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Sexual selection under parental choice: the role of parents in the evolution of human mating

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Abstract

Much of the evolutionary literature on human mating is based on the assumption of extensive female choice during the history of our species. However, ethnographic evidence from foraging societies reveals that, in societies thought to be akin to those of our ancestors, female choice is constrained by the control that parents exercise over their daughters. Data from 190 hunting and gathering societies indicate that almost all reproduction takes place while the woman is married and that the institution of marriage is regulated by parents and close kin. Parents are able to influence the mating decisions of both sons and daughters, but stronger control is exercised with regard to daughters; male parents have more say in selecting in-laws than their female counterparts. In light of the fact that parental control is the typical pattern of mate choice among extant foragers, it is likely that this pattern was also prevalent throughout human evolution. Because daughters' preferences can be expected not to fully coincide with those of their parents, research to date may thus have simultaneously overestimated the contribution of female preferences to processes of sexual selection and underestimated the contribution of parental preferences to such processes.

Keywords: Parental choice; Sexual selection; Female choice; Human mating; Hunters and gatherers

1. Introduction

Evolutionary psychology combines evolutionary theory with evidence from preindustrial societies in an attempt to reconstruct the ancestral environment and to make valid claims about the evolution of human behavior (Pinker, 1997). Since most of human evolution took place in an environment where subsistence was based on hunting and gathering (Lee & DeVore, 1968), particular emphasis is placed on evidence from modern foragers. Patterns of behavior and social organization that are typical among hunter–gatherers are also assumed to be typical of ancestral human societies (but see Kelly, 1995). However, much of the existing theory about the evolution of mating behavior has not taken into account the typical patterns in hunting and gathering societies (Ember, 1978). This fact makes many evolutionary claims problematic.

Over the last few years, a substantial literature on the evolution of human mating has emerged. Research in this area is commonly based on the assumption of extensive female choice during the period of human evolution (e.g., Buss, 1995, 2003; Daly & Wilson, 1983; Miller, 2000; Symons, 1979). However, the ethnographic record indicates that female mate choice is far from free. To the contrary, it demonstrates that the mating decisions of females are heavily controlled by their parents (Broude & Green, 1983; Minturn, Grosse, & Haider, 1969; Whyte, 1978b). Consequently, present models that do not incorporate the influence of close kin in mating decisions are inadequate for the study of human mating (Cronk, 1991). Accordingly, the first aim of this article is to provide an evolutionary model that incorporates the control over mate choice that is exercised by close kin and better accounts for the mating patterns observed in foraging societies. Secondly, data from an extensive sample of modern hunters and gatherers are surveyed and presented here, and the typical patterns of mating in these societies are identified.

1.1. The model of parental choice

The theory of parental investment (Bateman, 1948; Trivers, 1972) states that the female, by investing more in

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her offspring, becomes a scarce reproductive resource to which males are seeking access. As a consequence, the parents of the female find themselves in possession of a valuable resource that they can manipulate to their own advantage. By controlling their daughters' mating decisions, parents can select in-laws with characteristics that maximize their own inclusive fitness. For example, parents may choose mates for their daughters based on the male's willingness to provide resources and long-term support to the parents and their family in return. The parents can use these resources to increase the probability of survival and reproduction for themselves and their kin, including their daughter. Males also invest in their offspring; thus, parents have an incentive to control their sons' mating decisions as well. However, due to the asymmetry in parental investment, the model predicts that there will be less parental control aimed at the mating choices made by male versus female offspring since females are the scarcer commodity. Note that if parents leave mate selection to their offspring, the offspring will make choices that maximize their own (and not necessarily their parents') inclusive fitness. Because parents and offspring are not genetically identical and, thus, do not always have identical genetic interests, parents' and offspring's preferences may differ (Hamilton, 1964; Trivers, 1974).

Parental control over mating is possible in settings where the offspring are dependent on their parents for food and protection and where parents are able to use their physical strength over their offspring to impose their will. Certain aspects of human sociality, like the long period of parental investment, potential heritability of resources, and extensive networks of kinship and reciprocity, also facilitate parental control (Alexander, 1974; Flinn & Low, 1986; Trivers, 1974). In certain settings, parents have the power to seize mating control from the hands of their offspring. Furthermore, by means of greater physical strength, exclusive use of weaponry, and control of political institutions (Flinn & Low, 1986; see also Smuts, 1992, 1995), male parents may have more influence over offspring mate choice than do their female spouses.

