

Original Article

Pair-Bonded Humans Conform to Sexual Stereotypes in Web-Based Advertisements for Extra-Marital Partners

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Abstract: Partners advertisements provide advertisers with access to a large pool of prospective mates, and have proven useful in documenting sex differences in human mating preferences. We coded data from an Internet site (AshleyMadison.com) catering to advertisers engaged in existing pair-bonded relationships. While we predicted that pair-bonding may liberate advertisers from conforming to sexual stereotypes of male promiscuity and female choosiness, our results are uniformly consistent with those stereotypes. Our findings thus provide further evidence that human mating behavior is highly constrained by fundamental biological differences between males and females.

Keywords: mate preferences, sexual stereotypes, pair bond, promiscuity, female choosiness, companion advertisements, infidelity

Introduction

Individuals are categorized as either male or female on the basis of anisogamy, the production of unequal-sized gametes. Males specialize in the production of a large number of energetically inexpensive, highly motile, small gametes (sperm), while females produce a smaller number of energy rich, non-motile, large gametes (ova). That difference in gamete size is commonly regarded as the most fundamental reason for differences in male and female reproductive behavior (Parker, Baker, and Smith, 1972; Thornhill and Gwynne, 1986; Trivers, 1972). In general, males are promiscuous and compete for access to limiting female ova, while females are highly discriminating, and mate only with select males. With an abundance of sperm, males have greater “polygamy potential” than females, enhancing their reproductive success through the acquisition of supernumerary mates (Bateman, 1948). With a more limited supply of gametes, females have been selected to maximize their fitness by choosing mates that are genetically superior to others and/or that enhance

access to resources critical to their reproductive success (Andersson, 1994; Emlen and Oring, 1977; Ptak and Lachmann, 2003).

Sex differences in mating strategies are not limited to non-human animals, as humans mating systems are typically considered as polygynous (Daly and Wilson, 1978), and males, on average, are more promiscuous than females (Buss, 1994). Buss and Schmitt (1993) reported that males desired a larger number of sexual partners than females over their lifetime, and Schmitt (2003) confirmed that this trend applies universally across individuals sampled from 52 different countries. Further, males report greater willingness than females to copulate with a member of the opposite sex, and unlike females, are willing to do so even after only 1 hour of knowing that individual (Buss and Schmitt, 1993). Males are also more likely than females to accept a partner considered to have sub-standard intellect for the purposes of “casual sex”, though male and female expectations of intellect do not differ in selecting potential dates or marriage partners (Kenrick, Sadalla, Groth, and Trost, 1990). Even the largely concealed nature of human ovulation (Marlowe, 2004; but see Miller, Tybur, and Jordan, 2007) may, at least in part, be a byproduct of selection favoring female choice of the male genetic contribution to their progeny while retaining access to the resources of their pair-bonded male partner (Andelman, 1987). As in non-human animals, it is not uncommon for resource-rich human males to be more successful polygynists than less wealthy males. Pérusse (1993) reported statistically significant positive correlations between the number of potential conceptions - a measure of male mating success - and male income, for North American males over 30 years of age.

In addition to data gleaned from studies involving self-reports, male-female differences in mating behavior are evident from advertisements for life-partners. Wiederman (1993) noted that in personal advertisements, men made explicit requests for sexual relationships more frequently than women and tended to advertise for younger partners (a trend that increased decidedly with advertiser age), while women offered greater involvement only after the establishment of a platonic relationship, and tended to advertise for older partners (which decreased slightly with advertiser age). Men were also more inclined than women to seek physically attractive partners and touted both their financial resources and honesty/sincerity, while women were more inclined than men to seek financial resources, or qualities indicative of resource acquisition, and were more likely than men to offer an appealing body shape (Wiederman, 1993). Consistent with those findings, Greenlees and McGrew (1994) reported that in “lonely hearts” advertisements, men were more inclined than women to seek cues related to a prospective mate’s reproductive value (physical appearance and youth), while females were more inclined than men to seek cues revealing a potential mate’s ability to acquire resources (financial security and older age). In those advertisements, both males and females also preferentially advertised those characteristics that were sought by members of the opposite sex. Striking differences both in how male and female advertisers portrayed themselves, and what they advertise for in prospective partners in newspaper “singles” advertisements were also reported by Waynforth and Dunbar (1995). Females were more likely to tout their physical attractiveness than resource wealth, while the opposite was true for males. In terms of describing their desired partner, males were more likely to include criteria relating to physical attractiveness of prospective partners rather than resource-wealth, while the opposite held true for females. The tendency of males to advertise for younger partners and females to advertise for older potential mates has also been independently verified (e.g.

