Are Men More Competitive Than Women?

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Abstract

This study uses competition diaries to see whether women and men differ in (a) what they compete over, (b) whom they compete with, and (c) their competitive tactics, including use of aggression. In Study 1, university students kept diaries of their competitive interactions during the term. Sex differences, few overall, were as follows: (a) men's diaries contained more same-sex competition, (b) women competed more about looking attractive whereas men competed more about sports, and (c) men used physical (but not verbal) aggression more frequently than women. In Study 2 strength of competition was also measured by questionnaire. Women and men felt equally competitive overall, but men felt more competitive about athletics and sexual attention whereas women felt more competitive about looking attractive. In men, but not women, competitiveness for financial success was correlated with various aspects of mating competition. Young men were more competitive than older men in a variety of domains and were also more physically and verbally aggressive, but no age difference in aggression was found for women.

An unfortunate gap exists in our knowledge of male and female competitive behavior that makes it difficult to answer the question posed in the title. On the one hand, we have good laboratory studies of adult behavior in settings where competition and dominance may be expressed. Most studies of small-group interaction have found that women are less competitive and interested in dominance striving than men (Aries, 1976, 1982; Carli, 1990; Denmark, 1977; McCarrick, Manderscheid, & Silbergeld, 1981; Sapp, Harrod, & Zhao, 1996), and are less likely to assume positions of leadership (Eagly & Karau, 1991; Megargee, 1969; Nyquist & Spence, 1986), at least in unacquainted dyads and groups (Davis & Gilbert, 1989; Wheelan & Verdi, 1992).

We also have good behavioral studies of children and young adolescents that examine competition and dominance striving in natural settings, and which point to the same conclusion (Goodwin, 1988; Savin-Williams, 1979; Weisfeld, 1986; Weisfeld, Weisfeld, & Callaghan, 1982; Whiting & Edwards, 1973, 1988).

Systematic behavioral studies of adult competition in natural settings are scarce, however, and for a good reason: competition among adults is often subtle and indirect, and may not be marked by anything overt at all. Yet the scarcity of such studies means that arenas of competition difficult to bring into the laboratory and irrelevant to children—such as competition for mates—may be simply ignored. Recent ethnographic accounts have shown that aggressive competition among women is far from rare (Burbank, 1987, 1994; Cook, 1992; Campbell, 1991, 1995; Hines & Fry, 1994; Schuster, 1979, 1983). These studies provide compelling evidence that something is being left out of the discussion of sex differences in competition.

Evolutionary theory is a useful resource in such an endeavor because it is based on the premise that natural selection has shaped females and males to be effective competitors, but in ways that may differ as a consequence of differences in reproductive strategy. Mammalian males typically invest less in their offspring than females do, hence are less constrained in the number of offspring they can potentially have. They therefore have more to gain, reproductively, by competing for reproductive access to a large number of mates. Mammalian females typically must invest considerable time and energy in parental care, which limits the number of offspring they can have. They can gain more, reproductively, by being selective about their mates, and by competing successfully for the resources needed to rear their offspring to maturity (Daly & Wilson, 1983; Trivers, 1972). Because the variance in reproductive success is greater for males than for females, males have more to gain by intense competition and risk-prone behavior. (Daly & Wilson,

1988, 1983).

Do these arguments from sexual selection theory apply to people as well? Evolutionary psychologists argue that they should, because human desires and emotions have been shaped by natural and sexual selection. A considerable corpus of empirical evidence supports many of these expectations (see Archer 1996, Buss 1994, Cashdan 1996, and Daly and Wilson 1983 and 1988 for reviews) . For example, women are choosier than men about potential sexual partners and typically require more emotional commit ment from a partner before engaging in sex. Like most other female mammals, women prefer to mate with high-status males with abundant resources. Men, like most other male mammals, compete more aggressively with each other to attain high rank and the sexual access that typically accompanies it.