However, the offspring are not simply pawns in their parents' hands. Offspring may evolve adaptations to psychologically manipulate their parents toward their own ends (Trivers, 1974). On the other hand, parents may also evolve adaptations to counterbalance such manipulation (Stamps, Metcalf, & Krishnan, 1978). Consequently, the balance tilts in favor of the parents, who still control parental investment and are physically stronger (Dawkins, 1989). Still, parental control over the offspring's mating has its limits: parents, for instance, cannot always be present to guard their offspring. In addition, the successful manipulation of the offspring requires at least some consideration of their preferences by their parents. Such consideration reduces conflict and increases the effectiveness of parental control. However, parental control wanes as offspring grow older; with age, the offspring become more experienced in subsistence activities and less dependent upon their parents. In later marriages, parents and close kin may be absent due to death or at least less able to impose their choices due to old age. Likewise, if offspring change their group affiliations upon marriage, then geographic and social distance may reduce parental influence in the event of subsequent remarriage. Since this model predicts that parental control will be asymmetrically biased toward the female offspring, increased autonomy with age will have a more noticeable effect on female versus male mate choice. The precise impact of such changes will depend on timing. Given that female residual reproductive potential declines with age, the effects of increasing autonomy on female reproduction should be tempered by decreasing fertility. This may be one reason why control over women is relaxed in their post-childbearing years (Brown, 1982).

Overall, in this model of human reproduction, mate choice is controlled by the parents, particularly where female offspring are concerned. In addition, male parents have more decision-making power than female parents. Despite parental control, there is still sufficient space in this model for offspring to exercise some mate choice, either independently or through their parents. The next step is then to identify the mating patterns that are typical among foragers and examine the degree to which this model of parental choice accounts for the observations.

2. Methods

In cross-cultural research, random sampling is usually employed for the construction of a sample. However, random sampling in this case is not appropriate since it might result in the inclusion of many societies for which sufficient description is not available, as well as the exclusion of a number of societies for which rich description exists (Murdock, 1957). Similarly, certain geographic areas contain only a small number of foraging societies and a random sampling process would result in the exclusion or limited representation of these areas. Therefore, an extensive sample of 190 societies is employed instead. This sample includes almost all modern hunting and gathering societies for which reliable mating pattern data exist.

A society is categorized as a hunting and gathering group if its people base at least 75% of their subsistence on hunting and gathering, according to the *Ethnographic Atlas* (Murdock, 1967). If a society is not coded in the *Atlas*, it is classified as a hunting and gathering society if it is reported as such in the anthropological sources employed here. The majority of the societies in the sample are exclusively hunters and gatherers. Ideally, a geographically balanced sample of societies is desirable, but since hunting and gathering societies are not equally distributed across the globe, this is not possible (Murdock, 1967). For instance, there are no societies from Europe in the sample, but North American societies are overrepresented. In all,

the sample consists of 9 African societies, 16 East Eurasian societies, 19 Insular Pacific societies, 85 North American societies, 47 Arctic and Sub-Arctic societies, and 14 South American societies. Reference sources were gathered mainly with the use of Murdock's *Atlas of World Cultures* (Murdock, 1981) and *Atlas of World Cultures* (Price, 1989).

Ember and Ember's (2001) coding scheme was employed as a general guideline for the coding process. Coding was done by two coders. One independent coder was employed so as to control for possible biases (Ember & Ember, 2001). Average correlation across variables for the two sets of coding data was .90. For a number of variables of interest, data were scarce and information gathering was possible for only a limited number of cases. It is acknowledged that this might introduce a potential bias to the conclusions based on this evidence.

The use of an extensive sample can potentially suffer from the problems of cultural diffusion and historical relation (known together as Galton's problem). Cultural diffusion is the spread of a trait from one culture to another due to geographic proximity (Mace & Holden, 1999). However, there are no reasons to believe that the mating-related traits examined here are picked up from neighboring cultures simply because of proximity. That is, cultures do not assume all of the cultural traits that their neighbors have and still remain as separate cultures (Mace & Holden, 1999). Historical relation is a potential issue with regard to certain cultures in North America and the Arctic and Sub-Arctic. That said, Ember (1971) found no evidence that such historical relation can affect cross-cultural research. Although this conclusion is probably also valid for mating patterns, this is tested here with a reanalysis of the data from North America, the Arctic, and the Sub-Arctic with the random omission of cases from these subsamples (Ember & Ember, 2001). This did not produce significantly different results from the original samples. A potentially more serious concern is the overrepresentation of certain geographical areas. An alternative subsample was constructed to deal with this problem. The subsample consists of 54 societies equally distributed across geographical areas. This sample was created by including the nine African societies and nine randomly selected societies from each of the remaining geographical areas. The analysis of the full sample has also been repeated for the subsample, and the results are reported along with the results from the analysis of the entire sample.