Buss, 1989; Kenrick and Keefe, 1992; Pawłowski, 2000), reflecting not only sex-differential ages of reproductive senescence, but also the selective premium on female access to resources (Bereczkei, Voros, Gal, and Bernath, 1997; Pawłowski and Dunbar, 1999).

These same sex-differential preferences are evident in responses to personal advertisements. Pawłowski and Kozieł (2002) reported positive correlations between the number of responses to male-placed ads and the advertiser's education level, age, height and resources offered but negative correlations between the number of responses to female-placed ads and the advertiser's weight, height, education level and age. Campos, Otta and Siqueira (2002) also found that despite men becoming more demanding, and women becoming less demanding of the qualities of prospective partners as they age, older men received more responses to their ads than younger men, while older women received fewer responses to their ads than younger women.

With the widespread availability of the Internet, advertisements for prospective partners are no longer limited to print media, and web sites have appeared that cater to every imaginable proclivity. Of particular interest from a sociobiological perspective is the site AshleyMadison.com. This site provides a forum in which subscribers engaged in a pair-bonded relationship can connect with supernumerary partners. Indeed, extramarital sexual activity is not uncommon, as 25% of men and 15% of women surveyed reported having engaged in extramarital sex at least once (Hyde and DeLamater, 2003), and males and females even in their first year of marriage report similar tendencies towards infidelities in terms of flirting, kissing, partaking in a "one-night stand" or longer term affair (Buss and Shackelford, 1997a).

The likelihood of an individual engaging in an extra-marital relationship is influenced by their opportunity for extramarital sex, personal values, aspects of the existing marital relationship, and sundry "sociodemographic risk factors" including sex, age, educational achievement and race (see Treas and Giesen, 2000 for a review). Mating preferences of individuals engaging in such infidelities are, by and large, similar to those documented for singles (e.g. Scheib, 1994 but see Greiling and Buss, 2000), though females adopting short-term mating strategies, including those engaging in extra-pair mateships (*sensu* Scheib 2001), have been reported to place a greater emphasis on both the physical attractiveness (Buss and Schmitt, 1993; Gangestad and Simpson, 1990; Kenrick et al., 1990; Scheib, 2001), and immediate resource benefits (Buss and Schmitt, 1993) offered by prospective male mates.

While females in pair-bonded relationships may seek supernumerary partners as a means of enhancing their access to resources or assessing potential new mates (Greiling and Buss, 2000; Symons 1979), engaging in extra-pair copulations can also serve female genetic interests, resulting in the production of better adapted offspring (Gangestad and Simpson, 1990; Greiling and Buss, 2000; Smith, 1984; Symons 1979; Thornhill and Gangestad, 1999, 2009). Females adopting the latter strategy, and in particular those whose resource demands are met within their current pair-bonded relationship, would be predicted to show less of a preference for older males, instead focusing on the physical attributes of prospective male mates (Havlicek, Roberts, and Flegr, 2005; Scheib, 2001). Under such a scenario, males would be predicted to show a lesser preference for younger female partners, given the reduced demand for the extra-pair male's investment in child rearing.