Yet the picture for humans is complicated by the fact that human males invest considerably more in their offspring than is typical for most mammals. This is likely to affect sex differences in both resource and mate competition. Women need to acquire material resources for their offspring, either by acquiring them directly or from investing males. Yet men also need to compete for such resources in order to be attractive as mates. It is not obvious, therefore, which sex should compete more strongly for material resources, although these arguments would suggest that resource competition and mating competition would be associated in men but not in women.

With respect to mate competition, we can expect that men will compete more strongly for sexual access to women and women will compete more strongly for long-term relationships with high-quality men (Buss, 1994; Daly & Wilson, 1983), although the strength of this competition can be expected to vary cross-culturally in response to differences in male quality, access, and patterns of investment (Campbell, 1995; Cashdan, 1996). Finally, women may be the choosier sex, but to the extent that men must invest in order to mate, mating costs make discrimination important for men as well. Men should be especially choosy about mates in societies where they are forbidden legal access to more than one wife. In such a population, therefore, we can expect that women as well as men will compete to be attractive as mates, although the nature of the advertisement should differ in predictable ways, with women emphasizing their youth and fertility and men emphasizing their power and access to resources (Buss, 1989, 1994; Ellis, 1992; Symons, 1995).

In order to evaluate these predictions, methods are needed that will elicit the competitive aims and tactics that people normally engage in. This study, therefore, relies chiefly on competition diaries, wherein women and men describe actual competitive interactions that they engaged in during

the course of the study. The diaries were analyzed to determine whether women and men differ in what they compete over, whom they compete with, the way in which competition is expressed, and the way competition is resolved. In addition, questionnaire data were used to explore the strength of competitive feeling about different things.

Study 1

Methods

Subjects. The first study was conducted among 70 women and 28 men living at the Sill Center, a university residential facility. Ten students live there each term for reduced rent, with the understanding that they will participate as subjects in faculty research. During the period of this study, 70 women and 30 men (2 of whom did not complete the study) lived at the Sill Center.

The initial design called for the same number of women and men, but further replication is now no longer possible as the Central Administration has decided to convert the Sill Center from a research facility to office space. The small number of men is most unfortunate. Because it resulted from external causes rather than any factor intrinsic to the subjects, however, it is unlikely to introduce bias into the study. There was no obvious difference in the willingness of women and men to participate; the choice of women or men as participants in a given term was made by the researchers, in keeping with the needs of a variety of research projects.

The mean age of participants was 21 years (SD 1.96) for women and 22.6 years (SD 2.97) for men. All students were unmarried and most came from middle-class families.

Materials. Data on competition were derived from diaries, which acted as a form of guided recall. Students were given the following written instructions:

> Were there times today when you felt competitive with others, or when you sensed that they were competing with you? If so, please use this form to describe one of those times. Please review the instruction page to see how to fill out the questionnaire.

The instruction page defined competition very broadly, as follows:

> What do we mean by competition? Typically, competition involves trying to improve one's position relative to someone else's, or trying to have something that someone else wants. The categories on the forms should clarify this further. For our purposes, competition is defined very broadly, and need not take place as a discrete event. If you are feeling competitive about something, it counts as competition.

The diary form asked about (1) what the competition was about, (2) whom the competition was with, (3) how the competition was expressed, (4) how the competition was resolved, and (5) how strongly the subject felt about the particular interaction. In order to make responses comparable, a series of options was listed after the first three topics; subjects were told to check appropriate lines, and amplify each with comments. The options within each topic were designed to cover all likely responses, so as to minimize the use of the "other" category. They were derived from earlier unstructured diaries and trial forms.

Basic demographic data were obtained through questionnaire.

Procedure. Subjects were asked to think about the day's events each evening and complete an entry each time they had something to report. They were asked to fill out a total of 10 forms each. I met with them in a group once a week for various research purposes, and provided clarification and encouragement regarding the diaries during many of these meetings. A research assistant lived at the Sill Center and was also available for help and clarification.

