

### Original Article

## The Effects of Control of Resources on Magnitudes of Sex Differences in Human Mate Preferences

Fhionna Moore, Division of Psychology, University of Abertay Dundee, Dundee, Scotland, UK. Email: [f.moore@abertay.ac.uk](mailto:f.moore@abertay.ac.uk) (Corresponding author).

Clare Cassidy, School of Psychology, University of St Andrews, St Andrews, Scotland, UK.

David I. Perrett, School of Psychology, University of St Andrews, St Andrews, Scotland, UK.

**Abstract:** We tested the hypothesis that magnitudes of sex differences in human mate preferences would be inversely related to control of resources. Specifically, we predicted that the ideal partner age, maximum and minimum partner ages tolerated and preferences for “physical attractiveness” over “good financial prospects” of female participants would approach parity with that of men with increasing control of resources. In a sample of 3770 participants recruited via an online survey, the magnitudes of sex differences in age preferences increased with resource control whereas the sex difference in preferences for “physical attractiveness” over “good financial prospects” disappeared when resource control was high. Results are inconsistent, and are discussed in the context of adaptive tradeoff and biosocial models of sex differences in human mate preferences.

**Keywords:** Sex differences, mate preferences, control of resources, status

---

### Introduction

Sex differences in long term human mate preferences have been widely reported: men show stronger preferences for physical attractiveness and women stronger preferences for resource acquisition characteristics (e.g., Buss, 1989a; Buss and Barnes, 1986; Feingold, 1990, 1991, 1992; Furnham, 2009; Gil-Burmann, Pelaez, and Sanchez, 2002; Li, Bailey, Kenrick, and Linsenmeier, 2002; Waynforth and Dunbar, 1995) and men prefer partners younger than themselves and women partners older than themselves (e.g., Buss, 1989a; Kenrick and Keefe, 1992; Otta, da Silva Queiroz, de Sousa Campos, and Silveira, 1999; Waynforth and Dunbar, 1995). These preferences have been interpreted as evolved responses to biological constraints imposed on the reproductive success of mammalian

males and females (e.g., Buss, 1989a; Buss, 2003; Buss and Schmitt, 1993). A sexual asymmetry in minimum investment in reproduction, in which females invest more due to the high costs of gamete production (Bateman, 1948), gestation, lactation and provision of parental care (Trivers, 1972), means that females are constrained by access to the resources necessary to raise costly offspring whereas males are constrained by access to fertile females (Trivers, 1972).

Recently, however, Bateman's experimental methods have been criticized (e.g., Snyder and Gowaty, 2007) and variation in human mating strategies across populations suggests that human mating behavior cannot be explained in terms of biological sex differences alone (e.g., Brown, Layland and Borgerhoff Mulder, 2009). This intra-sexual variation in human mate preferences has long been acknowledged (e.g., Gangestad and Simpson, 2000; Smuts, 1989, 1991a,b) and has also been attributed to adaptive sexual strategies that serve to increase reproductive success (e.g., Gangestad and Simpson, 2000; Waynforth and Dunbar, 1995). Variation in female preferences, for example, is consistent with a putative tradeoff between two male characteristics inherent in female mate choice decisions: willingness and ability to invest material resources and care versus heritable quality or "good genes" (Trivers, 1972). It has been argued that men with "good genes" (in this context, heritable immunocompetence) are less likely to provide parental care and investment in long-term relationships, therefore women must weigh up the relative importance of each category of qualities (e.g., Gangestad and Simpson, 2000; Marlowe, 1999).

While women's mate choice decisions undoubtedly involve far greater complexity than a single trade-off between two broad partner characteristics, female preferences do appear to be context-dependent with preferences for cues to "good genes" exhibited at times when the benefits of heritable qualities may be expected to outweigh the benefits of securing a partner willing and able to invest material resources. Women, for example, prefer feminine male faces associated with caregiver qualities in general (Perrett et al., 1998) but more masculinized faces (which may signal heritable immunocompetence) at times when securing "good genes" for offspring may be expected to outweigh the benefits of securing a caregiver, including the fertile phase of the menstrual cycle (Johnston, Hagel, Franklin, Fink, and Grammer, 2001; Little, Jones, and DeBruine, 2008; Penton-Voak et al., 1999; Penton Voak and Perrett, 2000; Roney and Simmons, 2008), in the context of a short term relationship (Little, Jones, Penton-Voak, Burt, and Perrett, 2002; Penton-Voak et al., 1999; Waynforth, Delwadia, and Camm, 2005) or when disgust sensitivity to pathogens is high (DeBruine, Jones, Tybur, Lieberman, and Griskevicius, 2010).

Some authors have argued that economic and cultural constraints on women have contributed to widespread sex differences in preferences (Cashdan, 1993; Gangestad, 1993; Low, 1990; Moore and Cassidy, 2007; Moore, Cassidy, Law Smith, and Perrett, 2006; Wood and Eagly, 2002). Most studies of human mate preferences have used samples from societies which have historically constrained female participation in the workforce: perhaps sex differences in preferences arise from women trading "good genes" for a partner who will invest material resources when they are unable to acquire and control such resources independently (e.g., Hrdy, 1997; Moore et al., 2006). In support of this is convincing evidence that women's mate preferences are contingent upon their status. A reanalysis of Buss's (1989a) data from 37 cultures, for example, has shown inverse relationships between female empowerment (United Nations Gender Empowerment

Measure, 1995) and preferences for men's earning potential and age (Eagly and Wood, 1999). A further reanalysis of the dataset demonstrated an inverse relationship between educational gender equality and women's preference for resource-acquisition characteristics (Kasser and Sharma, 1999) and a positive relationship between women's participation in the economy and preferences for "physical attractiveness" in a partner (Gangestad, 1993). In a sample of non-industrial societies, Moore and Cassidy (2007) found women's "domestic authority" (Whyte, 1978, 1979) to relate to preferences for physical appearance over status in a partner. In other words, in societies with greater gender equality, women express mate preferences more like those typical of men (e.g., they show weaker preferences for resource acquisition characteristics and stronger preferences for physical appearance).