The widespread availability of personal computers provides a large and cosmopolitan pool of potential mates, and unparalleled opportunity to identify prospective

mates online. Data from ads placed on the Ashley Madison site minimize potential sex biases that can result from surveying young, college-aged students, who remain dependent on parental investment (Asendorpf and Penke, 2005), and provide an interesting and potentially informative contrast to published trends (i.e. sex differential foci on age/body condition and resource wealth) from “singles” ads. If mating preferences are independent of pair bonding, we would expect results tabulated from AshleyMadison.com to conform to those derived from traditional “singles” advertisements. If, alternatively, the presence of an existing pair bond affects underlying mating preferences, then trends in the data from AshleyMadison.com should depart from those described for singles ads.

Materials and Methods

Research was conducted with the permission of Mr. Darren Morgenstern (Managing Director, Ashley Madison Agency) and under an approved human research ethics protocol (P2005:073) issued by the University of Manitoba's Psychology/Sociology Research Ethics Board. We coded data from the first 200 male seeking female and the first 200 female seeking male advertisements retrieved from the AshleyMadison.com site, thus ensuring an unbiased sample of advertisements posted by both sexes. From each advertisement, TCK coded 15 variables including: the sex of the advertiser (male versus female), the relationship status of the advertiser (single versus attached), specified limits on the nature of the relationship sought (anything goes, short term, undecided, long term, cyber affair/erotic chat, or whatever excites me), age of the advertiser, age range of partner sought (indicated in only 5 of 182 (2.7%) and 14 of 162 (8.6%) attached male- and female-placed advertisements respectively, and coded as biased toward prospective partners younger than the advertiser, symmetrical about the advertiser's own age, or biased towards prospective partners older than the advertiser), the total number of adjectives used by the advertiser in describing themselves and in describing what they wanted in a partner, and specifically, the number of adjectives describing physical attributes, material possessions, educational achievement and athletic prowess of the advertiser and the partner(s) sought. Finally, after reading each advertisement, TCK subjectively categorized whether or not the advertisement portrayed the advertiser as attractive or wealthy, and whether or not the partner sought was being characterized as attractive or wealthy.

All meristic data were subjected to goodness-of-fit tests (e.g. comparing frequencies for male versus female advertisers) or contingency table analyses (e.g. testing for independence of relationship limits from sex of advertiser) using chi-square, with the Yates correction for continuity in cases with one degree of freedom. Contrasts between sexes for continuous variables employed Student's t-tests, because data for all such variables met the parametric assumptions of normality (D'Agostino's D-tests, all $p > 0.05$) and homoscedasticity (Bartlett's tests, all $p > 0.05$). Descriptive statistics are shown as mean \pm SE unless stated otherwise, and differences are considered significant where $p < 0.05$, although we report trends where $0.05 < p \leq 0.10$.

Results

The relationship status of advertisers was not independent of advertiser sex (2x2 contingency table: $X^2_C = 7.50$, $p = 0.006$), with attached males advertising for partners

more frequently than attached females (182 versus 162 of 200 ads posted by each of the two sexes respectively). Limits on the nature of the relationship were also significantly affected by the sex of the advertiser (Table 1: $X^2_5 = 21.25, p = 0.001$), with males advertising “anything goes” significantly more often than females ($X^2_C = 16.84, p = 0.0001$), and females showing a trend toward more frequent advertisement for long term relationships than males ($X^2_C = 2.33, p = 0.10$). All other limit classifications appeared in equal frequencies (all $p > 0.40$) in male- versus female-placed advertisements.

Table 1. Frequency of “limits” identified on the relationship sought by male versus female advertisers

Limit Identified	Male Seeking Female	Female Seeking Male
Anything Goes	68	27
Short Term	9	10
Undecided	38	45
Long Term	16	27
Cyber Affair/Erotic Chat	5	9
Whatever Excites Me	46	44

Female advertisers were significantly younger than males (39.6 ± 0.6 versus 42.2 ± 0.6 years of age for females and males respectively; $t_{342} = 3.03, p = 0.003$). Further, females were more likely to indicate the age range of their desired partner than males (8.6 versus 2.7% of attached advertisers respectively; 2x2 contingency table: $X^2_C = 4.09, p = 0.043$), though the preferred age range for respondents did not differ between females and males (3 x 2 contingency table: $X^2_2 = 1.69, p = 0.43$).