3. The anthropological record

3.1. Marriage among hunters and gatherers

Marriage is a universal institution (Murdock, 1949) and is found in all societies analyzed here. Females in hunter and gatherer societies remain married throughout their reproductive years, and hence, most reproduction takes place while the woman is married. Marriage is therefore of special importance for understanding human reproductive behavior.

Four main types of marriage are distinguished here: parental arrangement, close kin arrangement, courtship subject to parental approval, and courtship. In the parental arrangement type, parents are predominantly in control of marriage arrangements but their offspring can also be consulted. In close kin arrangement, family members other than parents arrange marriages, but the latter also participate in the arrangement process. In cases of courtship subject to parental approval, the individual parties find their own marriage partners, but their choices are subject to their parents' approval. Finally, in the courtship type of marriage, the individual parties are free to choose and marry whomever they like. It is usually the case that more than one type of marriage is practiced in each society. When the majority of marriages in a given society take a specific form (e.g., parental arrangement), this type of marriage is classified as primary for this society. If a marriage type is reported by anthropologists as present, then this type is classified as secondary irrespective of its frequency.

As discussed before, the sample is skewed toward an overrepresentation of North American, Arctic, and Sub-Arctic societies, and a separate analysis was conducted on a balanced subsample. The conclusions of the analysis are based on the results from the entire sample of societies. However, the results from the analysis of the subsample are also available and are presented in parentheses next to the results from the total sample. Unless it is indicated otherwise, the percentages reported are the percentages of cases that take a specific value when only cases with nonmissing values are considered.

The parental arrangement type of marriage, found to be primary in 130 (32) cases [69.9% (62.7%)], is the most widespread type of marriage. It is followed by close kin arrangement in 33 (12) cases [17.7% (23.5%)] and courtship subject to parental approval in 15 (4) cases [8.1% (7.8%)], while courtship is the primary form of marriage in only 8 (3) cases [4.3% (5.9%)] (Fig. 1). Parental and close kin control of marriage are the most frequent marriage types across all geographic areas (Fig. 2). In the three most common categories, parents have a major role in regulating mate choice. Thus, one can conclude that in roughly 96% of the societies in the sample, parents play a crucial role in determining whom their offspring will marry. Parental arrangement is the secondary marriage type in 145 (41) cases [52.9% (46.6%)], close kin arrangement in 54 (19) cases [19.7% (21.6%)], courtship subject to parental approval in 37 (11) cases [13.5% (12.5%)], and courtship in 38 (17) cases [13.9% (19.3%)] (Fig. 1).

Most of the societies practice polygyny, which is usually reported to be the privilege of few men. Polygyny is found in 140 (41) societies [73.7% (75.9%); missing values are considered], while it is reported as common in 17 (5) societies [21.5% (21.7%)] and rare in 62 (18) societies

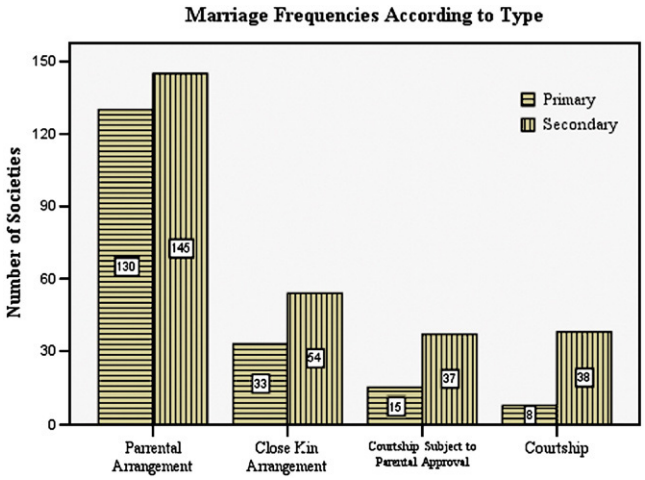

Fig. 1. Total number of cases by primary and secondary types of marriage in the sample.

[78.5% (78.3%)]. Polyandry is also present and is reported in 23 (10) cases [12.1% (18.5%); missing values are considered], always as very rare.

