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Mate Preferences do Predict Attraction and Choices in the Early Stages of Mate Selection

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Mate Preferences do Predict Attraction and Choices in the Early Stages of Mate Selection

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Abstract:

Although mate preference research has firmly established that men value physical attractiveness more than women do and women value social status more than men do, recent speed-dating studies have indicated mixed evidence (at best) for whether people's sex-differentiated mate preferences predict actual mate choices. According to an evolutionary, mate preference priority model (Li, Bailey, Kenrick, & Linsenmeier, 2002; Li & Kenrick, 2006; Li, Valentine, & Patel, 2011), the sexes are largely similar in what they ideally like, but for long-term mates, they should differ on what they most want to avoid in early selection contexts. Following this model, we conducted experiments using online messaging and modified speed-dating platforms. Results indicate that when a mating pool includes people at the low end of social status and physical attractiveness, mate choice criteria are sex-differentiated: Men, more than women, chose mates based on physical attractiveness, whereas women, more than men, chose mates based on social status. In addition, individuals who more greatly valued social status or physical attractiveness on paper valued these traits more in their actual choices. In particular, mate choices were sex-differentiated when considering long-term relationships but not short-term ones, where both sexes shunned partners with low physical attractiveness. The findings validate a large body of mate preferences research and an evolutionary perspective on mating, and they have implications for research using speed-dating and other interactive contexts.

Keywords: mate preferences, speed-dating, long-term mating, short-term mating, evolutionary psychology

"Tell me more, tell me more, did you get very far?" (the Thunderbirds to Danny)

"Tell me more, tell me more, like does he have a car?" (the Pink Ladies to Sandy)

Researchers investigating mate preferences have shown, consistent with the above refrain from the musical Grease, that women place greater importance than men on a potential partner's ability to acquire resources, whereas men place higher value than women on sexual access and physical attractiveness (e.g., Buunk, Dijkstra, Fetchenhauer, & Kenrick, 2002; Fletcher, Tither, O'Loughlin, Friesen, & Overall, 2004; Li, Bailey, Kenrick, & Linsenmeier, 2002; Shackelford, Schmitt, & Buss, 2005; Sprecher, Sullivan, & Hatfield, 1994). These relative preferences are reflected in self-concepts (Campbell & Wilbur, 2009) and folktales (Gottschall, Martin, Quish, & Rea, 2004), appear to be universal (Buss et al., 1990), and have been well established for several decades (e.g., Hill, 1945; McGinnis, 1958). But are they valid? Do they hold up when people are considering actual, rather than hypothetical, potential mates?

On the one hand, sex-differentiated mate choice criteria have been observed in mate selection contexts such as personal advertisements in newspapers (e.g., Wiederman, 1993) and online dating sites (e.g., Hitsch, Hortacsu, & Ariely, 2006). On the other hand, it is not clear that mate choice criteria are sex-differentiated or linked to mate preferences in contexts where potential mates behaviorally interact with each other. In particular, researchers have recently explored a modern day, live-interaction mating venue—speed-dating—and have found mixed results. For instance, whereas one study found that men valued physical attractiveness in their speed-dates more than women did (Fisman, Iyengar, Kamenica, & Simonson, 2006), another found no sex differences in selection criteria and no connections between stated preferences and mate choice criteria (Eastwick & Finkel, 2008).

Whether or not mate preferences hold up in interactive contexts has implications for the validity not only of the large body of mate preference research but also of the evolutionary framework that theorists have offered regarding the utility of mate preferences. In this paper, we sought to address and clarify the validity of mate preferences in interactive, early selection contexts where previously unacquainted individuals become acquainted. We next describe how an evolutionary view of mate preferences focuses as much or more on people avoiding those who do not meet minimal standards as it does on attaining a high-value mate. According to this model, mate choice criteria are more likely to be sex-differentiated and linked to mate preferences when the mating pool includes those at the low end of key traits. Guided by this framework, we examined mate evaluation and choice in online- and live-interaction dating contexts in four studies.

An Evolutionary Perspective on Mate Preferences

Whereas both sexes highly value physical attractiveness in short-term mates (e.g., Li & Kenrick, 2006; Regan, 1998), women tend to place greater value on social status and men tend to more highly value physical attractiveness in long-term, committed relationships (e.g., Buss, 1989; Li et al., 2002). From an evolutionary perspective, these preferences reflect what constitutes reproductive value for each sex in each context (Buss & Schmitt, 1993; Gangestad & Simpson, 2000; Symons, 1979). First, as people age, their ability to bear offspring decreases. However, whereas men's fertility decreases relatively slowly over the lifespan, women's fertility decreases quickly after 30 and disappears by menopause. Because women's fecundity is especially tied to age, men may have evolved to prefer romantic partners who appear sexually mature but youthful and are thus more

fertile (short-term) and able to bear more offspring over the lifetime (long-term). Indeed, physical features linked to youth and fertility, such as smooth skin, soft hair, and a low waist-to-hip ratio, are especially attractive to men (e.g., Singh, 1993).

Since ancestral times, men's resources have been particularly important for offspring survival and viability (Geary, 2009). Because men vary greatly in their ability to provide resources, women may have evolved to value social status in their long-term mates, as social status is associated with access to resources (Symons, 1979). For short-term matings, male resource provisioning is less applicable. However, women may have evolved to value indicators of a man's genetic quality, which provides valuable resistance to local pathogens and can be passed on to offspring (Gangestad & Simpson, 2000; Gangestad & Thornhill, 1997). Consistent with this theory, women tend to prefer physical features associated with genetic quality, including symmetry (e.g., Gangestad & Thornhill, 1998) and facial masculinity (e.g., Perrett et al., 1999), around the most fertile time of the menstrual cycle and are most likely to have casual sex with such men during that time (Gangestad & Thornhill, 1997). Thus, both sexes may have evolved to value physical attractiveness highly in short-term mates, although the specific features they are attracted to and the adaptive reasons are different (Li & Kenrick, 2006).

The Speed-Dating Paradigm: Varied Findings

Recently, researchers have begun studying actual mate choice in the modern-day venue of speed-dating. In speed-dating events, unacquainted men and women sit across from one another in pairs and have a few minutes to chat before they recombine into different pairs. After each speed-date, individuals of each pair indicate whether or not they want to exchange contact information. If both parties indicate "yes," their information is then exchanged by the organizer.

A seminal study using this paradigm analyzed speed-dating events held by the company HurryDate (Kurzban & Weeden, 2005). Physical attributes, such as an attractive face or body, body mass index, height, race, and age, predicted the extent to which both sexes were both selective and selected. In contrast, less observable traits, such as education, income, and number of future children desired, were inconsequential. Furthermore, although people's preferences for some traits (age, race, and religion) often predicted the demographic profile of the events they chose to attend (e.g., people preferring older mates attended events for older individuals), their preferences had limited predictive power regarding the types of dates they selected within the events (Kurzban & Weeden, 2007).

A study involving speed-dating events held for graduate and professional students at Columbia University (Fisman et al., 2006) found sex differences in criteria for the yes/no decision: Whereas men more greatly valued physical attractiveness than women did, women more highly valued intelligence. Women also valued the affluence of a partner's home neighborhood, though the sex difference was not significant.

Todd, Penke, Fasolo, and Lenton (2007) set up a speed-dating study through a company in Munich. For each sex, stated preferences were related positively to participants' self-assessments on the same traits but were not linked to mate choices. Although men's self-perceived wealth and status predicted their stated preferences for physical attractiveness, women's self-perceived physical attractiveness did not predict their stated preferences for wealth and status. Stated preferences were also unrelated to choices made at speed-dating events. However, choices were sex-differentiated in a manner consistent with an evolutionary perspective: Men chose partners based on the partners' physical attractiveness, and women chose partners whose overall desirability matched their own physical attractiveness.

Eastwick and Finkel (2008) ran an extensive mating study that included speed-dating events for Northwestern University undergraduates. Stated preferences were consistent with evolutionary predictions: Men placed greater value on female physical attractiveness, whereas women placed greater value on male earning prospects. However, the self-reported preferences failed to predict the criteria subsequently used when evaluating potential mates encountered at the events and beyond. Also, although the relationship between partner physical attractiveness and yessing (agreeing to future contact) was greater for men than women, there were no sex

differences in the degree to which partner physical attractiveness and earning prospects were related to other measures of relationship initiation, including romantic desire and chemistry.

No sex differences were found in the valuation of physical attractiveness for mate choices in another college sample (Luo & Zhang, 2009) and in a study of speed-dating events advertised to the general public in Germany (Asendorpf, Penke, & Back, 2011). However, the latter study did find that women, but not men, selected partners on the basis of income. Finally, an analysis of speed-dating events conducted by a company in the United Kingdom indicated that women, more than men, selected partners with professional and managerial jobs (Lenton & Francesconi, 2010).

The findings regarding stated preferences for physical attractiveness and social status and the valuation of these traits in actual mate choices, along with various features of the studies, are summarized in Table 1. Events differed on several dimensions, some of which we consider in the General Discussion. The three studies examining stated preferences for attractiveness and status all found sex differences in the importance of these traits in the predicted directions. In contrast, the three studies that examined links between stated preferences and actual choices found none. Findings that varied across studies involved sex differences in the valuation of attractiveness and status in mate choice. In this case, the two significant findings of predicted sex differences occurred in noncollege student samples. As we argue below, there are important theoretical reasons to expect sex differences in mate choice criteria, as well as links between preferences and choices, to be present in some samples but not others.

Table 1
Summary of Previous Speed-Dating Studies

Study	Type of events (participants)	Setting	No. sessions (M participants per session)	Age M (SD)	Stated preferences		Actual choices		Links between preferences and choices
					PA	Resources	PA	Resources	
Kurzban & Weeden (2005, 2007)	HurryDate company in large North American cities (professionals?)	Bars, clubs; in evenings	~211 (~50)	32 (5)		**F > M**	M (preferred low BMI)	None	Unrelated
Fisman et al. (2006)	Columbia University (grad/professional students)	Closed room in a bar/restaurant	14 (~29)	?			**M > F**	*F* (chose affluent neighborhoods)	
Todd et al. (2007)	FastDating events in Munich	?	1 (46)	35 (5)	[a]	[b]	M (preferred Fs with higher self-rated PA)		F stated preference for PA linked to M's self-rated PA; otherwise unrelated
Eastwick & Finkel (2008)	Northwestern University (college students for free)	University art gallery	7 (23)	20 (1.0)	**M > F**	**F > M**	Mixed	**M > F**	Nonsignificant
Luo & Zhang (2009)	UNC-Wilmington (college students for course credit)	Classroom	6 (18)	20 (1.8)	**M > F**	**F > M**	M = F		
Lenton & Francesconi (2010)	Speed-dating company in United Kingdom	?	84 (44)	?				**F > M** (chose professional/managerial jobs)	
Asendorpf et al. (2011)	Germany (general population)	Campus	17 (22)	33 (7)			M = F	*F* (but not M, preference for income)	

Note. Significant sex differences are bolded. Equality or inequality signs are shown only if sex differences were tested. Blank cells indicate no directly relevant tests were conducted. PA = physical attractiveness; F = female; M = male; BMI = body mass index; UNC = University of North Carolina.
[a] Self-rated attractiveness correlated with preference for attractiveness for both men and women (sex difference not tested). [b] Self-rated wealth and status marginally correlated with preference for wealth and status for men but not women (sex difference not tested).

Are Mate Preferences Valid?

On the one hand, a large body of research, supported by an evolutionary perspective, indicates sex-differentiated mate preferences. Self-reports of mate ideals or standards have been shown to be internally reliable and stable over time and have evinced a pattern of convergent and discriminant correlations with other variables (Fletcher, Simpson, Thomas, & Giles, 1999). Furthermore, they have a strong record of predictive validity for relationship evaluations (Fletcher et al., 1999), attempts to regulate partners (Overall, Fletcher, & Simpson, 2006), and relationship dissolution (Eastwick & Neff, 2012; Fletcher, Simpson, & Thomas, 2000).

