
Sexual Attractiveness: Sex Differences in Assessment and Criteria

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Two studies of university undergraduates used novel measures to explore sex differences and intrasexual variation in mate preferences and sexual behavior. Study 1 used photographs of models to assess the effects of sex of subject and target persons' ambition/income on judgments of dating, sexual, and marital desirability, and analyzed these effects' associations with subjects' sexual attitudes and behavior (Simpson's and Gangestad's Sociosexual Orientation Inventory [SOI]). Results were consistent with the proposed model of mate selection: for men, potential partners' physical attributes establish a pool of coitally acceptable partners, some of whom may merit long-term investment. When women choose partners, nonphysical characteristics such as ambition, status, and dominance establish a pool of partners who are potentially acceptable for sexual relations and higher-investment relationships. Target persons' ambition/income strongly affected women's, but not men's, reported willingness to date and have sex with target persons, and the effects on women were not associated with their SOI scores. Study 2 used photographs of models in bathing suits to explore sex differences in the capacity to determine coital acceptability by means of a visual scan, what types of information men and women need in addition to a visual scan in order to determine coital acceptability, and whether these variables are associated with subjects' SOI scores. Results were consistent with the hypotheses. Women with high SOI scores require fewer signs of male willingness to invest in order to engage in sexual relations than do women with low scores. Nevertheless, the two groups have essentially the same perceptual filters and criteria in mate selection, and these differ dramatically from those of men. A "tradeoff-threshold" model of mate evaluation is described, and its compatibility with Singh's models is discussed. © 1998 Elsevier Science Inc.

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Many researchers guided by evolutionary theory explain sex differences in sexuality and mate preferences in terms of differential parental investment. Symons (1979) argued that the discrepancy in minimum necessary parental investment caused, through natural selection, the mechanisms that mediate sexual emotion and perception to differ in men and women. Women's emotional-perceptual mechanisms motivate them to seek out and detect partners' ability and willingness to invest (Kenrick and Keefe 1992; Kenrick et al. 1990), to evaluate the quality of investment, and to counteract behavior that interferes with their quest for investment (Buss 1989b; Buss and Schmitt 1993; Townsend 1995). Men's emotional-perceptual mechanisms motivate them to copulate with a variety of nubile partners, to spread investments among several individuals in order to realize this goal, and to evaluate coital acceptability largely on the basis of physical attributes (Greer and Buss 1994; Singh 1993; Symons 1979, 1987). These sex differences in sexuality and mate preferences appear to be transnational (Buss 1989a; Buss and Schmitt 1993; Kenrick and Keefe 1992), and they are as large (or larger) among gay men and lesbians as among heterosexuals (Bailey et al. 1994; Jankowiak, et al. 1992; Symons 1979).

An important criticism of studies of sex differences in sexuality and mate preferences is that there appears to be considerable overlap between males and females, and this overlap may be equally or more important than the strongest differences (Bixler 1989). In Buss and Barnes (1986), the trait "kind and understanding" was the top preference for both sexes. Women rated eight traits, including "healthy" and "physically attractive" as more important than "good earning capacity;" men rated three characteristics as more important than "physically attractive" (Bixler 1989). Sex differences also vary in content and magnitude in different phases of relationships. For casual sexual relationships, women are choosy about partners' IQ and socioeconomic status (SES) and men are relatively indifferent, but both sexes value these traits when asked what they desire in a marriage partner (Kenrick and Keefe 1989, 1992; Kenrick et al. 1990; Thornhill 1989).

Intrasexual variation also creates substantial overlap in men's and women's sexual attitudes and behavior. Simpson and Gangestad propose that this variation reflects an evolutionary adaptation (Gangestad and Simpson 1990; Simpson and Gangestad 1991a, 1991b, 1992). They argue that women with high scores on their Sociosexual Orientation Inventory (SOI) engage in low-investment copulations with certain men because the men possess indicators of heritable fitness (e.g., status, dominance, physical attractiveness), rather than because of any material or emotional investments the men provide. Women with high SOI scores require less emotional investment and a shorter period for mate evaluation and tend to have more sexual partners and shorter-term relationships than do women with low scores.

The reported intersexual overlap in mate preferences and sexual attitudes and behavior may in part be a product of the measures used (Townsend 1993; Townsend and Wasserman 1997). Both adaptationist and social-psychological researchers have typically required subjects to rate or rank the importance of abstractions such as "physical attractiveness," "sexual attractiveness," and "good earning capacity" (Buss and Barnes 1986; Simpson and Gangestad 1991a, 1992; Sprecher 1989).

These procedures assume that when males and females rate these abstractions, they are evaluating the same traits. This assumption ignores evidence that the same stimuli or cues frequently have different or even opposite effects on males' and females' ratings of "attractiveness" (for reviews see Townsend 1993; Townsend and Roberts 1993; Townsend and Wasserman 1997). Limiting background information and visual cues in this way can cause sex differences to be understated (Morse et al. 1976). Furthermore, having actual persons (or photographs of actual persons) to represent physical attractiveness is particularly important for evolutionary studies, since visual assessment of fertility cues is one of the pivotal postulated sex differences in mate evaluation (Bailey et al. 1994; Ellis and Symons 1990; Knoth et al. 1988; Singh 1993; Symons 1979, 1987).

Symons and Ellis (1989) argue that males and females overlap in their sexual attitudes and behavior because these are determined by the simultaneous operation of many mind/brain mechanisms (most of which are presumably monomorphic) and by the vagaries of individual life histories. One strategy to illuminate the mental mechanisms that moderate sexuality is to design research instruments and procedures to reveal sex differences. Measures that maximize sex differences might not accurately reflect the sexual dimorphism of brain/mind mechanisms, but they would at least be consistent with the view that such dimorphism exists (Symons and Ellis 1989).