3.2. Who does the choosing?

The choice of a marriage partner for a given individual is predominantly made by his or her parents. Parental choice can be subdivided into two components: the choice exercised by female parents and the choice exercised by male parents. One can then analyze whether the opinions of individual parents carry equal weight or whether one parent's influence dominates the other's. In this sample, males are predominantly in control of the marriage negotiations with little or no influence from their female spouses in 53 (20) cases [43.8% (54.1%)]. Both parents participate equally in negotiations in 38 (9) cases [31.4% (24.3%)]. Both parents participate in negotiation, but males have more say than females in 19 (5) cases [15.7% (13.5%)] while both parents participate but females have more say than males in 10 (3) cases [8.3%

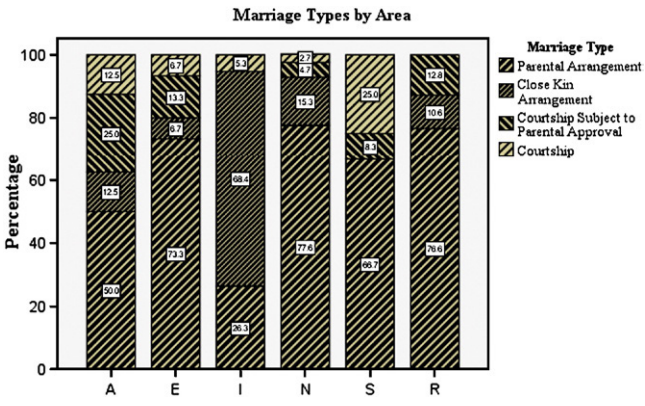

Fig. 2. Marriage types by geographical area: (A) Africa, (E) East Eurasia, (I) Insular Pacific, (N) North America, (S) South America, (R) Arctic and Sub-Arctic.

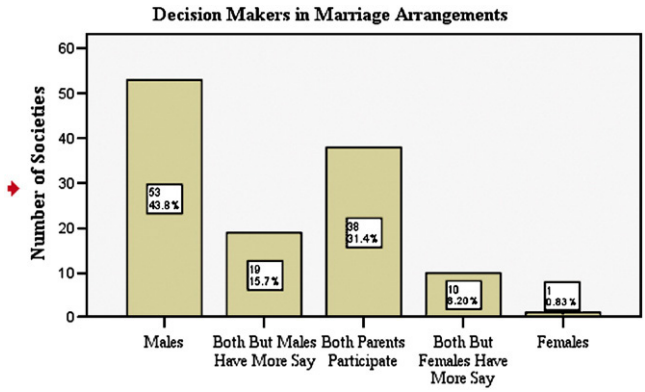

Fig. 3. The distribution of decision makers according to sex.

(13.5%)]. Finally, females dominate marriage negotiations with little or no influence from their female spouses in one (zero) case [0.8% (0%)] (Fig. 3).

When females have more say or dominate the negotiations, it is almost exclusively the mother who is the decision maker. When males dominate negotiations exclusively or have more say, fathers are the decision makers in 52 (19) societies [77.6% (76%)] followed by brothers of the bride in 11 (4) societies [16.4% (16%)] and her uncles in 4 (2) societies [6% (8%)].

3.3. Parental control

One way for parents to exercise effective control over their female offspring is to ensure that their daughters are married as soon as they reach puberty or even earlier (Goody, 1959). In such cases, daughters do not have time to start relationships of their own. In addition, parents can impose their choices more easily upon their female offspring, who are still dependent on them. According to a Sama Bajau saying, "fish and daughters are alike; both must be disposed of quickly lest they spoil" (Sather, 1997, p. 252). In this sample, the primary female age at first marriage is at onset of puberty in 66 (19) cases [86.8% (86.4%)], followed by marriage in childhood in 6 (3) cases [7.9% (13.6%)], and finally, marriage in adulthood in 4 (0) cases [5.3% (0%)]. Marriage at the onset of puberty is reported as secondary in 76 (22) cases [69.7% (68.8%)], marriage in childhood in 20 (9) cases [18.3% (28.1%)], and finally, marriage in adulthood in 13 (1) cases [11.9% (3.1%)]. However, males are not forced into early marriage, and as a consequence, females are usually married to men older than they are. This is the case in 55 (16) societies [88.7% (94.1%)]. Only in 7 (1) societies [11.3% (5.9%)] are females married to a man of the same age. Infant or child betrothal is found in 63 (20) cases [33.1% (37%); missing values are considered]. In this arrangement, parents betroth their children when they are very young, but these betrothals rarely constitute an absolute commitment for later marriage.