Analysis. In Study 1, where each person completed (ideally) 10 diary entries, the unit of analysis was the fraction of times each competitive behavior occurred for each person. For example, each person had a value representing the fraction of entries in which (s)he used verbal aggression, the fraction in which (s)he competed over the attention of a female or male friend, and so on. Women and men were compared on these variables using one-way analyses of variance. Although most complied with directions by completing ten diary entries, a few did not. In the ANOVAs, therefore, the scores were weighted by the number of diary entries per subject. Because some of the variables deviated from normality, all results were also checked using Wilcoxon tests. Since this test does not permit the use of weights, subjects who completed fewer than seven diary entries were dropped from these analyses, for a reduced sample size of 66 (from 70) females and 22 (from 28)

Table 1
Mean Fraction of Study 1 Subjects' Diaries Indicating Competition Against Different Opponents.

	Subjects		
Opponent	Women	Men	$F(1, 96)$
same sex	.46	.57	4.89*
opposite sex	.26	.16	6.91**
mixed sex	.26	.27	0.07

* $p < .05$; ** $p < .01$.

Note. 70 women, 28 men. Means and ANOVA were weighted by number of observations (diary entries) per subject.

males. The results of these analyses were virtually the same as those from the weighted ANOVA, and only the latter results are reported. All reported significance values are two-tailed.

Results

Whom did subjects compete against? Both the women and the men in Study 1 were far more likely to compete against members of their own sex, but this was particularly the case for men. Women's diaries contained, on average, about twice as many interactions with other women as with men. Men's diaries contained three and a half times as many interactions with other men as with women. This difference was statistically significant (see Table 1).

What was the competition about? Women in Study 1 competed most frequently over success in school and male attention (see Table 2). Men in Study 1 competed most frequently about success in school, sports, and getting their way. The data were analyzed with a one-way MANOVA, weighted by number of observations (diary entries) per subject, with sex as the independent variable and the following dependent variables: competition over school, work, another task, sports, looking attractive, attention from the opposite sex, attention from the same sex, popularity, status, object or territory, and getting my way. The analysis showed a small but statistically significant difference between women and men, $F\ (11, 86) = 3.64$, $p = .0003$.

Table 2
Mean Fraction of Study 1 Subjects' Diaries Indicating Competition Over Different Objectives.

	Women	Men	$F(1, 96)$
school	.16	.19	1.18
work	.09	.03	6.76*
other task	.11	.13	0.96
sports	.12	.18	4.27*
looking good	.05	.01	9.64**
attn. opp. sex [a]	.15	.09	4.83*
attn. same sex [a]	.03	.01	1.49
attn. family [a]	.01	.01	0.02
popularity	.04	.01	2.89
status	.04	.05	0.35
object/space	.06	.04	1.28
getting my way	.12	.17	2.72

* $p < .05$; ** $p < .01$.
Note. 70 women, 28 men. Interactions not codable into these categories ("other" in the questionnaire) are excluded from the table. Means and ANOVA were weighted by number of observations (diary entries) per subject.
[a] attention from members of the same/opposite sex excludes family members (all subjects were unmarried).

Areas with significant sex differences were few, and, for the most part, not surprising (see Table 2): men described more interactions about success at sports ($d = .48$), whereas women described more interactions about looking attractive ($d = .75$) the attention of the opposite sex ($d = .51$), and success at work ($d = .61$). When the "opposite sex" category was limited to mates or friends of the opposite sex (as opposed to employers, teachers, etc.), the sex difference, while in the same direction, was not statistically significant.

How was competition expressed? Are the diaries of men more likely than those of women to describe an aggressive interaction? Table 3 shows how competition was expressed. Men were more likely than women to report using physical aggression in their competitive interactions ($d = .59$). There was not a significant sex difference in verbal aggression (defined as "put-

Table 3
Mean Fraction of Study 1 Subjects' Diaries Indicating Competition with Different Tactics.

	Women	Men	$F(1, 96)$
physical aggression	.06	.13	10.48**
verbal aggression	.11	.15	1.71
verbal assertiveness	.23	.23	0
showing off	.09	.13	1.60
doing it better	.26	.28	0.20
taking possession	.04	.07	2.73
nothing overt	.28	.23	2.10

* $p < .05$; ** $p < .01$.