On the other hand, some speed-dating studies indicate a disconnect between preferences and choices and a lack of sex differences (e.g., Eastwick & Finkel, 2008; Kurzban & Weeden, 2005), and other studies of live interaction (Eastwick, Finkel, & Eagly, 2011) as well as a recent meta-analysis (Eastwick, Luchies, Finkel, & Hunt, 2013) suggest that although mate preferences guide the evaluation of hypothetical partners, they are less

related to the evaluation of ongoing relationship partners and even less so for potential mates encountered live. As a result of these findings, the validity of a large body of mate preference research and the associated evolutionary perspective has been called into question. Drawing on Nisbett and Wilson's (1977b) celebrated argument, Eastwick and Finkel (2008) posited that individuals simply lack good introspective awareness of their romantic ideal preferences and instead base their judgments on flawed a priori theories. To evaluate this argument, we must fully understand the nature and functions of mate preferences.

Mate Preference Priorities: The Low End Matters

According to the mate preference priority model (Li et al., 2002; Li & Kenrick, 2006; Li, Valentine, & Patel, 2011), although numerous traits are important in a mate, it is adaptive to first screen out individuals with low levels of traits associated with critically important reproductive value—those who, in ancestral times, would not have been able to reproduce or contribute to offspring survival. This initial screening process should be most relevant at the very early stages of mate selection, before any significant investment is made. For long-term mates, the traits that constitute critically important reproductive value are different for the sexes. Thus, despite having similar preferences for what they ideally prefer (a well-rounded mate), men and women likely have evolved mechanisms that initially prioritize different key traits (necessities) in long-term partners (Li et al., 2002). Men may first seek mates who clear a minimum threshold on physical attractiveness, whereas women may first seek mates who clear a minimum threshold on social status and resources.

The mate preference priority model is compatible with a view of mate selection involving satisficing processes (Grammer, Fink, Juette, Ronzal, & Thornhill, 2001; Todd & Miller, 1999). For instance, Miller and Todd (1998) proposed a sequential aspiration-level model of mate choice in which people accept only mates who exceed their aspiration levels for different traits. Because traits vary in terms of the ease with which they can be assessed (e.g., personality traits take longer to assess than physical attractiveness), they tend to be assessed sequentially over time. Accordingly, further courtship and more serious relationships are pursued only if a mate clears each successive hurdle. Consistent with satisficing processes in general are studies of attractiveness (e.g., Grammer et al., 2001), simulations of mate selection (which suggest that a mate value matching process may be a more realistic explanation of mate selection than a universal preference for the most desirable mate; Kalick & Hamilton, 1986), and studies of mate choice in animal species (Bateson, 1983).

Direct support for the mate preference priority model comes from studies using a budget allocation methodology as well as a mate screening paradigm. These studies have shown that sex differentiation in mate preferences (in the predicted directions) occurs when choices are made among low levels of traits at the very beginning of people's screening process for long-term mates (Li, 2007; Li et al., 2002; Li & Kenrick, 2006; Li et al., 2011). Related evidence comes from studies where people choose between different levels of physical attractiveness and status depicted in ecologically valid profiles (e.g., Townsend, 1993; Townsend & Levy, 1990) and from studies showing that the value of these key traits exhibit diminishing marginal returns (Kenrick, Sundie, Nicastle, & Stone, 2001; Li et al., 2002; Li & Kenrick, 2006).

If the mate preference priority model is valid, we should expect preferences for physical attractiveness and resource-related traits to be clearly expressed in actual mate choice—and sex differences to emerge—when the mating pool includes individuals of low status and low attractiveness and people are considering each other as potential long-term partners. However, it is not clear that speed-dating participants are representative of people in their age group on key attributes for mate selection (Asendorpf et al., 2011, p. 28) and, thus, whether these conditions have been met in previous speed-dating research.

For instance, on a college campus, students largely share similar social status by virtue of being college students (Carnevale & Rose, 2003). Although there are differences in economic background, men with low-end social status or earning prospects whom female university students might be unlikely to date (e.g., store clerks, community college students) are simply absent from the mating pool (e.g., Townsend, 1993). A lack of low-status people might also apply to off-campus events. For instance, the income level for the urban male participants in Kurzban and Weeden's (2005) HurryDate study ($M = \$84,000$, $SD = \$42,000$) was relatively

high. In fact, the company's cofounder and president has described Hurrydate's clientele as "young, cosmopolitan professionals" (HurryDate, 2005).

Although a plausible argument can be advanced for a lack of low socioeconomic status in a speed-dating sample, the same logic seems unlikely to apply to physical attractiveness (Eastwick & Finkel, 2008, p. 261). However, physically unattractive people are more likely to anticipate being rejected as a potential dating partner (Montoya, 2008). Such rejection anticipation might be relevant for speed-dating events, which center around people being evaluated quickly and repeatedly by the opposite sex. Also, there may be a stereotype that speed-dating is mostly useful for people who lack mating opportunities (a concern that highly physically attractive people would likely not have). Thus, it is possible that particularly unattractive people, as well as particularly attractive individuals, may avoid such venues, thereby reducing both low- and high-end variance in physical attractiveness and, thus, the predictive power of mate preferences.

Similar issues of preselection may also apply to contexts outside of speed-dating events. For instance, people's social networks tend to consist of individuals with similar social status and other traits (e.g., McPherson, Smith-Lovin, & Cook, 2001). Thus, studies of mate choice processes occurring among friends and associates may be examining choices that occur in samples of limited variability where initial selection has already taken place.

Furthermore, it has been unclear whether speed-dating and attraction studies have involved long- or short-term mating contexts and, thus, whether an evolutionary perspective would even predict sex-differentiated mate choices. For instance, in one study, both sexes reported having more long-term than short-term mating interest before a speed-dating event (Asendorpf et al., 2011). However, as this and other studies have found (e.g., Kurzban & Weeden, 2005), both sexes highly valued physical attractiveness in their speed-dates, which is more consistent with a short-term mating context. As Kurzban and Weeden (2007) suggested, people may be pondering a long-term partner when reporting preferences for an ideal speed-dating match but, when confronted with several attractive singles, switch to a short-term mating mode. Such a process, which may be particularly likely to occur for studies held in short-term mating venues such as bars and nightclubs (e.g., Kurzban & Weeden), would contribute to mate choice criteria lacking sex differences and being disconnected from stated mate preferences.

The Current Research

Although speed-dating research has provided useful insights into early mate choice in a modern, live-interaction context, a dismissal of the role of mate preferences (and an associated evolutionary perspective) may be premature. Our argument is that mate preferences, from a mate preference priority perspective, include mechanisms that function in early mate selection contexts to prioritize obtaining moderate levels of reproductively relevant traits, which, for men and women, tend to be different in a long-term mating context. As such, individuals at the low end of key traits have to be present in the mating pool for sex-differentiated preferences to be strongly manifested in actual mate choices. However, it is not clear that low levels of key traits have been well represented in past speed-dating events (or in other live-interaction contexts) or that participants have been considering each other as long-term mates in such venues.

We examined mate choice and the validity of mate preferences in four studies. First, we addressed a potential challenge to our argument that there has been insufficient variability in past studies: Past speed-dating studies failed to find sex differences in mate choice and links between preferences and choices, despite reporting relatively large variation in participants' perceptions of traits. It seemed to us that such perceived variability might well be a function of the nature of the sample. For example, a college student may be regarded as having average social status in the general population; however, if compared only among fellow college students, he or she might be viewed as having low status if he or she is at the low end of that group. Accordingly, we tested the hypothesis that trait ratings of specific individuals will reflect the homogeneity of the group within a specific sample by having students rate the earning prospects only of other students (high variance among students expected) or of students as well as professionals and low-income individuals (low variance among students expected).

We then experimentally manipulated social status and physical attractiveness in an online messaging experiment (Study 2) and social status (Study 3) and physical attractiveness (Study 4) in a modified speed-dating paradigm. By ensuring the presence of potential mates who are low versus average on these traits, we expected choices to be consistent with the standard sex-differentiated functions of mate preferences predicted by evolutionary psychology.

We investigated two main questions in Studies 2, 3, and 4. First, we examined whether the sexes differ in their mate choice criteria by looking for sex differences in the association between target trait levels and romantic interest toward targets. We predicted that, on average, target physical attractiveness would more strongly influence men's than women's romantic interest, whereas target social status would more strongly influence women's than men's romantic interest. Second, we examined whether individuals' stated preferences predict the criteria they use when evaluating actual mates by testing, separately for physical attractiveness and social status, the link between participants' stated preference and the association between target trait levels and romantic interest toward targets. Regardless of their sex, individuals who ascribe a greater importance to a trait were predicted to demonstrate a stronger positive association between target trait level and romantic interest toward the target.

Furthermore, as described above, an evolutionary perspective on mate preferences hypothesizes that sex differences (men's prioritization of physical attractiveness vs. women's prioritization of social status) occur more in a long-term mating context than in a short-term context in which both sexes tend to prioritize physical attractiveness (Li & Kenrick, 2006; Li et al., 2011). So far, however, little work has been done to examine whether mate choices in speed-dating events are for long-term or short-term mates. In Study 4, to address this important dimension of mate selection, we preliminarily investigated (a) whether criteria underlying participants' romantic interest are more in line with their long-term mate preferences or their short-term preferences and (b) whether the context-differentiated preference patterns espoused by an evolutionary perspective would hold up when people specifically considered live-interaction partners for a long-term versus short-term relationship.

Study 1

Our framework suggests that there has been insufficient meaningful low-end variation on key traits in speed-dating studies conducted on college students or professionals. However, in some of these studies, a respectably large amount of variation in participants' ratings of each other on key traits has been reported. Accordingly, it could be argued that previous studies have failed to find sex-differentiated mate choices despite having individuals in their samples with low levels of key traits. We sought to first address this concern.

We believe that trait rating variation probably reflects comparisons within the rating context rather than fixed perceptions of absolute trait levels. Thus, a group of individuals with relatively small trait variation within a general population may be perceived as differing much more widely if the individuals are compared only among themselves. This idea is related to the body of research on intergroup bias (Messick & Mackie, 1989) and how judgments of ingroup traits generally exhibit a heterogeneity bias (see Mullen & Hu, 1989) but, when the group represents a minority, a homogeneity bias is observed (Simon, 1992).

In Study 1, college students rated the earning prospects of fellow college student target profiles representing both low and high earning prospects. When rated in the context of other college student profiles, the target profiles were expected to differ widely in rated earning prospects. However, when college student target profiles were considered among profiles representing low and high earning prospects in the general population, we expected differences between ratings of the target profiles to significantly decrease and the students with low earning prospects to be perceived as having average earning prospects.

Method

Participants

Participants were 47 male (age: M = 23.46 years, SD = 1.53) and 41 female (age: M = 21.38 years, SD = 1.26) undergraduates at a major Singaporean university who were paid S$ 3.

Materials and procedure

Participants reviewed six opposite-sex profiles of similarly aged individuals and rated them (1 = extremely below average, 7 = extremely above average) on earning prospects (good career prospects, ambitious/driven; α = .82). Each profile contained a photo and a brief description. Photos were of front-facing East Asian adults obtained from public domain websites and edited for size and quality uniformity. We selected photos of average physical attractiveness (M = 3.92, SD of Ms = 0.15) as rated by 20 individuals (1 = extremely unattractive, 7 = extremely attractive). Profile descriptions were based on a perusal of actual profiles at the university and interviews of several students who described people they actually knew. In the college context condition, participants reviewed six profiles allegedly of fellow students. Two profiles described relatively low status (e.g., a marketing major with an internship at a small retailer, not sure about career plans), two described moderate status (e.g., an information systems student with a second major in finance, interning at an insurance company and interested in service), and two described relatively high status (e.g., a go-getter double-majoring in business and law with an internship at an investment bank). In the general population context condition, two profiles described low status (e.g., a technical school graduate who works at a mall) and two described high status (e.g., a recent Harvard graduate with a promising career in investment management). A low-status college profile and a high-status college profile were randomly chosen to be target profiles and were also included in the general population condition.

