Original Article

RATIONAL CHOICE AND EVOLUTIONARY PSYCHOLOGY AS EXPLANATIONS FOR MATE SELECTIVITY

Yaarit Bokek-Cohen Department of Economics and Business Administration Ariel University Center, Ariel, Israel

> Yochanan Peres Department of Sociology and Antrhopology Tel Aviv University, Tel Aviv, Israel

Satoshi Kanazawa Interdisciplinary Institute of Management London School of Economics and Political Science

> Department of Psychology University College London

Department of Psychology Birkbeck College, University of London

Abstract

Rational choice theory of marriage market predicts that mate selectivity responds to operational sex ratios whereby the sex in shorter supply and thus greater demand becomes more selective. In contrast, an evolutionary psychological perspective on mate selectivity predicts that women on average will be more selective than men under most circumstances, and the sex difference will not respond to operational sex ratios. We analyze mate preferences expressed by men and women (n = 2,956) who subscribe to a computer dating service in Tel Aviv, Israel, which has an extremely low sex ratio (646 available single men for 1,000 women). The findings support the evolutionary psychological prediction and show that women remain more selective than men even under conditions of extreme "marriage squeeze" for women.

Keywords: Sex ratios; marriage market; marriage squeeze; Israel

AUTHOR NOTE: Please direct all correspondence to Satoshi Kanazawa, Interdisciplinary Institute of Management, London School of Economics and Political Science, Houghton Street, London WC2A 2AE, United Kingdom. S.Kanazawa@lse.ac.uk

©2007 Journal of Social, Evolutionary, and Cultural Psychology

How do men and women select each other as mates, partners, and spouses? What influences how selective they are in their mate choice and what traits and characteristics they demand in their potential mates? Rational choice theory and evolutionary psychology provide two contrasting explanations for *mate selectivity*.

Rational Choice Theory

An economic perspective on marriage and mate selection consists of three theoretical tools (Grossbard-Shechtman, 2003a). Cost/benefit analysis explains individual choice of mates and decision to marry in terms of subjective expected benefits and costs. Holding costs constant, the greater the benefits of marriage, such as children efforts in raising them, and shared the more likely to seek marriage. Costs in the cost/benefit analysis include opportunity costs, which in the context of mate selection under monogamy mean all the other alternative and superior mates that one cannot marry if one chooses to marry a particular person. Game theory analyzes strategic decisions of individuals. Mate selection involves at least two actors, and the decision of each depends on the anticipated decision of the other because the costs and benefits of a given choice depends partly on the choice of the other person. Finally, market analysis focuses on individual decisions both on the supply and demand sides. Individuals make decisions in the context of competition with other individuals who supply or demand the same good or service. In this view of the mate selection, men are in competition with each other for access to women, and women are in competition with each other for access to men. In our paper we will focus on the market analysis of mate selection as an aspect of rational choice theory.

Based on the microeconomic model of the "marriage market" (Becker, 1973, 1974; Grossbard-Shechtman, 1993, 2003b), market analysis explains men's and women's mate selectivity in part as a function of their own "supply" and "demand." If there are too many men relative to the number of women, then the "supply" of men is high. Their "value" decreases, the "price" they command on the market plummets, and, as a consequence, men have to lower their standards and become less selective in order to find a mate. In contrast, the exact opposite happens to women in the same situation. If there are too few women relative to the number of men, women's value and their price increase, and, as a result, they can increase their standards and become more selective in their mate choice. The operational sex ratio (the ratio of available men to available women) thus becomes a crucial factor in the rational choice theory of marriage market (Grossbard-Shechtman 1993, pp. 85-129; Guttentag & Secord, 1983). Specifically, rational choice theory suggests that women become less selective as the operational sex ratios decrease (more women) and become more selective as they increase (more men).

The logic of market analysis of mate selection suggests that higher sex ratios will favor women in the marriage market and in their marriages themselves once they get married. Consistent with this logic, Chiappori, Fortin, and Lacroix (2002) find that the higher the sex ratio, the more husbands share their incomes with their wives. Their empirical results suggest that one percent increase in the proportion of males in the population induces husbands on average to increase their transfer to their wives by \$2,163. Because women can obtain more favorable marriages when the sex ratios are high, they are simultaneously less likely to participate in the labor force or to work longer hours. Both women in general (Ferber & Berg, 1991) and married women specifically

(Grossbard & Amuedo-Dorantes, 2007; Grossbard-Shechtman & Neideffer, 1997) are less likely to participate in the labor force and work longer hours when the sex ratios are higher. Angrist (2002) studies the influx of various immigrant groups into the United States, and the effect of the sex ratios of different nationality groups on the largely endogamous marriage of the second generation. His analysis shows that higher sex ratios increase the marriage rates of both men and women, although the effect on women is much stronger. Higher sex ratios also decrease women's labor force participation.