RESEARCH GOALS

The central goals of the current investigation were to introduce novel measures and test their ability to reveal sex differences in the processes of mate evaluation and sexual attraction, to explore associations between mate preferences and sexual attitudes and behavior, and to describe a model that accounts for both sex differences and overlap in mate selection. In Study 1 we explored the effects of sex of subject and target persons' ambition and income on judgments of dating, sexual, and marital desirability, and analyzed these effects' associations with subjects' SOI scores. In Study 2 we used photographs of models in bathing suits to explore sex differences in the capacity to determine coital acceptability by means of a visual scan and thus to report sexual desire in response to the sight of a potential partner. We also sought to determine what types of information men and women need in addition to a visual scan in order to determine coital acceptability, whether subjects' SOI scores were associated with how important they considered these types of information, and whether sex differences appeared in these associations.

MODELS OF MATE EVALUATION

To study the relative effects of status and physical traits, a series of experiments was conducted that used specific status characteristics and photographs of actual people. Townsend and Levy (1990a) dressed models who had been pre-rated for physical

attractiveness in costumes representing three levels of SES. The effects of costume/status on models' acceptability differed significantly for men and women when the models were less physically attractive. Men appeared unwilling to have any type of relationship with the less attractive models regardless of status; women were willing to have coffee and chat, date the models, and were merely undecided about sexual relationships and marriage—provided the models wore the high-status costume.

Townsend and Roberts (1993) paired the costumes from the preceding study with descriptions of income and occupation to measure law students' willingness to date, marry, or have sex with target persons. In the high-status condition, the only significant predictor for men for dating and sexual relations was models' physical attractiveness; for women, only the regression model for date was significant and the only significant predictor was subject's age (other predictors were models' physical attractiveness, parents' education, family income, subject's expected income). Female law students appeared unwilling to engage in any kind of relationship with models in the low-status condition even when the models were good looking. Male law students were merely undecided about marrying the best-looking woman in the low-status condition, and 60% of the men said they were willing to date and have sex with her.

Townsend (1993) dressed models in costumes of social types familiar to college students and paired their photographs with detailed descriptions of these social types' tastes, achievements, and lifestyles. Sex differences appeared in the effects of these descriptions on models' acceptability for sexual relations but not for dating and marriage. Townsend (1998) used the same pictures as Townsend (1993) but substituted descriptions of high and low education/ambition. The effect sizes of the education/ambition descriptions were sometimes comparable for men and women, but different positions on the scale indicated different levels of desirability. For example, even for a date *with the best-looking models*, moving from high to low education/ambition moved women's mean rating of models to the midpoint of the scale. Men's mean rating was affected, but their rating of the best-looking, low-status models remained squarely on the "desirable" side of the scale.

The results of these experiments suggest that both sexes are influenced by target persons' status cues and physical attractiveness, and status cues have more influence on men's ratings of partners for marriage than for casual sexual relations, as other researchers have argued (Kenrick and Keefe 1989, 1992; Thornhill 1989). However, our experiments suggest that high status can compensate for low physical attractiveness, and high physical attractiveness can compensate for low status, and these *tradeoffs* differ dramatically for men and women. These studies also suggest that men and women have different *thresholds of initial acceptance*. For middle-class men, high physical attractiveness can render women desirable for dating, sexual relationships, and even marriage regardless of their occupation, income, and education—provided that they do not exhibit the obvious trappings of a lower-class status and lifestyle. In comparison, women appear unwilling to date, marry, or have sexual relations with low-income, uneducated males regardless of the men's physiognomies and physiques. A study of medical students also supported this view (Townsend 1989, 1998).

In some respects, women's evaluation of potential mates is the reverse from that of men. This process can be visualized as a series of doors (or windows) nested within one another. For men, potential partners' physical attributes largely determine the pool of partners with whom they desire sexual relations, and this sexual desirability sets the acceptance baseline for higher-investment relationships. Partners' physical attributes thus establish a pool of partners who are acceptable for sexual relations and who may merit further investment.

When women choose partners, nonphysical characteristics such as ambition, dominance, education, earning power, and occupational prestige are more decisive in establishing a pool of partners who are socially acceptable and who *may be* acceptable for sexual relations. For women, a positive initial assessment, which is also influenced by partners' physical attributes, typically opens the door to a first date. A first date for women is a chance to explore partners' potential for higher-investment relationships, e.g., partners' warmth, values, family background, SES, and interest in them. Hereafter, we will call this model of mate evaluation the "tradeoff-threshold" model (Townsend 1993, 1998).

Singh's (1993) model of men's evaluation of women's sexual attractiveness shares some similarities with ours, but he uses the metaphor of "filters" instead of tradeoff-threshold to describe the process of evaluation. Women's waist-to-hip ratio (WHR) correlates with numerous indices of female health and fecundity, and men judge women with low WHR to be more sexually attractive. Singh (1993) proposes that WHR acts as a wide first-pass filter that automatically excludes women who are unhealthy or have low reproductive capability. For women who pass this first test, a second, narrower filter that assesses other bodily and facial attributes operates. At this second level, cultural forces (e.g., beauty preferences such as bound feet) can operate as long as they do not obscure or contradict the signals reliably associated with reproductive success. If a long-term relationship such as marriage is a possibility, a final, most restrictive filter that includes personality and social traits (e.g., social class) becomes operative. This final filter is the most culturally biased.

STUDY 1

If male and female selection criteria converge in higher-investment relationships (Kenrick and Keefe 1989), we would expect large sex differences in the effects of status cues on willingness to date or have sexual relations, but little difference in their effects on men's and women's willingness to marry target persons. Contrary to this expectation, our tradeoff-threshold model would suggest *Hypothesis 1*: For men, potential partners' physical attributes establish a pool of coitally acceptable partners, some of whom merit long-term investment. When women choose partners, nonphysical characteristics such as ambition, status, and dominance are more decisive in establishing a pool of partners who are potentially acceptable for sexual relations and higher-investment relationships. Accordingly, we predicted that status cues would have significantly greater effects on women than on men for all three relationships: dating, sexual relations, and marriage (Prediction 1).