Male and female advertisers used similar numbers of adjectives in describing themselves in their advertisements, though females used significantly more adjectives than males in describing the attributes of desired partners (Table 2). Significant male-female differences were also detected in how advertisers portrayed themselves and how they described desired partners. Females incorporated significantly more adjectives describing physical attributes and listing material requirements of would-be partners, while males incorporated significantly more adjectives in describing their own material resources, educational achievements, and athletic interests (Table 2). No differences were detected, however, in the number of adjectives males and females used to describe physical aspects of themselves, or in educational achievements and athletic interests of the desired partner(s) (Table 2).

Table 2. Mean \pm SE number of adjectives used in advertising for partners with statistical comparisons of male- versus female-posted advertisements

Adjective Type	Reference To	Female Posted	Male Posted	t_{342}	p
All (Total)	Self	0.93 \pm 0.18	1.14 \pm 0.16	0.90	0.369
	Partner	2.48 \pm 0.25	1.52 \pm 0.16	3.26	0.001
Physical	Self	0.35 \pm 0.09	0.25 \pm 0.05	1.02	0.307
	Partner	0.90 \pm 0.10	0.55 \pm 0.08	2.64	0.009
Material Wealth	Self	0.06 \pm 0.02	0.18 \pm 0.04	2.73	0.007
	Partner	0.19 \pm 0.04	0.02 \pm 0.01	3.79	0.000
Education	Self	0.01 \pm 0.01	0.09 \pm 0.02	3.00	0.003
	Partner	0.10 \pm 0.03	0.10 \pm 0.02	0.16	0.873
Athletic Interests	Self	0.02 \pm 0.01	0.10 \pm 0.03	2.06	0.040
	Partner	0.05 \pm 0.02	0.04 \pm 0.02	0.21	0.832

Based on the overall subjective impressions left by each individual advertisement on TCK, males and females did not differ in their propensity to represent themselves as physically attractive (Table 3: $X^2_C = 0.36$, $p = 0.549$), or to advertise for physically attractive partners (Table 3: $X^2_C = 0.35$, $p = 0.553$). Males, however, were more likely than females to portray themselves as wealthy (Table 3: $X^2_C = 24.61$, $p = 1.0 \times 10^{-7}$), and females were more likely than males to advertise for wealthy partners (Table 3: $X^2_C = 14.91$, $p = 0.0001$).

Table 3. Percentage of advertisements subjectively characterizing the advertiser or partner(s) desired as “attractive” or “wealthy”

Character Evaluated	Male Seeking Female	Female Seeking Male
Advertiser Attractive	16.48	13.58
Wants Attractive Partner	28.57	30.41
Advertiser Wealthy	19.23	0.02
Wants Wealthy Partner	0.04	17.90

Discussion

Mating preferences of advertisers on the Ashley Madison web site, which caters primarily to individuals in pair-bonded relationships, are in accord with those inferred from traditional singles advertisements. Barring misrepresentation of existing relationship status, the fact that a greater proportion of male seeking female advertisements were posted by individuals describing themselves as “attached”, is consistent with greater male promiscuity (Daly and Wilson, 1978; Parker et al., 1972). This interpretation is also supported by the fact that males were more likely to suggest “anything goes”, and less likely to seek long-term commitment in specifying the limits of the relationship where analyses were restricted to “attached” advertisers.

There is also direct evidence that females are more selective than males in seeking prospective extra-pair partners. Females used significantly more adjectives in describing

attributes of prospective partners than males. This difference is presumably not attributable to females being more descriptive in posting advertisements, as females did not use significantly more adjectives than males in describing themselves within their ads. Females may limit information about themselves, however, to protect their anonymity, particularly in light of the serious consequences associated with a female's current partner detecting efforts toward infidelity (Buss and Shackelford, 1997b; Harris, 2003). That said, the 38 females declaring themselves as single, and thus presumably at lower risk of detection and reprisal by a jealous partner, did not use significantly more adjectives in describing themselves than the 162 females advertising for partners from within an existing pair-bonded relationship (0.45 ± 0.17 versus 0.93 ± 0.18 respectively, Mann-Whitney U test, $U = 2857$, $p = 0.372$).