South and Lloyd (1992) find that the quantity and quality of potential husbands (specific to women's age, race, education and area of residence) increase both the rates of marriage and divorce. They argue that this is because married women can find better alternatives if there are more unmarried men in the area. Similarly, South and Lloyd (1995) find that the number of unmarried women in school or labor force increases the rates of divorce because married men can find better alternatives in such conditions. They also discover that substantial proportions of men and women who eventually divorce are involved in extramarital affairs before the marital dissolution. With respect specifically to the effect of sex ratio on mate selectivity, Grossbard-Shechtman (1985) suggests that the higher the sex ratio (more men relative to women), the more selective women become and the less selective men become; conversely, the lower the sex ratio (more women relative to men), the less selective women become and more selective men become.

Evolutionary Psychology

An evolutionary psychological perspective offers a different explanation for mate selectivity. The parental investment theory (Trivers, 1972) proposes that the sex that invests more heavily in the offspring is more selective in mate choice than the less investing sex. The higher-investing sex is usually, and among mammalian species always, the female. Women have much larger obligatory parental investment than men do; they must carry the fetus in their womb for nine months and nurse the infant for years afterwards. As a result, a human female can normally have far fewer children than a human male can. The largest number of children that a man has ever had is at least 1,042; this record is held by the last Sharifian emperor of Morocco, Moulay Ismail the Bloodthirsty. In sharp contrast, the largest number of children a woman has ever had is 69; the record is held by the wife of an 18th-century Russian peasant, Feodor Vassilyev (Young, 1994, p. 10). The *fitness ceiling*, the highest reproductive success one can potentially achieve, is two order of magnitude higher for men than for women (1000s vs. 10s).

Their lower fitness ceiling typically inclines women to be careful and cautious in choosing a mate. A mistake in mate choice, in the form of having a child with a wrong mate, is often much costlier for women than it is for men because such a mistake represents a greater proportion of women's lifetime reproductive potential than men's. As a result, an average woman would require a longer period of acquaintanceship before consenting to have sex with someone than an average man would (Buss & Schmitt, 1993). Women on average are much less interested in casual sex with a stranger than men are. Approached by an attractive stranger of the opposite sex, 75% of men immediately agree to have sex with the stranger, while none of the women do (Clarke & Hatfield, 1989). An evolutionary psychological perspective therefore predicts that, *given*

the asymmetry in reproductive biology and the consequent sex difference in obligatory parental investment, women are always more selective in mate choice than men.

Further, we predict that women's greater mate selectivity is relatively impervious to environmental factors like the operational sex ratio. Evolutionary theories do not always predict fixed behavior impervious to environmental conditions; in fact, most evolutionary theories predict just such environmental influences. However, evolutionary psychological theories aver that the human brain can facultatively respond only to conditions that prevailed at some regularity during the course of human evolution (Crawford, 1993; Kanazawa, 2004; Symons, 1990; Tooby & Cosmides, 1990). We hypothesize that the operational sex ratios during most of human evolution was very seldom extremely skewed and it was never extremely high or extremely low. We therefore predict that men's and women's brains do not respond facultatively to such evolutionarily novel conditions.

For example, Wiederman and Allgeier (1992) examine and empirically test evolutionary psychological hypotheses on women's mate selection against a hypothesis derived from rational choice theory. The "structural powerlessness hypothesis" contends that women prefer a mate with economic resources because they themselves often lack such resources; in this view, women use their mates as an alternative means to acquire economic resources since they often lack the means to do so on the labor market. In contrast, an evolutionary psychological hypothesis attributes women's preferences for resourceful mates to evolved female human nature, which is relatively impervious to environmental conditions and does not facultatively respond to evolutionarily novel conditions, such as women's economic independence and their ability to acquire a large amount of resources on their own. The structural powerlessness hypothesis would therefore predict a negative correlation between women's own economic resources acquired on the labor market and their desire for mates with such resources, while the evolutionary psychological hypothesis would predict a null correlation. Wiederman and Allgeier's (1992) data shows that the correlation is zero in the community sample, and actually positive in the college sample. A rational choice perspective would have difficulty explaining why women who have greater financial resources of their own would prefer a mate who have even more money than they do.