Studies of relationships between traditional gender role ideology and mate preferences across individuals have provided further support for this model with positive relationships reported between endorsement of traditional gender role ideology and preferences for earning potential in a partner (Johannessen-Schmidt and Eagly, 2002; Koyama, McGain, and Hill, 2004). Positive relationships between women's income and preferences for resource-acquisition characteristics in a partner (e.g., Buss, 1989b; Gil-Burmann et al., 2002; Kalmijn, 1991, 1994; Townsend, 1989; Wiederman and Allgeier, 1992) appear to conflict with the results discussed above, but "income" may not adequately measure female autonomy (e.g., Gangestad and Simpson, 2000; Moore et al., 2006). It is possible, for example, to have a high income yet have no control over the allocation of that income. Moore et al. (2006), for example, found women's income to be associated with traditional female partner preferences, but their resource control to less traditional preferences (i.e. a lower maximum partner age tolerated and preferences for "physical attractiveness" over "good financial prospects") and argued that it is control over resources which enables women to adjust their partner preferences.

In order to test the hypothesis that sex-specific economic constraints contribute to sex differences in human mate preferences, it is necessary to investigate the effects of measures of status on the preferences of both men and women. This is of particular importance if shifts in women's preferences are to be attributed to an adaptive trade-off in the importance of "good genes" versus material resources, as this suggests that women's preferences will shift such that they will become more like those of men when they are able to provide for themselves independently. It is also possible that the preferences of men will be contingent upon their status. High status men, for example, may possess higher mate value in a mating "market" and therefore expect to acquire a similarly high "value" partner, expressing stronger preferences for physical attractiveness and youthfulness. We argue, however, that these individual differences in male status will not exact the same magnitude of effect as for women who, as a gender group, have experienced widespread and historical constraints on their ability to provide. Therefore, we predict that the magnitude of sex differences in preferences for age and physical attractiveness versus material resources would decrease with increasing status.

To test our hypotheses in a sample with a broad age and socioeconomic profile, the female sample recruited via online tests described in Moore et al. (2006) with a male sample recruited concurrently were included in analyses. Status was assessed using the measures of resource control developed by Moore et al. (2006). Partner age preferences were assessed by asking participants to indicate their ideal partner age and maximum and

minimum partner ages tolerated (in years). Preferences for resource acquisition characteristics and physical attractiveness were measured using preference rankings of a series of partner characteristics, with “good financial prospects” and “physical attractiveness” as target characteristics. A number of covariates were included in analyses in accordance with those identified by Moore et al. (2006). These were measures that relate to mate preferences and control of resources: own age, self-rated attractiveness, own income, parents’ income while growing up and relationship status. Participants were recruited, and completed the experiment, via online questionnaires.

## **Materials and Methods**

### *Participants*

Of approximately 6000 participants who completed the online survey, 3770 aged 18–35 years who reported a completely heterosexual orientation were included in the analyses. Of these, 1851 were female (mean age = 24.35, *SD* = 4.98) and 1919 male (mean age = 24.70, *SD* = 4.88). Eighty-five per cent of the participants reported white British, white other European or white American ethnicity. The majority of participants were in middle brackets for current income (60%) and parents’ income while growing up (82%), and had been educated to university or college level (85%). Forty-nine percent of women and 62% of men were single, with the remainder in serious relationships.

### *Materials*

#### *a. Demographic details*

Participants reported their age, ethnicity, relationship status (dummy variable: 0 = *single or casual relationship*, 1 = *serious relationship*), sexual orientation (1 - 7 scale; 1 = *completely homosexual*, 7 = *completely heterosexual*), own income and parents’ income while growing up (by quartiles) and self-rated attractiveness (1 - 7 scale; 1 = *not at all attractive*, 7 = *extremely attractive*).

#### *b. Control of resources*

Participants completed the measures of control of resources described in Moore et al. (2006). These were 7 items to assess financial independence, importance of financial independence, control of finances, importance of having a career, maximum level of education, and input in decisions in the home and workplace, all measured on 1 – 7 scales with the exception of education (primary/grade school, secondary/high school, college, undergraduate degree, postgraduate degree).

#### *c. Mate preferences*

Participants were asked to rank 13 characteristics in order of importance in a potential partner for a long-term relationship (where the least important characteristic received a rank of “1”, and the most important a rank of “13”). A partner for a long term relationship was defined as “someone you would be willing to commit to in a serious relationship and would consider marrying, or entering a relationship with on grounds similar to marriage.” The 13 characteristics were in part taken from those used by Buss (1989a) and included the target characteristics “good financial prospects” and “physical attractiveness” as well as others such as “dependability” and “sense of humor.” A binary

variable that indicated preferences for “physical attractiveness” over “good financial prospects” was computed by subtracting preference ranking for “physical attractiveness” from that of “good financial prospects” and recoded such that a value of 0 indicated a stronger preference for “good financial prospects” and a value of 1 indicated a stronger preference for “physical attractiveness.” Participants were asked to report ideal partner age and maximum and minimum partner ages tolerated (in years).