Arranged marriages usually take the form of parents or close kin "giving away" their female relative after

negotiations with the male or his relatives. As such, males are allowed much more autonomy to exercise mate choice than females. Men are reported to ask for a woman in marriage from her parents in 49 (15) cases [25.8% (27.8%); missing values are considered], while there is no case where women are allowed to take such initiative. Also, the groom's parents take the initiative in arranging the marriage with the bride's parents in 52 (15) cases [86.7% (83.3%)], both sets of parents can take the initiative in 7 (3) cases [11.7% (16.7%)], and only in 1 (0) case [1.7% (0%)] are the bride's parents reported to take the initiative.

3.4. What parents want

When choosing a son-in-law, parents look for someone who is hardworking and a good provider in 20 (4) cases [45.5% (33.3%)], a good hunter in 19 (5) cases [43.2% (41.7%)], and from a good family in 5 (3) cases [11.4% (25%)]. When parents do explicitly express a dominant preference, it is usually for a good hunter in 15 (4) cases [60% (57.1%)], followed by someone who is hardworking and a good provider in 8 (2) cases [32% (28.6%)], and from a good family in 2 (1) cases [8% (14%)]. The groom's parents are looking for a hardworking daughter-in-law in 22 (4) cases [75.9% (66.7%)] and one from a good family in 7 (2) cases [24.1% (33.3%)]. Being hardworking is reported as the dominant preference in 16 (4) cases [84.2% (100%)] and coming from a good family in 3 (0) cases [15.8% (0%)]. Of interest here is that traits such as physical attractiveness are not reported as contributing to parents' assessments of potential in-laws.

Being selected by a mate's parents gives an individual male far more reproductive advantages than acquiring a single female. Through the institution of sororal polygyny, a male is likely to receive his first wife's sisters as additional wives. The sororate, a common practice across cultures (Murdock, 1949), also mandates that if a man's wife dies, he can receive one of her sisters as a wife. The sororate is found in 81 (15) [42.6% (27.8%); missing values are considered] of the societies presented here. Sororal polygyny and the sororate are heavily regulated by the families of the parties involved.

3.5. Female choice

Despite strong parental control over mating, female choice may still be exercised. The institution of divorce offers this possibility. Divorce is almost as frequent as marriage, being found in 125 (33) societies [65.8% (61.1%); missing values are considered]. It is reported as common in 32 (8) societies [59.3% (57.1%)] and as rare in 22 (6) of them [40.7% (42.9%)]. For the Chinookans and the Sarsi, divorce is reported to be a male privilege; in the rest of the sample, divorce is obtained at will by both sexes. Incompatibility is given as reason for marriage dissolution by both parties in 23 (6) societies [21.9% (21.4%)]. Husbands may also initiate marriage dissolution due to female barrenness in 30 (6) societies [28.6% (21.4%)]. Finally, laziness is given as a reason for divorce by both partners in 20 (6) cases [19% (21.4%)].

When arranging their daughters' marriages, parents usually consult the daughters themselves. This is the case in 35 (7) societies [18.4% (13%); missing values are considered]. A daughter's consent is not always a prerequisite for a marriage to proceed, and the females are usually reported to submit to their parents' wishes.

Extramarital relations are another way for women to exercise choice, but this carries a heavy price. Adultery is punished severely in 20 (2) cases [60.6% (25%)]. Severe punishment includes mutilation and often death. Moderate punishment, which involves beating the wife, is reported in 12 (5) cases [36.4% (62%)]. No punishment for adultery is reported only in 1 (1) case [3% (12.5%)]. Although severe punishment is more frequent in the total sample than in the subsample, no punishment for adultery is the minority in both. Women also risk permanently destroying their marriage by engaging in extramarital relations; adultery is given as reason for divorce in 32 (10) cases [30.5% (35.7%)].

Finally, elopement is another manifestation of female choice. Elopement may or may not lead to marriage. Elopement is found in 45 (15) societies [23.7% (27.8%); missing values are considered]. In all these cases, elopement is reported as rare, one of the reasons being that parents often react severely, forcing their daughter to return or withholding support from her.

4. Discussion

An exhaustive review of the ethnographic record indicates that parents in foraging societies have a central role in selecting the long-term spouses of their offspring, although offspring can still exercise some mating choice through various means, including divorce and extramarital relations. These conclusions also hold for the subsample examined here, which is balanced across geographical areas. Therefore, it may be productive to modify previous models of human mating, which assume free female choice, so as to take into consideration the role of parental control in mate choice.