In a recent study, Stone, Shackelford, and Buss (2007) test a rational choice theory of mate selection, which they call "classical sex ratio mate preference shifts hypothesis," against an evolutionary psychological hypothesis, which they call "alternative sex ratio mate preference shifts hypothesis," with cross-cultural data from 36 cultures. The first hypothesis predicts that men become more selective and women become less selective, as the sex ratio becomes lower (more women). In contrast, the second hypothesis predicts that lower sex ratios lead men to lower their mate selection criteria in order to pursue short-term mating opportunities, and women to raise theirs in order to guard against deceptive suitors. Their empirical analysis supports classical sex

believe it is reasonable to assume that the operational sex ratios as well as the breeding system of *H. sapiens* have remained more or less constant for about 800,000 years.

¹Sexual dimorphism in size is known to correlate with operational sex ratios (Plavcan, 2000) as well as breeding systems (monogamy vs. polygyny) (Alexander et al., 1979). The sexual dimorphism in size increases when the operational sex ratio increases, and decreases when it decreases. The available fossil records show that sexual dimorphism in size in the *Homo* lineage has remained more or less constant since the mid-Pleistocene (about 800K years ago) (Flinn, Ward, & Noone, 2005, pp. 555-529). We therefore

Rational Choice and Evolutionary Psychology

ratio mate preference shifts hypothesis for men, and alternative sex ratio mate preference shifts hypothesis for women. In other words, both men and women become *more* selective as the sex ratio decreases (more women).

Marriage Squeeze

A crucial empirical test of the rational choice and evolutionary psychological theory of mate selectivity takes place in the context of marriage squeeze for women (Glick, Beresford, & Heer, 1963; Grossbard-Shechtman, 1985). Marriage squeeze for women occurs when the sex ratio is so low that there are not enough available men for women to marry. The rational choice theory of marriage market would predict, as does Stone et al.'s (2007) classical sex ratio mate preference shifts hypothesis, that women under such conditions will lower their standards and become less selective in their mate choice in order to find a mate, because women's mate value and thus the price they can command become lower under marriage squeeze for women. In contrast, we suggest that the evolutionary psychological perspective would predict, in slight variance with Stone et al.'s (2007) alternative sex ratio mate preference shifts hypothesis, that marriage squeeze for women would not affect their mate selectivity, because all the factors that contribute to women's higher standards for mate selection, such as sexual asymmetry in reproductive biology, higher obligatory parental investment in children, and lower fitness ceiling for women, remain relatively constant under marriage squeeze. We test these contrasting predictions for women's mate selectivity in one particular case of marriage squeeze for women, the contemporary Israel. Our focus in this study is men's and women's expressed mate *preferences*, as opposed to their actual mating behavior.

Note that our evolutionary psychological hypothesis, based on the assumption that sex ratios during most of human evolutionary history were never too extremely skewed, predicts that men's and women's mate selectivity will largely be impervious to fluctuations to operational sex ratios in the local marriage market. In contrast, Stone et al.'s (2007) alternative sex ratio mate preference shifts hypothesis, also derived from an evolutionary psychological perspective, predicts that men become less selective and women become more selective in the face of lower sex ratios. Contrary to popular belief among uninformed critics of evolutionary psychology, it is very common for evolutionary psychologists to propose competing, empirically testable hypotheses derived from evolutionary psychological logic (Ketelaar & Ellis, 2000).

Empirical Analysis

Baseline Sex Differences in Mate Selectivity

In order to establish the baseline sex differences in mate selectivity, to discover what traits men and women seek in each other *under normal circumstances*, we use data from David M. Buss's (1989) International Mate Selection Project.² Buss, in

²For the purpose of establishing the baseline sex differences in mate selectivity, it would have been ideal to use data collected by someone not so closely associated with one of the two theories we test here. However, no one (then and since) has ever conducted as extensive a study on mate selection, with samples from as many countries, as Buss and his collaborators did. And there is absolutely no reason to question the quality of Buss's data or the accuracy of his generalizations from the data.

collaboration with an international team of 49 scientists throughout the world, collects data on what men and women value in their mates from 37 cultures in 33 countries on six continents and five islands. The international sample includes 10,047 individuals of all races and all major world religions, who live throughout the globe. Buss (1989) does not have information on the operational sex ratios of the communities from which his respondents come; however, Stone et al. (2007) now do. The mean of sex ratio of the 37 cultures in Buss's data, weighted by the population size, turns out to be 105.3534, which is exactly the normal human secondary sex ratio of 105 (Grant, 1998). We therefore have good reason to believe that Buss's data provide the baseline sex differences in mate selectivity.