#### *Data processing and statistical analysis*

Missing values accounted for a maximum of 12% of responses (income) for questionnaire items. As distribution of these was random, missing values were replaced with the mean of the series (Cohen, Cohen, West, and Aiken, 2003).

To reduce the number of variables included in the analyses, resource control variables were entered into sex-specific factor analyses (see Moore et al., 2006). The effects of resource control on the magnitudes of sex differences were determined through investigation of sex as a moderator of relationships between resource control and mate preferences in multiple regression models. Covariates (age, self-rated attractiveness, own income, parents income while growing up and relationship status) were entered in the first level, resource control factors and sex in the second level and interaction terms of sex and resource control factors in the third. Ideal age difference between self and partner was calculated by subtracting ideal partner age from own age. Age differences between self and maximum and minimum partner ages tolerated were calculated similarly. These were entered as dependent variables in linear regression models. The binary variable for preference for “physical attractiveness” over “good financial prospects” was entered as the dependent variable in a binary logistic regression model.

### **Results**

There were no significant differences between men and women for age, parents' income while growing up, self-rated attractiveness or resource control factors (all  $ps > .12$ ). There was a significant sex difference in income category ( $t(3769) = 4.27, p < .001$ ) with men earning significantly more ( $M = 3.15, SD = 0.87$ ) than women ( $M = 3, SD = 0.94$ ). Relationship status was not evenly distributed, with significantly more single men than women ( $\chi^2 = 50.71, p < 0.001$ ).

#### *Resource control factor analysis*

To reduce the number of variables included in analyses, the 7 resource control measures were entered into sex-specific factor analyses. Factors were extracted using principal components analysis and rotated using the standard Varimax rotation with Kaiser Normalization. Two factors with eigenvalues greater than 1 were extracted for both male and female participants. Variables that loaded highly on Factor 1 (“financial independence and power”: female participants: eigenvalue = 2.15, accounting for 30.74% of the variance; male participants: eigenvalue = 2.20, accounting for 31.62% of the variance) were *financial independence, control of finances and input in decisions in the home and input in decisions in the workplace*. Variables that loaded highly on Factor 2 (“ambition”: female participants: eigenvalue = 1.34, accounting for 19.19% of the variance; male participants: eigenvalue = 1.20, accounting for 17.13% of the variance) were *importance of financial independence*

and *importance of having a career*. As the factors extracted for male and female participants were comprised of the same variables in the same order of loading, they were considered to measure consistent dimensions of resource control across males and females and were therefore appropriate for inclusion in analyses. Participants' scores for each factor were computed using the regression method, such that the mean of each factor was zero and the variance equal to the squared multiple correlation between estimated and true factor scores. See Table 1 for descriptions of factors for male and female participants.

**Table 1.** Resource control factors for men and women (“financial independence and power” and “ambition”) showing factor loadings, eigenvalues, and percents of variance for factor analysis on resource control questionnaire responses

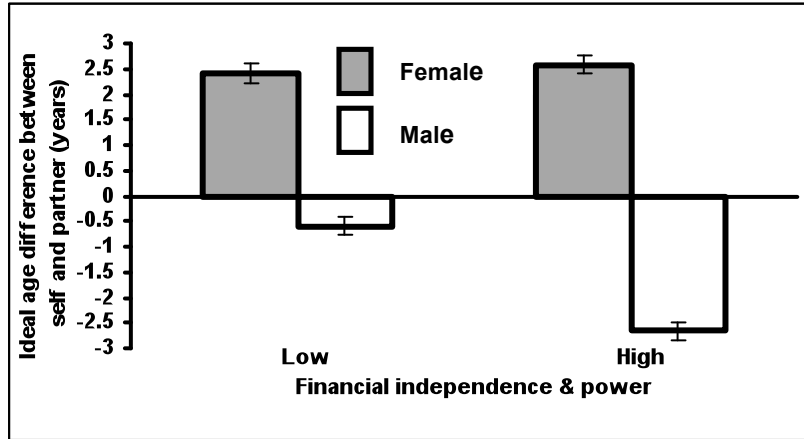
Factor	Eigenvalue		Percent of variance		Variable	Loading ( <i>r</i> )	
	Female	Male	Female	Male		Female	Male
Financial independence and power	2.15	2.20	30.74	31.62	Financial independence	0.75	0.75
					Input in decisions in the work place	0.69	0.74
					Input in decisions in the home	0.69	0.70
					Control of finances	0.60	0.54
Ambition	1.34	1.20	19.19	17.13	Importance of having a career	0.84	0.84
					Importance of financial independence	0.80	0.68

*Effects of control of resources on sex differences in mate preferences*

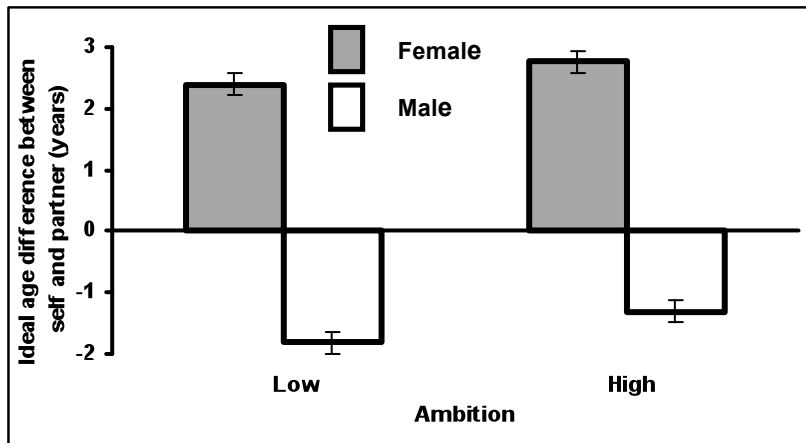
*a. Ideal age difference between self and partner*