Note. 70 women, 28 men. Numbers sum to more than 1 because a given competitive interaction could involve more than one tactic. Means and ANOVA were weighted by number of observations (diary entries) per subject.

downs, barbed humor, sarcasm, being argumentative, etc."), or in other ways of expressing competition.

Indirect aggression through social manipulation was not included in the diary form, because it was not volunteered by subjects in the open-ended diaries and pretests that led to the development of the form. This is not surprising; as Björkqvist et al. (1992) note, such manipulation is socially undesirable and hence is unlikely to be be admitted or acknowledged through self-report.

Because of the discrepancy in the number of males and females in Study 1, it is likely that areas with a small sex difference may have been missed. However, as noted above, there was no obvious source of bias in the male sample—the small number of men resulted from decisions made by the University administration, not the unwillingness of men to participate in the study. Where women and men do show statistically significant differences, therefore, the results should be a reliable indication of sex differences within the larger student body.

Study 2

Study 2 aimed to (a) replicate the diary findings of Study 1 on a larger sample, (b) explore the effects of age on competition by using a sample with a greater range of ages, and (c) inquire directly of subjects how competitive they felt about a range of issues.

Methods

Subjects. A total of 111 female students and 119 male students participated in Study 2. They were similar to the subjects of Study 1, but had a greater age range. The average age was 24 years (SD 7.80) for women and 25 years (SD 6.61) for men, and 23% of the women and 38% of the men were married.

Materials. Students completed in class a single, slightly-shorter, form of the diary used in Study 1, together with a background questionnaire. The diary form for Study 2 differed in being slightly less open-ended and in not asking subjects whom they were competing with.

In addition, subjects were asked to rate, on a scale of 1 to 5, how competitive they felt over a variety of issues. The issues were similar to the options listed on the diary forms but attempted to isolate things that were difficult to distinguish in the diaries, such as interest in short-term versus long-term relationships. The full list was as follows: (a) winning in athletic competition, (b) getting high grades, (c) popularity with members of the same sex, (d) popularity with members of the opposite sex, (e) being more attractive than others, (f) sexual interest from members of the opposite sex, (g) prestige/status, (h) financial success, (i) being able to attract a desirable long-term mate, and (j) getting your way (getting your opinion, plan, course of action, etc. to prevail).

Procedure. The questionnaire was administered to students in evening as well as day classes, in order to get a wider range of ages. All forms were filled out anonymously at the end of class, and participation was voluntary.

It was not possible to give the in-depth encouragement that was given for the diaries in Study 1, nor were the students able to wait until a salient event occurred. The data from the diaries in Study 2, therefore, are probably of poorer quality. Certainly there were fewer comments on these diary forms, and a larger fraction concerned competition about success in school,

a topic both immediately salient (since the study was done during class) and probably more socially acceptable than many other areas of competition.

Analysis. In Study 2, where each subject completed only one diary entry, diary variables consisted of presence/absence for particular competitive characteristics: the subject did or did not use verbal aggression, compete over mates, etc. These variables were analyzed with techniques appropriate for categorical data. The larger age range of the second study allowed for analyses of age effects on competition. These analyses were performed on women and men separately, and used Wilcoxon tests to determine whether subjects who used verbal aggression, competed over mates, etc. differed significantly in age from those who did not.

All reported significance values are two-tailed.

Results

What was the competition about? In Study 2, a third of women's diaries, and a fourth of men's, described competition about success in school (see Table 4). This was a far larger fraction than in Study 1 (perhaps due, in part, to the fact that forms were filled out in class, not at home). As in Study 1, men were more likely to compete over sports and women over looking attractive. In contrast to the results from Study 1, women were significantly more likely than men to describe an interaction about getting their way.

Taking the two studies together, it seems reasonable to conclude that women and men differ significantly, if not overwhelmingly, in the fraction of their competitive interactions that are over sports (men more) and looking attractive (women more).

How was competition expressed? The results concerning competitive tactics were similar in the two studies. As in Study 1, men were much more likely to report using physical aggression in their competitive interactions (see Table 5). As in Study 1, there was not a significant sex difference in verbal aggression. There were few other differences in how competition was expressed; men were slightly more likely to compete by "taking possession" and by "doing it better," perhaps because more of their competition concerned sports.