Buss (1999) lists the traits men and women seek in their long-term mates (as opposed to short-term mates for casual sex), drawn both from his large international sample and from his extensive review of other studies. While men and women seek some of the same traits in their long-term mates (such as kindness and intelligence), there are also clear sex differences. Women on the whole seek 10 traits in their long-term mates: 1) economic resources; 2) good financial prospects; 3) high social status; 4) older age; 5) ambition and industriousness; 6) dependability and stability; 7) athletic prowess; 8) good health; 9) love; and 10) willingness to invest in children. In contrast, men seek 3 traits in their long term mates: 1) youth; 2) physical attractiveness; and 3) particular body shape (low waist-to-hip ratio). Note that we are not concerned here with the specific criteria that men and women use, but whether or not the criteria (whatever they may be) *remain the same or change* under the condition of marriage squeeze.

There are two important points to note. First, women typically list more than three times as many traits important in their long-term mates as men do. In this sense, women in the baseline condition are more selective and have higher standards than men do. Second, all the traits that men list are physical, while women's list consists predominantly of nonphysical traits. So the data on the baseline sex differences in mate selectivity reveal that women are more selective in mate choice than men, and men emphasize physical traits while women emphasize nonphysical (social) traits. Feingold's (1992) meta-analysis largely confirms these sex differences in mate preferences, where men emphasize physical attractiveness in their mates while women emphasize status and resources. Li et al.'s (2002) and Sprecher and Regan's (2002) studies uncover, however, that intelligence and kindness are also very important criteria for mate selection for both men and women, even though the latter study unfortunately does not distinguish men's and women's mate preferences.

How would these sex differences in mate selectivity change under conditions of marriage squeeze for women?

Mate Selectivity under Marriage Squeeze for Women: Israel at the Dawn of the Third Millennium

Until the 1970s, the sex ratio in Israel was close to parity. Since then, however, due to a combination of factors such as selective emigration, where a large majority of single Israelis who emigrate are men, and differential mortality, the sex ratio in Israel has steadily declined. In 2000, when our study was conducted, the sex ratio among singles in their 30s was extremely low. The sex ratio of never married men age 35-39 to never married women age 30-34 was .651 (19,000 never married men age 35-39 to 29,200 never married women age 30-34). [http://www1.cbs.gov.il/shnaton54/st02 19x.pdf] The

sex ratio of unmarried men to unmarried women in the same age groups, which include never married, divorced, and widowed, was even lower at .646 (29,700 unmarried men age 35-39 to 46,000 unmarried women age 30-34). There were therefore fewer than two available men for every three available women. This is a prime condition for marriage squeeze for women. We have therefore decided to examine Israeli men's and women's mate selectivity in order to test the rational choice prediction against the evolutionary psychological prediction.

Data

We obtain the database of a large national commercial computer dating service in Tel Aviv, which has a very high concentration of singles. The dating service caters specifically to men and women who are looking for long-term mates for marriage, not short-term mates for casual sex. In the year of our study (2000), 3,541 individuals used this particular computer dating service. We limit our sample to 2,956 never-married, childless individuals (1,379 men and 1,577 women) Their mean age is 33.3 (SD = 8.7) for men, and 36.9 (SD = 8.8) for women. While the sex ratio in our sample of respondents (1,379/1,577 = .874) is somewhat higher than the operational sex ratio in Israel at large (.646), the respondents are not aware of the number of men and women who subscribe to their computer dating service. We therefore expect them to respond to the operational sex ratio of the larger society. Since women in general prefer mates who are a few years older than them (Buss, 1989, 1999), the higher mean age of women than men in our sample is expected to lead our female respondents to lower their standards, thereby providing a more conservative test for our evolutionary psychological hypothesis.

Measures of Selectivity

Upon subscription to this dating service, each new member must fill out a self-administered questionnaire with regard to 51 separate traits. For each trait, a member answers three separate questions: 1) how important the trait is in a potential long-term mate (on a 5-point scale from 1 = does not matter at all, to 5 = very important); 2) what level of the trait is required in a mate (on a 5-point scale from 1 = lowest, to 5 = highest); and 3) what level of the trait the member believes she has (on the same 5-point scale). While, as with any self-report measure, it is possible for our respondents to lie and misrepresent their true mate preferences, we believe that such misrepresentations are less likely in our data than in other social surveys, because our respondents are in a sense "voting with their feet." They all have the goal to find a desirable mate, so we assume that their responses are primarily driven by this desire.