Because men's partners' physical attributes determine their sexual desirability and set a baseline of acceptance for higher-investment relationships, we predicted that in response to highly physically attractive target persons, men's willingness to date would be indistinguishable from their willingness to have sex. In contrast, women would greatly prefer the prospect of a date to the prospect of sexual relations; the sex difference in relative preferences for date and sexual relations would be significant (Prediction 2).

Simpson and Gangestad (1992) propose that women with high SOI scores trade off signs of men's willingness to invest for physical and status traits that act as fitness markers (Gangestad 1993; Gangestad and Simpson 1990). Buss and Schmitt (1993) argue that short-term sexual relationships can serve to evaluate one's own mate value, assess partners' intentions and mate value, gain protection, and acquire better partners. Given the potential costs and benefits of short-term mating for women, however, women tend to test and evaluate short-term sex partners as long-term prospects rather than being end goals themselves. Consequently, women's criteria for short- and long-term partners are similar, whereas men's criteria for long-term partners are significantly more stringent than for short-term partners. Comparing these two arguments, we wanted to determine whether women with high SOI scores might be less stringent regarding partners' SES than women with low scores if partners' physical attractiveness was very high.

Our tradeoff-threshold model is consistent with that of Buss and Schmitt (1993). When women evaluate partners for short- or long-term relationships, the process and criteria of evaluation are essentially similar. Consequently, status cues should have highly significant effects on both high and low SOI women's willingness to date, have sex with, and marry target persons. In contrast, for men high physical attractiveness can outweigh the effects of status cues in determining initial acceptance thresholds. Hence, status cues should have significantly greater effects on both high and low SOI women than on high and low SOI men (Prediction 3). Our model also suggests that high and low SOI women should greatly prefer the prospect of a date to sexual relations with target persons, whereas high and low SOI men's willingness to date should be inferior or equivalent to their willingness to have sex. The sex differences in preferences for date or sexual relations will be highly significant for individuals with both high and low SOI scores (Prediction 4).

Method

Subjects. The participants were male ($n = 109$) and female ($n = 107$) students in an introductory psychology course at a private, Northeastern university. Participants received credit toward the research participation requirement of the class. All subjects in both samples were unmarried and between the ages of 18 and 23. University policy dictates that sign-up sheets for experiments be accompanied by a brief description of the task. Participants therefore read when they signed up that the investigators were "interested in heterosexual dating and sexual experience." To our knowledge, no participants declined to participate after they signed the consent form.

Stimulus materials. To test the ability of physical attributes to determine coital acceptability, we tried to select models who were paragons of health and physical beauty and to choose pictures in which these features were readily visible. We also wanted to use photographs that revealed physique and flesh in order to allow that sex difference in the perception of attractiveness to emerge (Hill et al. 1987; Symons 1979, 1987). Calendars and catalogues featuring models in bathing suits were scoured and pictures of 10 males and 10 females were rated by 25 males and 25 females on 6-point Likert scales (1 = least attractive, 6 = most attractive). Two males and two females were chosen as target persons from this group because the males and females had received similar mean ratings. The two males were rated: $M = 4.95$, $SD = 1.32$; $M = 4.33$, $SD = 1.20$. The two females were rated: $M = 5.15$, $SD = .91$; $M = 4.46$, $SD = 1.17$. Photographs depicted the models from head to hip level.

Status manipulation. In our prior studies, the low-status target persons were social types that were unacceptable to many college students for dating and marriage: a waiter/waitress (Townsend and Levy 1990a, 1990b; Townsend and Roberts 1993) and an uneducated, working-class “townie” (Townsend 1993). These status descriptions and costumes were probably extreme and were deliberately chosen in order to explore the limits of sex differences in partner selection. In Study 1 we wanted to build on our prior studies by using descriptions that conveyed large distinctions in income and ambition but did not reveal class differences through grooming, costume, or educational achievements. The following description represented high ambition and income: “This young man/woman has a steady job. He/she makes about \$100,000 a year.” Low ambition and income were represented as follows: “This young man/woman works at various temporary jobs and makes about \$15,000 a year. He/she describes himself/herself as not ambitious and not interested in a high-powered career.”

Procedure. Procedure and instructions were identical to those used by Townsend and Roberts (1993). Participants completed the surveys in same-sex groups of 10 to 20 under the supervision of same-sex, graduate research assistants. Participants read and signed a standard consent form, which was approved by the university’s Institutional Review Board.

Measures. Subjects then answered the following three questions in relation to a picture and description of an opposite-sex person on 5-point agree-disagree scales: “I would be willing to date/have sex with/marry this person.” Simpson’s and Gangestad’s SOI was embedded in the 67-item questionnaire (they were items 41–47) (Simpson and Gangestad 1991a, 1991b, 1992). Other items included demographic information, questions on family background (e.g., whether parents were divorced, who had physical custody, quality of relationships with parents), and the Mate Selection Questionnaire (Townsend 1989, 1993).

The SOI consists of seven questions: (a) number of sex partners in the previous year; (b) number of one-night stands; (c) number of sex partners foreseen in the next

5 years; (d) frequency of sexual fantasies about people other than the current dating partner; and three attitudinal questions answered on 9-point, Likert-type scales: (e) "Sex without love is OK"; (f) "I can imagine myself being comfortable and enjoying 'casual' sex with different partners"; and (g) "I would have to be closely attached to someone (both emotionally and psychologically) before I could feel comfortable and fully enjoy having sex with her/him." The seven SOI questions were aggregated and weighted according to the originator's formula (Simpson and Gangestad 1991a: 883). The SOI correlates with numerous measures of sexuality and personality, including Extraversion and Lack of Constraint (Gangestad and Simpson 1990; Simpson and Gangestad 1991a, 1991b, 1992). Simpson and Gangestad classified subjects who scored below the median on their SOI as *restricted*, and subjects who scored above the median as *unrestricted*. We use the more neutral terms, high and low SOI, to denote these groups.