Do women and men use the same competitive tactics for the same objectives? It is likely that different competitive weapons will be appro-

Table 4
Fraction of Study 2 Subjects Competing Over Various Objectives.

Objective	Women	Men	p [a]
school	.32	.25	ns
work	.08	.15	ns
other task	.04	.07	ns
sports	.09	.24	.002
looking good	.05	0	.02
attn. opp. sex [b]	.08	.06	ns
attn. same sex [b]	.01	0	ns
popularity	.02	.01	ns
status	.04	.06	ns
object/space	.04	.01	ns
getting my way	.22	.11	.04

Note. Interactions not codable into these categories (listed as "other" in the questionnaire) are not included in the table. For the 11 objectives reported ($N = 208$), overall significance of sex x objective is $p = .002$ by Fisher's exact test, two-tailed.
[a] Fisher's Exact Test used for two-tailed p values (sex x presence/absence of each objective), α set at .05. 100 women, 108 men.
[b] Attention from members of the same/opposite sex includes family as well as non-family members (relationship between competitors was not ascertained in Study 2)

Table 5
Fraction of Study 2 Subjects Competing with Different Tactics.

	Women	Men	p [a]
physical aggression	.07	.26	.0003
verbal aggression	.21	.23	ns
verbal assertiveness	.43	.39	ns
showing off	.12	.11	ns
doing it better	.42	.59	.01
taking possession	.02	.10	.05
nothing overt	.27	.22	ns

Note. Numbers sum to more than 1 because a given competitive interaction could involve more than one tactic (155 tactics mentioned by females, 207 tactics mentioned by males). Overall significance of sex x tactic: χ^2 (6, N = 362) = 15.1, p=.02.
[a] Fisher's Exact Test used for two-tailed p values (sex x presence/absence of each tactic), α set at .05. 101 women, 109 men.

priate for different competitive objectives. It is reasonable to ask, therefore, whether the difference between men and women in how competition was expressed is a result of differences in the object of competition. Specifically, are higher male scores on physical aggression a consequence of their more frequent mention of competition in sports and other arenas that call for such tactics? Or are men just more likely than women to compete aggressively in all arenas of competition?

Sports competition was nearly three times as frequent among men than women, and both women and men were more likely to use physical aggression in competition involving sports than in other types of competition. Some of the sex difference in physical aggression, therefore, is attributable to differences in the domains in which women and men compete. The sports competition that women did report was as likely to involve physical aggression as that reported by men (60% of women's sports competition involved physical aggression, vs. 57% of men's). In non-sports competition, on the other hand, there was a greater disparity: 15% of men's non-sport interactions involved physical aggression, whereas this was true for only 1% of women's (ϕ = .26, p = .0008, N=171, Fisher's Exact Test, two-tailed). In this study, therefore, there is more physical aggression among males in non-sports competition, hence the sex difference is not solely a consequence of

Table 6
How Competition was Resolved (Fraction of Women's vs. Men's Diaries)

How Resolved	Women	Men
Study 1:		
not resolved	.38	.44
in subject's favor	.21	.24
in opponent's favor	.10	.09
by accord/compromise	.12	.10
other	.19	.13
Study 2:		
not resolved	.26	.15
in subject's favor	.36	.45
in opponent's favor	.06	.12
by accord/compromise	.18	.18
other	.15	.11

greater male participation in sports.

How was the competition resolved? Not surprisingly, both women and men were more likely to report that interactions were resolved in their favor rather than in favor of their opponents (see Table 6). Study 1 did not show a sex difference in how competition was resolved. In Study 2, there was a trend for the competitive interactions of female subjects to be more likely to remain unresolved ($p = .06$ for sex x resolved/not resolved, N=213, Fisher's Exact Test, two-tailed.)

What do women and men feel competitive about? Study 2 included a questionnaire that asked subjects how strongly they felt about competition in different areas. Asking about this directly, rather than inferring it from particular interactions, made it possible to isolate objects of competition difficult to distinguish in the diaries. For example, competition for a long-term mate and competition for sexual interest from the opposite sex would both be coded in the diaries as "attention from a member of the opposite sex," but individuals might feel differently about them. Similarly, a competitive interaction over athletics might be motivated by competition for status, and could logically be coded either way in the diaries.