Results

We first compare men and women on the mean importance of each of the 51 rated traits. We perform an independent-sample t-test for each of the traits to see if there is any significant sex difference. Table 1 categorizes the traits into three groups: 1) those which women rate as statistically significantly more important than men (at at least p < .05); 2) those for which there is no statistically significant sex difference; and 3) those which men rate as statistically significantly more important than women (at at least p < .05).

Table 1. Criteria for Mate Selection for Men and Women - Results from Tel Aviv, Israel

Traits which are significantly more important to women	Traits for which there is no significant sex difference	Traits which are significantly more important to men
Country of origin*	Lack of physical disability	Physical attractiveness*
Education***	Ethnic origin	Body build**
Economic standing/status***	Skin color	Hair color***
Car ownership***	Hair style	Eye color***
Career importance***	Importance of marital relations over relations with parents	Facial skin condition***
Height*	Ways to solve differences of opinion with partner	Rational decisionmaking*
Dress**	Sharing recreation time	Mutual flexibility in career development***
Marital attitude***	Importance of mutual independence in the relationship	Responsibility for child care and education***
Joint decisionmaking with partner***	Emotional openness	
Sharing emotions with partner***	Tendency to reveal self	
Importance of sex in relationship*	Desire to spoil spouse	
Willingness to lose an argument**	Forgiveness	
Being romantic***	Helpfulness	
Optimism***	Emotional predictability	
Sociability***	Being ethical	
Emotional control**	Desire to draw attention to self	
Conformity*		
Being energetic**		
Altruism**		
Sense of humor***		
Tendency to save money***		
Responsibility for family income***		
Responsibility for household		
cleanliness and order***		
Responsibility for managing family finances***		
Attitude toward which spouse should spoil the other***		
Attitude toward sexual equality***		
Desire for children***		
	I	I .

There are two important points to note in Table 1. First, there are 27 traits which women rate as significantly more important than men, while there are eight traits which men rate as significantly more important than women. In other words, women list more than three times as many important traits as men do. Bonferroni correction for multiple comparisons calls for the use of $p=.05/51=.0098\sim.01$. The correction, however, increases the sex difference in mate selectivity. Women now rank 23 traits as significantly (p<.01) more important than men, while men rate six traits as significantly more important than women. Women list nearly four times as many important traits as men do after the Bonferroni correction.

Second, a majority of the traits that men consider significantly more important in a long-term mate than women do are physical. These are physical attractiveness, body build, hair color, eye color, and facial skin condition, even though they also consider three nonphysical traits as more important than women do (rational decisionmaking, mutual flexibility in career development, and responsibility for child care and education). In contrast, virtually all of the traits which women rate as more important than men do are nonphysical (social) traits; the only exception is height. This pattern largely holds even after the Bonferroni correction.

Both of these patterns are identical to those seen in the baseline sex differences in mate selectivity in Buss's (1989) data. The similarities are striking. The women in both samples include economic resources, social status, career ambition, and desire for children, while the men in both samples include physical attractiveness and body shape. These similarities are uncanny, given that the 51 traits in Table 1 were chosen by one computer dating service agency in Tel Aviv, as a comprehensive list of traits potentially important to its subscribers, without any knowledge whatsoever of Buss's international mate selection project.

In order to perform further analyses, we categorize the 51 traits into five trait groups (socioeconomic, personality, physical attractiveness, interpersonal relations, and egalitarianism), and compute the sex means for each trait group. The internal consistency of each of the five areas shows very high degrees of reliability (Cronbach's alpha for socioeconomic: .72 for men and .67 for women; for personality: .93 for men and .91 for women; for physical attractiveness: .81 for men and .83 for women; for interpersonal relations: .92 for men and .90 for women; for egalitarianism: .91 for men and .87 for women).

Table 2 shows that women attach significantly (p < .001) greater importance to four out of five trait groups (socioeconomic, personality, interpersonal relations, and egalitarianism), while men attach significantly (p < .001) greater importance to physical attractiveness. A sex x trait group analysis of variance (ANOVA) reveals a significant effect of sex ($F_{1, 2679} = 12.15$, p < .001), a nonsignificant effect of trait group ($F_{4, 10716} = 2.11$, p < .001).

