

The Evolution of Human Intrasexual Competition: Tactics of Mate Attraction

David M. Buss
University of Michigan

Darwin's theory of sexual selection suggests that individuals compete with members of their own sex for reproductively relevant resources held by members of the opposite sex. Four empirical studies were conducted to identify tactics of intrasexual mate competition and to test four evolution-based hypotheses. A preliminary study yielded a taxonomy of tactics. Study 1 used close-friend observers to report performance frequencies of 23 tactics to test the hypotheses. Study 2 replicated Study 1's results by using a different data source and subject population. Study 3 provided an independent test of the hypotheses in assessing the perceived effectiveness of each tactic for male and female actors. Although the basic hypotheses were supported across all three studies, there were several predictive failures and unanticipated findings. Discussion centers on the heuristic as well as predictive role of evolutionary theory, and on implications for other arenas of intrasexual competition.

When individuals live in groups, they compete with each other for valuable resources. Competition among members of the same species for reproductively relevant resources is the cornerstone of Darwin's (1859) theory of natural selection (West-Eberhard, 1979). Whenever the interests of two individuals do not coincide, competition can ensue (Alexander, 1979). Despite its centrality to evolutionary theory, little systematic empirical work has been conducted on the ways in which humans compete for reproductively relevant resources.

Key reproductive resources are often those held by members of the opposite sex. Because these resources are possessed by individuals in varying degrees, competition to engage those desirable individuals holding the most valuable resources will be keen. Intrasexual competition is expected to be especially fierce when possession of these resources varies greatly among members of the opposite sex, because reproductive differences often correlate with resource differences (e.g., Turke & Betzig, 1985; but see Dawkins, 1986; Vining, 1986). Darwin's (1871) theory of sexual selection provides a conceptual foundation for an analysis of several key aspects of this competitive struggle—those involving competition among members of one sex for mating opportunities with desirable members of the opposite sex.

Sexual Selection

Darwin (1859, 1871) became intrigued by characteristics that impair survival but nonetheless promote reproductive success. The elaborate plumage, heavy horns, and conspicuous dis-

plays of many species seem costly in the currency of survival. However, these displays increase success in mating contexts and so evolve despite their costs. The concept of sexual selection describes the evolution of characteristics that enable individuals to gain advantage over same-sex competitors in obtaining successful matings.

Darwin divided sexual selection into two distinct but conceptually related processes: *intrasexual* selection and *intersexual* (epigamic) selection. Intrasexual selection involves competition between members of the same sex for mating access to members of the opposite sex. Characteristics so selected could be those that enable winning in direct combat, such as size and strength, or noncombat traits, such as producing successful mate-attracting signals, acquiring resources desired by the opposite sex, or interfering with competitors' access to the opposite sex.

Intersexual selection, in contrast, involves *preferential choice* exerted by members of one sex for members of the opposite sex possessing certain qualities. Because Darwin observed that females of many species were more discriminating and choosy in their matings than were males, he termed intersexual selection "female choice." Conceptually, however, male choice is possible, especially in mating systems that tend toward monogamy.

Intersexual and intrasexual selection are conceptually related in that mate choice preferences exerted by one sex should influence the resources over which intrasexual competition occurs in the other sex. Under conditions of female choice, males are predicted to compete most strongly to display those characteristics and possess those resources that females value in their selections. Although rarely studied (Smuts, 1987), male choice should influence female-female competition in an analogous way. Despite this intriguing connection, no empirical evidence exists in humans that documents a close connection between intersexual selection and intrasexual competition (Buss, 1987). Thus, one goal of these studies was to test the following hypothesis: Patterns of human intrasexual competition can be predicted from knowledge of mate selection criteria.

This research was partly supported by NIMH Grant MH-41593-01.

The author thanks Richard D. Alexander, Laura Betzig, Michael Cunningham, Doug Kenrick, Barbara Smuts, Donald Symons, and Paul Turke for helpful suggestions on earlier versions of this article.

Correspondence concerning this article should be addressed to David M. Buss, Department of Psychology, University of Michigan, 580 Union Drive, Ann Arbor, Michigan 48109-1346.

The concept of intrasexual competition conjures up images of direct combat, with the winner triumphantly taking the mate and the loser ambling off dejected, wounded, and empty-handed. Indeed, direct male-male combat, including skill at avoiding damaging interactions with same-sex conspecifics, is part of what Darwin meant by the intrasexual component of sexual selection. Many forms of intrasexual competition, however, do not have this dramatic head-to-head dimension. The essence of competition is not direct confrontation. It consists instead of behaviors designed to acquire limited or better resources at the expense of others who are attempting to acquire those resources. Competitors need not ever meet to engage in intrasexual competition. The distinction between combat and noncombat competition has been succinctly summarized as "contest" versus "scramble" competition (Daly & Wilson, 1983, p. 105).

There are four components of intrasexual competition that are probably more prevalent among humans than direct confrontation: (a) skill at locating mates (e.g., visiting habitats frequented by members of the opposite sex); (b) producing effective mate-attracting behaviors (e.g., signaling interest or availability); (c) acquiring resources that are highly desired by members of the opposite sex (e.g., territory); and (d) altering morphology or appearance (e.g., dieting) (cf. Thornhill & Alcock, 1983). These components of intrasexual mate competition are central to these studies.

Resources Involved in Intrasexual Competition

Trivers (1972) provided an important elaboration of Darwin's theory of sexual selection from which specific hypotheses can be derived. He proposed that one driving force behind sexual selection is the relative parental investment of the sexes in their offspring. According to Trivers's theory, males (typically investing less than females) should adopt a reproductive strategy that maximizes copulatory opportunities, whereas females (typically investing more than males) should adopt a strategy that imposes maximum choice, holding back until the best male (variously defined) is identified. Poor mating choices typically are more costly to females than to males in the currency of reproductive success.

In humans, although female parental investment is often greater than male parental investment, the latter is far from trivial. Where the potential for male parental investment exists, women may choose men for their ability and willingness to invest. Food, shelter, protection, opportunities for learning, and social status are examples of parental provisions (Trivers, 1972, p. 142). The ability and willingness of a man to provide social, psychological, and material resources are hypothesized to compose a crucial part of female mate selection criteria. Therefore, it may be predicted that competition among men to attract women will center on acquiring and displaying such resources.

In contrast to women, whose primary reproductive constraint is securing social and material resources for offspring, the primary reproductive constraint for men consists of gaining access to reproductively valuable women. This suggests that men will value those characteristics in women that provide powerful cues to reproductive value. Mating with less fertile or less reproductively valuable women can be costly in lost oppor-

tunities, especially in mating systems that require prolonged courtship and discourage simultaneous multiple matings. Men, therefore, also are predicted to exert choice. Hence, women should compete with each other to display those characteristics that men use to select mates—those linked with female reproductive value.

Female reproductive value is indicated strongly by characteristics of youth and health, and these are most accurately evaluated from physical appearance and attractiveness (Buss, 1987; Symons, 1979, in press). Men more than women should place more value on youth, physical appearance, and physical attractiveness in potential mates.