Results

The experimental manipulation contained three independent variables: sex of subject, high or low SOI score (based on a within-sex median split), and the level of target person's ambition/income. It yielded three dependent variables: subjects' reported willingness to go out on a Date, have Sex, or Marry stimulus persons. This resulted in a 2 (sex of subject) × 2 (high or low SOI group) × 2 (ambition/income) factorial design. The means and standard deviations for the eight groups are shown in Table 1.

Males' mean SOI score was 69.36 *SD* = 24.92; females' *M* = 39.45, *SD* = 25.09. A multivariate analysis of variance (MANOVA) revealed that the overall effect of Ambition/Income was significant, multivariate *F*(3, 213) = 21.76, *p* < .0001. Ambition/Income affected all three relationships: Date *F*(1, 215) = 17.07, Sex *F* = 7.79, Marriage *F* = 63.56, *p* < .005. The overall Sex × Ambition/Income interaction was significant, multivariate *F*(3, 206) = 5.36, *p* < .001. The Sex ×

Table 1. Mean Reported Willingness to Date, Have Sexual Relations, and Marry Target Persons, by Subjects' Sex and SOI Score and Target Persons' Ambition/Income in Study 1

	High ambition/income				Low ambition/income			
	Male Subjects		Female Subjects		Male Subjects		Female Subjects	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Above Median SOI Score								
Date	1.20	.58	1.65	1.01	1.27	.53	2.42	1.24
Sex	1.12	.44	2.59	1.09	1.31	.47	3.27	1.00
Marriage	2.64	.99	2.69	.89	3.17	.89	4.23	.86
Below Median SOI Score								
Date	1.50	.72	1.63	1.93	1.69	.74	2.48	1.06
Sex	1.65	.75	3.33	2.17	1.46	.65	3.89	1.08
Marriage	2.96	.74	3.00	2.04	3.65	1.06	4.48	1.38

Note. *N* = 109 females and 107 males. 1 = strongly agree; willing to date/have sex/marry stimulus person; 3 = undecided; 5 = strongly disagree. Subjects were divided into high and low groups based on within-sex median scores on the Sociosexual Orientation Inventory (SOI; see text and Simpson and Gangestad 1991a for question content).

Ambition/Income interaction was significant for Date $F(1, 215) = 8.75, p < .003$. Ambition/Income significantly affected women's reported willingness to Date, $F = 17.62, p < .0001$, but not men's, $F = 1.19, ns$. The Sex \times Ambition/Income interaction was significant for Sex, $F = 7.90, p < .005$. Ambition/Income significantly affected women's reported willingness to have Sex, $F(1, 107) = 10.57, p < .001$, but not men's, $F(1, 108) < 1$. The Sex \times Ambition/Income interaction was significant for Marriage, $F = 11.53, p < .0008$. Ambition/Income significantly affected women's reported willingness to Marry, $F(1, 99) = 56.41, p < .0001$, and had a smaller but significant effect on men's, $F(1, 108) = 12.23, p < .0007$. These results supported Prediction 1.

In a planned contrast, the means for Date and Sex were compared. Sex of subject had a significant main effect on this comparison, $F(1, 215) = 133.64, p < .0001$. Within-sex t -tests were computed for the Date-Sex comparison across levels of SOI and Ambition/Income. Women greatly preferred the prospect of a Date, $M = 2.05, SD = 1.00$, to the prospect of Sex, $M = 3.27, SD = 1.01, t = 11.73, df = 101, p < .0001$. Men's reported willingness to have Sex, $M = 1.39, SD = .58$, was indistinguishable from their willingness to Date target persons, $M = 1.42, SD = .64, t < 1$. These results supported Prediction 2.

The overall Sex \times SOI \times Ambition/Income interaction was nonsignificant, multivariate $F(3, 213) < 1$, as were the individual three-way interactions, Date, Sex, and Marriage, $F(1, 215) < 1$. Hence, target persons' Ambition/Income had significantly greater effects on both high and low SOI women than on high and low SOI men for all three relationships. These results supported Prediction 3.

SOI scores were significantly associated with the planned comparison of Date and Sex, $F(1, 215) = 8.47, p < .004$, and the Sex \times SOI interaction was also significant, $F = 9.39, p < .003$. Within-sex, univariate ANOVAs showed that SOI was associated with men's responses to both Date and Sex, respectively, $F(1, 108) = 8.48, p < .005, F = 9.19, p < .003$. SOI was associated with women's responses to Sex, $F(1, 107) = 12.86, p < .0005$, but not to Date, $F < 1$. The means in Table 1 indicate that subjects with high SOI scores said that they were more willing than subjects with low SOI scores to date (or have sex) with target persons.

Of the four groups of women, the high SOI women who viewed the high ambition-income model indicated the most willingness to have sex with the models. Nevertheless, these high SOI women greatly preferred a Date with the high ambition-income model, $M = 1.65, SD = 1.01$, to the prospect of Sex, $M = 2.59, SD = 1.09, t = 5.16, df = 28, p < .0001$. Of the four groups of men, the low SOI men who viewed the high ambition/income model indicated the largest preference for Date over Sex, respectively, $M = 1.50, SD = .72, M = 1.65, SD = .75$, but the difference between means was not significant, $t = 1.06, df = 27, p > .2$. These results supported Prediction 4.

Discussion

Although a considerable number of high SOI women indicated willingness to have sexual relations with the high ambition/income models, many high SOI women

were undecided or negative about this prospect (their mean response was between “agree” and “undecided”). Most of the women, however, were willing to date these models, and their SOI scores were not associated with their willingness to date. In rating models’ acceptability for dating, sexual relations, and marriage, high and low SOI women were significantly and indistinguishably affected by models’ ambition and income. In contrast, men’s willingness to date and have sex with the models was not significantly affected by models’ ambition and income. Men’s SOI scores were associated with their willingness to date and have sex, but their responses were so positive that virtually all the men said they were willing to date and have sexual relations with the models, and their willingness to date was approximately equivalent to their willingness to copulate. These results were consistent with our tradeoff-threshold model of mate evaluation (Hypothesis 1), and they supported Predictions 1, 2, 3, and 4.