Results and Discussion

We ran a general linear model (GLM) with earning prospects as the dependent variable, the status of the two college-student target profiles (low, high) as a within-subjects variable, and participant sex and sample context (college students, general population) as between-subject variables. There was a strong sample × status interaction, $F(1, 84) = 67.63$, $p < .001$, $\eta 2 = .45$, unqualified by sex. As shown in Figure 1, when viewed among other college student profiles, the two target profiles differed widely on rated earning prospects (M = 6.43 vs. M = 3.12), $F(1, 84) = 354.88$, $p < .001$, $\eta 2 = .81$. However, when viewed among profiles in the general population (which include individuals who, according to our model, likely have low enough status to evince sex-differentiated mate choices), the two targets were perceived to be much closer (M = 5.55 vs. M = 4.31), $F(1, 84) = 47.77$, $p < .001$, $\eta 2 = .36$. In fact, the lower status target went from being considered low in earning prospects (beneath the scale midpoint) among college students to being considered average (above the scale midpoint) in the general population.
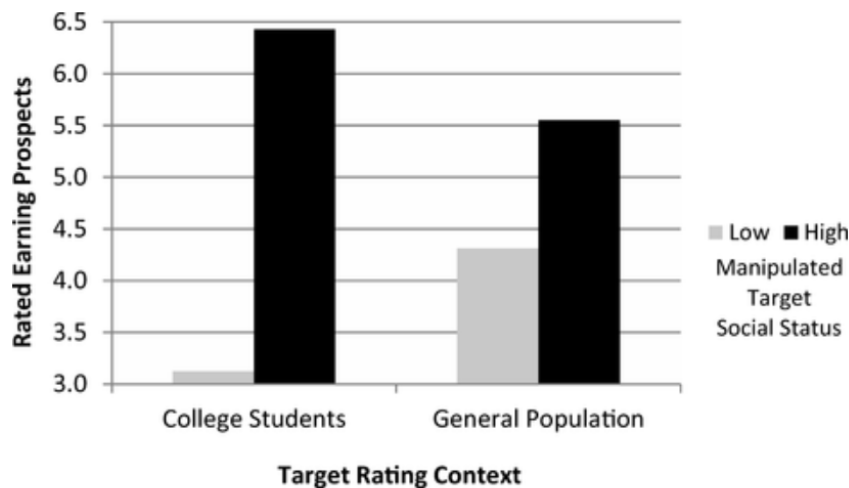
Target Rating Context

Figure 1. Effect of sample context on ratings of target earning prospects (Study 1).

These results indicate that large variance and low ratings on a key trait may reflect comparison processes within the sample and, as in the case of past studies based on college samples or professionals, do not by themselves indicate the presence of individuals who are low in the general population and low enough on the trait to evince sex-differentiated mate choice. As described above and examined subsequently, a level of social status that is low enough is likely below the normal range of college students or professionals (e.g., Townsend, 1993).

Study 2

In Study 2, we utilized a modern-day medium through which many individuals become acquainted: online messaging. As we have argued, speed-dating paradigms might not have captured enough low-end variability in key mate selection traits due to natural sampling biases. Hence, we experimentally manipulated both the social status and the physical attractiveness of chat partners to ensure such variability. With full ranges of each variable, we predicted, sex differences in mate choice criteria would emerge, with men valuing physical attractiveness more than women and women valuing social status more than men in potential mates. We also predicted stated preferences would correspond with actual choices: Those placing higher value on a trait should respond more favorably to actual potential mates who are higher versus lower on that trait.

Method

Participants

The study drew 643 undergraduates taking psychology courses at a major university in Singapore. Of these, 44 indicated being nonheterosexual and six did not respond to questions regarding sexual orientation. Because this study focused on romantic interest toward opposite-sex targets, these individuals were excluded from analyses, yielding 593 participants: 371 women (age: M = 20.65 years, SD = 1.58) and 222 men (age: M = 22.58 years, SD = 1.74).

Procedure

Participants attended a study called "Chatting Online" in which they engaged in online messaging. Each participant sat in a private testing room and completed an online survey on mate preferences. The experimenter then signed the participant into Windows Live Messenger with a username consisting of the university's initials + "Student" and took a webcam picture of the subject for the chat window display. The experimenter told the participant, "The person you are messaging with is a [social status condition; see next section for exact wording of each condition]. He/she (opposite-sex) is messaging from another location and is being told that you are a student at this university. The only guidelines for this chat are to get to know each other a bit and do not give out or ask for any personal information or anything that could identify yourself or the other person."

After 7 minutes of messaging, the chat partner (a confederate) told the participant, "The experimenter tells me that our chat time is up" and politely said good-bye. Shortly afterward, the experimenter came by and instructed the participant to complete a post-chat online survey.

Experimental manipulations

The chat partner was one of six confederates in another room messaging as an opposite-sex individual under one of three (counterbalanced) social status conditions. The conditions were established through focus-group meetings with several students: low ("a high-school-degreed person working in fast food"), moderate ("a student majoring in business at another university"), and high ("a law student [undergraduate] at another university with a job lined up at a top law firm"). The confederates, preselected for familiarity with local slang and instant messaging customs, were told to chat intelligently and pleasantly across all conditions but to answer occupation-related questions consistent with their alleged social status.

From the same photo database used for Study 1, we selected two male photos of low (Ms = 2.46, 1.92, SDs = 0.66, 0.76; percentiles within the database = 15.5, 1.7), moderate (Ms = 3.85, 3.77; SDs = 0.99, 1.09; percentiles = 51.7, 48.2), and high physical attractiveness (Ms = 5.62, 5.38; SDs = 0.77, 0.77; percentiles = 98.2, 94.8) and two female photos of low (Ms = 2.38, 2.31; SDs = 1.04, 0.75; percentiles = 9.6, 8.0), moderate (Ms = 4.08. 4.00; SDs = 0.86, 0.82; percentiles = 56.4, 50.0), and high physical attractiveness (Ms = 5.77, 5.46; SDs = 0.93, 0.66; percentiles = 91.9, 88.7). The confederate displayed a headshot photo of low, moderate, or high physical attractiveness (counterbalanced) in the chat window (confederates knew to which condition the photo belonged, and both participants and confederates could see the displayed photo).

Materials

Pre-chat mate preferences survey

In the mate preferences survey, percentiles were explained and a comparison population was given: "The percentile scales correspond to how a person measures against all others of the same sex that you might encounter on a busy street during a typical week" (e.g., Li, 2007). Participants were also given definitions of social status ("education, what occupation they have or intend to have, financial affluence, etc.") and physical attractiveness ("how good-looking someone's physical features [i.e., body, face] are"). They were told, "For each characteristic, indicate the minimum percentile level you would require a date to have" (e.g., Kenrick, Groth, Trost, & Sadalla, 1993; Kenrick, Sadalla, Groth, & Trost, 1990).

Post-chat evaluation measures

Participants rated agreement (1 = strongly disagree, 7 = strongly agree) with statements on the chat partner's traits ("The chat partner was physically attractive," "… had high social status") and their dating interest ("I would potentially be interested in going on a date with this person") and provided demographic information.

Results

Sex differences in stated mate preferences

As predicted and consistent with past research, men required a date to have more physical attractiveness (M = 70.16, SD = 14.97) than women did (M = 62.87, SD = 15.07), t(582) = 5.69, p < .001, η 2 = .05, whereas women required more social status (M = 66.01, SD = 15.74) than men did (M = 57.45, SD = 19.21), t(582) = −5.85, p < .001, η 2 = .06.

Manipulation checks

A GLM analysis indicated the manipulation of chat partner physical attractiveness was effective both for male participants, $F(2, 217) = 69.17$, $p < .001$, $\eta 2 = .39$, and for female participants, $F(2, 368) = 93.88$, $p < .001$, $\eta 2 = .34$. Men judged female partners in the high-attractiveness condition ($M = 5.09$, $SD = 1.31$) to be more attractive than those in the moderate condition ($M = 4.46$, $SD = 1.09$), who were considered more attractive than those in the low condition ($M = 2.86$, $SD = 1.10$). The same held true for women's perceptions of male partners (high: $M = 4.87$, $SD = 0.93$; moderate: $M = 3.80$, $SD = 1.07$; low: $M = 3.11$, $SD = 1.06$). The manipulation of partner social status was also effective both for male participants, $F(2, 214) = 66.79$, $p < .001$, $\eta 2 = .38$, and for female participants, $F(2, 367) = 170.49$, $p < .001$, $\eta 2 = .48$. Women judged male partners in the high-status condition ($M = 4.95$, $SD = 0.94$) to have higher status than those in the moderate condition ($M = 4.24$, $SD = 0.78$), who were judged to have higher status than those in the low condition ($M = 2.85$, $SD = 0.99$). The same was true for men and their female partners (high: $M = 5.00$, $SD = 1.11$; moderate: $M = 4.21$, $SD = 1.12$; low: $M = 2.93$, $SD = 1.04$).

Sex differences in criteria predicting dating interest

Using a GLM, we tested for sex differences in the relationship between manipulated target-partner physical attractiveness (low, moderate, high) and social status (low, moderate, high) on participants' (male, female) interest in dating their partners. Sex differences on both manipulated variables were indicated by significant interactions of attractiveness × sex, $F(2, 572) = 4.45$, $p = .012$, $\eta 2 = .02$, and status × sex, $F(2, 572) = 3.48$, $p = .031$, $\eta 2 = .01$. As shown in Figure 2 (top), men's dating interest did not differ significantly, $F(2, 572) = 1.66$, $p = .19$, among partners with low, moderate, or high social status. In contrast, women's dating interest significantly increased, $F(2, 572) = 17.44$, $p < .001$, $\eta 2 = .06$, as partner status increased. As shown in Figure 2 (bottom), as partner physical attractiveness increased, women's dating interest increased, $F(2, 572) = 8.03$, $p < .001$, $\eta 2 = .03$, but men's interest increased even more, $F(2, 572) = 23.10$, $p < .001$, $\eta 2 = .07$.
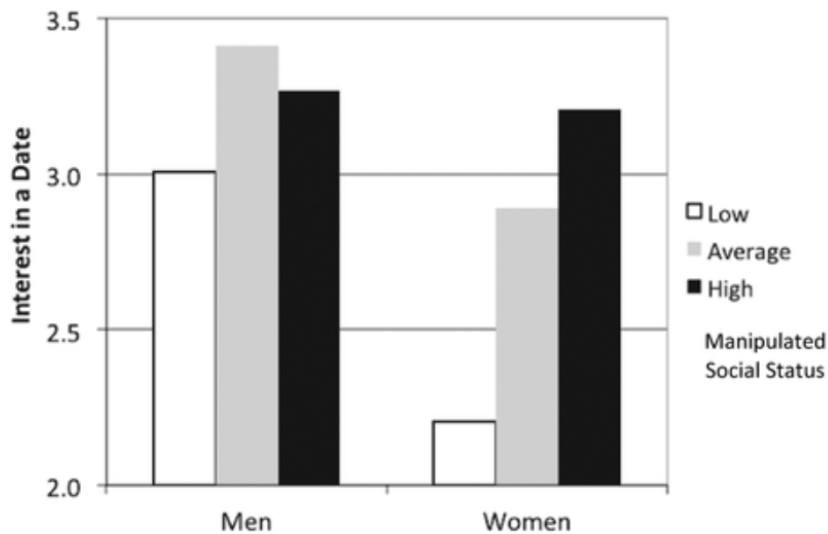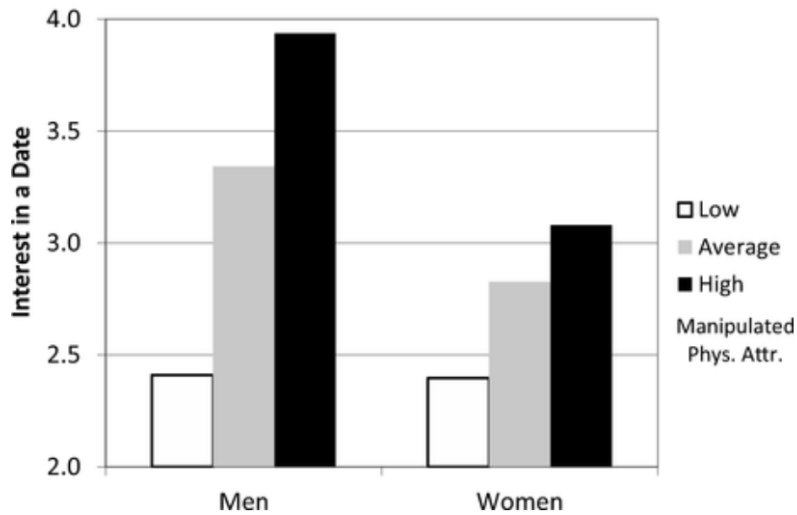
Figure 2. Sex differences in the effects of experimentally manipulated social status and physical attractiveness (Phys. Attr.) on dating interest (Study 2).