Table 2. Sex Differences in Mate Selectivity in Five Trait Groups

Trait group	Sex	Mean	SD	n
Socioeconomic	Men	2.99	.88	1,164
	Women	3.62	.74	1,576
Personality	Men	3.37	.95	1,137
	Women	3.71	.78	1,565
Physical attractiveness	Men	3.45	.83	1,378
	Women	3.27	.79	1,576
Interpersonal relations	Men	3.61	.90	1,133
	Women	3.96	.71	1,548
Egalitarianism	Men	3.16	1.09	1,143
	Women	3.69	.90	1,559

Further, on three quantitative traits of education, socioeconomic status, and physical attractiveness, we compute the ratio of the subjects' desired level of each trait in their mate to their own level of the same trait. Since both the desired level and their own level are measured on a 5-point scale, this ratio varies from 1/5 = .2 if the subject desires the lowest level of a given trait while possessing its highest level, to 5/1 = 5.0 if the subject desires the highest level of a given trait while possessing its lowest level. This ratio is therefore an indicator of the subject's desire for *hypergamy*, the desire for a mate who possesses a higher level of a given trait that the subject does herself. The higher the ratio, the greater the desire for hypergamy. Any number greater than unity means that the subject desires a mate who possesses a higher level of a given trait than herself; any number less than unity means that the subject desires a mate who possesses a lower level of a given trait than herself.

Table 3 presents men's and women's mean desire for hypergamy on the three quantitative traits of education, socioeconomic status, and physical attractiveness. On education and socioeconomic status, women on average express greater hypergamic selectivity; they prefer mates who are superior to them in these traits. In contrast, men do not express desire for hypergamy on education or socioeconomic status; on average they prefer a mate who possesses lower levels of education or socioeconomic status than they themselves do. On the other hand, men express a desire for hypergamy on physical attractiveness; they desire a mate who ranks higher on the physical attractiveness scale than they themselves do. Women, on the other hand, do not express a desire for hypergamy on physical attractiveness. The sex differences on all three traits are statistically significant (ps < .001). A sex x trait ANOVA reveals a significant effect of sex ($F_{1, 2954} = 32.00$, p < .001), a significant effect of trait ($F_{2, 8862} = 12.15$, p < .001), and a significant sex x trait interaction effect ($F_{2, 8862} = 54.33$, p < .001).

Table 3. Sex Differences in Desire for Hypergamy on Three Quantitative Traits

Trait	Sex	Mean	SD	n
Education	Men	.93	.35	1,379
	Women	1.05	.30	1,577
Socioeconomic status	Men	.88	.47	1,379
	Women	1.23	.43	1,577
Physical attractiveness	Men	1.18	.32	1,379
	Women	.98	.42	1,577

The statistical analyses from Tables 2 and 3 lead to the same conclusion: Women are significantly more selective in their mate choice in most areas, especially socioeconomic status and education, than men are, but men are more selective in their mate choice in the singularly exceptional area of physical attractiveness. This conclusion is largely consistent with the pattern of sex differences in mate selectivity observed in Table 1. Most importantly for our purposes, despite massive marriage squeeze for women observed in contemporary Israel, Israeli women are much more selective in their mate choice than Israeli men, consistent with the pattern observed by Buss and his collaborators throughout the world in their International Mate Selection Project.

Discussion

Rational choice theory of marriage market suggests that criteria that men and women employ in choosing their long-term mates respond to "market conditions." Those who are in high demand and in short supply increase their selectivity and become more demanding in their mate choice, while those in low demand and large supply decrease their selectivity and become less demanding in their mate choice. In terms of operational sex ratios, higher sex ratios (more men than women) should lead to women becoming more demanding and men becoming less demanding, while lower sex ratios (more women than men) should lead to men becoming more demanding and women becoming less demanding.

In contrast, an evolutionary psychological perspective on mate choice emphasizes the importance of sexual asymmetry in reproductive biology. Because they have greater obligatory parental investment and lower fitness ceiling, women are typically more careful in choosing a mate than men are, because mistakes are typically costlier for women. Since these asymmetries in reproductive biology are constant, women on average are expected to be more selective in mate choice than men are under most conditions, and their mate selectivity is not expected to respond to operational sex ratios.