STUDY 2

Dominance and Male Attractiveness

Mazur et al. (1994: 88) point out: “The proper analogy to an animal dominance hierarchy is not socioeconomic status in mass society, but the status hierarchy in a primary group of interacting humans who know one another.” Higher-status men in industrial societies do not enjoy greater reproductive success than lower-status men because of the tendency of higher-status individuals (both men and women) to limit their natality. In industrial societies, however, men who enjoy dominance in local hierarchies do tend to have more sex partners than do less dominant men (Mazur et al. 1994; Perusse 1993; Townsend 1992, 1993, 1998; Townsend et al. 1995).

If dominance in a local hierarchy is an important determinant of male sexual attractiveness, then as men or women move from contexts in which their status is known and high to contexts in which it is unknown or low, men’s attractiveness should vary more than women’s attractiveness as a function of this variation in information and in dominance-status ranking (Symons 1979). Several types of evidence support this proposition: surveys of college students’ opinions (Townsend et al. 1995); interviews with medical students, athletes, and married and divorced adults (Townsend 1987, 1989, 1998; Townsend et al. 1995); and sex differences in variability of attractiveness ratings (Townsend and Wasserman 1997).

Commitment versus status/social traits. In assessing the components of attractiveness, Simpson and Gangestad (1992) found that physical attractiveness, sex appeal, social status, and financial resources loaded on one factor and parenting qualities such as sexual fidelity and commitment loaded on another. High SOI women scored higher on the former factor and low SOI women scored higher on the latter. Our tradeoff-threshold model posits that women with high SOI scores tend to test and evaluate short-term partners as long-term prospects rather than low-investment sex with physically attractive persons being the end goal Buss and Schmitt (1993).

Hypothesis 2: Women with high SOI scores are willing to forgo signs of willingness to invest as preliminaries to intercourse only if potential partners' ability to invest meets their standards.

If our measures of commitment assess some of the same qualities as the SOI (i.e., willingness to invest), men and women with high SOI scores will consider commitment less important than do men and women with low SOI scores (Prediction 5). Men, however, generally consider commitment less desirable than do women (Simpson and Gangestad 1992; Townsend 1995, 1998). Hence, women should consider commitment significantly more important than do men (Prediction 6). As in Study 1, however, both high and low SOI women should consider target persons' social and status traits significantly more important than do high and low SOI men even when target persons are very physically attractive (Prediction 7).

Symons (1985) suggests that although men tend to agree on what is sexually attractive, men with lesser competitive abilities may actually perceive attractiveness differently and may find female physical attractiveness less important for sexual arousal than do males with greater competitive abilities. Waller (1994) found that men with higher incomes and Social Potency were especially likely to desire younger women. Men with higher SES actually do marry more physically attractive women (Chase 1975; Elder 1969; Udry and Eckland 1984). Buss (1994) argues that, taken together, these findings suggest that people high in mate value shift their preferences so that they are more exacting on those dimensions that are typically preferred by their sex.

For men, copulation is often the end goal, so we might expect higher-status men to be more polygamous and to shift their standards for mates—either to more exacting standards for physical attractiveness, as Waller (1994) found, or less exacting standards for social characteristics, or both. We therefore predicted that high SOI men would be significantly less interested than low SOI men in social traits that are important for long-term relationships (Prediction 8).

Visually inspired sexual desire. Symons proposed that males evolved the tendency to become sexually aroused by visual stimuli because selection favored males who were attracted to a great variety of partners and who assessed these partners' acceptability for intercourse largely on the basis of physical attributes that indicate fertility (Ellis and Symons 1990; Symons 1979, 1987). Diverse lines of evidence support this thesis (Bailey et al. 1994; Knoth et al. 1988; Singh 1993; Townsend 1998; Weinrich 1988).

If high SOI women trade off signs of men's willingness to invest for physical traits that act as fitness markers, high SOI women might be more able than low SOI women to determine coital acceptability by means of a visual scan and thus to report sexual desire in response to the sight of a potential partner. In this respect, high SOI women would be more like men than would low SOI women.

We propose, however, that the process and criteria of high and low SOI women's mate evaluation are essentially similar but differ dramatically from those of men. We therefore predicted both high and low SOI women would be significantly less likely than high and low SOI men to determine coital desirability by

means of a visual scan and report sexual desire (Prediction 9). Symons's (1985) argument and Waller's (1994) findings would suggest that high SOI men would be more likely than low SOI men to determine coital desirability by means of a visual scan and report sexual desire (Prediction 10).

Popularity and peer opinion. Graziano et al. (1993) showed that in their judgments of target persons' physical attractiveness and dating desirability, women were significantly affected by simulated peers' opinions whereas men were not. We would therefore expect target persons' popularity and peers' opinions of their attractiveness to be more important to women than to men (Prediction 11). If status in a local hierarchy is an important determinant of male sexual attractiveness and females with high SOI scores are trading signs of male willingness to invest for male status (Simpson and Gangestad 1992), high SOI females should consider target persons' popularity and peers' opinions of their attractiveness to be more important than should women with low SOI scores (Prediction 12).

Method

Subjects and procedure. Male ($n = 97$) and female ($n = 82$) students in an introductory psychology course participated for course credit. The procedure was similar to that in Study 1 except that subjects viewed a picture and a description of an opposite-sex person and then responded to nine items on 7-point, Likert-type scales.

Stimulus materials. Highly attractive bathing-suit models were chosen from catalogues and calendars and rated according to the procedures in Study 1. The six males' mean rating was 4.06, $SD = 1.18$; the six females' mean rating was 4.21, $SD = 1.07$. Women's breasts were concealed by their bathing suits. Men's chests were bare.