Strong empirical support exists for this hypothesis in studies using diverse methodologies (Buss & Barnes, 1986; Buss, 1987; Hill, 1945; Hudson & Henze, 1969; McGinnis, 1958; Symons, in press). Men and women consistently differ in expressed mate selection criteria in the predicted ways, and these results transcend particular populations and generations. In addition, longitudinal data suggest that physically attractive women tend to marry men of high occupational status (Elder, 1969; Taylor & Glenn, 1976; Udry & Eckland, 1984). These results suggest that expressed mate selection criteria operate in actual mating decisions. Four general hypotheses about intrasexual mate competition may be derived from these results and conceptual analysis.

Hypothesis 1: Patterns of human intrasexual competition will be influenced by mate selection preferences imposed by members of the opposite sex; sex differences in mate selection preferences will produce corresponding sex differences in tactics of intrasexual mate competition.

Hypothesis 2: Men more than women will show greater intrasexual competition around direct acquisition and display of material resources. Men more than women will give gifts to potential mates as signals of resource possession in intersexual display; will display direct possession of material resources (e.g., cars, stereos) in intersexual display; and will display characteristics that lead to likely acquisition of resources (e.g., ambition, industriousness, degree attainment).

Hypothesis 3: Women more than men will show greater intrasexual competition for displaying cues that correlate with reproductive value or fertility. Women more than men will compete to enhance their physical attractiveness, appear healthy, appear youthful, and appear coy and hard to get (hypothesized correlates of reproductive value). Playing hard to get is a hypothesized correlate of reproductive value. Actual difficulty of male access is correlated with female reproductive value. Women with greater reproductive value are more desirable and hence can be more choosy and discriminating. Therefore, women will use this cue to attempt to appear highly desirable. Playing hard to get may also serve other functions, such as testing a man's willingness and ability to invest resources or serving as a cue to the man of her fidelity.

Hypothesis 4: Performance frequencies for tactics of intrasexual mate competition will be calibrated to their relative effectiveness in attracting mates. Tactics that are highly successful at attracting mates will have been selected through evolutionary history, individual learning histories, or both, and hence will be performed with greater frequency than will tactics that are less effective at attracting mates.

Preliminary Study: Acts and Tactics of Intrasexual Mate Competition

The goal of the preliminary study was to identify empirically the specific acts used by men and women in intrasexual mate

competition. An act nomination procedure was adapted from the procedures used by Buss and Craik (1983) for identifying naturally occurring acts. I anticipated that this procedure, by identifying a wide range of topographically diverse acts, would provide a foundation for a preliminary taxonomy of tactics.

Method

Subjects. Participants in this study were 113 college students, 57 women and 56 men, enrolled at a large state university. Participation in this study partially fulfilled an experimental requirement for a psychology course.

Act nominations. Each subject received a sheet of paper asking for age and sex and containing the following instructional set:

In this study, we are interested in the specific acts or tactics that people use to make themselves more attractive to members of the opposite sex. Please think of three *males* [females] you know well (this could include yourself). Now write down five things these males do to make themselves more attractive to members of the opposite sex. This could include: 1) actions to make themselves more attractive *relative to other males* [females]; 2) actions to impress members of the opposite sex; and 3) things to increase their overall desirability or attractiveness to members of the opposite sex.

Five lines were provided for subjects to record their nominations. Following this recording, the instructional set was repeated, with sex of the actor altered, and an additional five lines were provided to record nominations.

Results

The primary goal of this study was to identify a large number of distinct acts that men and women use in mate competition to attract members of the opposite sex. To this end, act duplications were eliminated. All distinct acts were retained for further studies. No additional acts were added. Next, a preliminary set of 23 superordinate *tactics* was derived by the author. These included display resources, act provocative, wear makeup, act coy, increase exposure, and so on.

Acts were typed onto 101 index cards (3 × 5 in). To obtain consensus on the assignment of acts to tactics, these decks were sorted by four judges into the 23 provisional tactics. If an act was judged to not belong to any of the tactics, judges were instructed to sort the act into a miscellaneous category and to suggest a new tactic for that act. Only acts that were consensually sorted by 75% or more of the judges were included in subsequent analyses of tactics. One tactic (feign desirability) did not receive the required consensus and was dropped. One tactic (show off) was nominated by all judges under miscellaneous, and so was added. In all, 75% of the acts received consensual placement. Of these, 72% received the consensus of 100% of the judges, whereas 28% received consensus from 75% of the judges.

One of the strengths of act frequency methodology is that novel tactics are discovered that are not anticipated by particular conceptual accounts. Eleven such tactics emerged for which no sex differences were predicted. These include increasing exposure to potential mates, displaying athleticism, showing off, displaying humor, niceness, or sophistication, touching, having sex, and dissembling in various ways (e.g., manipulating conversations, flattery, and feigning interest in another's interest). The appendix shows sample acts from these 23 tactics.

Study 1: Assessments of Performance Frequency Among Undergraduates

The primary purpose of Study 1 was to test the hypotheses that men and women differ in the predicted ways in their relative performance of intrasexual mate competition tactics. Translating the central hypothesis into specific predictions about tactics is straightforward in some cases and requires untested assumptions in others. The two tactics that bear directly on resources, *display resources* and *brag about resources*, provide direct tests of Hypothesis 2. Other tactics, however, may also imply the possession of resources. For example, *display strength*, *display sophistication*, and even *display humor* may indeed be correlated with resource acquisition, but no data yet exist on these relations. Thus, no specific predictions were made for these tactics.

Tactics for which women were predicted to display greater performance fall into three groups. The first group involves altering physical appearance to appear attractive and healthy—two known correlates of reproductive value (Buss, 1987). Thus, *wear makeup*, *keep clean and groomed*, *alter appearance—general*, *wear stylish clothes*, *wear jewelry*, and *keep hair groomed* were predicted to show greater female than male performance frequencies.

The second set of predictions involves signaling the availability of female reproductive value. Thus, flirting, acting provocative, and wearing sexy clothes were hypothesized to be tactics that women could effectively use to signal their reproductive availability. In contrast, *act promiscuous* was not hypothesized to be performed more by women because this tactic implies indiscriminant access to reproductive value, as well as being a signal of infidelity. According to Trivers's (1972) theory of parental investment and sexual selection, women generally should be more rather than less discriminating about who they mate with.

The final prediction centers around the act coy tactic. This tactic was predicted to be more effective for women because it signals high desirability and reproductive value, serves as a signal of dispositional fidelity, and functions as a test of a mate's willingness and ability to invest resources. Note that some of the acts appear to be directed at members of the opposite sex (e.g., acting coy, flirting), whereas others appear to be directed at members of the same sex or are ambiguous in the sex to which the act is displayed (e.g., show strength). As described earlier, both intersexual displays and intrasexual maneuvers are properly regarded as intrasexual competition. Indeed, these acts suggest that, as with species other than humans, sending out strong signals to members of the opposite sex without necessarily having contact with members of the same sex is a central part of intrasexual competition (e.g., Thornhill & Alcock, 1983).

Method

Subjects. One hundred and eleven subjects, 54 men and 54 women, participated in Study 1. None had participated in the preliminary study. Subjects were first given a brief questionnaire on which they indicated whether or not they had a close friend of the same sex. Three subjects indicated that they did not and so were given an alternative procedure and not used in this study.

Observer Act Report. The remaining subjects (108) were given an Observer Act Report that requested the following information about themselves and their close friend: their age, their class or year in school, friend's initials, friend's age, friend's sex, friend's year in school, length of friendship, and closeness of friendship. These detailed questions about the friend were asked for substantive reasons, as well as to establish a framework within which subjects would report on the acts performed by their specific friend and not on men or women in general.