There was a significant effect of sex on ideal age difference between self and partner ( $\beta = -0.53$ ,  $t(3758) = 40.6$ ,  $p < 0.001$ ) such that the ideal age difference of women ( $M = 2.55$  years) was significantly greater than that of men ( $M = -1.47$  years). The  $R^2$  change associated with the interaction terms was 0.01 and the  $F$ -change (32.17) was significant ( $p < 0.001$ ). The interaction between sex and “financial independence and power” was significant ( $\beta = -0.14$ ,  $t(3758) = -7.76$ ,  $p < 0.001$ ). Figure 1a shows that the magnitude of the sex difference in ideal age difference was greatest when “financial independence and power” was high. The interaction between sex and “ambition” was also significant ( $\beta = 0.04$ ,  $t(3758) = 1.99$ ,  $p = 0.046$ ). The magnitude of the sex difference in age preference was greater at high “ambition” (see Figure 1b).

**Figure 1.** Significant interactions between gender and participants' (a) "financial independence and power" and (b) "ambition" on ideal age difference between self and partner (+1 SE). Displayed using data from participants above and below the mean +/- 1 standard deviation



(a)

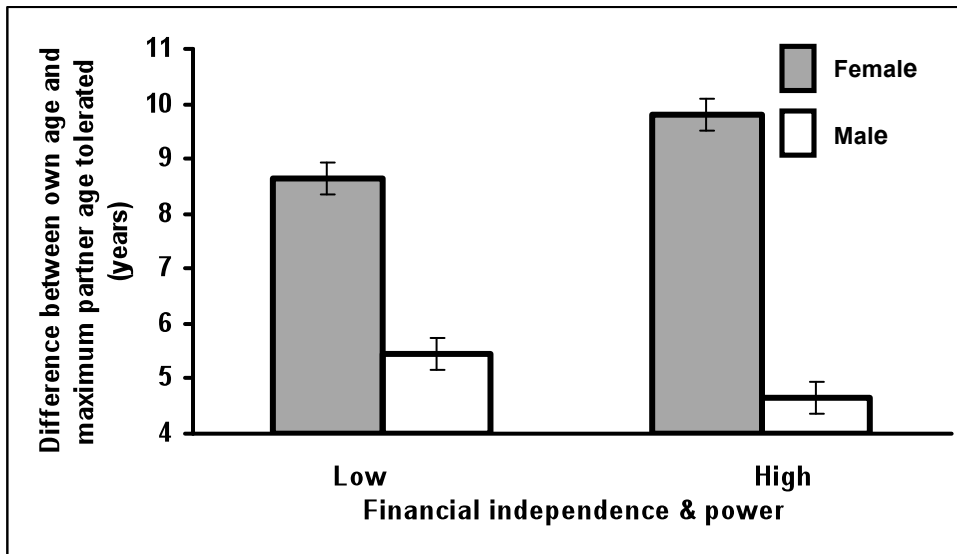


(b)

*b. Age difference between self and maximum partner age tolerated*

There was a significant effect of sex on age difference between self and maximum partner age tolerated ( $\beta = -0.3$ ,  $t(3758) = -21.67$ ,  $p < 0.001$ ) such that the age difference tolerated by women (mean = 8.85 years) was significantly greater than that of men (mean = 5.07 years). The  $R^2$  change associated with the interaction terms was 0.003 and the  $F$ -change (6.35) was significant ( $p = 0.002$ ). The interaction between sex and "financial independence and power" was significant ( $\beta = -0.08$ ,  $t(3758) = -3.47$ ,  $p = 0.001$ ). Figure 2 demonstrates that the magnitude of the sex difference in age difference between self and maximum partner age tolerated was greatest at high "financial independence and power". The interaction between sex and "ambition" was non-significant.

**Figure 2.** Significant interaction between participant sex and “financial independence and power” on difference between own age and maximum partner age tolerated (+1 SE). Displayed using data from participants above and below the mean +/- 1 standard deviation