Are stated requirements related to dating interest criteria?

Next, we examined the extent to which people's pre-chat stated requirements moderated the relationship between manipulated partner trait levels and interest in dating the partner. Compared to those having low stated requirements for a trait, individuals with higher stated requirements were expected to have greater dating interest toward targets who are higher (vs. lower) on that trait. A significant physical attractiveness requirement × manipulated level interaction, $\beta = .010$, $t(577) = 2.21$, $p = .028$, $\eta 2 = .01$, indicated that for individuals with a higher (vs. lower) minimum requirement for a date's physical attractiveness, manipulated attractiveness had a greater positive impact on dating interest (see Figure 3, which compares the effect of manipulated attractiveness on dating interest for those with requirements one standard deviation below the mean to those one standard deviation above). The trait requirement × social status interaction, however, was not significant ($p = .22$).
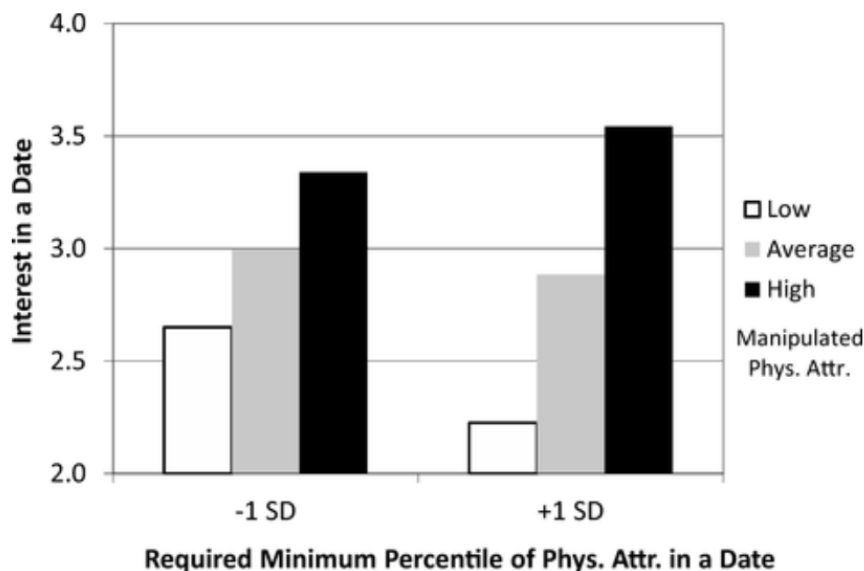

Figure 3. Stated preferences for physical attractiveness (Phys. Attr.) moderate the effect of experimentally manipulated physical attractiveness on interest in dating chat partner (Study 2). SD = standard deviation.

Discussion

In Study 2, we examined relationships among stated mate preferences, manipulated target trait levels of both physical attractiveness and social status, and dating interest in an online messaging experiment. As summarized in Table 2, there were significant sex differences: a target partner's manipulated physical attractiveness increased men's more than women's interest in dating, whereas a partner's manipulated status increased women's—but not men's—interest.

Table 2
Summary of Findings: Sex Differences

Effect examined	Physical attractiveness	Social status/earning prospects
Study 2 (both PA and SS manipulated)		
Effect of trait level on dating interest using		
Manipulated trait levels	M > F*	F > M*
Perceived (participant-rated) trait levels	n.s.	F > M†
Study 3 (SS manipulated)		
Effect of manipulated trait levels on		
Romantic desirability		F > M***
Yessing		F > M**
Effect of perceived (participant-rated) trait level on		
Romantic desirability	n.s.	F > M**
Yessing	n.s.	F > M**
Study 4 (PA manipulated)		
Effect of manipulated trait levels on		
Romantic desirability	M > F**	
Yessing	M > F*	
Effect of perceived (participant-rated) trait levels on		
Romantic desirability	F > M*	n.s.
Yessing	n.s.	n.s.
Choosing moderate physical attractiveness over low physical attractiveness for		
Long-term relationship	M > F***	
Short-term relationship	n.s.ᵃ	

Note. PA = physical attractiveness; SS = social status; F = female; M = male; n.s. = nonsignificant.
ᵃ Both sexes chose moderate PA.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

As summarized in Table 3, mate choice criteria were also related to mate preferences: As minimum requirements for physical attractiveness increased, so did the positive relationship between the target-partner's manipulated physical attractiveness and participants' interest in dating the target. Social status requirements, however, did not significantly moderate the relationship between manipulated target social status and dating interest. Overall, the results support a sex-differentiated mate preference priority model and indicate that, at least for physical attractiveness, the link between stated preferences and mate choice criteria depends on how much objective variability there is.

Table 3

Summary of Findings: Links Between Mate Preferences and Mate Choice Criteria

Link examined	Physical attractiveness	Social status/earning prospects
Study 2 (both PA and SS manipulated)[a]		
Preferences moderating the relationship between		
Manipulated trait levels and dating interest	Positive interaction[*]	n.s.
Perceived trait levels and dating interest	Positive interaction[*]	Positive interaction[*]
Study 3 (SS manipulated)[b]		
Preferences moderating the relationship between		
Manipulated trait levels and romantic desirability		Positive interaction[***]
Manipulated trait levels and yessing		Positive interaction[*]
Preferences moderating the relationship between		
Perceived trait levels and romantic desirability	Positive interaction[*]	Positive interaction[***]
Perceived trait levels and yessing	Positive interaction[*]	Positive interaction[***]
Study 4 (PA manipulated)[b]		
Long-term mate		
Preferences moderating the relationship between		
Manipulated trait levels and romantic desirability	Positive interaction[**]	
Manipulated trait levels and yessing	Positive interaction[**]	
Preferences moderating the relationship between		
Perceived trait levels and romantic desirability	n.s.	n.s.
Perceived trait levels and yessing	n.s.	n.s.
Short-term mate		
Preferences moderating the relationship between		
Manipulated trait levels and romantic desirability	n.s.	
Manipulated trait levels and yessing	n.s.	
Preferences moderating the relationship between		
Perceived trait levels and romantic desirability	n.s.	n.s.
Perceived trait levels and yessing	n.s.	n.s.

Note. PA = physical attractiveness; SS = social status; n.s. = nonsignificant.
[a] Mate preferences = minimum requirements for a date. [b] Mate preferences = importance of a trait in a chat partner.
[*] $p < .05$. [**] $p < .01$. [***] $p < .001$.

Study 3

Although Study 2 utilized a novel interactive paradigm, participants chatted online with confederates, rather than in person with other participants. Thus, in Studies 3 and 4, we examined mate choice using a live, speed-dating paradigm. If the mate preference priority model is valid, sex-differentiated mate choices linked to preferences should occur when people initially choose from among individuals who are low versus moderate on key traits; high trait levels are not necessary to evince these effects. Accordingly, Study 3 allowed college-student participants to have speed-dates with other college students as well as individuals selected for having low-status jobs.

With social status (low, moderate) as a manipulated variable, we expected to see consistent sex differences in the effect of social status on romantic interest (i.e., women valuing status in their mate choices more than men did) across two measures of romantic interest. We also expected significant links between stated preferences and mate choices: Those who place higher value on social status in their stated preferences should have greater romantic interest in actual potential mates who are moderate (vs. low) on social status.

Method

Participants

Participants were 60 male (age: M = 22.95 years, SD = 1.74) and 82 female (age: M = 21.23 years, SD = 1.36) undergraduates at a Singaporean university given psychology course credit.

Procedure

Modified speed-dating paradigm

Each participant speed-dated four opposite-sex targets: two individuals employed in a low-status job and two other college students. We recruited low-status targets with an advertisement seeking nonprofessional, nonmarried people age 18 to 24 to participate in a chat study. Respondents read about the speed-dating

procedures and e-mailed a photo. Those selected as low-status targets held jobs regarded by presurveyed students as being low in social status (e.g., fast food employees, security guards, waitstaff, and gas station attendants). We recruited college student targets from another university (of equal prestige) to reduce the possibility that participants might already be acquainted with targets and to eliminate ingroup (same-school) bias as a confounding factor. We set up three 5-hr sessions, each with a separate set of four female targets, and three sessions with separate sets of four male targets. Each set of targets had two low-status individuals and two college students. To reduce potentially conflicting status information conveyed by clothing, we required all targets to wear white T-shirts.

Sessions

The first 30 minutes of each 5-hr session was used for target administration. During this time, targets were briefed with speed-dating instructions, assigned IDs, and seated in every other cubicle in a row of tall, wide, and deeply walled cubicles. For each session, targets were given drinks, snacks, a meal, and one hour of scheduled breaks. Male targets chatted with an average of 27 female participants and female targets chatted with an average of 20 male participants. No target appeared or indicated being fatigued from their participation, and ratings of targets did not significantly change over the course of their sessions.

Participants signed up for 30-min slots within each session, with each slot accommodating up to four participants. After the targets were settled in, the first group of participants (opposite-sex to the targets) arrived. After they registered, they were photographed. Participants filled out the pre-event survey and were led to a waiting area. When all participants for a time slot had arrived (or 10 min had passed from the reporting time, whichever was first), the experimenter briefed the participants on the procedures (the same as for the targets). Each participant was randomly assigned to a cubicle in a row of cubicles, with the open side facing the open side of a cubicle where a target was seated. This arrangement allowed for some privacy.

Each speed-date session lasted 4 minutes, during which participants spoke freely with one another. The experimenter rang a bell after each session to signal participants to stop talking. Participants rotated to the next target-date and were then given 2 minutes to fill out a survey about the just-completed date, before the experimenter rang the bell again to signal the start of the next date. After a group of participants had completed chats with each of the four targets, they were debriefed, credited, and dismissed. This procedure repeated for each new group of participants. After all participant sets for a session had been run, the targets for that session were debriefed and compensated with S$ 50. Whenever a participant and target yessed each other, the corresponding e-mail addresses were sent to both parties.