When the specific nature of adjectives is taken into account, female use of adjectives exceeded that of males only in describing the presumptive partner, while male adjective use significantly exceeded that of females only when the advertiser was describing himself. That females used more adjectives describing the material requirements of prospective partners, and males use more adjectives describing their own education and material wealth, suggests that mate choice even among pair-bonded individuals is predicated upon females attempting to access male-controlled resources. The subjective evaluation of the emergent character of ads also supports this interpretation, as males were significantly more likely than females to represent themselves as wealthy, and females were more inclined than males to seek wealthy partners. Females, however, also focused upon physical aspects of prospective partners, using significantly more adjectives to describe their desired partner(s) than did males, and males themselves used significantly more adjectives to describe their own athletic interests and educational achievements than did females. Taken together, our findings suggest that females prefer males who not only provide superior access to resources, but who are physically fit and intelligent as well, thus presumably providing "good genes" to potential progeny (Gangestad and Simpson, 1990; Thornhill and Gangestad, 1999).

The small proportion of advertisers indicating a preferred age range of partners provided no evidence of sex-differential age preference, although female advertisers were significantly younger than male advertisers. That few individuals indicated an age preference in these web-based advertisements, however, likely reflects the greater ease with which advertisers can communicate with multiple respondents using current technology. Subsequent communication would facilitate comparative mate choice (Bateson and Healy, 2005; Sedikides, Ariely, and Olsen, 1999) in a sequential decision-making process (Townsend and Wasserman, 1998), where preliminary contact would lead to further data sharing, including, but not limited to, the age of all prospective partners responding to the advertisement. The opportunity for follow-up assessment of prospective partners may also explain why the vast majority of advertisers offer relatively little information regarding their physical attractiveness or resource wealth, notwithstanding the fact that sex-differences were detected for those variables. While it could prove useful in these and other regards, to post fictitious ads and then quantify the attributes of respondents, such an approach would preclude informed consent on the part of subjects, and thus be unethical.

Both Waynforth and Dunbar (1995) and Campos et al. (2002) noted that females become less demanding of prospective partners as they age, likely owing to their declining reproductive value. Consistent with those findings, post-hoc analyses of adjective use

relative to the advertiser's age in our sample revealed that the number of adjectives used by females in pair-bonded relationships to describe physical attributes of prospective mates declined significantly with age (Simple linear regression; $F_{1,160} = 4.729$, $p = 0.031$), though counter to that notion, female use of adjectives associated with educational achievement of prospective partners increased with age (Simple linear regression; $F_{1,160} = 3.925$, $p = 0.049$). Both the frequency of adjectives describing material wealth, and athletic interests of presumptive partners were unaffected by the age of attached females, and for unattached female advertisers, no significant relationship was detected between age and adjective use of any sort. Thus, our data provide only limited support for the notion that females become less discriminating as they age.

Males have been reported to become more demanding with age, presumably as a product of their increased resource value (Campos et al. 2002; Waynforth and Dunbar, 1995). While the 18 unattached males in our sample tended to increase the number of adjectives used to describe physical attributes of desired partners with increasing age (Simple linear regression; $F_{1,16} = 4.240$, $p = 0.056$), the reverse was true for the 182 pair-bonded males, whose use of adjectives describing physical attributes of prospective female mates declined significantly with age (Simple linear regression; $F_{1,180} = 5.616$, $p = 0.019$). No other trends with age were evident in adjective use by either unattached or pair-bonded males, and thus, our data provide scant evidence that males become more demanding as they age.