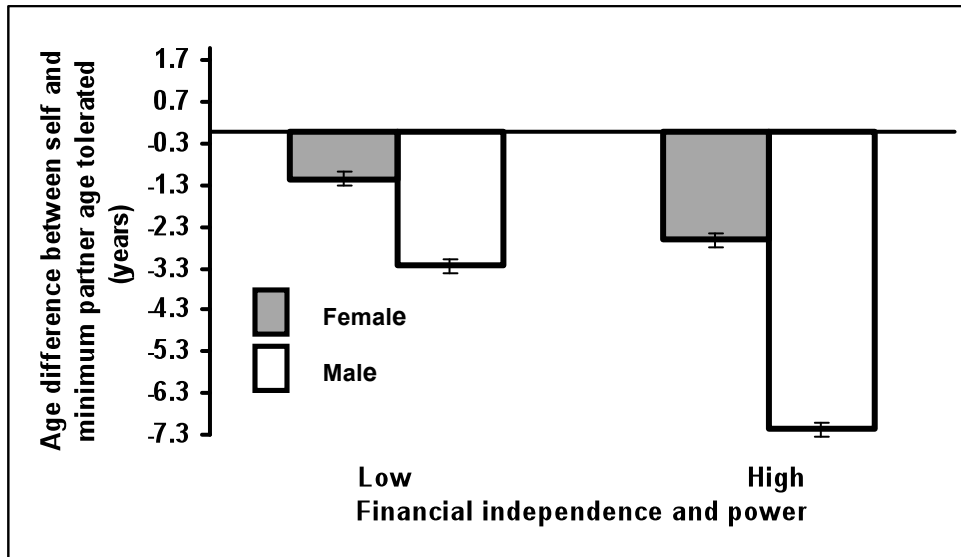


*c. Age difference between self and minimum partner age tolerated*

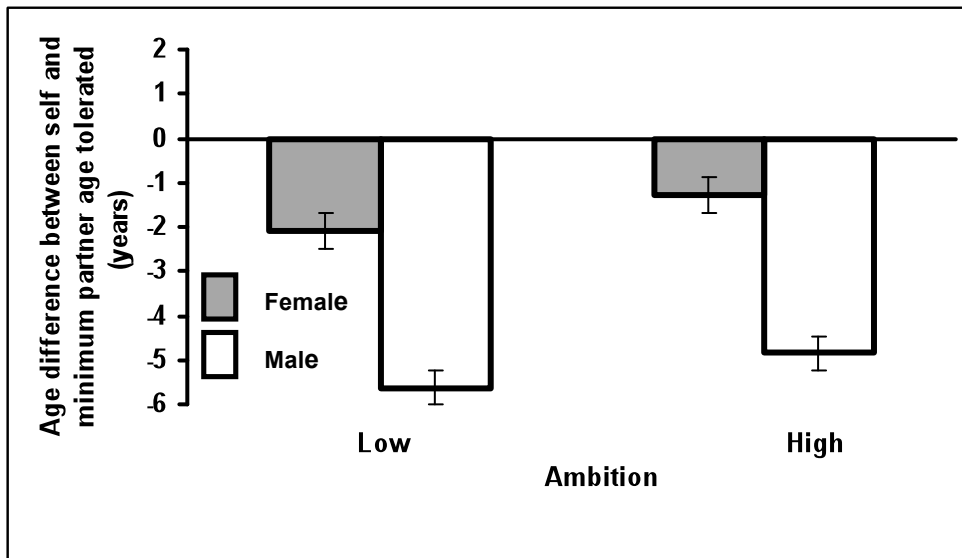
There was a significant effect of sex on age difference between self and minimum partner age tolerated ( $\beta = -0.39$ ,  $t(3758) = -33.46$ ,  $p < 0.001$ ) such that the age difference tolerated by women ( $M = -1.72$  years) was significantly smaller than that of men ( $M = -5.06$  years). The  $R^2$  change associated with the interaction terms was 0.01 and the F-change (43.65) was significant ( $p < 0.001$ ). The interaction between sex and “financial independence and power” was significant ( $\beta = -0.15$ ,  $t(3758) = -8.94$ ,  $p < 0.001$ ). The magnitude of the sex difference was greatest when “financial independence and power” was high (see Figure 3a). The interaction between sex and “ambition” was also significant ( $\beta = 0.04$ ,  $t(3758) = 2.67$ ,  $p = 0.008$ ) such that the magnitude of the sex difference was greatest when “ambition” was high (see Figure 3b).



**Figure 3.** Significant interactions between participant sex and (a) “financial independence and power” and (b) “ambition” on age difference between self and minimum partner age tolerated (+1 SE). Displayed using data from participants above and below the mean +/- 1 standard deviation



(a)



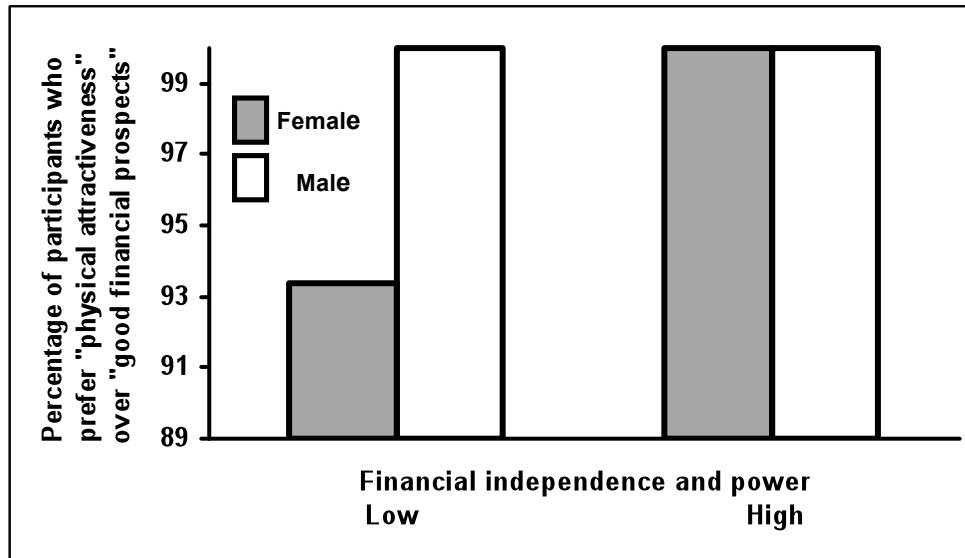
(b)

d. Preference for “physical attractiveness” over “good financial prospects”

In a binary logistic regression (Nagelkerke  $R^2 = 0.03$ ,  $p < 0.001$ ), there was a significant effect of sex ( $\beta = 0.52$ ,  $p < 0.001$ ), such that a greater number of men than women preferred “physical attractiveness” over “good financial prospects”. There was a significant interaction between sex and “financial independence and power” ( $\beta = -0.14$ ,  $p < 0.05$ ). Figure 4 demonstrates that the sex difference in preferences for “physical attractiveness” over “good financial prospects” disappeared at high “financial

independence and power”. The interaction between sex and ambition was not significant ( $p > 0.1$ ).