Materials

Using a Likert-type scale (1 = strongly disagree, 7 = strongly agree), a mate preference survey (Eastwick & Finkel, 2008) asked for the importance of physical attractiveness (physically attractive, hot; $\alpha = .73$) and earning prospects (good career prospects, ambitious/driven; $\alpha = .79$) in a potential date. Participants also rated their date-targets on these traits (αs = .91, .84) and on romantic desirability (like, sexually attracted to, willing to date; $\alpha = .78$) and whether they would be interested in exchanging e-mails with each target ("yes" or "no").

Results

Because the study design involved chat partners nested within subjects, responses were analyzed with hierarchical linear and nonlinear modeling (HLM; Raudenbush & Bryk, 2002). Dependent measures of partner evaluation were analyzed with hierarchical linear regression, whereas the yes–no item was analyzed via hierarchical nonlinear regression. We specified fixed slopes for all models predicting romantic desirability and yes–no responses because the random variation in slopes was not significant. Such models provide more power to test the cross-level interaction effects of theoretical interest (Snijders & Bosker, 1999).

Because participant-level residuals for the yes–no measure were nonnormal, significance tests on these responses were based on robust standard errors (Huber, 1967; White, 1982). This method can provide more reliable estimates of participant-level effects when the sample size is sufficiently large (> 100; Maas & Hox, 2004).
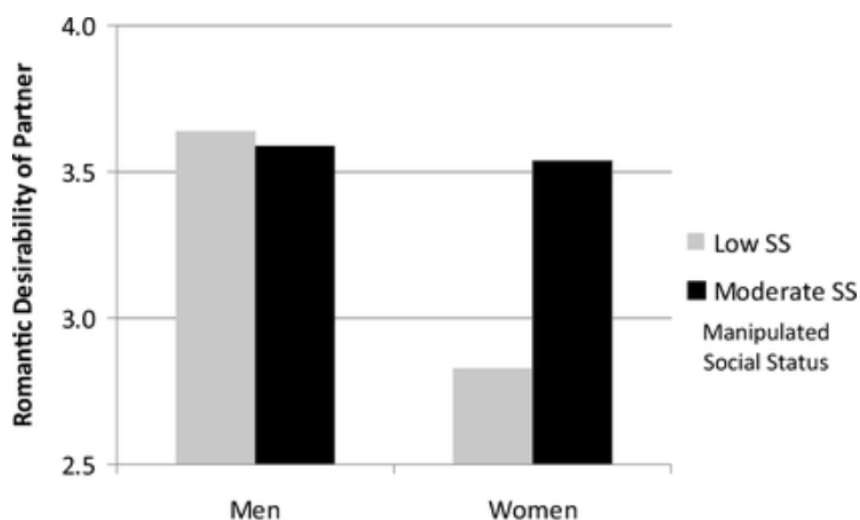
Sex differences in stated mate preferences

Consistent with predictions and past research, men placed more importance on a potential date's physical attractiveness (M = 5.13, SD = 0.91) than women did (M = 4.63, SD = 1.12), t(140) = 2.84, p = .005, η 2 = .05, whereas women placed more importance on earning prospects (M = 5.37, SD = 0.94) than men did (M = 4.42, SD = 1.10), t(140) = −5.54, p < .001, η 2 = .18.

Manipulation check

Moderate targets were rated as having greater earning prospects than low targets both by men (Ms = 4.90 vs. 3.99, respectively), F(1, 102) = 43.12, p < .001, and by women (Ms = 4.79 vs. 3.98, respectively), F(1, 102) = 49.91, p < .001.

Sex differences in mate choice criteria

We regressed the dependent measures onto manipulated social status, participant sex (male = −1, female = 1), and their interaction. For romantic desirability, there was a significant social status × sex interaction, b = .19, t(436) = 4.82, p < .001, η 2 = .05. As shown in Figure 4 (top), as manipulated social status went from low to moderate, women's attraction toward the target increased. In contrast, men's attraction was unaffected by the target's social status. There was also a significant sex × social status interaction for yessing, b = .34, t(430) = 2.78, p = .006, η 2 = .02. As shown in Figure 4 (bottom), as manipulated target social status increased, women were more likely to yes the target. In contrast, men's likelihood of yessing the target was unaffected by the target's social status.
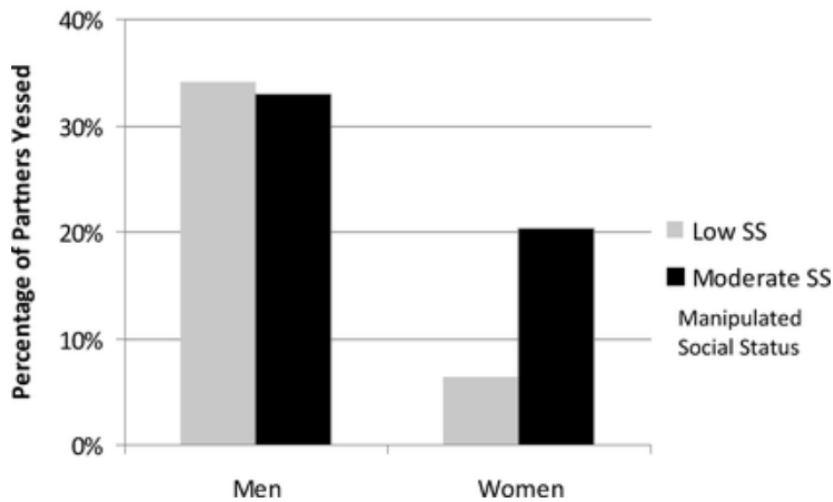
Figure 4. Sex differences in the effects of experimentally manipulated social status (SS) on romantic interest (Study 3).

Links between stated preferences and criteria for romantic interest

We examined the extent to which people's stated importance ratings of earning prospects moderated the relationship between manipulated target-partner social status and romantic interest (ratings of target romantic desirability and yessing) by regressing the dependent variables onto stated importance, manipulated social status, and their interaction. An interaction of stated importance × manipulated social status was found both for romantic desirability, $\beta = .16$, $t(435) = 4.45$, $p < .001$, $\eta 2 = .04$, and for yessing, $\beta = .26$, $t(429) = 2.09$, $p = .037$, $\eta 2 = .01$. For individuals who considered earning prospects to be important in a date—but not for those who considered earning prospects to be unimportant—manipulated target social status had a positive impact on their ratings of target romantic desirability (see Figure 5, top) and on the likelihood they would yes the target (see Figure 5, bottom).
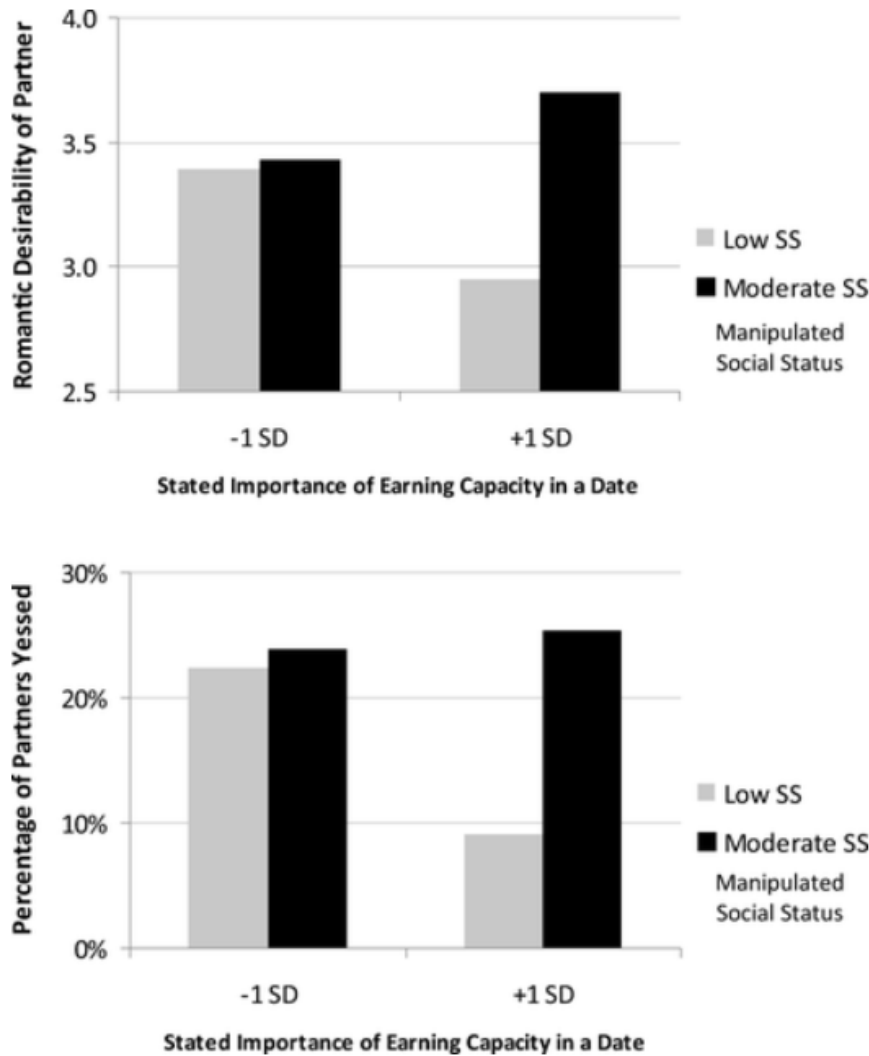
*Figure 5. Stated **mate preferences** (importance of earning prospects in a potential date) moderate the effects of experimentally manipulated social status (SS) on romantic interest (Study 3). SD = standard deviation.*

Discussion

In Study 3, undergraduate participants speed-dated two types of target-partners: students from another university and individuals selected for having lower social status. Findings are summarized in Tables 2 and 3. A target-partner's social status (as determined by actual occupation) increased women's—but not men's— assessment of partner romantic desirability and yessing. There was also evidence that participants accurately gauged on paper how important social status would be to them in a potential mate. As stated importance of earning prospects increased, so did the positive relationship between the target's social status and participants' assessment of target-partner romantic desirability and likelihood of yessing the target. Both sets of results offer clear support for the mate preference priority model and its underlying assumption that mate preferences adaptively guide actual mate choice.

Study 4

Following the paradigm introduced in Study 3, we next examined mate choice in a mating pool with both unattractive and moderately attractive individuals. With physical attractiveness (low, moderate) as a manipulated variable, we expected to see sex differences in the effect of physical attractiveness on romantic

interest (i.e., men valuing physical attractiveness in their mate choices more than women did) and links between stated preferences and criteria for romantic interest (i.e., those with greater stated preferences for physical attractiveness valuing physical attractiveness more in their assessments of actual potential mates).

The sex-differentiated mate choices obtained thus far suggest that participants in our experiments have been considering their chat partners for potential long-term relationships. In Study 4, we directly investigated the distinction between long- versus short-term mating by including both contexts in the mate preference items and in new forced mate-choice questions. We predicted, consistent with an evolutionary perspective and the mate preference literature (e.g., Li & Kenrick, 2006), that men would value physical attractiveness more than women did when considering chat partners for a long-term relationship, but that these sex differences would disappear when rating the importance of physical attractiveness in the context of a short-term relationship. We also investigated whether romantic interest (ratings of romantic desirability and yessing) is more closely linked to long-term stated mate preferences or short-term preferences. In line with the results of a previous campus-held speed-dating study (Asendorpf et al., 2011), mate choices were predicted to be more strongly related to long-term preferences.

Method

Participants

Participants were undergraduates at a major Singaporean university who were either given psychology course credits (n = 37) or paid $5 (n = 56). There were 51 men (age: M = 23.08 years, SD = 1.73) and 42 women (age: M = 21.49 years, SD = 1.68).