As described in Section 2, steps have been taken to control for Galton's problem, coder bias, and the over-representation of certain geographical areas. However, the best guard against these biases is the replication of the results presented here. It is therefore revealing that previous studies, although with findings less comprehensive than those reported here and/or not limited to foraging societies, arrive at similar conclusions. Minturn et al. (1969) report that the courtship type of marriage was the least frequent type of marriage in their sample. Similarly, Broude and Green (1983) use a subsample from the standard cross-cultural sample and find that arranged marriages were the most common marriage type, with more control exercised over the marriage of females. Moreover, Whyte (1978b) concluded

that in the majority of the preindustrial societies considered, marriage arrangements are dominated by males. It was also found that, in the vast majority of cases, divorce was equally available as an option for both husband and wife. Frayser (1985) reported that, in the majority of the societies in his sample, parents consider the offspring's opinion when selecting an in-law. Finally, Betzig (1989) found that adultery and incompatibility are frequent causes of divorce across cultures.

Although there is agreement that patriarchy is the norm in preindustrial societies, and thus it is reasonable to expect male dominance over marriage decisions (Collier & Rosaldo, 1981; Goldberg, 1973; Leach, 1951; Levi-Strauss, 1969), this may be exaggerated in the ethnography. Men, having a passion for prestige and public display, may have less control than is apparent (Daly & Wilson, 1988). Whyte (1980) found that in almost half of the preindustrial societies in his sample, ethnographers report that women have more influence than is reflected in their society's formal norms. According to Brown (1982), the influence of older women in marriage arrangements is often underestimated by many anthropologists. It has also been argued that most anthropological studies are undertaken by men, and this can lead to a bias in understanding the position of women in a given society (see also Endicott, 1999). Although Whyte (1978a) found no evidence for this claim, this is still a worrying concern. Overall, female parents may have more decision-making power over marriage decisions than is evident in ethnographic accounts.

The findings presented here will not come as a surprise to many scholars familiar with the ethnographic literature. However, this may be less true for psychologists who, perhaps constrained by time demands imposed by discipline-based specialization, are less well acquainted with the ethnographic record. For instance, Miller (2000, p.180) assumes that arranged marriages and patriarchy are recent inventions associated with the onset of agriculture and animal domestication. While other evolutionary psychologists accept that, in many societies, the marital decisions of the offspring rest with the parents (Buss, 2003, p. 91; Daly & Wilson, 1983, p. 288), they nevertheless proceed to assume extensive female choice in their analyses. Thus, many scholars may benefit from incorporating anthropological evidence into the study of human behavior.

Sexual selection arises from differences in the reproductive success caused by competition over mates (Darwin, 1871). Since males compete for access to females, who, in turn, are controlled by their parents, it is possible that certain mating adaptations are best understood as the evolutionary product of parental rather than female choice. More complexly, since both parents and offspring are able to exercise some control over mate choice, the evolution of individual and parental mate choice behavior can be seen as the outcome of coevolution between parental and offspring choice. This renders the exploration of parent–offspring conflict over mating particularly important. The theory of parent–offspring conflict (Trivers, 1974) predicts that some conflict exists, but the extent to which parental and offspring mating preferences overlap or clash requires further investigation. However, even if parents and offspring do have identical interests, the evolutionary path of mating adaptations may still be different if mating is disproportionately controlled by parents. For example, it has been hypothesized that males have evolved adaptations for honest signaling that reliably communicates their otherwise unobservable properties to females (Miller, 2000; Zahavi & Zahavi, 1997). As honest signaling adaptations are contingent upon the receiver's psychology (Guilford & Dawkins, 1991; Row, 1999), evolution may take one path if the receiver is a female and a different path if the receiver is a female and male pair (the parents).

To date, the evolutionary literature on human mating has often been inconsistent, or incomplete, in its attention to ethnographic evidence such as that studied here. Perhaps this is because data on mating patterns among foraging societies are scattered across individual studies (e.g., the !Kung; Lee, 1979) or presented along with evidence from nonforaging societies (e.g., Whyte, 1978b), or perhaps this is because much human mating research takes place within a Western context where parents have little direct role in the choices of their offspring. Regardless, taking into account the role of parents in manipulating the mating choices of their offspring may broaden our understanding of human mating, enabling us to more accurately reconstruct the evolution of human mating behavior.

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