Differences in the scores of women and men were assessed with Wilcoxon

rank-sum tests. Women indicated feeling less competitive about athletic competition (mean rank 90.83 vs. 138.51, $z = -5.61, p = .0001$). They also showed a trend to lower scores for competition about sexual interest from the opposite sex (mean rank 107.09 vs. 122.44, $z = -1.84, p = .07$). Women reported feeling more competitive about looking attractive (mean rank 128.26 vs. 103.60, $z = 2.93, p = .003$). There were no significant differences in any of the other areas, nor in the strength of competition when the scores for the different areas were combined.

In general, the intercorrelations among these items were similar for women and men. The exception lay in the association between competition for financial success and mating competition variables, which were significant for men but not for women. The pattern is similar with Spearman's and Pearson's correlations, but I report the latter here in order to test for a sex difference in these correlations. Among men, competition for financial success was correlated with competition for sexual interest from the opposite sex ($r = .33, p = .0003$), looking attractive ($r = .28, p = .002$), and popularity with the opposite sex ($r = .17, p = .06$). Among women, on the other hand, competition for financial success did not correlate with competition for opposite sex popularity ($r = .00$) and showed only weak associations with competition for sexual interest ($r = .14, p = .13$) and looking attractive ($r = .16, p = .09$). The sex difference between these correlations, using Fisher's transform of r to r', is significant for the correlation of financial success with opposite-sex popularity ($z = 2.81, p = .006$) as well as financial success with looking attractive ($z = 2.36, p = .018$), although the difference in the correlation of financial success with sexual interest from the opposite sex is not statistically significant ($z = 1.29, p = .196$, all p values two-tailed). It seems reasonable to conclude that among men, competition for financial success is related to at least some aspects of mating competition, whereas this is less the case for women.

Age effects on competition: Do women and men differ? The greater age range in Study 2 allowed for analysis of age effects on competition. Women varied in age from 17 to 51, with an average age of 24 years (SD 7.80), while men varied in age from 17 to 55, with an average age of 25 years (SD 6.61). 23% of the women and 38% of the men were married.

Spearman's rank-order correlations were used to assess the relationship between age and strength of competitive feeling. Young men reported feeling more competitive than older men (had higher scores on the five-point scale discussed above) in a variety of areas: getting high grades

($r_s = -.25, p = .006$), looking attractive ($r_s = -.19, p = .04$), sexual interest from the opposite sex ($r_s = -.21, p = .02$), and financial success ($r_s = -.24, p = .01$); $n = 115$ for sexual interest, $n = 116$ for the other areas mentioned. Combining the scores for all areas of competition provides a crude index of overall competitiveness, and correlation of this measure with age shows that young men are significantly more competitive overall than older men ($r_s = -.22, p = .02, n = 113$). In no area were older men more competitive than younger men.

Young women were not significantly more competitive than older women by this measure, although there was a trend in this direction for all areas combined ($r_s = -.15, p = .11, n = 108$). The difference may be due less to sex than to the larger number of married men than married women in the sample. With the analysis limited to married subjects, the correlation between age and competitiveness was the same for females as for males ($r_s = -.23$ and $r_s = -.24$ respectively, both ns). In both sexes, subjects who were married showed a stronger age effect than did those who were unmarried.

Age affected not only how competitive people felt, but how aggressive they were. Wilcoxon tests were used to see whether people who reported aggression in their diaries were younger than those who did not. Men in Study 2 who reported aggression were significantly younger than men who did not, both for physical aggression (mean age rank 41.86 for those using aggression vs. 58.30 for those not using aggression, $z = 2.4, p = .02$) and, even more strongly, for verbal aggression (mean age rank 38.85 vs 58.38, $z = -2.72, p = .007$). There was no indication of any such age effect for women.