The persistence of sex-differential preferences may ultimately relate back to the transient nature of human pair bonds (Jankowiak and Fisher, 1992), and thus selection favoring individuals who, in effect, are looking to "trade-up" to their next reproductive partner (Greiling and Buss, 2000). Consistent with that notion, Morrell (1998) reported that females paired with low-quality males engaged in extra-pair matings, while females paired with high quality males did not. Further, women advertising for partners in the secondary mate market (i.e. divorced or separated individuals) sought resources more frequently than those who had never been married (Kozieł and Pawłowski, 2003). Post-hoc analyses of our data, contrasting adjective use by 38 single females with that of 162 females in pair-bonded relationships revealed that attached females used more adjectives overall to describe prospective partners (2.48 ± 0.25) than single females (1.34 ± 0.32 ; Mann-Whitney U test, $U = 2442$, $p = 0.040$). In particular, these pair-bonded females used significantly more adjectives describing physical attributes of desired male mates than single females (0.90 ± 0.10 versus 0.42 ± 0.13 respectively; Mann-Whitney U test, $U = 2450.5$, $p = 0.026$), and yet significantly fewer adjectives describing material aspects of desired mates than single females (0.19 ± 0.04 versus 0.40 ± 0.11 ; Mann-Whitney U test, $U = 2573$, $p = 0.012$). These latter results suggest that females advertising for supernumerary partners from within pair-bonded relationships, unlike those in the secondary mate market, may have their resource demands met, and yet continue to search for high quality males with which to engage in short-term mateships, thereby producing more fit offspring (Gangestad and Simpson, 1990; Greiling and Buss, 2000; Smith, 1984; Symons 1979; Thornhill and Gangestad, 1999, 2009). The number of adjectives unattached and attached females used to describe educational achievement and athletic interests of prospective male partners, however, did not differ.

While one cannot ignore the fact that the consequences of infidelity are commonly far more severe for females than males (Buss and Shackelford, 1997b; Harris, 2003;

Sefcek, Brumbach, Vasquez, and Miller, 2006; Symons, 1982), the potential benefits of seeking supernumerary partners (increased fecundity for males and resource and/or genetic benefits for females: summarized in Hyde and DeLamater, 2003; Sefcek et al., 2006) clearly outweigh the potential costs for certain individuals. Despite advances in the technology employed in seeking partners, human mating decisions, even within pair-bonded relationships, remain constrained by our evolutionary heritage. While some have emphasized the role that social factors play in promoting sex-differential mating preferences (e.g. Social Structural Theory: Eagly and Wood, 1999), it is critical to remember that social/cultural conventions themselves often reflect underlying selective benefits (Wilson, 1975), and as such, the psychological algorithms underlying human mating preferences (Berezkei et al., 1997; Campos et al. 2002; Lippa, 2007), including emotions expressed in the context of pair-bonded relationships (e.g. jealousy; Harris, 2003, 2004; Schützwohl, 2007), are a product of selection acting upon their expression. Such evolved predispositions, however, remain amenable to modification in light of variation in both ecological and sociocultural circumstances (Berezkei et al., 1997; Gangestad and Simpson, 2000; Lippa, 2007; Pawłowski and Dunbar, 1999), allowing fitness to be enhanced through the expression of conditional mating strategies (e.g. Strategic Pluralism: Gangestad and Simpson, 2000).

It is not surprising that both males and females turn to a web-based medium like the Ashley Madison site in pursuing extra-pair relationships, in that such a site offers not only access to an abundance of prospective partners, but also relative anonymity in screening respondents. While our findings from that site at present reveal stereotypical sex differences toward greater male promiscuity and female selectivity, it would prove interesting to track these trends over the longer term, including quantification of the more subtle aspects of what males and females seek in prospective mates. Ultimately, heightened competition in the face of increasing world population and diminishing resources should favor greater parental investment (Lancaster and Lancaster, 1983), though it is unlikely that even such a premium on investment would consistently supersede the potential advantages of exploring extra-pair mating opportunities, given individual-specific optima in mating strategies (Gangestad and Simpson 2000).

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