We have put these two competing explanations for mate selectivity to an empirical test, by examining men's and women's mate selectivity under one extreme condition of a marriage squeeze for women in contemporary Israel, and comparing it to the pattern generally observed throughout the world. The comparison of the major findings from the International Mate Selection Project (Buss, 1989) and our analysis of the database from one computer dating service in Tel Aviv reveals remarkable similarity in men's and women's mate selectivity in both conditions. Both in Tel Aviv in 2000 and

throughout the world in the 1980s, women are much more selective in their mate choice than men are, consistent with the evolutionary psychological prediction but contrary to the rational choice prediction. In both cases, women are more selective in most areas of life, except physical attractiveness, where men are more selective than women. In addition, there is no evidence that women under marriage squeeze are less selective than women under normal circumstances.

While our analysis strongly supports the evolutionary psychological explanation for mate selectivity, our study is limited in three ways. First, the baseline sex differences in mate selectivity are derived from one study led by an evolutionary psychologist. While there is no reason to question the accuracy of Buss's data, our critics might question our objectivity in selecting this study to establish baseline sex differences. Second, our data come from only one case of marriage squeeze for women. While our sample size is large, it is not representative of single men and women in Israel. Future empirical studies must investigate mate selectivity of men and women with more representative samples. Finally, our study has the same limitations shared by all cross-sectional studies of one society. We cannot rule out the possibility that there were some unique social, political, and economic circumstances unrelated to marriage squeeze that may be responsible for our findings.

At the same time, our conclusions above are inconsistent with Stone et al.'s (2007) recent findings that environmental conditions (operational sex ratios) affect men's and women's mate selectivity throughout the world. In particular, it appears difficult for either evolutionary psychology or rational choice theory *simultaneously* to account for the fact that both men and women become *more* selective as the sex ratio decreases. Further empirical investigations are necessary to explore the possible effects of environmental conditions such as operational sex ratios on men's and women's mate selectivity.

Finally, our results suggest, in support of an evolutionary psychological perspective, that men's and women's mate *preferences* are relatively stable and do not respond to evolutionarily novel environmental conditions like extremely skewed operational sex ratios. However, it is still possible that rational choice theory can explain people's actual mating *behavior*. Regardless of what men and women may want in their mates, with whom they actually end up selecting as their mates may still be dictated by market forces hypothesized by rational choice theory. Future research on mate selectivity will need to distinguish between mate preferences from actual mating behavior.

Acknowledgments

We are grateful to Joseph Neuman, Dan Zakay, Micha Hopp, and two anonymous *JSEC* reviewers for their helpful comments and suggestions on earlier drafts.

Received August 13, 2007; Revision received November 17, 2007; Accepted March 12, 2008

References

- Alexander, R. D., Hoogland, J. L., Howard, R. D., Noonan, K. M., & Sherman, P. W. (1979). Sexual dimorphisms and breeding systems in pinnipeds, ungulates, primates and humans. In N. A. Chagnon & W. Irons (Eds.), *Evolutionary Biology and Human Social Behavior: An Anthropological Perspective* (pp. 402-435). North Scituate: Duxbury Press.
- Angrist, J. (2002). How do sex ratios affect marriage and labor market? Evidence from America's second generation. *Quarterly Journal of Economics*, 117, 997-1038.
- Becker, G. S. (1973). A theory of marriage: Part I. *Journal of Political Economy*, 81, 13-846.
- Becker, G. S. (1974). A theory of marriage: Part II. *Journal of Political Economy*, 82, S11-S26.
- Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences*, *12*, 1-49.
- Buss, D. M. (1999). Evolutionary psychology: The new science of the mind. Boston: Pearson.
- Buss, D. M., & Schmitt, D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review*, 100, 204-32.
- Central Bureau of Statistics (Israel). (2004). *Statistical abstract of Israel 2004*. Jerusalem: Central Bureau of Statistics (Israel)
- Chiappori, P.-A., Fortin, B., & Lacroix, G. (2002). Marriage market, divorce legislation, and household labor supply. *Journal of Political Economy*, 110, 37-72.
- Clarke, R. D., & Hatfield, E. (1989). Gender differences in receptivity to sexual offers. Journal of psychology and human sexuality, 2, 39-55.
- Crawford, C. B. (1993). The future of sociobiology: Counting babies or proximate mechanisms? *Trends in Ecology and Evolution, 8*, 183-186.
- Feingold, A. (1992). Gender differences in mate selection preferences: A test of the parental investment model. *Psychological Bulletin*, 112, 125-139.
- Ferber, M. A., & Berg, H. M. (1991). Labor force participation of women and the sex ratio: A cross-country analysis. *Review of Social Economy*, 49, 2-19.
- Flinn, M. V., Ward, C. V., & Noone, R. J. (2005). Hormones and the human family. In D. M. Buss (Ed.), *The Handbook of Evolutionary Psychology* (pp. 552-583). Hoboken: Wiley.
- Glick, P. C., Beresford, J. C., & Heer, D. M. (1963). Family formation and family composition: Trends and prospects. In M. B. Sussman (Ed.), *Sourcebook in Marriage and the Family* (pp. 30-39). Boston: Houghton Mifflin.
- Grant, V. J. (1998). Maternal Personality, Evolution, and the Sex Ratio: Do Mothers Control the Sex of the Infant? London: Routledge.
- Grossbard, S., & Amuedo-Dorantes, C. (2007). Cohort-level sex ratio effects on women's labor force participation. *Review of Economics of the Household*, 5, 249-278.
- Grossbard-Shechtman, A. (1985). Marriage squeeze and the marriage market. In K. David (Ed.), *Contemporary Marriage: Comparative Perspectives on a Changing Institution* (pp. 375-395). New York: Russell Sage Foundation.
- Grossbard-Shechtman, S. (1993). On the Economics of Marriage: A Theory of Marriage, Labor, and Divorce. Boulder: Westview Press.