Following these questions, subjects read an instructional set and then completed third-person act reports about their friend's conduct within the past 3 months. The following instructional set was used:

On the following pages are listed a series of acts or behaviors. In this study, we are interested in how often, if at all, your *closest current friend of the same sex* has performed each act within the *past three months*. Please circle the word that represents your most accurate estimate of how often your friend has performed the act in the past three months. If he [she] has not performed the act at all to your knowledge in the past three months, circle "never;" circle "rarely," "sometimes," or "often" to represent your best estimate of the frequency with which he [she] has performed each act within the past three months.

Following this instructional set was a list of 101 acts derived from the preliminary study. Following each act were the markers *never*, *rarely*, *sometimes*, and *often*, which subjects were instructed to circle to best correspond to the observed frequency of performance. Two versions of the act report were constructed: one with a male actor (e.g., he told her that he expected to earn a lot of money) and one with a female actor (e.g., she told him that she expected to earn a lot of money). Only one item differed substantively for the male and female versions of the act report. The nominated female act *She padded her bra* was replaced in the male version with the nominated male act *He padded his shorts*.

Results

Composites were constructed by summing the acts within each tactic. A *t* test was performed on each of the 23 tactics. Table 1 shows for men and women the means and standard deviations (corrected for number of acts in each composite) of the 23 tactics, along with the *t*-test values and significance levels. The first set of statistics addresses the hypothesized tactics that men were predicted to use with greater frequency than women. The central hypothesis that men more than women display resources in the context of attracting potential mates is robustly confirmed. Also supported is the hypothesized greater male than female performance of the tactic of boasting about resources.

The second set of analyses show the tactics that women were hypothesized to perform more frequently than men. The hypotheses based on altering appearance, wearing makeup, wearing stylish clothes, and keeping clean and well-groomed are strongly supported by these data. The hypotheses of greater female use of sexy clothing, provocative behavior, and coyness, however, were not supported by these data. Women in this sample do not appear to use these tactics with any greater frequency than do men.

The bottom third of Table 1 shows the analyses for tactics for which no sex differences were predicted. Five reached statistical significance. Women more than men appear to use the *act nice* tactic. Men more than women appear to act promiscuous, display strength, display athleticism, and show off.

To examine the sex differences in greater detail, *t* tests were

performed on each of the 101 acts. Of these analyses, 47 sex differences reached statistical significance, where approximately 5 would be expected by chance alone. Tables 2 and 3 show the results of these analyses.

Table 2 shows a detailed portrait of the specific acts that men in this sample perform with greater frequency than women. Particularly strong are the differences on acts such as boasting about one's accomplishments, mentioning future high earning potential, and display of expensive possessions such as cars or stereos. Also strong are the sex differences surrounding flexing muscles and boasting about athletic abilities. Interestingly, acting passive with a member of the opposite sex appears to be more frequent for men than for women in this sample.

Table 3 shows a detailed portrait of the acts that women in this sample performed with greater frequency than men. Especially interesting are acts such as playing hard to get, enhancing appearance through makeup, jewelry, or obtaining a suntan, and displaying sympathy for a man's troubles.

Discussion

This study confirms the hypothesis that men more frequently use tactics of intrasexual mate competition involving resource possession and display. Similarly, the hypothesis of greater female alteration of appearance is supported. Both of these correspond to the sex differences in expressed mate selection criteria: men, more than women, prefer a mate who is physically attractive or good-looking; women, more than men, prefer a mate who is a good financial prospect or whose earning power appears to be high (Buss, 1987). Thus, the hypothesis that sex differences in mate selection criteria influence sex differences in intrasexual mate competition tactics receives support in these data.

Several hypothesized sex differences, however, were not supported by these data. Specifically, women generally did not show a greater frequency of wearing sexy clothes, acting provocative, or acting coy, although they did play hard to get with significantly greater frequency. The possible reasons for this lack of support will be examined following the results from Study 3.

Despite major sex differences in reported performance frequency, men and women are similar in some of the most frequently performed tactics, such as displaying a good sense of humor. Indeed, the correlation between male and female performance means across all 101 acts is .63, suggesting considerable sexual similarity.

Study 2: Retrospective Performance Assessments in Married Couples

Goals of Study 2

The major goal of Study 2 was to replicate the results from Study 1 using a more representative sample, a different data source, and a clarified instructional set. Study 2 requested reports on performance frequency of those acts performed with the specific goal of enhancing attractiveness to the opposite sex.

Method

Subjects. Subjects were 214 individuals composing 107 newlywed couples. As part of a larger study, all couples in a large county married

Table 1
Sex Differences in Use of Tactics of Attraction: Undergraduate Sample ($N = 104$)

Tactics	Men		Women		<i>t</i> test	Significance
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Men predicted to be higher						
Display resources	0.80	.65	0.37	.44	3.85	.0001
Brag about resources	1.03	.77	0.59	.51	3.38	.001
Women predicted to be higher						
Wear sexy clothes	0.67	.59	0.71	.58	-0.32	<i>ns</i>
Act provocative	0.81	.75	0.88	.76	-0.46	<i>ns</i>
Flirt	1.89	.70	1.67	.68	1.57	<i>ns</i>
Wear makeup	0.07	.26	2.21	.73	-19.85	.0001
Keep clean & groomed	2.51	.40	2.71	.35	-2.73	.007
Alter appearance—general	0.55	.39	1.57	.46	-12.02	.0001
Wear stylish clothes	1.78	.90	2.48	.54	-4.72	.0001
Act coy	1.03	.63	1.11	.65	-0.57	<i>ns</i>
Wear jewelry	0.74	.71	2.70	.55	-15.61	.0001
Keep hair groomed	2.42	.45	2.37	.39	0.61	<i>ns</i>
No predicted sex differences						
Increase exposure	1.38	.54	1.24	.56	1.27	<i>ns</i>
Act nice	1.29	.44	1.53	.49	-2.68	.009
Display humor	2.40	.54	2.24	.65	1.36	<i>ns</i>
Act promiscuous	0.64	.87	0.27	.62	2.44	.016
Act submissive	1.19	.53	1.13	.61	0.52	<i>ns</i>
Dissemble	1.72	.77	1.45	.81	1.72	<i>ns</i>
Touch	1.73	.82	1.78	.91	-0.29	<i>ns</i>
Display sophistication	1.55	.73	1.33	.69	1.58	<i>ns</i>
Display strength	1.05	.64	0.61	.60	3.59	.001
Display athleticism	1.71	.83	1.27	.87	2.62	.01
Show off	1.21	.69	0.72	.61	3.78	.0001

Note. Means and standard deviations reflect the sum divided by the number of acts composing each tactic so that relative frequencies of performing each tactic can be evaluated.

within a 1-year time frame were invited to participate in this study. Individuals completed a battery of instruments at home in their spare time, prior to a 3-hr laboratory testing session in which they were interviewed, photographed, and tape recorded, and completed a second battery of instruments that requested a report on their spouse's behavior. Details of this sample are reported elsewhere (Buss, 1988).