**Figure 4.** Significant interaction between participants’ sex and “financial independence and power” on percentage of participants who preferred “physical attractiveness” over “good financial prospects”. Displayed using data from participants above and below the mean  $\pm 1$  standard deviation



## Discussion

We predicted that control of resources would be associated with decreased magnitudes of sex differences in mate preferences. Furthermore, we predicted that the manner in which sex differences would diminish would be such that women’s preferences would approach those of men as resource control increased. There were significant sex differences in age preferences and in preferences for “physical attractiveness” over “good financial prospects” concordant with those reported in previous studies, such that women preferred significantly older partners than did men and more men than women preferred “physical attractiveness” over “good financial prospects” (e.g., Buss, 1989a). As such, the mate preferences of our participants did not appear to differ from those of previous studies.

Factor analyses of resource control variables yielded comparable factors for male and female participants: “financial independence and power” and “ambition”. This suggests that, in the context of our questionnaire items, “resource control” is a similar construct for men and women which falls into two independent dimensions. “Financial independence and power” represents general resource control whereas “ambition” represents attitudes associated with obtaining resource control (see Moore et al., 2006). Despite similarity in the structure of factors across the sexes, it is possible that resource control items were interpreted differently by men and women. Financial independence, for example, may be interpreted as independence from a partner by women, but from parents or loans by men. We did not ask participants to provide an indication of their interpretation of items, and this should be controlled for in future tests.

We predicted that women's preferences would shift with increasing resource control towards expression of preferences more like those typical of men, as women who control resources could "afford" to direct their preferences away from older, wealthy partners. We found traditional sex differences in ideal age difference between self and partner, and age differences between self and maximum- and minimum- partner ages tolerated. The magnitudes of these sex differences increased at high "financial independence and power." "Ambition" also increased the magnitude of sex differences in ideal age difference between self and partner, and age difference between self and minimum partner age tolerated. Therefore, the effects of resource control on age preferences were in the opposite direction to that predicted. One interpretation is that results reflect assortative mating on the basis of financial prospects: women who are financially independent and powerful seek older partners who are in a similar financial position. This seems unlikely, however, as financially independent, powerful women ranked "physical attractiveness" as more important than "good financial prospects" in a partner. Nor can the result be attributed to an underlying relationship between participant age and financial independence, as participant age was controlled for in analyses. Financially independent women may hold greater responsibility, and desire older partners with similar attitudes, personality characteristics and priorities, although further research is required to test this interpretation.

We also predicted that the manner in which sex differences would be influenced by resource control would be such that greater effects were exerted on women. In all cases, the effects on sex differences in age preferences were either such that both sexes expressed more traditional age preferences at high levels of resource control, with a stronger effect on men or, in the case of "ambition", increased resource control caused both sexes to either increase (ideal partner age) or decrease (minimum age tolerated) their age preference, with a stronger effect on men. In no case did resource control have a stronger effect on the age preferences of women, as predicted. Therefore, our age preference results do not support a model in which historical constraints on the economic status of women has shaped sex differences in mate preferences.

While men's preferences for "physical attractiveness" over "good financial prospects" remained stable, women's preferences reached parity with that of men at high levels of "financial independence and power." This result was in support of our prediction, implicating a role of economic constraints on sex differences in mate preferences. We cannot, however, conclude that economic constraints on women have contributed to sex differences in mate preferences due to our inconsistent findings. Effects of resource control on age preferences were counter to predictions, whereas effects on preference rankings of partner characteristics were supportive of the model. While it is possible that either result is the by-product of a confounding variable, without developing stronger tests (e.g., experimental manipulations of perceived resource control), we cannot be certain which result reflects more fairly the effects of resource control on preferences. Alternatively, there may be greater complexity than anticipated in the effects of resource control on the mate preferences of both men and women, and this too warrants further investigation.

An alternative explanatory framework comes from the Biosocial Model (Wood and Eagly, 2002). This model emphasizes differences in the social roles of men and women: when the sexes are segregated to "breadwinner" and "homemaker" roles, they will seek partners who possess characteristics associated with the opposite gender role (i.e. women seek partners who can earn an income and men seek partners with good domestic skills;

Eagly and Wood, 1999). This model predicts that if gender roles merge, so too will mate preferences (e.g., Eagly and Wood, 1999; Wood and Eagly, 2002). Our results do not support this model as in no instance did men's and women's preferences converge. As such, our results are not entirely consistent with either an adaptive tradeoff perspective or the Biosocial Model.

We limited our analyses to the context of a single trade off between two broad partner characteristics in the context of women's mate choice decisions. Women's preferences are likely to be more complex than this, and perhaps by exploring shifts in preferences for a greater range of partner characteristics we will learn more about the ways in which partner traits are weighted in response to the demands of the current environment. Furthermore, there are potential differences in the traits advertised by the "physical attractiveness" of men and women. Consistent with previous literature, we assumed that women's preferences for "physical attractiveness" in a partner reflect preferences for "good genes" and, specifically, those for heritable immunity. In men, however, it is usually assumed that preferences for "physical attractiveness" in a partner reflect preferences for fertility and reproductive capacity (e.g., Buss, Shackelford, and LeBlanc, 2000): an interpretation recently supported by a positive relationship between female attractiveness and lifetime reproductive success (Jokela, 2009). As such, converging preferences of men and women for "physical attractiveness" over "good financial prospects" may not reflect preferences for equivalent characteristics, but concordant preferences for cues to different underlying traits. In order to conclude that the preferences of men and women become more similar with economic equality, it would be necessary to identify the particular traits advertised by "physical attractiveness."