Procedure

Study 3's procedure was followed except for the following: Instead of systematically varying social status, we recruited all target-partners by advertising to nonmarried students of ages 18 to 24 from another university of similar prestige. We required respondents to take and send high-resolution photos of themselves standing against a white background, squarely facing the camera and not smiling. Submitted photos adhering to the instructions were collected and the female photos were rated by 20 men while the male photos were rated by 19 women (1 = extremely unattractive, 7 = extremely attractive). Targets were chosen for the low and moderate physical attractiveness conditions based on the ratings. Research assistants set up four 5-hr sessions with a low-attractiveness target and a moderate-attractiveness target in each session: two female targets in the first (low: M = 2.05, SD = 0.83; moderate: M = 4.45, SD = 1.23) and third sessions (low: M = 2.80, SD = 0.70; moderate: M = 4.45, SD = 1.19), and two male targets in the second (low: M = 2.63, SD = 0.76; moderate: M = 4.47, SD = 1.07) and fourth sessions (low: M = 2.16, SD = 0.90; moderate: M = 4.05, SD = 0.62).

For each session, participants signed up online to participate in 20-min time slots, where each slot accommodated up to two participants (opposite-sex to the targets). Each participant speed-dated each of the two targets (low vs. moderate physical attractiveness). Male targets chatted with an average of 21 female participants, and female targets chatted with an average of 25 male participants. No target appeared or indicated being fatigued from their participation, and ratings of targets did not significantly change over the course of their sessions.

Materials

Before their speed-dating chats, participants completed a mate preference survey on how important (1 = very unimportant, 7 = very important) physical attractiveness (physically attractive, sexy/hot) would be in determining interest in a chat partner for a potential long-term relationship (α = .79) and short-term relationship

(α = .95). After each speed-date, participants rated their date-target on physical attractiveness (1 = extremely below average, 7 = extremely above average; α = .74) and romantic desirability (1 = not at all, 7 = very much so; like, sexually attracted to, willing to date; α = .83) and indicated their interest in exchanging e-mails ("yes" or "no"). After completing both speed-dates, participants indicated if they had to choose one of the two targets (who varied in terms of physical attractiveness), which one would they choose for (a) a long-term, committed relationship and (b) a short-term, casual sexual relationship.

Results

Sex differences in stated mate preferences

Men considered physical attractiveness to be (marginally) more important (M = 5.08, SD = 1.05) than women did (M = 4.76, SD = 0.66) for assessing interest in a chat partner for a potential long-term relationship, $t(91)$ = 1.743, p = .085, $\eta 2$ = .05. However, men (M = 6.16, SD = 1.09) and women (M = 6.16, SD = 0.82) did not differ when assessing the importance of physical attractiveness for a short-term relationship (p = .808).

Manipulation check

Recall that each participant interacted with two targets who varied on physical attractiveness. Men judged female partners to be more physically attractive in the moderate physical attractiveness condition (M = 4.42, SD = 1.18) than in the low physical attractiveness condition (M = 3.76, SD = 1.39), $F(1, 91)$ = 7.561, p = .007, $\eta 2$ = .08. The same held true for women's perceptions of male partners (moderate: M = 4.80, SD = 0.85; low: M = 3.36, SD = 1.09), $F(1, 91)$ = 29.944, p < .001, $\eta 2$ = .25.

Sex differences in romantic desirability and yessing

We regressed the dependent measures onto manipulated physical attractiveness, participant sex (male = −1, female = 1), and their interaction. There was a significant physical attractiveness × sex interaction for both romantic desirability, b = −.21, $t(182)$ = −2.76, p = .007, $\eta 2$ = .04, and yessing, b = −.27, $t(178)$ = −2.03, p = .044, $\eta 2$ = .02. As manipulated physical attractiveness went from low to moderate, men, more than women, reported greater attraction toward the target (see Figure 6, top) and had a greater likelihood of yessing the target (see Figure 6, bottom).
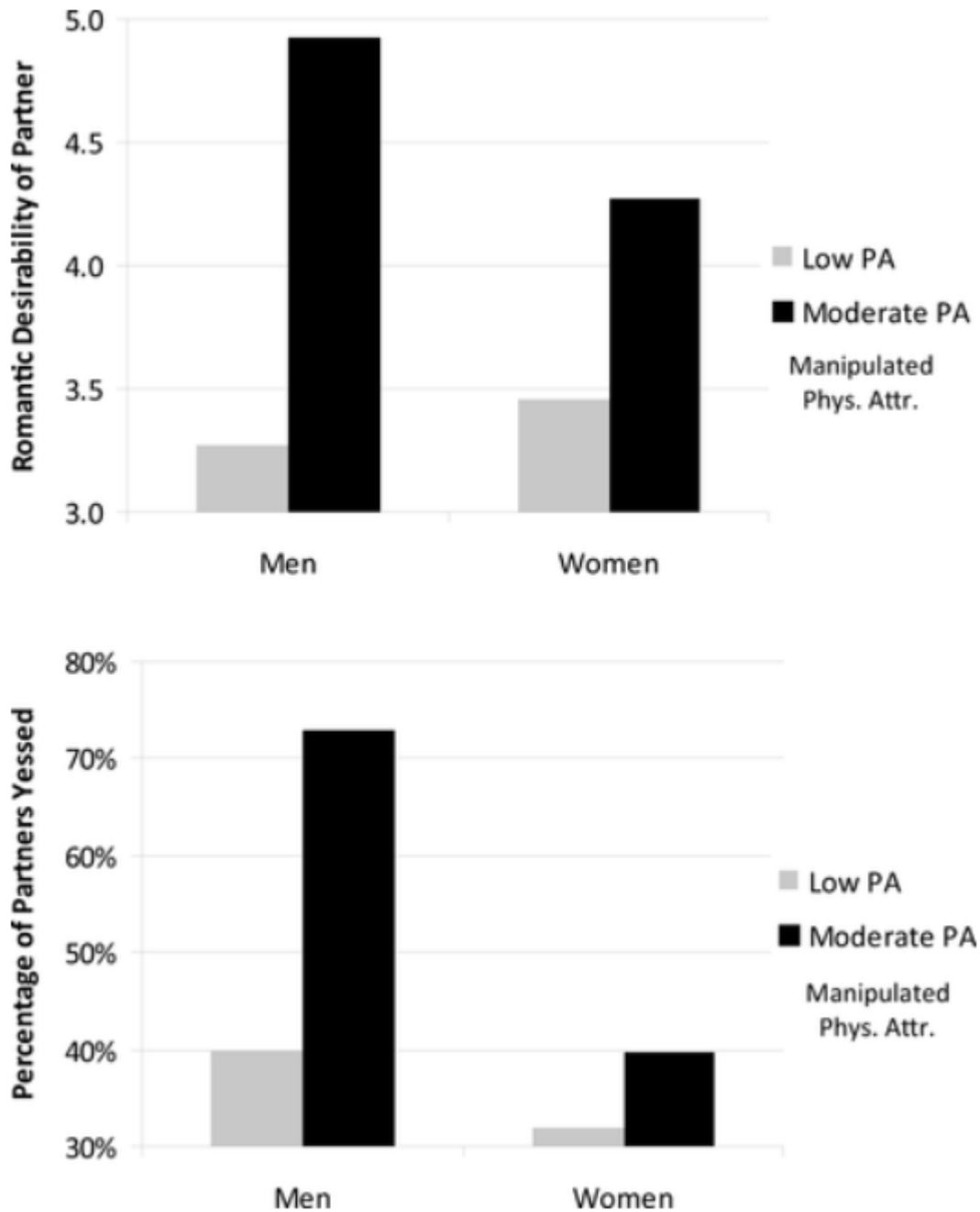
Figure 6. Sex differences in the effects of experimentally manipulated physical attractiveness (PA) on romantic interest (Study 4). Phys. Attr. = physical attractiveness.

Links between stated preferences and criteria for romantic interest

We next examined the extent to which people's stated importance ratings of physical attractiveness moderated the relationship between manipulated target-partner physical attractiveness and romantic interest (ratings of target romantic desirability and yessing). When prior stated mate preferences were framed as assessing the

importance of physical attractiveness in a chat partner as a potential long-term mate, there was a significant interaction of stated importance × manipulated physical attractiveness both for romantic desirability, $\beta = .23$, $t(182) = 2.77$, $p = .007$, $\eta 2 = .04$, and for yessing, $\beta = .38$, $t(178) = 3.01$, $p = .003$, $\eta 2 = .05$. For those who considered physical attractiveness as more (vs. less) important for such assessments, manipulated target physical attractiveness had a greater impact on ratings of target romantic desirability (see Figure 7, top) and the likelihood of yessing the target (see Figure 7, bottom). In contrast, when prior mate preferences assessed the importance of physical attractiveness in a chat partner as a potential short-term mate, there were no significant interactions (i.e., short-term mate preferences did not predict romantic interest or yessing).

Figure 7. Stated mate preferences (importance of physical attractiveness [PA] in assessing chat partner as a long-term [LT] partner) mo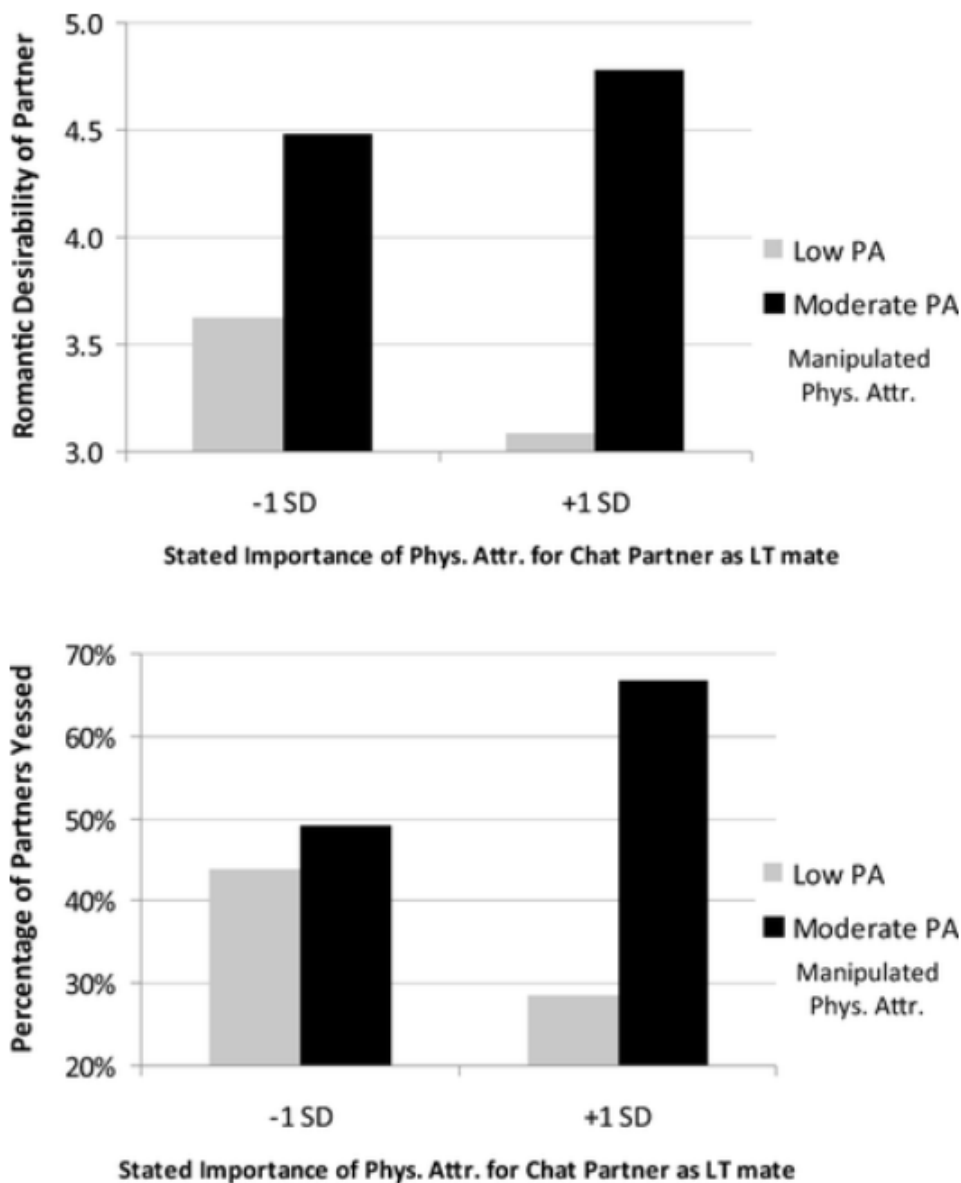derate the effects of experimentally manipulated physical attractiveness on romantic interest (Study 4). SD = standard deviation. Phys. Attr. = physical attractiveness.