Measures

Because we wanted to assess subjects' capacity to decide on the basis of physical appearance alone whether a person was acceptable for sexual relations, we included no information about stimulus persons' SES or lifestyle. However, given the current concern about sexually transmitted diseases (Clark 1990), like Symons and Ellis (1989) we stipulated that the target person had no diseases. The following description accompanied the photograph of the target person: "The man/woman in the picture above has no diseases. To decide whether I would want to have sex with him/her . . .

Visually inspired sexual desire. This item was derived from theoretical and empirical literature and designed to measure subjects' capacity to respond to a visual stimulus with sexual desire (Knoth et al. 1988; Symons 1979, 1987; Townsend 1993; Weinrich 1988): "I do not need any more information to decide.

Just looking at this picture makes me want to have sex with him/her” (1 = strongly agree; 7 = strongly disagree).

Eight additional items assessed subjects' interest in stimulus persons' status, social background, willingness to commit, and popularity. These items were derived from both open-ended and close-ended questions used in previous research (Townsend 1987, 1989, 1993, 1995). For these eight items: 1 = very important; 7 = not at all important. For statistical analysis, these questions were grouped into three aggregates.

Commitment. Three questions assessed desire for information about stimulus persons' willingness to invest: “I would like to know whether he/she would be sensitive to my feelings; whether he/she was available for a more involved relationship (for example, not involved with anyone else at the time); whether he/she just wanted a one-night stand or was willing to develop a relationship” (Cronbach's alpha = .88). These questions focus on two indices of partners' willingness to invest: sensitivity to partners' feelings, and availability and willingness to become involved in relationships (as opposed to one-night stands). They were designed to assess some of the same prerequisites for sexual intercourse measured by the SOI: investment of time, sexual exclusivity, and love and emotional attachment (Simpson and Gangestad 1992; Townsend 1995).

Status/social traits. Three questions assessed desire for information regarding stimulus persons' potential for material investment and long-term relationships: “I would like to know his/her career plans (how ambitious he/she is); how intelligent he/she is; something about his/her family background (religion, social class)” (Cronbach's alpha = .82). “Career plans” and “ambition” were traits used in Study 1. “Intelligence” was used as a status trait by Kenrick et al. (1990). Family background, social class, and religion are more important when females rate attractiveness than when males rate attractiveness (Buss 1989a; Buss and Barnes 1986; Morse et al. 1976; Sprecher 1989; Sprecher et al. 1994; Townsend 1989, 1998).

Popularity/peer opinion. Interviews had previously indicated that college students think in terms of popularity rather than status or dominance when considering sexual attractiveness (Townsend 1995, 1998; Townsend et al. 1995), and peers' opinions are important to women's mate evaluation (Graziano et al. 1993). We therefore created the following items: “I would like to know whether he/she is (or would be) popular in the group I move in; whether he/she is (or would be) considered attractive by my friends” (Cronbach's alpha = .77).

Results

The study contained two independent variables: sex of subject and high or low SOI score (based on a within-sex median split). It yielded four dependent variables: subjects' reported Visually Inspired Sexual Desire, subjects' ratings of how important they thought it was to have information on target person's Status/Social Traits, Pop-

ularity/Peer Opinion, and potential for Commitment. This resulted in a 2 (sex of subject) \times 2 (high or low SOI group) factorial design.

The men's mean SOI score was 62.43, $SD = 26.89$; women's $M = 32.71$, $SD = 17.52$. A MANOVA compared the means for Visually Inspired Sexual Desire, Commitment, Status/Social Traits, and Popularity/Peer Opinion (Table 2). Sex of subject differed in its effects on the four variables, multivariate $F(3, 168) = 38.45$, $p < .0001$. Univariate ANOVAs were performed on the four dependent variables.

Commitment. Subjects' sex and SOI scores were associated with their interest in target persons' potential for Commitment (respectively, $F(1, 167) = 79.92$; $F = 15.50$, $p < .0001$). The Sex \times SOI interaction was nonsignificant, $F < 1$. Subjects with low SOI scores were more likely than subjects with high SOI scores to want information regarding potential for Commitment (respectively, $M = 2.52$, $SD = 1.66$; $M = 3.44$, $SD = 1.96$; 1 = very important; 7 = not at all important). These findings supported Prediction 5. Females were more likely than males to want information regarding potential for Commitment (respectively, $M = 1.85$, $SD = 1.40$; $M = 3.91$, $SD = 1.68$). This finding supported Prediction 6. The ANOVA model accounted for 37% of the variance. Commitment correlated with the SOI attitude questions: male $r = .50$, $df = 96$, $p < .0001$; female $r = .25$, $df = 80$, $p < .02$. These findings suggest that the items in Commitment measured some of the same attitudes as the SOI (which was the intention).

Status/social traits. Subjects' sex and SOI scores were associated with their interest in target persons' Status/Social Traits (respectively, $F(1, 167) = 49.30$, $p <$

Table 2. Mean SOI Scores, Visually Inspired Sexual Desire, and Ratings of Importance of Information Necessary to Determine Target Persons' Coital Acceptability in Study 2

	Males		Females	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Subjects' Visually Inspired Sexual Desire				
Subjects above median SOI score	2.25	1.84	5.56	1.71
Subjects below median SOI score	3.81	2.10	5.97	1.58
Rated Importance of Target Person's Traits				
Commitment				
Subjects above median SOI score	4.47	1.55	2.18	1.65
Subjects below median SOI score	3.34	1.63	1.51	1.01
Status/social traits				
Subjects above median SOI score	4.74	1.67	2.67	1.58
Subjects below median SOI score	3.74	1.18	2.68	1.31
Popularity/peer opinion				
Subjects above median SOI score	4.43	2.01	4.28	1.76
Subjects below median SOI score	4.57	1.58	4.93	1.42

Note. Males: $n = 97$; females, $n = 82$. Subjects were divided into high and low groups based on within-sex median scores on the Sociosexual Orientation Inventory (SOI; see text and Simpson and Gangestad 1991a for question content). SOI components are weighted according to originators' formula (Simpson and Gangestad 1991a). For Commitment, Status Traits, and Popularity, 1 = very important; 7 = not at all important. For Visually Inspired Sexual Desire, 1 = strongly agree; 7 = strongly disagree. See text for the individual questions that comprise the aggregates.