Self-reported tactics of mate attraction. In contrast to Study 1, in which observer reports were used, Study 2 requested self-reported tactics of mate attraction. Results consistent across the two studies, therefore, can be regarded as robust in the sense of transcending data sources and samples. The following instructional set was used:

In this study we are interested in the things that you did *when you first met* your current spouse and *while you were dating* him or her. Specifically, we are interested in the things you did *to make yourself more attractive to him or her*. On the rating scale to the right of each act listed below, please circle the word that best describes the frequency with which you performed each act when you first met your spouse and while you were dating.

Following this instructional set were listed the 101 acts used in Study 1 in self-report form (e.g., I bought him dinner at a nice restaurant).

Results

Composites were constructed in the same manner as in Study 1. Table 4 shows the means, standard deviations, *t* tests, and

significance levels for sex differences in tactics of mate attraction. The predictions regarding greater male display of material resources clearly replicate the results found in Study 1. The predictions of greater female use of the tactics of wearing makeup, keeping clean and groomed, altering appearance generally, and wearing jewelry replicate the sex differences found in Study 1. Additionally, women in this newlywed sample reported greater performance frequencies of wearing sexy clothes and acting coy. These latter results were predicted by the hypotheses, but were not found in the undergraduate sample.

With respect to the set of tactics for which no predictions were made, results from Study 2 replicated those from Study 1 in showing greater male than female frequencies for the tactics of displaying strength, displaying athleticism, and showing off. In contrast, the sex differences found in Study 1 (showing greater female than male use of acting nice and greater male than female use of acting promiscuous) were not replicated in Study 2.

Discussion

Study 2 provides a strong replication of Study 1 using a differently composed sample (married couples rather than undergraduates), a different data source (self-report rather than

Table 2
Sex Differences in Act Performance: Men More Than Women

Act	<i>t</i> test	Men		Women	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
He lifted weights.	3.12**	1.57	1.02	0.95	1.08
He gave encouraging glances to girls.	2.23*	2.04	0.88	1.65	0.91
He bought a woman dinner at a nice restaurant.	3.49***	1.31	0.95	0.69	0.92
He had sex on the first date.	2.11*	0.69	0.94	0.35	0.75
He went to parties to meet girls.	2.08*	2.17	0.89	1.80	0.95
He looked at a woman repeatedly.	2.63**	2.01	0.74	1.82	0.80
He talked about how good he was at sports.	3.13**	1.22	1.00	0.65	0.89
He drove an expensive car.	2.35*	0.83	0.95	0.44	0.81
He pretended he was easy—he teased her.	2.87**	1.08	1.02	0.56	0.83
He flashed a lot of money to impress her.	2.33*	0.48	0.75	0.20	0.49
He showed his ability to drink a lot.	2.56*	1.39	1.09	0.89	0.94
He acted passive with a girl.	2.36*	1.51	0.91	1.09	0.93
He got a high-paying job.	2.16*	0.63	0.92	0.30	0.66
He flexed his muscles.	4.14***	1.04	0.80	0.44	0.71
He tried to become friends with people who were already popular.	2.39*	1.48	0.89	1.07	0.90
He mentioned that he had a lot of status and prestige among his work colleagues.	3.19**	0.82	0.91	0.35	0.58
He bragged about his accomplishments.	3.73***	1.38	0.99	0.76	0.69
He told her things she wanted to hear.	2.55*	1.72	0.89	1.29	0.85
He showed off his driving skills.	2.68**	1.28	1.14	0.75	0.93
He bought an expensive stereo.	3.02**	0.67	0.99	0.20	0.56
He slept around with a lot of girls.	2.68**	0.65	0.96	0.24	0.61
He acted like he was interested in sports.	2.64**	2.24	0.91	1.75	1.04
He strutted in front of the group.	3.38***	0.96	0.89	0.45	0.66
He mentioned that he expected to earn a lot of money.	4.47***	1.59	1.17	0.69	0.92
He talked openly about having sex.	2.26*	1.49	1.01	1.04	1.07

* $p < .05$. ** $p < .01$. *** $p < .001$.

observer report), and a different instructional set (goal-directed tactics rather than goal-unspecific tactics). Both predictions regarding greater male than female display of resources are confirmed. Eight of the specific hypotheses regarding greater female than male display of tactics signaling reproductive value, availability of that value, and coyness with respect to indiscriminant use of that value are also confirmed. These replicable results provide confidence that obtained sex differences in tactics of mate attraction are not limited to undergraduates, particular data sources, or particular instructional sets.

Study 3: Assessments of Tactic Effectiveness

Goals of Study 3

Study 3 had three major goals. The first was to provide an independent test of the hypothesized sex differences in tactics of intrasexual mate competition. This represents an independent conceptual replication of Studies 1 and 2 using a different methodology and a different subject sample. The second goal was to identify which tactics and acts are perceived to be more and less effective in successfully out-competing members of the same sex in attracting members of the opposite sex. The third goal was to test the hypothesis that the frequency with which the acts and tactics are performed will be positively correlated with their judged effectiveness in successfully attracting members of the opposite sex. More specifically, I predicted that male performance frequency would be correlated positively with male act

effectiveness and female performance frequency would be correlated positively with female act effectiveness. Furthermore, I predicted that these same-sex correlations between frequency of performance and perceived act effectiveness would be higher than analogous cross-sex correlations (e.g., between male act performance and judgments of the effectiveness of those acts when performed by a woman).

Method

Subjects. Fifty-five subjects, 29 men and 27 women, participated in Study 3. Subjects were undergraduate students drawn randomly from a subject pool who participated in the studies as part of a class requirement. Subjects were tested in groups ranging from 6 to 10 people.

Design. The design of Study 3 was a 2×2 factorial in which the first factor was sex of subject (male, female) and the second was sex of actor (male, female).

Procedure. Subjects received the following written instructions:

Below are listed acts that someone might perform to make herself (himself) more attractive to members of the opposite sex, relative to other females (males). In this study, we are interested in *how effective* you think each act is at achieving this goal. Please read each act carefully, and think about its *consequences*. Then rate each act on how likely the act is to be effective in successfully attracting a member of the opposite sex.

Use this 7-point scale: a "7" means that you feel the act will be *very likely* to be effective in attracting members of the opposite sex. A "1" means that you feel the act is *not very likely* to be effective in attracting members of the opposite sex. A "4" means that you

Table 3
Sex Differences in Act Performance: Women More Than Men

Act	<i>t</i> test	Men		Women	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
She was sympathetic to his troubles.	2.81**	1.81	0.81	2.27	0.89
She wore facial makeup.	22.35***	0.11	0.37	2.55	0.72
She went on a diet to improve her figure.	5.05***	0.85	1.00	1.87	1.11
She wore stylish, fashionable clothes.	2.72**	1.89	1.08	2.36	0.70
She played hard to get.	2.48*	0.62	0.79	1.00	0.79
She learned how to apply cosmetics.	8.76***	0.15	0.56	1.65	1.14
She wore a necklace.	6.95***	1.39	1.25	2.71	0.63
She smiled a lot at men.	2.00*	2.11	0.79	2.42	0.81
She kept herself well-groomed.	2.82**	2.65	0.48	2.87	0.34
She got a new, interesting hairstyle.	2.62**	0.74	0.92	1.24	1.05
She used makeup that accentuated her looks.	16.59***	0.19	0.62	2.44	0.79
She shaved her legs.	28.47***	0.09	0.45	2.69	0.51
She showed good manners.	2.74**	2.33	0.73	2.69	0.64
She spent more than 1 hour making her appearance pleasant.	4.00***	0.61	0.76	1.30	1.00
She wore an earring or earrings.	18.54***	0.17	0.64	2.71	0.79
She groomed her hair carefully.	2.57*	2.38	0.71	2.69	0.54
She made him some article of clothing (e.g., scarf).	3.25**	0.00	0.00	0.29	0.66
She laid out in the sun to get a tan.	3.09**	1.25	0.98	1.87	1.12
She wore attractive outfits.	6.23***	1.72	0.89	2.58	0.50
She wore perfume or cologne.	5.04***	1.57	1.03	2.47	0.84
She giggled when guys were around.	3.80***	0.89	0.95	1.60	0.99
She had her hair styled and blow-dried.	3.39***	1.19	1.09	1.89	1.05