Discussion

Are men more competitive than women? The premise of this study was that such a question is more meaningful if different arenas of competition are considered separately, hence the diaries and the questionnaire asked subjects about different arenas of competition. The responses to the Study 2 questionnaire, which measured the strength of competitive feeling, were similar among women and men in all areas except looking attractive (higher scores for women), athletics (higher scores for men), and possibly sexual interest from the opposite sex (trend to higher scores for men). Although previous questionnaire studies have found that males are more competitive overall (Gill, 1986; Gladue & Bailey, 1995; Spence & Helmreich, 1983), no

significant sex differences emerged in this questionnaire when the different areas were averaged.

On the other hand, the Study 1 diaries indicate that men are significantly more likely than women to compete against members of their own sex. Such a finding might be consistent with a situation where (1) there are more men than women with whom to compete, or (2) men compete more frequently than women do, hence a larger fraction of their interactions are with each other, or (3) men are more likely to report on the competitive interactions they have with males, perhaps because such interactions are more salient or acceptable to them than their interactions with females. The first alternative seems unlikely in a large university population. The latter interpretation gains some support from evidence that men report feeling less willing to compete against women than women do to compete against men (Meara & Day, 1993), but the second explanation remains a possibility.

Women and men differ in unsurprising ways in what they compete over and how they do it. Theorists in evolutionary psychology have argued that sex differences in parental investment lead to greater interest by males in maximizing number of matings, while females are more interested in finding and keeping a high-quality long-term mate (Daly & Wilson, 1983; Trivers, 1972). The questionnaire data provides support only for the former, with men reporting more competitiveness over sexual interest from the opposite sex. The same body of theory has led to predictions that women, more than men, will value good financial prospects in a mate, whereas men, more than women, will value a prospective mate's physical attractiveness. This sex difference exists the world over, although to different degrees in different societies (Buss, 1989, 1994). Both the questionnaire and the competition diaries indicate that these sex differences in mate choice shape competition among women: a larger fraction of women's diaries, in both studies, concerned competition about looking attractive, and the questionnaire data also indicated that women felt more competitive about this.

The same line of reasoning might lead to the expectation that men should compete more about financial success than women do, since this would make them more attractive to women. The data, however, do not support this: there was no sex difference in the strength of competitive feeling about attaining financial success, nor were there consistent differences in the fraction of diary entries concerned with things that might be thought to lead to financial success, such as success at school; in fact, in Study 1 women had a larger fraction of diary entries about success at work than men did. It seems likely that the absence of a sex difference in this area would typify societies where women must depend on their own efforts to provide needed resources

to their children, while a sex difference favoring males would appear in societies where women depend on men for their financial resources.

The link between financial success and mating success among men is suggested by another aspect of the data, however. Among men, competition for financial success was correlated with competition for popularity with members of the opposite sex, sexual interest from the opposite sex, and looking attractive; among women, however, these associations were weak to nonexistent. These results are consistent with the argument that financial success for men is a route to mating success, whereas this is less the case for women.

Men reported more physical aggression in their competition diaries than women did, a result that appears to be due in part, but not entirely, to their having more diary entries about sports competition. The sex difference in sports competition, furthermore, may itself be due to men's greater inclination toward status competition in domains where success is enhanced by physical toughness and aggression. The finding of greater physical aggression among males is consistent with other reports in the literature (Archer, Kilpatrick, & Bramwell, 1995; Björkqvist, 1994; Buss & Perry, 1992; Eagly & Steffen, 1986), although the difference between women and men was larger in this study than in most experimental studies, perhaps because interactions in the diaries were less likely to involve strangers (Eagly & Steffen, 1986) or perhaps because of functional differences in the type of aggression being studied (Archer, 1995). There was not a significant sex difference in the use of verbal aggression in the competition diaries, either in study 1 or study 2, and verbal aggression was a frequent tactic of competition for both women and men.

Wilson and Daly (Wilson & Daly, 1985; Daly & Wilson, 1988) use sex and age differences in homicide to support their argument that men compete more strongly than women do, and that young men compete more strongly than older men. They refer to this as the "young male syndrome." Although the competition diaries tended to describe more "middle class" concerns than those discussed by Daly and Wilson, a similar age effect appears, with younger men more likely than older men to report aggression (both physical and verbal) in their diaries. Younger women were not more aggressive than older women in this study, although there is evidence for this in other data (Campbell, 1995).