Physical attractiveness in long- versus short-term relationships

Recall that at the end of each chat session, participants were asked to choose between the low and moderate attractiveness targets for (a) a long-term, committed relationship and (b) a short-term, casual sexual relationship. As predicted, for these forced partner-choice items, the sexes differed for a long-term relationship, $\chi 2(1) = 11.03$, $p < .001$, but not for a short-term relationship, $\chi 2(1) = 0.11$, $p = .74$. As Figure 8 (top) shows, when considering a long-term relationship, women were split between choosing the low (50%) versus moderate (50%) targets. In contrast, men favored the moderately physically attractive target (82.4%) over the low attractiveness target (17.6%). For a short-term relationship (see Figure 8, bottom), however, both sexes favored the moderately physically attractive target (90.2% of men, 88.1% of women) over the low attractiveness one. Thus, low physical attractiveness was shunned by both sexes when considering a short-term relationship and by men for a long-term relationship, but it was not a factor for women when considering long-term relationships.

Figure 8. Choosing between low and moderate physical attractiveness (PA) speed-dates for long- and short-term relationships (Study 4). Phys. Attr. = physical attractiveness.

Discussion

In Study 4, college student participants speed-dated students from another university who were selected for having low versus average physical attractiveness. Findings are summarized in Tables 2 and 3. First, more physical attractiveness in the target led to men reporting higher romantic desirability and yessing than women did. Second, as the stated importance of physical attractiveness in assessing a chat partner for a long-term relationship increased, so did the positive impact of the target-partner's manipulated physical attractiveness on both target-partner romantic desirability and yessing. However, as expected, the stated importance of physical attractiveness for short-term relationships did not moderate the link between manipulated physical attractiveness and either romantic desire or yessing. Once again, both sets of results offer clear support for the mate preference priority model and its underlying assumption that mate preferences adaptively guide actual mate choice.

Third, by asking participants to choose between chat targets for both a long- and a short-term relationship, we found that both sexes highly favored a partner of average physical attractiveness over one of low attractiveness for a short-term relationship. In contrast, only men shunned low physical attractiveness for a long-term relationship; women were indifferent to the level of attractiveness in this context. Given the patterns of results regarding mating context, our participants were likely considering their partners in this lab-based, speed-dating context as potential long-term relationship partners rather than as potential short-term sexual ones.

Manipulated versus perceived (participant-rated) trait levels

To examine our claim that prior null results concerning sex differences and mating behavior may be a product of insufficient low-end variability on key traits that are not explicitly manipulated, we compared the average standard deviation of participants' ratings of target traits for Study 3 (where only social status was manipulated) and Study 4 (where only physical attractiveness was manipulated). Male participants' ratings of female targets' physical attractiveness varied more when physical attractiveness was manipulated ($\overline{SD} = 1.20$) than when it was not ($\overline{SD} = 0.82$). Similarly, female participants' ratings of male targets' physical attractiveness varied more when attractiveness was manipulated ($\overline{SD} = 1.02$) than when it was not ($\overline{SD} = 0.89$). The same pattern was found for social status. Male ratings of female targets' earning prospects varied more when social status was manipulated ($\overline{SD} = 0.94$) than when it was not ($\overline{SD} = 0.56$). Similarly, female ratings of male targets' earning prospects varied more when social status was manipulated ($\overline{SD} = 0.99$) than when it was not ($\overline{SD} = 0.67$). Thus, when a trait was manipulated to have both low and medium levels, participants perceived greater variation among the targets on that trait than when it was not manipulated.

In addition to expecting greater perceived trait variation when traits are manipulated versus left as passive variables, we would predict the ability to detect sex-differentiated mate choice criteria and links between preferences and choices to be greater when analyses use manipulated trait levels than participant-rated trait levels. Compared to manipulated trait levels, live interaction participants' own ratings of their chat partners' attributes may reflect other criteria including interaction dynamics and halo effects (further considered below). Such influences could potentially add noise and weaken the ability to detect sex differences and links between preferences and choices. To test this prediction, we also performed secondary analyses for Studies 2, 3, and 4, using participant-rated trait levels (see online supplemental materials). We expected the secondary analyses to yield less consistent results, especially for traits that were not manipulated. Thus, low-end trait representation was not ensured.

As summary Tables 2 and 3 indicate, 11 of 12 tests (assuming that in Study 4 only the long-term mating context is relevant; 92%) using manipulated trait levels were significant, 6 of 12 corresponding tests (50%) where participant-rated trait levels were used for a manipulated trait were significant, and only 2 of 8 tests (25%) using participant-rated trait levels for a nonmanipulated trait were significant (in line with the sporadic findings of previous studies).

Consistent with the mate preference priority model, these numbers indicate that the ability to find sex-differentiated mate choice criteria and links between mate preferences and mate choice criteria may depend on ensuring that individuals with objectively low levels of key traits are present and using the manipulated trait levels, rather than participant-rated ones, for analyses. They also suggest that one reason why such sex differences and links have not been consistently found in previous speed-dating studies was due to the reliance in these studies on participants' ratings of traits that were not specifically manipulated to include low levels.

General Discussion

Recent studies utilizing a speed-dating paradigm have reported mixed or null findings for whether individual differences and sex differences in reported mate preferences predict actual mate choices (e.g., Eastwick & Finkel, 2008; Kurzban & Weeden, 2005; Lenton, Fasolo, & Todd, 2008). More generally, the lack of correspondence between stated mate preferences and mate choices seems to be reflected across studies of romantic evaluations made in a variety of face-to-face contexts and ongoing relationships (Eastwick et al., 2013). Such results potentially challenge the validity of a vast body of mate preference research (e.g., Buss, 1989; Hill, 1945) and an evolutionary perspective on mating, which argues that mate preferences evolved to adaptively guide mate choice (Buss & Schmitt, 1993; Symons, 1979).

Investigation Summary

To address this issue, we started by describing how, according to a mate preference priority model (Li et al., 2011), mate preferences include mechanisms that adaptively prioritize obtaining at least moderate levels of key reproductively relevant traits. In a long-term mating context, having a minimum level of social status is more important to women, whereas having a minimum level of physical attractiveness is more important to men. In other words, although the sexes are rather similar in what they ideally want (i.e., a well-rounded, high-quality mate), they differ in the types of low-quality mates they are most likely to reject (Li et al., 2002). As such, we can expect mate choices in the early stages of mate selection to be sex-differentiated and connected to mate preferences if people are choosing among potential long-term mates that include individuals with low levels of key traits.

Utilizing this framework, we investigated early-stage mate choice in interactive contexts. First, in Study 1, we found that perceived trait variation among college students greatly diminished when the students were placed in a broader demographic context. Indeed, when college student profiles rated as having low earning prospects were placed among profiles of the general population, their earning prospects were rated as average. These results suggest that in the context of the general population, college students (and other groups such as professionals) share a reasonably elevated social status. Thus, although past studies may have found reasonable variation in ratings of key traits, such variation may reflect comparisons made within a group of college students or professionals and thus masks the absence of individuals in the general population low enough on specific traits to evoke sex-differentiated mate choice.

We then examined mate choice in three experiments in which participants chatted with target partners in two modern-day, interactive platforms. First, in Study 2, we utilized a novel online messaging paradigm where we manipulated chat partners' social status and physical attractiveness to represent low, medium, and high levels in the general population. We then introduced a modified speed-dating paradigm in which participants chatted with target-partners who were directly recruited from the general population for their low versus medium levels of social status (Study 3) and physical attractiveness (Study 4).

Findings and Implications

Across the three interactive mate-selection experiments, the effects of self-reports of the importance attached to mate choice criteria were consistently found to be both significantly sex-differentiated and predictive of romantic interest and choices. First, more physical attractiveness in targets increased men's romantic interest more than it did women's, whereas higher social status increased women's romantic interest more than it did men's. Second, individuals who ascribed more importance to a pivotal trait (physical attractiveness or social

status) were more romantically interested in chat partners who were objectively higher on that trait. These results suggest that when the mating pool includes individuals with low-end variability, mate preferences do predict mate evaluations and choices in the early stages of mate selection, and sex differences in self reports are mirrored in real-world provisional judgments.

We also found, in Study 4, that mate choice criteria were linked to individuals' stated preferences for a potential long-term—but not short-term—relationship. Moreover, both sexes shunned low physical attractiveness in their choice of a short-term mate, but only men did so for a long-term mate. These results, together with the other findings, provide strong evidence for the importance of distinctions in the evolutionary psychological literature concerning long- and short-term mating (Buss & Schmitt, 1993; Kenrick et al., 1993; Li & Kenrick, 2006) and suggest that participants in our studies viewed their speed-dates more as possible long-term partners than as short-term partners.

Finally, both sexes perceived greater target-partner trait variability when target traits were manipulated to attain low and medium levels. Moreover, results were consistently significant in the predicted directions when analyses used on manipulated trait levels, less consistently so when they used participant-perceived levels of a manipulated trait, and even less so when they used participant-perceived levels of a nonmanipulated trait. This pattern further underscores the importance of ensuring sufficient low-end representation on key traits when testing the validity and functions of mate preferences.

More generally, our findings support the mate preference priority model and an evolutionary perspective on mating, and they extend validity to a large body of research that has previously found preferences for physical attractiveness and social status to be sex-differentiated. The current research indicates that mate preferences are alive and well from the preliminary stages of mate selection and that individual differences in mate preferences can and do predict real-world mate evaluations and sex-differentiated mating decisions.

Our research also has important implications for speed-dating research. First, our studies are the first to manipulate levels of key traits in modern speed-dating or chatting paradigms. The failure of prior speed-dating studies to find that the sex differences in self-reports are reflected in behavior, or that stated mate preferences do predict behavior, could be a function of insufficient low-end variability on key traits in the samples examined and, relatedly, a reliance on participant ratings of the trait levels.

Second, as further discussed in the next section, ambiguity over the mating duration (long- vs. short-term) may also have contributed to previous null findings. In particular, if speed-daters were considering each other as potential short-term mates, both sexes would be predicted to focus on physical attractiveness, and clear sex differences in the valuation of either physical attractiveness or social status would not be predicted. Furthermore, if past participants were considering long-term mates when completing mate preference surveys prior to their speed-dating event (Kurzban & Weeden, 2007), their mate preferences and mate choices would be mismatched on mating duration and the link between the two would be unclear.

Researchers studying attraction processes via speed-dating or other live-interaction paradigms may wish to account for these factors (and the issues raised below), especially if they are examining the validity of mate preference research and associated theoretical frameworks.

Limitations and Future Directions

The research presented here has shed light on the nature of mate preferences and their links to early-stage mate choice. However, various potentially controversial issues remain, to which we now turn.

Similarity as an alternative explanation

Because participants in our studies were undergraduates and the moderate social status condition in Studies 2 and 3 consisted of students from another university, our social status manipulation also manipulates

socioeconomic similarity. Thus, the greater importance of social status in women's mate choices could actually reflect a greater female preference for similar socioeconomic status.