* $p < .05$. ** $p < .01$. *** $p < .001$.

feel the act is *moderately likely* to be effective in attracting members of the opposite sex. Use intermediate numbers for intermediate likelihoods of effectiveness in attracting members of the opposite sex.

Following these instructions was a visual display of the rating scale and the 101 acts to be assessed on effectiveness. Half of the male subjects and half of the female subjects received the male-actor (He . . .) version; the other half of each sex received the female-actor (She . . .) version.

Results

Reliabilities of act effectiveness judgments. Alpha reliability coefficients were computed for each of the four cells in the 2×2 matrix. These reliability coefficients are .93 and .91 for the male judges' ratings of male and female actors, respectively. The corresponding reliability coefficients for female judges are .91 and .92. These results suggest that high composite reliability exists for which acts are more and less effective in attracting members of the opposite sex.

Most effective male and female acts. Tables 5 and 6 show the 20 most effective acts for male actors and female actors, respectively. Displaying humor, good manners, sympathy, and good grooming top the list for both male and female actors. Interestingly, *kind* and *understanding* typically top the list of mate selection preferences (Buss, 1985; Buss & Barnes, 1986); this appears to be reflected in the effectiveness of acts such as showing sympathy, good manners, and helpfulness. Similarly, acts involving attractive appearance and stylish dress appear in the top 20 for both sexes, again reflecting the relatively high value placed on appearance in mate selection preferences. The overlap of acts in the top 20 between male and female actors is ex-

ceptionally high: 15 of the 20 acts overlap the two sets. Across means for sex of actor, the correlation for judged effectiveness is .71, suggesting moderately strong similarity between men and women in which acts are considered more and less effective.

Analysis of variance. Analyses of variance (2×2) were conducted on each of the 23 tactics and 101 acts to identify main effects due to sex of actor and sex of rater, and to identify any significant interactions between these two factors. No interactions were predicted in advance. Of the 23 interactions for the tactics, only 1 reached statistical significance. Similarly, of the 101 interactions analyzed at the act level, only 5 reached statistical significance. These are approximately what could be expected on the basis of chance alone.

Similarly, no specific predictions were made regarding sex of rater. Of the 23 tactics, there was only one main effect for sex of rater. Of the 101 specific acts, there were only five significant main effects for sex of rater, two showing greater female rating of effectiveness and three showing greater male rating of effectiveness. These are about what may be expected on the basis of chance alone. It was concluded that strong rater effects do not exist.

In sharp contrast, there were many strong effects due to sex of actor, as predicted earlier by Hypotheses 2 and 3. Specifically, 11 of the 23 tactics show significant sex difference due to actor, and 31 of the 101 acts show significant sex-of-actor differences. These results are shown in Table 7. Table 7 shows the analyses for the two sets of tactics for which sex differences due to actor were predicted, and the third set of tactics for which no specific predictions were made. Only the most central prediction for male actor effectiveness greater than female actor effectiveness

Table 4
Sex Differences in Use of Tactics of Attraction: Newlywed Sample

Tactics	Men (n = 102)		Women (n = 106)		t tests	Significance
	M	SD	M	SD		
Men predicted to be higher						
Display resources	0.67	.47	0.44	.40	3.88	.000
Brag about resources	0.73	.55	0.60	.54	1.68	.05
Women predicted to be higher						
Wear sexy clothes	0.68	.59	0.91	.71	-2.57	.006
Act provocative	0.77	.64	0.90	.68	-1.40	ns
Flirt	2.13	.54	2.09	.52	0.87	ns
Wear makeup	0.02	.09	1.63	.79	-20.57	.000
Keep clean & groomed	2.27	.54	2.44	.56	-2.29	.012
Alter appearance—general	0.39	.33	1.27	.57	-13.56	.000
Wear stylish clothes	1.22	.75	2.00	.78	-7.31	.000
Act coy	0.54	.64	0.73	.65	-2.07	.02
Wear jewelry	0.25	.50	2.21	.91	-19.40	.000
Keep hair groomed	2.20	.54	2.31	.59	-1.37	ns
No predicted sex differences						
Increase exposure	0.89	.43	0.90	.49	-0.42	ns
Act nice	1.77	.33	1.86	.40	-1.95	ns
Display humor	2.42	.59	2.28	.67	1.63	ns
Act promiscuous	0.30	.60	0.21	.54	1.02	ns
Act submissive	1.24	.46	1.11	.54	1.94	ns
Dissemble	1.26	.80	1.09	.80	1.60	ns
Touch	2.26	.51	2.16	.60	1.23	ns
Display sophistication	1.18	.74	0.88	.66	3.08	.002
Display strength	0.96	.64	0.44	.57	6.13	.000
Display athleticism	1.18	.80	0.94	.84	2.11	.036
Show off	0.70	.59	0.47	.54	2.97	.003

Note. Means and standard deviations reflect the sum divided by the number of acts composing each tactic so that relative frequencies of performing each tactic can be evaluated.

was confirmed: male display of resources is considered more effective than female display of resources in attracting potential members of the opposite sex.

For female actors, the tactics of wearing sexy clothes, acting in a provocative manner, wearing makeup, wearing stylish clothes, and altering appearance are judged to be much more effective than male use of these tactics. In contrast, the predictions regarding jewelry, hair, keeping well-groomed, and acting coy do not show the predicted sex differences in actor effectiveness. Several significant sex differences in judged tactic effectiveness occurred among those for which no sex differences were specifically predicted. Female tactics of increasing exposure, flirting, acting promiscuous, and touching a man appear to be more effective than the corresponding male tactics. The male tactic of acting nice is considered to be slightly more effective than the corresponding female tactic.

At the level of single acts, purchasing a woman a nice dinner, lifting weights, displaying a superior vocabulary, offering help, driving a sports car, and mentioning financial independence are considered more effective acts of attraction for men than for women. The acts involving sexual and provocative themes show greater female than male effectiveness. Wearing sexy clothes, having sex on the first date, walking in a sexy manner, wearing skimpy clothes, looking at a man repeatedly, acting sexy, wear-

ing short shorts to show off legs, and wearing tight, revealing clothes are more effective when performed by a woman than by a man. Similarly, applying makeup is an act that is more effective for women than for men. Interestingly, the act *pretended to be dumb* showed greater female than male effectiveness, even though no sex differences appeared in Studies 1 or 2 in reported performance frequency.