- Grossbard-Shechtman, S. (2003a). Marriage and economy. In S. Grossbard-Shechtman (Ed.), *Marriage and Economy: Theory and Evidence from Advanced Industrial Societies* (pp. 1-34). Cambridge: Cambridge University Press.
- Grossbard-Shechtman, S. (2003b). *Marriage and Economy: Theory and Evidence from Advanced Industrial Societies*. Cambridge: Cambridge University Press.
- Grossbard-Shechtman, S., & Neideffer, M. (1997). Women's hours of work and marriage market imbalances. In I. Persson & C. Jonung (Eds.), *Economics of the Family and Family Policies* (pp. 100-118). London: Routledge.
- Guttentag, M., & Secord, P. F. (1983). *Too Many Women?: The Sex Ratio Question*. Beverly Hills: Sage.
- Kanazawa, S. (2004). The Savanna Principle. *Managerial and Decision Economics*, 25, 41-54.
- Ketelaar, T., & Ellis, B. J. (2000). Are evolutionary explanations unfalsifiable? Evolutionary psychology and the Lakatosian philosophy of science. *Psychological Inquiry*, 11, 1-21.
- Li, N. P., Bailey, J. M., Kenrick, D. T., & Linsenmeier, J. A. W. (2002). The necessities and luxuries of mate preferences: Testing the tradeoffs. *Journal of Personality and Social Psychology*, 82, 947-955.
- Plavcan, J. M. (2000). Inferring social behavior from sexual dimorphism in the fossil record. *Journal of Human Evolution*, *39*, 327-344.
- South, S. J., & Lloyd, K. M. (1992). Marriage opportunities and family formation: Further implications of imbalanced sex ratios. *Journal of Marriage and the Family*, 54, 440-451.
- South, S. J., & Lloyd, K. M. (1995). Spousal alternatives and marital dissolution. *American Sociological Review, 60,* 21-35.
- Sprecher, S., & Regan, P. C. (2002). Liking some things (in some people) more than others: Partners preferences in romantic relationships and friendships. *Journal of Social and Personal Relationships*, 19, 463-481.
- Stone, E. A., Shackelford, T. K., & Buss, D. M. (2007). Sex ratio and mate preferences: A cross-cultural investigation. *European Journal of Social Psychology*, *37*, 288-296
- Symons, D. (1990). Adaptiveness and adaptation. *Ethology and Sociobiology*, 11, 427-444.
- Tooby, J., & Cosmides, C. (1990). The past explains the present: Emotional adaptations and the structure of ancestral environments. *Ethology and Sociobiology*, 11, 375-424.
- Trivers, R. L. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual Selection and the Descent of Man 1871-1971* (pp. 136-179). Chicago: Aldine
- Wiederman, M. W., & Allgeier, E. R. (1992). Gender differences in mate selection criteria: Sociobiological or socioeconomic explanation? *Ethology and Sociobiology*, 13, 115-124.
- Young, M. C. (ed.) (1994). *The Guinness book of records 1995*. New York: Facts on Life.