Although this argument is plausible, it has several limitations. First, it is not clear why women would prefer more socioeconomic similarity than men would. Similarity, which may itself be an adaptive preference, tends to be valued by both sexes (e.g., Kenrick et al., 1993). Second, in Studies 2 and 3, women valued social status more than men did not only from the experimental manipulation of social status (which could be construed as different levels of similarity) but also when status (earning prospects) was rated by the participants themselves. Third, a similarity argument for mate choices does not explain why women have stronger stated preferences for social status than men do. Fourth, a similarity argument does not explain the obtained sex differences in physical attractiveness. For these concerns, an evolutionary, mate preference priority perspective may be a more parsimonious explanation. Regardless, future research may benefit from further consideration of similarity's role in mate choice mechanisms.

Cross-cultural differences

Whereas people from Western cultures report that love is important for marriage, individuals in underdeveloped Southeast Asian and South Asian countries consider love to be relatively unimportant, and those from developed East Asian countries are somewhere in between the other two groups (Levine, Sato, Hashimoto, & Verma, 1995). As such, it is possible that similar cultural differences exist in the degree to which people follow their stated preferences when evaluating speed-dates. For example, Westerners may follow their gut feelings (perhaps responding more to physical attraction), whereas Easterners favor propositional beliefs (such as following their stated ideals) over their feelings (Eastwick et al., 2013).

Singapore, where the current studies were conducted, is a highly modern and Westernized, English-speaking country; yet, traditional Asian values remain (e.g., Tan & Farley, 1987). As such, it is possible that Singaporeans rely relatively more strongly on their stated mate preferences when evaluating live interaction partners, and our results may be more representative of Eastern cultures than Western ones (where previous speed-dating studies were conducted). On the other hand, Easterners' tendency to be more deliberate in important decisions such as marriage may not show up when given 2 minutes to evaluate a 4-min speed-date on a multitude of dimensions. To examine the issue of cultural context, one could replicate the current procedures (in particular, those of Studies 3 and 4) in Eastern and Western countries and compare the results. Cross-cultural differences would not necessarily be at odds with an evolutionary perspective. Rather, a knowledge of cross-cultural differences alongside a consideration of adaptive mechanisms would enable a better understanding of how both processes mutually constrain and shape one another (e.g., Kenrick, Li, & Butner, 2003).

Speed-dating dimensions

Although speed-dating provides many opportunities for examining attraction processes in modern contexts (e.g., Asendorpf et al., 2011; Finkel, Eastwick, & Matthews, 2007), researchers should be aware of various potential issues when using this and other live-interaction platforms to study and make inferences about fundamental processes of human mating. As described earlier and shown in Table 1, speed-dating studies have differed widely on many dimensions. Such differences may have contributed to inconsistent results across studies. Also, there are common factors across many speed-dating studies (and modern contexts in general) that may constrain the ability of evolved preferences to manifest in actual choices or otherwise work against finding links between preferences and actual choices. Below, we describe a few such factors and consider their potential impact.

Intimacy of setting

As proposed by the mate preference priority model, sex-differentiated long-term preferences may serve as screening mechanisms to exclude those who are especially low on key, reproductively relevant traits. Thus, when people first encounter individuals who are below their thresholds on such traits, they may disregard or avoid such individuals (Li et al., 2002). However, in speed-dating settings, opposite-sex strangers sit down to chat face-to-face, sometimes over a white tablecloth, candlelight, and soft music (e.g., Eastwick & Finkel,

2008). In such settings, a level of intimacy or romantic interest may be presupposed and screening mechanisms bypassed. To the extent that this occurs, the link between mate choices and stated, sex-differentiated mate preferences would be weakened in speed-dating contexts. Future studies could consider this possibility by examining mate choice in less intimate large-group contexts where individuals can become quickly acquainted (e.g., cocktail parties). Screening mechanisms—and thus links between mate choices and preferences—would be expected to be stronger in settings suggesting less one-on-one intimacy.

Asymmetry in information availability and processing

For their classic dating study, Walster, Aronson, Abrahams, and Rottman (1966) suggested that two and a half hours of interaction was not enough time for people to evaluate each others' personal traits. Speed-daters have much less time, and the few minutes allotted for chatting may not be sufficient for individuals to assess traits such as family background, warmth, trustworthiness, intelligence, education, and earning prospects as accurately as physical attractiveness. Thus, regardless of their underlying preferences, both sexes may base their mate choices on the more salient and easily assessed physical traits (Kurzban & Weeden, 2007, p. 631). A recent study suggests that this is especially true when speed-dating participants meet and evaluate a large number of potential partners (Lenton & Francesconi, 2010). If perceptions of physical attractiveness swamp the perceptual field in early mate selection contexts, they may attenuate the influence of prior standards and, thus, sex differences in the influence exerted by such standards.

On the other hand, there is some evidence that people can accurately judge traits other than physical attractiveness, such as extroversion, rather quickly through "thin slices" of cue exposure (e.g., Borkenau, Mauer, Riemann, Spinath, & Angleitner, 2004; see Fletcher & Kerr, 2010), and it is also possible that speed-dating participants—men, especially—may be motivated to display strong cues to their social status and intelligence through clothing, jewelry, and vocabulary. Furthermore, although we controlled for clothing in our live interactions, participants in Study 3 were still able to perceive and respond to the differing levels of manipulated social status. Informal interviews indicated that participants commonly asked "What do you do?" during their chats. All in all, speed-dating research may benefit from a systematic investigation of which traits are more easily assessable than others in brief, initial encounters and how this might affect romantic interest in such contexts.

Relationship type ambiguity

Consistent with results from another study (Asendorpf et al., 2011), our findings of sex-differentiated mate choice criteria and the results of our investigation of mating context (Study 4) suggest that our speed-dating participants were considering each other as potential long-term mates. As mentioned earlier, speed-dating participants seem to be pondering a long-term partner when reporting preferences beforehand (Eastwick & Finkel, 2008; Kurzban & Weeden, 2007; Luo & Zhang, 2009); however, many studies have found both sexes to especially value physical attractiveness (e.g., Kurzban & Weeden, 2005), which is more consistent with a short-term mating context (Li & Kenrick, 2006). One factor influencing whether participants consider each other for long- or short-term relationships (and thus what traits are valued by which sex) may be the setting: Whereas some speed-dating studies (e.g., Kurzban & Weeden) have taken place in short-term mating contexts (bars, nightclubs), others have been conducted classrooms and laboratories—places that may be more conducive for considering long-term mateships.

One way to clarify relationship type ambiguity is to examine mate choice in speed-dating events held specifically for long- versus short-term relationships. Mate choice criteria can also be naturalistically observed in short-term mating markets (e.g., singles bars) and compared to those in long-term-oriented venues (e.g., church social mixers). Such studies could clarify how people select mates in long- versus short-term contexts and where speed-dating events fit in this process.

Aside from setting, numerous other factors can influence the type of relationship people seek and may be worth investigating. Such factors include sociosexual orientation (e.g., Simpson & Gangestad, 1991), motives

currently active (e.g., Griskevicius, Cialdini, & Kenrick, 2006; Maner et al., 2005), and the sex ratio (e.g., Guttentag & Secord, 1983).

Halo effects

As our comparison of results obtained from using manipulated versus participant-perceived trait levels suggests, relying on participant-rated trait levels may weaken the ability to find links between mate choice criteria and stated mate preferences. For instance, whereas independent raters of physical attractiveness rate only one trait from photos, participants are exposed to and rate targets on several dimensions in a live interaction. As such, participant ratings may reflect criteria other than the underlying trait values. Indeed, even though traits were independently manipulated, participants' ratings of the traits were significantly correlated in our studies. Others have found that women, more than men, tend to incorporate social status information into their judgments of physical attractiveness in opposite-sex targets (Townsend & Levy, 1990). Correlated trait ratings could also reflect halo effects (Nisbett & Wilson, 1977a): When interested in a potential mate, people might rate that person highly on all traits, including unobservable ones, even though the interest is actually due to the strength of one observable trait.

A fruitful avenue for future research would be to sort out the process by which traits and overall evaluative judgments are independently and relatedly assessed in brief, live interactions. Clarity on this process would have implications for research not only on mate choice in speed-dating events but also for all interpersonal judgments that occur in interactive contexts.

Dynamic processes

In speed-dating contexts, choices and preference ratings are made after an increasing number of face-to-face interactions. Although choices and preferences are recorded privately, speed-dating participants may experience many direct or indirect indicators of acceptance or rejection prior to any given interaction. Perceptions of rejection, over time, may push choice-making behavior in the direction of a matching model (e.g., Kalick & Hamilton, 1986). That is, social feedback during the interactions would inform participants as to whether they are likely to be successful by sticking to their preferences; after experiencing rejections, the answer is no. The possibility that people's mate selection strategies change over the course of a speed-dating event for this and other reasons can be investigated in speed-dating studies featuring numerous participants in each round.

Summary

Overall, many factors potentially constrain the ability of mate preferences to manifest in people's selection of mates in speed-dating events and, more generally, modern contexts. As such, a lack of correspondence between preferences and choices does not necessarily mean that mate preferences are faulty or could not have evolved to adaptively guide mate choice. Rather, such discrepancies underscore the need to more carefully consider the nature of mate preference mechanisms and how features of modern contexts might interact with them.

Conclusion

We raised a question that has important implications for the study of mate choice in naturalistic settings and for the validity of research on mate preferences: Do mate preferences predict mate evaluations and choices in the very early stages of mate selection? To answer this question, we clarified how examining an evolutionary perspective on mate preferences requires seeking good variance of the possession of key traits and investigated mate choice in modern, interactive contexts. In line with personal advertisements, folktales, and prior research, our studies suggest that people have good introspective access to what they desire in a potential mate and that sex-differentiated preferences do indeed predict mate selection decisions.

Footnotes

1 We did not test for sex differences in the link between stated preferences and the association between target trait levels and romantic interest toward the target, because we had no reason to expect stated preferences to be more strongly linked to mate choice criteria for one sex over the other. For example, if an individual rated the importance of physical attractiveness as 2 whereas a second individual rated the importance of physical attractiveness as 6, we would expect the second person's romantic interest to be more strongly influenced by target physical attractiveness than the first, regardless of the sex of the individuals.

2 We used earning prospects in our studies to be consistent with previous mate preference research (e.g., Buss, 1989) and with a key speed-dating study (Eastwick & Finkel, 2008).

3 The HLM statistical procedures described in Study 3 were used for the corresponding analyses in Study 4. In Study 4, slopes were all fixed, because there were not enough degrees of freedom to estimate the random effects for both the slope and the intercept (each participant interacted with only two targets).

4 For the four male targets in Study 4, the difference in physical attractiveness preratings between the low and medium targets (shown in the Method section; $\overline{D} = 1.86$) was larger than the difference as rated by the participants (shown in the manipulation check; $\overline{D} = 1.44$). The same was true for the four female targets, $\overline{D}(\text{preratings}) = 2.02_{\text{versus}} \overline{D}(\text{participant ratings}) = 0.66$. Comparing intertarget variability in physical attractiveness, the average standard deviation of the preratings of the four male target photos was $\overline{SD} = 1.20$. In contrast, for the participants' ratings of the male targets, $\overline{SD} = 0.69$. For the four female targets, photo preratings exhibited an average standard deviation of $\overline{SD} = 1.37$, whereas for the participants' ratings of the female targets, $\overline{SD} = 1.20$. These patterns—larger mean differences and greater variability in preratings versus participant ratings—reflect the results we obtained from analyses using manipulated trait levels versus participant-rated trait levels of the manipulated traits, and they support our conjecture that factors other than underlying trait value may affect participant trait ratings made during live interactions.

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