Correlations between act effectiveness and frequency of performance. To test the hypothesis that acts that are highly effective will be performed more frequently than acts that are less effective, correlations were computed between the mean effectiveness judgments and mean performance frequencies across the set of 101 acts. The correlations between male performance and male actor effectiveness are .69 and .73 for the undergraduate and newlywed samples; the correlation between female performance and female actor effectiveness are .70 and .75. These results strongly support the hypothesis that acts judged as effective are performed more frequently, although the lack of unity suggests room for high frequency–low effectiveness acts as well as low frequency–high effectiveness acts.

The cross-sex correlations also were computed to test the more specific hypothesis that performance frequencies will correlate higher with same-sex actor effectiveness than with opposite-sex actor effectiveness. The correlations between male fre-

Table 5
20 Most Effective Male Acts

Act	<i>M</i>	<i>SD</i>
He displayed a good sense of humor.	6.38	0.68
He was sympathetic to her troubles.	6.07	0.80
He showed good manners.	5.93	0.96
He kept himself well-groomed.	5.90	0.94
He made an effort to spend a lot of time with a particular woman.	5.83	1.47
He offered to help her.	5.76	1.02
He showered daily.	5.76	1.35
He kept physically fit to create a healthy appearance.	5.76	1.02
He exercised.	5.62	0.78
He wore attractive outfits.	5.45	0.91
He washed his hair every day.	5.35	1.61
He wore stylish, fashionable clothes.	5.24	1.09
He went on a diet to improve his figure.	5.21	1.05
He smiled a lot at women.	5.14	1.27
He gave encouraging glances to girls.	5.07	1.28
He bought a woman dinner at a nice restaurant.	5.07	1.28
He participated in extracurricular activities to meet girls.	5.04	1.14
He touched her.	5.03	1.30
He made up jokes to make women laugh.	5.00	1.51
He expressed strong opinions.	4.90	1.01

quencies and female actor effectiveness are .51 and .59 for the undergraduate and newlywed samples, whereas the corresponding correlations for female frequencies are .52 and .59. To test whether the differences between these cross-sex and same-sex correlations were significant, *t* tests for dependent correlations were computed (Cohen & Cohen, 1975). For male performance, $t = 3.24$ ($p < .01$) for the undergraduate sample and $t = 2.66$ ($p < .01$) for the newlywed sample; for female performance, $t = 3.28$ ($p < .01$) for the undergraduate sample and $t = 3.14$ ($p < .01$) for the newlywed sample. Thus, the same-sex correlations are significantly higher than the cross-sex correlations in both cases.

Discussion

The results from Study 3 provide strong support for the central hypotheses but weak or no support for several instantiations of the hypotheses. Specifically, male resource display is judged to be more effective than female resource display. The results for the perceived effectiveness of boasting about resources, however, showed only marginal sex differences in tactic effectiveness. Strong support was found for Hypothesis 3 regarding greater perceived effectiveness of female acts of enhancing appearance and signaling sexuality or provocativeness. These results support the evolutionary hypothesis that reproductive capability and availability are powerful female resources that can be used to attract men. Nonetheless, the specific hypotheses about the greater female effectiveness for acting coy, as well as the effectiveness of tactics such as enhancing appearance through jewelry or hair grooming, were not supported. It may be concluded that the importance placed on female coyness in evolutionary accounts is not warranted by these results.

Finally, despite sex differences in act effectiveness, men and

women show remarkable similarity in which acts are judged to be effective in attracting mates. Indeed, many of the acts that received mean judgments in the top 20 for effectiveness, such as displaying a good sense of humor, showing sympathy, and offering help, show no sex differences in judged effectiveness. Because *kind* and *understanding* are characteristics that emerge near the top of mate selection preferences and show no sex differences there (Buss, 1985; Buss & Barnes, 1986), these results yield tentative support for the general hypothesis that mate selection criteria influence tactics of intrasexual mate competition. They also suggest that sex differences should be evaluated within the context of a high degree of sexual congruence.

General Discussion

Evolutionary considerations suggest that desirable members of the opposite sex are reproductively valuable resources over which members of the same sex compete. One of the chief strategies of competition is to make oneself more attractive than others of the same sex by using certain tactics and displaying certain resources. Men and women typically differ on which reproductively relevant resources they need from a potential mate. This yields sex differences in reproductive strategies and hence sex differences in mate selection preferences. The most effective tactics of mate attraction should be those that fulfill selection criteria imposed by the opposite sex.

Three studies explored the tactics and acts that men and women use in intrasexual mate competition and tested evolution-based hypotheses about sex differences in the nature and effectiveness of the tactics used. Several conclusions can be drawn from these studies. First, the evolutionary perspective provides a useful heuristic in generating general and specific predictions about the nature of intrasexual mate competition

Table 6
20 Most Effective Female Acts

Act	<i>M</i>	<i>SD</i>
She displayed a good sense of humor.	6.41	0.93
She kept herself well-groomed.	6.33	0.73
She was sympathetic to his troubles.	6.15	1.13
She showed good manners.	6.07	1.07
She showered daily.	6.04	0.98
She kept physically fit to create a healthy appearance.	5.85	1.03
She made up jokes to make men laugh.	5.67	1.14
She made an effort to spend a lot of time with a particular man.	5.59	1.12
She wore stylish, fashionable clothes.	5.48	1.19
She offered to help him.	5.48	1.16
She wore attractive outfits.	5.48	1.13
She exercised.	5.44	1.22
She participated in extracurricular activities to meet guys.	5.41	1.08
She smiled a lot at men.	5.30	1.20
She groomed her hair carefully.	5.19	1.21
She bought a man dinner at a nice restaurant.	5.15	1.35
She wore sexy clothes.	5.11	1.28
She gave encouraging glances to guys.	5.11	1.45
She went to parties to meet guys.	5.04	1.34
She told him things he wanted to hear.	5.00	1.21

Table 7
Beliefs About Tactic Effectiveness for Male and Female Actors

Tactics	Men		Women		<i>t</i>	Significance
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Men predicted to be higher						
Display resources	4.12	0.82	3.56	.94	1.72	.05
Brag about resources	3.27	0.75	2.88	.93	1.50	.07
Women predicted to be higher						
Wear sexy clothes	3.01	1.10	4.45	1.19	-4.66	.0001
Act provocative	3.59	0.87	4.71	1.01	-4.38	.0001
Flirt	4.21	0.77	5.11	0.93	-3.88	.0001
Wear makeup	1.92	0.87	4.71	1.01	-4.38	.0001
Keep clean/groomed	5.37	0.04	5.50	0.85	-0.10	<i>ns</i>
Alter appearance	3.26	0.71	4.37	0.88	-5.08	.0001
Wear stylish clothes	5.14	1.09	5.63	0.89	-1.86	.04
Act coy	2.96	1.31	3.45	1.00	-1.60	.06
Wear jewelry	3.26	1.16	3.52	1.56	-0.57	<i>ns</i>
Keep hair groomed	4.67	0.89	5.48	0.83	-3.09	.002
No predicted sex differences						
Increase exposure	3.95	0.68	4.70	0.67	-4.13	.0001
Act nice	5.63	0.88	5.25	0.71	1.79	.08
Display humor	5.86	0.82	5.86	0.95	0.02	<i>ns</i>
Act promiscuous	1.84	0.73	3.00	1.48	-3.57	.0001
Act submissive	3.19	1.00	3.35	1.04	-0.62	<i>ns</i>
Dissemble	4.82	1.15	4.42	1.44	1.13	<i>ns</i>
Touch	3.98	0.98	4.71	1.12	-2.56	.013
Display sophistication	4.26	1.12	3.89	1.03	1.30	<i>ns</i>
Display strength	3.39	0.85	2.86	1.29	1.76	.07
Display athleticism	3.80	0.92	3.88	0.73	-0.37	<i>ns</i>
Show off	2.39	0.92	2.71	1.00	-1.25	<i>ns</i>

tactics. Second, support is found across studies and methods for the greater male than female use and perceived effectiveness of resource display. Third, support is found across studies and methods for greater female use and perceived effectiveness of enhancing physical appearance. Fourth, the general hypothesis that mate selection criteria influence intrasexual competition tactics receives support. These data provide the first demonstration of a close empirical connection between intersexual selection and intrasexual competition.