.0001; $F = 4.94, p < .03$). Females were more likely than males to want information regarding target persons' Status/Social Traits (respectively, $M = 2.68, SD = 1.44$; $M = 4.24, SD = 1.53$). This finding supported Prediction 7. The Sex \times SOI interaction was also significant, $F = 5.12, p < .03$. Within-sex t -tests showed that SOI scores were associated with males' responses ($t = 3.34, df = 96, p < .001$), but not with females' responses ($t < 1$). Males with high SOI scores were less likely than males with low SOI scores to want information regarding target persons' Status/Social Traits (respectively, $M = 4.74, SD = 1.67$; $M = 3.74, SD = 1.18$). These results supported Prediction 8.

Visually inspired sexual desire. Sex affected subjects' reported Visually Inspired Sexual Desire, $F(1, 167) = 93.75, p < .0001$. Males were more likely than females to agree that they did not need any more information to decide; just looking at the photograph made them want to have sex with the person portrayed (respectively, $M = 3.03, SD = 2.12$; $M = 5.76, SD = 1.65$; 1 = strongly agree; 7 = strongly disagree). These results supported Prediction 9. SOI scores and the Sex \times SOI interaction were associated with Visually Impaired Sexual Desire (respectively, $F(1, 167) = 12.05, p < .0007$; $F = 4.09, p < .05$). Within-sex t -tests showed that SOI scores were associated with males' responses ($t = -4.09, df = 96, p < .0001$), but not with females' responses ($t < 1$). Males with high SOI scores were more likely than males with low SOI scores to agree that viewing the photograph inspired sexual desire (respectively $M = 2.25, SD = 1.85$; $M = 3.81, SD = 2.10$). These results supported Prediction 10.

Popularity/peer opinion. Neither SOI scores nor sex of subject was associated with interest in target persons' Popularity (respectively, $F(1, 167) = 2.23, p > .13$; $F < 1$). This latter finding was not consistent with Prediction 11. Normally, when the main and interaction effects are nonsignificant, further comparisons within an ANOVA model are not made. It is legitimate, however, to perform such tests when they have been predicted on the basis of a theoretical rationale (Kirk 1982). The predicted difference between high and low SOI females' responses to Popularity was significant: females with high SOI scores were more likely than females with low SOI scores to desire information on target persons' Popularity (respectively, $M = 4.28, SD = 1.76$; $M = 4.93, SD = 1.42$; $t = -1.66, df = 77, p < .05$; one-tailed test). This finding supported Prediction 12.

Discussion

The results were consistent with Hypothesis 2 and, with the exception of Prediction 11, supported Predictions 5 through 12. Women with high SOI scores were less interested than women with low SOI scores in target persons' willingness to Commit, but these groups' ratings of the importance of Status/Social Traits were indistinguishable. Both male groups were less interested than were the female groups in Commitment and Status Traits. Women were much less likely than men to determine coital

acceptability and report Visually Inspired Sexual Desire in response to the pictures, and the responses of women with high and low SOI scores were indistinguishable.

In general, the results of Study 2 were consistent with the view that the components and the weighting of components in high and low SOI women's initial acceptance thresholds (filters) are essentially similar but differ dramatically from those of men. The criteria of the high and low SOI women differed in only two aspects. High SOI women were more willing than low SOI women to have sexual relations in the absence of Commitment. High SOI women exhibited a greater interest in peers' opinions of target persons' popularity and attractiveness. The latter finding is consistent with the proposition that high SOI women trade male Commitment for male status and social visibility (Simpson and Gangestad 1992; Townsend et al. 1995).

The predicted sex difference in the importance of Popularity/Peer Opinion did not appear (Prediction 11). Men and women expressed equivalent and mild interest in information regarding Popularity. Given the strong sex differences in the other variables, it is possible that both sexes assumed that target persons would be popular in their circles if they met their standards for the other traits: primarily physical attributes for men, and Commitment and Status/Social Traits for women. The lack of a sex difference also may be explained by the fact that the operation, goals, and principles of sexual strategies are not necessarily conscious (Buss 1989b; Buss and Schmitt 1993). Men and women may express comparable, mild agreement with the importance of Popularity/Peer Opinion because they are uncertain concerning these determinants of male and female attractiveness. A survey of college students' opinions on the determinants of attractiveness was consistent with this interpretation (Townsend et al. 1995).

If high SOI women have a greater risk of strategic interference (Buss and Schmitt 1993), why did they not show greater interest in Status/Social Traits than low SOI women, as they did for Popularity? We suspect this occurred because of the types of information involved and the different levels of female interest in Popularity and Status/Social Traits. Both groups of women were much more interested in Status/Social Traits than men were, and this interest may be sufficient to acquire the necessary information. In contrast to Status/Social Traits, men and women showed comparable, *mild* interest in Popularity/Peer Opinion, so perhaps high SOI women compensate for their greater risk by expressing a stronger desire than low SOI women for peers' opinions.