While we have argued that control of resources is a valid measure of female status which taps economic autonomy as an important underlying predictor of broader measures of female status, it is possible that employment of alternative measures of status would yield different results. Measurements of gender role ideology, for example, may provide a fairer test of the Biosocial Model and allow for analysis of the effects of attitudes associated with more general female status on preferences than our measures of resource control. Furthermore, while our sample was more representative than the undergraduate students typically used in mate preference research, it was still limited to predominantly middle income, well educated participants. The range of preferences expressed by our participants, for example, may be naturally limited by the kinds of partners it is socially acceptable, or likely, for them to meet. Perhaps most interesting among our results was the considerable variation in men's preferences in response to resource control, an area which remains relatively underexplored in the literature.

To summarize, we found the effects of resource control on the magnitude of sex differences in mate preferences to be complex and dependent upon the specific dimension of resource control and the specific mate preference. The sex difference in preferences for "physical attractiveness" over "good financial prospects" disappeared when "financial independence and power" was high. While this is consistent with the adaptive trade off model, caution must be exercised when concluding that this is support for concordant preferences of the sexes when resource control is high until further analysis can confirm the underlying traits advertised by "physical attractiveness" in men and women. Sex differences in age preferences increased with resource control. Men's preferences showed greater variation than we predicted and warrant further investigation. In conclusion, our

results demonstrate that the mate preferences of men and women are dependent upon resource control, but both mate preferences and resource control are more complex than predicted.

**Acknowledgements:** The authors would like to thank Miriam Law Smith and Michael Stirrat for assistance with online data collection. Fhionna Moore was supported by the Medical Research Council (PhD Studentship).

**Received 08 September 2010; Revision submitted 08 November 2010; Accepted 08 November 2010**

## References

- Bateman, A.J. (1948). Intra-sexual selection in *Drosophila*. *Heredity*, 2, 349-368.
- Brown, G.R., Laland, K.N., and Borgerhoff Mulder, M. (2009). Bateman's principles and human sex roles. *Trends in Ecology and Evolution*, 24, 297-304.
- Buss, D.M. (1989a). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences*, 12, 1-49.
- Buss, D.M. (1989b). Toward an evolutionary psychology of human mating. *Behavioral and Brain Sciences*, 12, 39-49.
- Buss, D.M. (2003). *The evolution of desire: Strategies of human mating*. New York: Basic Books.
- Buss, D.M., and Barnes, M. (1986). Preferences in human mate selection. *Journal of Personality and Social Psychology*, 50, 559-570.
- Buss, D.M., and Schmitt, D.P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review*, 100, 204-232.
- Buss, D.M., Shackelford, T.K., and LeBlanc, G.J. (2000). Number of children desired and preferred spousal age difference: Context-specific mate preference patterns across 37 cultures. *Evolution and Human Behavior*, 21, 323-331.
- Cashdan, E. (1993). Attracting mates: Effects of paternal investment on mate attraction strategies. *Ethology and Sociobiology*, 14, 1-24.
- Cohen, J., Cohen, P., West, S.G., and Aiken, L.S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*. London: Lawrence Erlbaum Associates.
- DeBruine, L.M., Jones, B.C., Tybur, J.M., Lieberman, D., and Griskevicius, V. (2010). Women's preferences for masculinity in male faces are predicted by pathogen disgust, but not by moral or sexual disgust. *Evolution and Human Behavior*, 31, 69-74.
- Eagly, A.H., and Wood, W. (1999). The origins of sex differences in human behavior: Evolved dispositions versus social roles. *American Psychologist*, 54, 408-423.
- Feingold, A. (1990). Gender differences in effects of physical attractiveness on romantic attraction – a comparison across 5 research paradigms. *Journal of Personality and Social Psychology*, 59, 981-993.
- Feingold, A. (1991). Sex-differences in the effects of similarity and physical attractiveness on opposite-sex attraction. *Basic Applications of Social Psychology*, 12, 357-367.