Despite clear sex differences, however, men and women showed strong similarity in the acts performed and in the acts judged to be more and less effective at attracting mates. Across means, the correlations between men and women were .63 and .75 for performance frequency within the undergraduate and newlywed samples and .71 for act effectiveness. These findings suggest that sex differences must be evaluated in the context of a high degree of similarity between the sexes.

These studies suggest that prior evolutionary accounts have emphasized too strongly intrasexual mate competition as primarily a male activity. For these samples, at least, such competition appears to occupy women as much as men. Indeed, summing across all 23 tactics, there was no sex difference in overall performance frequency. Female-female competition appears to be an unnecessarily neglected area of research in social psychology and evolutionary biology (see Cunningham, 1986).

Similarity exists strongly for the acts considered to be most

effective. The acts frequently performed and considered highly effective for both sexes involve displaying sympathy, kindness, good manners, helpfulness, and humor. Since the characteristic kind-understanding emerges at or near the top of mate selection preferences for both sexes (Buss, 1985; Buss & Barnes, 1986), these results support the general hypothesis that mate selection criteria influence tactics of intrasexual mate competition, even for criteria that show no sex differences.

Several anomalies, unanticipated findings, and predictive failures require explanation and further research. One unanticipated result was the strong sex difference in the judged effectiveness of acting provocative in contrast to the absence of sex differences in reported performance frequencies of these tactics in both samples. Provocative behaviors by women appear highly effective in attracting men when used, but are not used often and show no greater female than male performance.

The explanation for this anomaly may rest with the distinction between competition for a temporary sex partner and competition for a long-term mate (Symons, 1979, in press). Evolutionary accounts often predict that a woman will avoid indiscriminate mating of the sort implied by temporary sex partners, instead seeking a man who will invest maximally in her and her future offspring. Perhaps overtly sexual and provocative tactics are mainly effective at attracting men as temporary sex partners and less effective at attracting long-term mates. This speculation may account for the absence of sex differences

in performance frequencies coupled with significant sex differences in judged tactic effectiveness.

The intrasexual competition tactics for which no predictions were made are many, varied, and rich compared with those for which specific predictions were made. This suggests that evolutionary accounts may be limited in their ability to identify the proximate mechanisms through which reproductively relevant processes occur. Bottom-up, brute empirical, and explicitly exploratory studies are needed to complement evolutionary hypothesis testing (Buss, 1984). Act frequency methodology seems particularly well suited for operationalizing evolutionarily relevant constructs for hypothesis testing and for identifying unanticipated tactics.

Several limitations and future research directions should be noted. First, although different data sources were used for Studies 1 and 2, both relied on retrospective reports of performance. Future studies could use alternative data sources and methods (e.g., on-line observation) to assess performance frequencies. Second, consensual judgments about act effectiveness may be imperfectly correlated with actual effectiveness. Studies that link tactics with actual mating success address this limitation. Finally, the samples used in these studies were limited to American undergraduates and married couples. Future studies could profitably examine tactics of intrasexual mate competition in samples drawn from different age groups, socioeconomic status levels, and cultures.

Although these studies, hypotheses, and findings were generated by and interpreted in the context of evolutionary theory, additional theoretical accounts are possible and even necessary. Unspecified by this account, for example, are the proximate causes of observed sex differences in tactics of competition. Proximate causation in this context deals with the direct mechanisms that bring about the observed sex differences (e.g., Daly & Wilson, 1983). These direct mechanisms could involve those commonly invoked in social psychological research, such as structural powerlessness (Buss & Barnes, 1986; Falbo & Peplau, 1980) or sex role socialization (Howard, Blumstein, & Schwartz, 1986). These direct mechanisms also could involve genetic differences, physiological differences, or anatomical differences. Finally, these direct mechanisms could derive from complex social forces such as interaction rituals, modes of strategic self-presentation (Goffman, 1959), or norms for social exchange of resources (e.g., Foa & Foa, 1974; Kelly et al., 1983). These studies provide no information about which proximate cause or combination of proximate causes produces observed sex differences in tactics of mate competition.

In contrast, the observed sex differences were predicted from an ultimate causal account. Ultimate causal accounts concern adaptive significance, which involves selective or reproductive advantage occurring on a generational, rather than an immediate or ontogenetic, time scale (e.g., Daly & Wilson, 1983). It was hypothesized that current patterns of intrasexual mate competition occur because in our evolutionary past there existed (and perhaps currently exist) selective advantages to those patterns. Thus, it was hypothesized that men who displayed resources in our evolutionary past would gain greater access to women, and hence enjoy greater reproductive success. Similarly, it was hypothesized that women in our evolutionary past who displayed cues to reproductive value or fertility would have been at a se-

lective advantage over women who failed to display those cues. Positing ultimate causes for current patterns of intrasexual competition implies that those ultimate causes produced proximate mechanisms that are currently responsible for observed patterns. Nonetheless, nothing in those ultimate causal accounts provides the details about the precise nature of those mechanisms. The explication of current proximate causes is an important next step in this line of research.

It is crucial to recognize that ultimate and proximate causal accounts are not competing alternatives. Indeed, both are needed for a complete account of observed patterns of intrasexual competition. In this sense, evolutionary explanations are not antagonistic to explanations more commonly invoked in the social sciences. Instead, they add an additional layer of explanation to current social psychological accounts. Evolutionary explanations supplement, rather than replace, traditional modes of explanation in psychology.

These results may be viewed as just the start of an exploration of human intrasexual competition. Competition for mates, although an important and largely neglected social psychological topic (cf. Kenrick & Trost, 1986), may be regarded as only one component of intrasexual competition. Thornhill and Alcock (1983), for example, partition insect intrasexual competition into three broad categories: (a) precopulatory competition for access to potential mates; (b) postcopulatory competition for access to and protection of eggs (e.g., mate-guarding, mate concealment); and (c) postfertilization destruction of rival zygotes (e.g., induced abortion, infanticide). Daly and Wilson (1981, 1982, 1983) provide insightful treatments of postcopulatory and postfertilization competition in the contexts of sexual jealousy, infanticide, and child abuse. This article, in contrast, has been concerned primarily with tactics of precopulatory competition for access to mates. Future research could address postcopulatory and postfertilization competition among humans from a tactical perspective.