GENERAL DISCUSSION

In Studies 1 and 2, women were more interested than men in target persons' status traits and willingness to invest (Commitment) and were less likely to report Visually Inspired Sexual Desire and willingness to have sexual relations. The responses of high and low SOI women differed in only three respects: in Study 1 high SOI women were more likely than low SOI women to say that they were willing to have sexual relations with the models; and in Study 2 high SOI women reported more

interest in target persons' Popularity and less interest in Commitment than did low SOI women. The two female groups' reports of Visually Inspired Sexual Desire were indistinguishable. Hence, high SOI women's greater willingness to have sexual relations without evidence of willingness to invest does not seem to be the result of a greater tendency to determine coital acceptability on the basis of a visual scan of physical traits. Apparently, high SOI women are only willing to forgo signs of willingness to invest when evidence of ability to invest, such as status, ambition, and resources, is sufficient—even when target persons' physical attractiveness is high. In contrast, in Study 1 virtually all the men said they were willing to date and have sex with the models, and their willingness was unaffected by the model's Ambition/Income. In Study 2 men were much more likely to say that merely seeing the models made them want to have sex with them, and men's interest in models' Status/Social Traits and Commitment were much weaker than women's. These results were consistent with our tradeoff-threshold model—and Singh's (1993) filter model—of mate selection (Townsend 1993, 1995; Townsend and Roberts 1993).

Why were men's Visually Inspired Sexual Desire positively associated, and their interest in Status Traits negatively associated, with their SOI scores, whereas women's responses to these factors were not related to their SOI scores? Research concerning emotional reactions to casual sexual relations produced a similar pattern (Townsend 1995, 1998; Townsend et al. 1995). Women's tendency to worry about partners' willingness to invest and to have thoughts about marriage (Investment Thoughts) was not associated with their SOI scores, whereas men's reports of Investment Thoughts correlated negatively with their SOI scores. Because copulation is often an end goal for men, men's mate value correlates positively with number of sex partners and casual sexual relations (and therefore SOI), and negatively with willingness to invest (Mazur et al. 1994; Perusse 1993; Simpson and Gangestad 1992; Townsend et al. 1995). Thus, high SOI men may shift to a lower-investment strategy and express more Visually Inspired Sexual Desire, less interest in Status/Social Traits, and fewer Investment Thoughts because low-investment relations are more available to them; low SOI men may facultatively shift to a higher-investment strategy because they are less able to have low-investment sex. The study of medical students also indicated that men shifted their investment strategy as their sexual opportunities expanded (Townsend 1987, 1998). Kenrick and Keefe (1994) note that the mechanisms mediating such shifts might be fixed early in development, or they might be triggered at any time during the life course by the appropriate environmental stimuli.

The relationships between women's mate value, mate preferences, and SOI are less clear. Buss and Schmitt (1993) argue that for women, mate value and low-investment sexual relations are negatively associated, and Elder (1969) found that more physically attractive women were more likely to be chaste. Physically attractive women also are more likely to marry up, so presumably they have shifted their standards in accordance with their mate value (Buss 1994). Thus, physically attractive women—not high SOI women—are the logical analogue of men with higher mate value (who tend to have higher SOI scores). We would therefore expect highly physically attractive women to shift their standards for commitment and status traits

upward, just as men with high mate value shift their interest in these qualities downward (at least for casual sexual relations).

Women with higher SES have higher socioeconomic standards for their male partners (Townsend 1989, 1998; Wiederman and Allgeier 1992). Higher-status women may shift their economic standards because they judge their own mate value to be higher—even though their income and occupational prestige are relatively unimportant to men. Alternatively, they may simply believe that men with inferior status and earning power offer few advantages and therefore do not merit their (the women's) investment. These explanations are not mutually exclusive (Townsend 1998).

What are women's motivations for engaging in low-investment sexual relations? Some women may engage in uncommitted sex to attract and retain desirable partners even though they may actually desire more commitment (Simpson and Gangestad 1991a). Others may do so because they can acquire better genes that can be passed on to their offspring (Gangestad and Simpson 1990). This type of "genetic benefit remains theoretically controversial in evolutionary biology" (Buss and Schmitt 1993: 215).

Younger persons and people between long-term relationships may be more likely to use short-term relationships to assess their own mate value and that of partners than older individuals and people in long-term relationships (Buss and Schmitt 1993). Some research suggests that women's testing and evaluation of partners' ability and willingness to invest continue long after a stable relationship has been established (Buss 1989b; Townsend 1995, 1998; Townsend et al. 1995). Hence, for women such testing may be a relatively automatic and continuous process.

The current findings and our tradeoff-threshold model are consistent with Singh's (1993) model of men's evaluation of women's attractiveness. In assessing *women's* evaluation of men's attractiveness, however, Singh (1995) found that women preferred men with both high WHR and high SES. Even when paired with high status, male figures with WHR in the female range received lower ratings than other figures. Singh (1995) notes that this finding does not support Ellis's (1992) conclusion that high status can equalize the acceptance of less physically attractive men. Our current findings and previous studies appear to be more consistent with Ellis's conclusion. However, we never manipulated WHR, and our less attractive male models were plain or homely but never grossly deviant in their features or proportions (Townsend 1993; Townsend and Levy 1990a, 1990b; Townsend and Roberts 1993). Furthermore, Singh (1995) notes that only WHR and body size were presented in his experiments, and line drawings omit a host of other traits that also may affect attractiveness. Hence, our findings and tradeoff-threshold model also may be compatible with Singh (1995).

Both sexes seem to prefer physically attractive partners, other things being equal (Singh 1995; Townsend 1989; Townsend and Levy 1990a, 1990b). Consequently, the question is not whether various measures of male physical attractiveness predict females' selection of sex partners, but, rather, how much of the variance in males' and females' partner selection, and in their attractiveness to the opposite sex, is predicted by physical and nonphysical traits. What sorts of tradeoffs between

different types of physical traits and status characteristics are men or women willing to make? Physical attributes affect women's selection of sexual, dating, and marriage partners, but physical attributes appear to have their greatest effects on female choices within a pool of individuals who have acceptable status and social characteristics. We suspect, therefore, that nonphysical characteristics such as status in local hierarchies will ultimately prove to be stronger predictors of males' mate value and number of sex partners than will physical traits, but physical traits also are significant predictors (Simpson and Gangestad 1992; Singh 1995; Thornhill and Gangestad 1993; Townsend 1998). A final judgment awaits research that adequately controls for all of these factors.

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