- Feingold, A. (1992). Gender differences in mate selection preferences – a test of the parental investment model. *Psychological Bulletin*, 112, 125–139.
- Furnham, A. (2009). Sex differences in mate selection preferences. *Personality and Individual Differences*, 47, 262–267.
- Gangestad, S.W. (1993). Sexual selection and physical attractiveness: Implications for mating dynamics. *Human Nature*, 4, 205–235.
- Gangestad, S.W., and Simpson, A.S. (2000). The evolution of human mating: Trade-offs and strategic pluralism. *Behavioral and Brain Sciences*, 23, 573–587.
- Gil-Burman, C., Pelaez, F., and Sanchez, S. (2002). Mate choice differences according to sex and age: An analysis of personal advertisements in Spanish newspapers. *Human Nature*, 13, 493 – 508.
- Hrdy, S.B. (1997). Raising Darwin's consciousness: Female sexuality and the prehuman origins of patriarchy. *Human Nature*, 8, 1-49.
- Johannessen-Schmidt, M.C., and Eagly, A.H. (2002). Another look at sex differences in preferred mate characteristics: The effects of endorsing the traditional female gender role. *Psychology of Women Quarterly*, 26, 322–328.
- Johnston, V.S., Hagel, R., Franklin, M., Fink, B., and Grammer, K. (2001). Male facial attractiveness: Evidence for a hormone-mediated adaptive design. *Evolution and Human Behavior*, 22, 251 – 267.
- Jokela, M. (2009). Physical attractiveness and reproductive success in humans: Evidence from the late 20th century United States. *Evolution and Human Behavior*, 30, 342–350.
- Kalmijn, M. (1991). Status homogamy in the United States. *The American Journal of Sociology*, 97, 496-523.
- Kalmijn, M. (1994). Assortative mating by cultural and economic occupational status. *The American Journal of Sociology*, 100, 422 - 452.
- Kasser, T., and Sharma, Y.S. (1999). Reproductive Freedom, educational equality, and females' preference for resource-acquisition characteristics in mates. *Psychological Science*, 10, 374–377.
- Kenrick, D.T., and Keefe, R.C. (1992). Age preferences in mates reflect sex differences in human reproductive strategies. *Behavioral and Brain Sciences*, 15, 75–133.
- Koyama, N.F., Macgain, A., and Hill, R.A. (2004). Self-reported mate preferences and “feminist” attitudes regarding marital relations. *Evolution and Human Behavior*, 25, 327–335.
- Li, N.P., Bailey, M., Kenrick, D.T., and Linsenmeier, J. A. W. (2002). The necessities and luxuries of mate preferences: Testing the tradeoffs. *Journal of Personality and Social Psychology*, 82, 947–955.
- Little, A.C., Jones, B.C., and DeBruine, L.M. (2008). Preferences for variation in masculinity in real male faces change across the menstrual cycle. *Personality and Individual Differences*, 45, 478–482.
- Little, A.C., Jones, B.C., Penton-Voak, I.S., Burt, D.M., and Perrett, D.I. (2002). Partnership status and the temporal context of relationships influence human female preferences for sexual dimorphism in male face shape. *Proceedings of the Royal Society of London, Series B*, 269, 1095-1100.
- Low, B.S. (1990). Sex, power and resources: Male and female strategies of resource acquisition. *International Journal of Contemporary Sociology*, 27, 49-73.

- Marlowe, F. (1999). Male care and mating effort among Hadza foragers. *Behavioral Ecology and Sociobiology*, 46, 57-64.
- Moore, F.R., and Cassidy, C. (2007). Female status predicts female mate preferences across non industrial societies. *Cross Cultural Research*, 41, 66-74.
- Moore, F.R., Cassidy, C., Law Smith, M.J., and Perrett, D.I. (2006). The effects of female control of resources in sex differentiated mate preferences. *Evolution and Human Behavior*, 27, 195-205.
- Otta, E., da Silva Queiroz, R., de Sousa Campos, L., and Silveira, M.T. (1999). Age differences between spouses in a Brazilian marriage sample. *Evolution and Human Behavior*, 20, 99-103.
- Penton-Voak, I.S., Perrett, D.I., Castle, D.L., Kobayashi, T., Burt, D.M., Murray, L.K. and Minamisa, R. (1999). Female preference for male faces changes cyclically. *Nature*, 399, 741-742.
- Penton-Voak, I.S., and Perrett, D.I. (2000). Male facial attractiveness, perceived personality and shifting female preferences for male traits across the menstrual cycle. *Advances in the Study of Behavior*, 30, 219-259.
- Perrett, D.I., Lee, K.J., Penton-Voak, I.S., Rowland, D.R., Yoshikawa, S., Burt, D.M., Henzi, S.P., Castles, D.L., and Akamatsu, S. (1998). Effects of sexual dimorphism on facial attractiveness. *Nature*, 394, 884-887.
- Roney, J.R., and Simmons, Z.L. (2008). Women's estradiol predicts preference for facial cues of men's testosterone. *Hormones and Behavior*, 53, 14-19.
- Smuts, R.W. (1989). Behavior depends on context. *Behavioral and Brain Sciences*, 12, 33-34.
- Smuts, R.W. (1991a). Preference and behavior – response. *Ethology and Sociobiology*, 12, 409-410.
- Smuts, R.W. (1991b). The present also explains the past-response. *Ethology and Sociobiology*, 12, 77-82.
- Snyder, B.F., and Gowaty, P.A. (2007). A reappraisal of Bateman's classic study of intrasexual selection. *Evolution*, 61, 2457-2468.
- Townsend, J.M. (1989). Mate selection criteria. A pilot study. *Ethology and Sociobiology*, 10, 241-253.
- Trivers, R.L. (1972). *Parental investment and sexual selection*. In *Sexual Selection and the Descent of Man*, B. Campbell (Ed). Chicago, IL: Aldine publishing Group.
- United Nations Development Index. (1995). *Human Development Report*. New York: Oxford University Press.
- Waynforth, D., Delwadia, S., and Camm, M. (2005). The influence of women's mating strategies on preferences for masculine facial architecture. *Evolution and Human Behavior*, 26, 409-416.
- Waynforth, D., and Dunbar, R.I.M. (1995). Conditional mate choice strategies in humans. Evidence from "Lonely Hearts" advertisements. *Behavior*, 132, 755-779.
- Wiederman, M.W., and Allgeier, E.R. (1992). Gender differences in mate selection criteria. sociobiological or socio-economic explanation? *Ethology and Sociobiology*, 13, 115-124.
- Whyte, M.K. (1978). Cross-cultural codes dealing with the relative status of women. *Ethology*, 17, 211-237.

- Whyte, M.K. (1979). *The Status of Women in Pre-Industrial Society*. Princeton, NJ: Princeton University Press.
- Wood, W., and Eagly, A.H. (2002). A cross-cultural analysis of the behavior of women and men. implications for the origins of sex differences. *Psychological Bulletin*, 128, 699-727.