Intrasexual competition extends far beyond attracting mates. In humans, tactics for ascending in dominance hierarchies, guarding acquired mates, derogating competitors, and even for sexual poaching are part of intrasexual competition. The heuristic value of evolutionary theory and the methodological precision of the act frequency approach produce a powerful combination for exploring these uncharted areas of human competition.

References

- Alexander, R. D. (1979). *Darwinism and human affairs*. Seattle: University of Washington Press.
- Buss, D. M. (1988). *Personality and the evocation of anger and upset*. Unpublished manuscript.
- Buss, D. M. (1987). Sex differences in human mate selection criteria: An evolutionary perspective. In C. Crawford, M. Smith, & D. Krebs (Eds.), *Sociobiology and psychology: Issues, goals, and findings* (pp. 335-354). Hillsdale, NJ: Erlbaum.
- Buss, D. M. (1985). Human mate selection. *American Scientist*, 73, 47-51.
- Buss, D. M. (1984). Evolutionary biology and personality psychology: Toward a conception of human nature and individual differences. *American Psychologist*, 39, 361-377.
- Buss, D. M., & Barnes, M. L. (1986). Preferences in human mate selection. *Journal of Personality and Social Psychology*, 50, 559-570.

- Buss, D. M., & Craik, K. H. (1983). The act frequency approach to personality. *Psychological Review*, *90*, 105–126.
- Cohen, J., & Cohen, P. (1975). *Applied multiple regression correlation analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.
- Cunningham, M. R. (1986). Measuring the physical in physical attractiveness: Quasi-experiments on the sociobiology of female facial beauty. *Journal of Personality and Social Psychology*, *50*, 925–935.
- Daly, M., & Wilson, M. (1981). Child maltreatment from a sociobiological perspective. *New Directions for Child Development*, *11*, 93–112.
- Daly, M., & Wilson, M. (1982). Male sexual jealousy. *Ethology and Sociobiology*, *3*, 11–27.
- Daly, M., & Wilson, M. (1983). *Sex, evolution, and behavior*. Boston: Willard Grant Press.
- Darwin, C. (1859). *On the origin of the species by means of natural selection, or, preservation of favoured races in the struggle for life*. London: Murray.
- Darwin, C. (1871). *The descent of man and selection in relation to sex*. London: Murray.
- Dawkins, R. (1986). Wealth, polygyny, and reproduction success. *The Behavioral and Brain Sciences*, *9*, 167–216.
- Elder, G. H., Jr. (1969). Appearance and education in marriage mobility. *American Sociological Review*, *34*, 519–533.
- Falbo, T., & Peplau, L. A. (1980). Power strategies in intimate relationships. *Journal of Personality and Social Psychology*, *38*, 618–628.
- Foa, U., & Foa, E. (1974). *Societal structures of the mind*. Springfield, IL: Charles C. Thomas.
- Goffman, E. (1959). *The presentation of self in everyday life*. New York: Doubleday Books.
- Hill, R. (1945). Campus values in mate selection. *Journal of Home Economics*, *37*, 554–558.
- Howard, J. A., Blumstein, P., & Schwartz, P. (1986). Sex, power, and influence tactics in intimate relationships. *Journal of Personality and Social Psychology*, *51*, 102–109.
- Hudson, J. W., & Henze, L. P. (1969). Campus values in mate selection: A replication. *Journal of Marriage and the Family*, *31*, 772–775.
- Kelly, H. H., Berscheid, E., Christensen, A., Harvey, J. H., Huston, T. L., Levinger, G., McClintock, E., Peplau, L. A., & Peterson, D. R. (1983). *Close relationships*. New York: W. H. Freeman & Co.
- Kenrick, D. T., & Trost, M. R. (1986). A biosocial model of heterosexual relationships. In D. Byrne & K. Kelly (Eds.), *Males, females, and sexuality* (pp. 59–100). Albany, NY: SUNY Press.
- McGinnis, R. (1958). Campus values in mate selection. *Social Forces*, *36*, 368–373.
- Smuts, B. B. (1987). Sexual competition and mate choice. In B. B. Smuts et al. (Eds.), *Primate societies* (pp. 385–399). Chicago: Aldine.
- Symons, D. (1979). *The evolution of human sexuality*. New York: Oxford University Press.
- Symons, D. (in press). The evolutionary approach: Can Darwin's view of life shed light on human sexuality? In J. Geer & W. O'Donohue (Eds.), *Theories and paradigms of human sexuality*. New York: Plenum Press.
- Taylor, P. A., & Glenn, N. D. (1976). The utility of education and attractiveness for females' status attainment through marriage. *American Sociological Review*, *41*, 484–498.
- Thornhill, R., & Alcock, J. (1983). *The evolution of insect mating systems*. Cambridge: Harvard University Press.
- Trivers, R. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man: 1871–1971* (pp. 136–179). Chicago: Aldine.
- Turke, P. W., & Betzig, L. L. (1985). Those who can do: Wealth, status, and reproductive success on Ifaluk. *Ethology and Sociobiology*, *6*, 79–87.
- Udry, R. J., & Eckland, B. K. (1984). Benefits of being attractive: Differential payoffs for men and women. *Psychological Reports*, *54*, 47–56.
- Vining, D. R., Jr. (1986). Social versus reproductive success: The central theoretical problem of human sociobiology. *The Behavioral and Brain Sciences*, *9*, 167–216.
- West-Eberhard, M. J. (1979). Sexual selection, social competition and evolution. *Proceedings of the American Philosophical Society*, *123*, 222–234.

(Appendix follows on next page)

Appendix

Sample Acts From 23 Tactics of Mate Attraction

Tactic	Sample act
Display resources	He flashed a lot of money to impress her. She drove an expensive car.
Brag about resources	He told people how important he was at work. She bragged about her accomplishments.
Wear sexy clothes	He wore sexy clothes. She wore skimpy clothes to impress guys.
Act provocative	He walked in a sexy manner. She acted sexy to interest him.
Flirt	He flirted verbally and visually. She gave encouraging glances to guys.
Wear makeup	He used makeup to accentuate his good looks. She wore facial makeup.
Keep clean/groomed	He washed his hair every day. She brushed her teeth several times a day.
Alter appearance—general	He went on a diet to improve his figure. She laid out in the sun to get a tan.
Wear stylish clothes	He wore stylish, fashionable clothes. She bought expensive clothes.
Act coy	He played hard to get. She tried to appear indifferent to the guy she really liked.
Wear jewelry	He wore a necklace. She wore an earring or earrings.
Keep hair groomed	He got a new, interesting haircut. She groomed her hair carefully.
Increase exposure	He went to parties to meet girls. She joined a club to gain more social exposure.
Act nice	He was sympathetic to her troubles. She offered to help him.
Display humor	He made up jokes to make women laugh. She displayed a good sense of humor.
Act promiscuous	He had sex on the first date. She slept around with a lot of guys.
Act submissive	He let a woman control the conversation. She pretended to be helpless.
Dissemble	He pretended to be interested in the woman's interests. She told him things he wanted to hear.
Touch	He touched her. She tickled him.
Display sophistication	He acted sophisticated and worldly. She displayed a superior vocabulary.
Display strength	He flexed his muscles. She showed off her strength by opening jars.
Display athleticism	He lifted weights. She played sports.
Show off	He showed off his ability to drink a lot. She showed off her driving skills.

Received September 17, 1986
Revision received October 21, 1987
Accepted November 5, 1987 ■