The questionnaire from Study 2 indicates that young men also feel more competitive than older men; this age difference exists for a variety of domains, including those unlikely to be marked by aggressive tactics (getting high grades, looking attractive, and financial success). The young male syn-

drome, therefore, may typify a far broader array of competitive domains than just altercations that lead to homicides. A similar pattern may exist in females, although the difference was not statistically significant in this data set.

The ubiquity of the decline in male aggressiveness with age suggests that it is a response to something broader than particular cultural pressures. At a mechanistic level, it is likely to be due, in part, to the decline in testosterone associated with aging. Testosterone appears to facilitate competitive challenges in men, as well as rising in response to a successful outcome (Mazur & Booth, 1997). In women, both estradiol and androgens (including testosterone) may be associated with assertive behavior (Cashdan, 1995), so it is possible that declining hormone levels affect competitive behavior in women also.

Adaptive (evolutionary) explanations for the young male syndrome have fared better at explaining the sex difference than the age difference. Because men vary more in their reproductive success than women do, men face a higher potential evolutionary payoff to risk-prone competition. The widely-replicated finding that men are more aggressive and risk-prone than women is therefore consistent with expectations from evolutionary theory. It is less clear why young men should be more competitive and more aggressive than older men. Greater male than female aggressiveness is widespread (although not universal) in other species, but greater aggressiveness and combativeness among young males is not. Wilson and Daly (1985, p. 70) have noted that

> It is evident that the principal protagonists in homicide are young adults, but we are not satisfied that the sociobiological theories reviewed earlier explain why. Several authors have suggested that a young adult peak in risk-prone competitiveness is a prediction from sexual selection theory. We know of no formal derivation of this 'prediction,' which seems to be more of a generalization from comparative knowledge. One might instead predict that where two men find themselves similarly disenfranchised—their circumstances similarly predictive of failure—that it is the *older* (emphasis in original), not the younger, who has less to lose and should therefore be readier to employ dangerous competitive tactics. Development of theory about competitive strategies in relation to life histories seems called for.

A few additional arguments have been offered since this was written, but the question remains unresolved. One suggestion is that young people discount the future more than older people do; that is, they are less inclined

than older people to defer an immediate reward in order to reap a larger one in the future. Much evidence indicates that young adults are, indeed, more inclined to "live as though there were no tomorrow," and Rogers (1994) has developed a formal model showing that this age pattern should be favored by natural selection. This argument might lie behind the higher homicide rates among young people, but not greater competitiveness in areas where returns are delayed (such as competition over success in school and financial success). Since the age effect appeared in these areas of competition as well, this is unlikely to be the sole explanation of these results.

Daly and Wilson (1996) have suggested that selection pressure for competitive success or failure is strongest in early adulthood, and should be particularly strong at this age in humans because the acquisition of a reputation for toughness may enhance a person's success long into the future. This argument requires further development (a reputation for toughness should last only as long as it is a useful predictor of an individual's actual competitive ability), but the issue of reputation is intriguing and may indicate why humans differ from many other species in this regard.

It is also possible that the change with age is more a shift in the nature (object and tactics) of competition than a change in intensity. Among women, competition for desirable mates should be favored in young adulthood, when women are more likely to benefit from (and be successful at) finding a high-quality partner (Campbell, 1995). At later ages, particularly among married women, the successful provisioning of children and grandchildren may become more important. We may well see competition among older women, therefore, but it might involve issues such as favorable treatment and inheritance for children rather than competition for mates. A common pattern cross-culturally is for women to become more outspoken after the childbearing years are over, in response to the lifting of constraints on their sexuality and associated mobility (Kerns & Brown, 1992). The evidence of a decline with age in homicide rates, therefore, may not indicate a general decline in competitiveness. Clearly, further research will be needed, both to unravel the explanation for these age effects in competition and aggression and to ascertain whether the young male syndrome has a female equivalent.

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