchanges (Li & Kenrick, 2006) because (1) such encounters are more about sexual pleasure than anything else (Jonason, 2013) and (2) the very nature of the relationship might preclude such a nuanced and obscure trait being salient enough to fixate on in decision-making. Instead, men may view a less intelligent woman as an “easier target” for their short-term, sexual agenda. Second, women, more than men, placed a premium on intelligence in their long-term partners relative to their short-term ones. Because the costs of making mating mistakes is substantially higher in women than in men (Trivers, 1972), women should reject low quality men whereas men should be less likely to reject women as fast as women do, and even are willing to lower their standards for short-term relationships where men invest much less than women do in offspring (Buss & Schmitt, 1993). Third, we found that intelligence only seemed to matter in the decision-making process when a sufficient level of physical attractiveness had been met in the short-term context. Given the role of physical attractiveness in short-term relationships (Buss & Schmitt, 1993; Li & Kenrick, 2006), there is little sense in people's minds to consider whether someone is smart until the most important (i.e., necessity) trait has been established to be at a sufficient level. In

this way, physical attractiveness, in the short-term context, acts as a prerequisite so that a person might be considered for further interaction. What this may mean though is that men are not rejecting intelligent women in some *carte blanche* fashion, but instead, men make tactical adjustments to their mate preferences as a function of relationship context and probably their relationship goals. Indeed, it may be that there is some disconnect between the sexes here where women are placing considerably more emphasis on intelligence and long-term mating and men are placing more of an emphasis on physical attractiveness and short-term mating which creates the illusion that men are rejecting smart women.

The last contribution of this paper was the examination of the role of mate value in understanding who finds people attractive based on individual differences in intelligence. Women with more short-term mate value appeared to reject (i.e., found less desirable) men who are less intelligent than they are. In addition, women with more mate value, in general, found men who were smarter than they were more desirable for short-term relationships and women with more long-term mate value found a man with more intelligence than she had more desirable. Women often want to commit hypergamy for evolutionary or pragmatic reasons (Buss, 1995; Eagly, 1987; Eagly & Wood, 1999; Li & Meltzer, 2015; Zentner & Eagly, 2015), but not all women will be able to do so. It is only those women who embody valuable traits on the market including physical attractiveness, but also traits like kindness (Li et al., 2002; Li & Kenrick, 2006), who can do so as they have the best chance of attracting men who are relatively above them in a valued trait like intelligence. It is notable here that men's mate value was uncorrelated with how desirable they find women as a function of their relative intelligence, suggesting that (1) it is not the men cannot handle smart women but (2) women who want a man who is smarter than they are but cannot always find such a man. Again, this may create sexual conflict whereby women—especially those who feel like they have high value like doctors and lawyers (Townsend, 1989; Townsend & Roberts, 1993)—are placing a greater emphasis on the very trait that the men they want—those high in intelligence—are rather ambivalent about. This may create the false impression that men reject smart women when men are merely and only weakly indexing their mate choice on a woman's intelligence, treating it as a secondary (or even tertiary) feature.

5. Limitations and conclusions

Despite the evolutionary economics approach and the experimental methods used, this study was nonetheless limited in several ways. First, the samples were W.E.I.R.D. (i.e., Western, educated, industrialized, rich, and democratic; Henrich, Heine, & Norenzayan, 2010) which might make them particularly useful participants for online research on mate preferences, but might not be the same as people living in tribal groups or in places where intelligence is less favored for other features like hunting ability or piety. Second, we focused on the short-term/long-term distinction in relationships, but that ignores the possibility and importance of some of the “shades of grey” when trying to understand the contextual power of particular kinds of relationships (Jonason, Valentine, & Li, 2012). Third, we juxtaposed physical attractiveness and relative intelligence in Study 2, but this may be artificial as mate choice is likely composed of multiple mate cues (Jonason, Raulston, & Rotolo, 2012; Miller & Todd, 1998). Fourth, we have adopted rather simple and even artificial methods to test our hypotheses. We did so to control for external sources of variance that are likely present in “live interaction” studies. This means we cannot get away from the criticism that what we have found here is merely evidence of what men and women think they want as opposed to what they—in a behavioral fashion—would choose when faced with *en vivo* mate choice (Park et al., 2015). Fifth, the magnitudes of our effects were modest-to-small in nature (with some effects only approaching significance) suggesting the role of intelligence in mate choice is

limited. This would be expected given that mate choice is conducted using multiple cues and we have only isolated one of them here. Nevertheless, any incremental advantage in mating over time can accumulate to serve fitness goals and make a particular trait advantageous. Sixth, we used an as-yet-unpublished measure of mate value. At the very least, the measure is conceptually sound, had good internal consistency, and has face validity, but these results are tentative. Seventh, one downside of this kind of research is the relatively small sample sizes from a fixed location and the hypothetical nature of the judgments (e.g., demand characteristics). Given the ubiquity and nuance now available in online dating, a more detailed look at the relationship between factors like intelligence and education in mate choice may be worth pursuing. Future research should attempt to address these limitations to better inform research on mate preferences in relation to intelligence.

We began our study with the question, is smart sexy. In short, the answer is “yes” when in relatively equal quantities. Our research suggests both sexes want mates of similar intelligence for long-term (especially) and short-term relationships (Regan et al., 2000; Prokosch et al., 2009). We contend this is because such a partner is likely to have more in common with the person doing the choosing and is less likely to pose serious threats from either being too low in value (i.e., low resource acquisition ability) or too high in value (e.g., mate poaching attempts). This may mean that when men and women bemoan that the opposite-sex are rejecting them for their intelligence, they might consider whether they are trying to attract someone who is similar in intelligence to them.

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