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TACTICS OF INTRASEXUAL COMPETITION:
AN EXPLORATORY INVESTIGATION OF SEX DIFFERENCES

by

Sally Walters

B. A., University of British Columbia, 1983

THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF ARTS (PSYCHOLOGY)

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of

Psychology

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Abstract

Competition appears to be a pervasive human social behavior. Its significance in modern life, however, may reflect its adaptiveness for ancestral humans. The present study attempts to replicate and extend Buss's findings of sex differences in intrasexual competition with respect to tactics of mate attraction. Specifically, this study investigates possible sex differences in use of tactics of intrasexual competition in general, and attempts to account for both ultimate and proximate explanations. An evolutionary psychology perspective is used to argue how environmental conditions in ancestral populations rendered intrasexual competition adaptive, and how the mechanisms that evolved to deal with these ancestral environmental conditions function in contemporary environments. According to Darwin's theory of sexual selection, individuals of the same sex can be expected to compete with each other for reproductively important commodities. The present study uses data from contemporary humans to test these evolution-based hypotheses. Specifically, it was hypothesized that males more than females will use tactics related to the use of resources, to status, and to risk-taking, that females, more than males, will use tactics related to the display of an attractive physical appearance, and that tactics predicted to be performed more frequently by one sex will also be considered more effective for that sex. Three empirical studies were conducted using Simon Fraser University undergraduates as subjects. In Study 1 a taxonomy of 79 competitive acts was obtained and acts were placed into 26 categories called tactics. The acts obtained in Study 1 were used to construct questionnaires in Study 2 and Study 3. Study 2 used a self-report measure to investigate the frequency with which males and females perform those acts. Study 3 obtained male and female judgements of the effectiveness of the acts as competitive strategies for male and female actors. Correlations between frequency and effectiveness were calculated. The hypotheses were partially supported, demonstrating support for evolution-based hypotheses regarding intrasexual competition. The predictive failures suggest that other factors may also influence

intrasexual competitive behavior. The interaction of ultimate and proximate factors in intrasexual competition is discussed, and suggestions are made for future research in these areas.

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Introduction

Competing is a social behavior that appears to be pervasive in modern life. Its significance in modern life, however, may reflect its adaptiveness for ancestral humans. Competition evolved to deal with several areas of importance, such as survival, growth, and reproduction. The present study is specifically concerned with intrasexual competition, in which individuals of the same sex compete. Intrasexual competition evolved as an important behavioral adaptation for finding the best mate possible, and for garnering the maximum resources relevant to reproduction (Darwin, 1871). From an evolutionary psychology perspective (Crawford, 1989), environmental conditions in ancestral populations rendered intrasexual competition adaptive, and therefore, the behavioral and psychological mechanisms that evolved to deal with those ancestral environmental conditions function in the contemporary environment in predictable ways.

While 99% of *Homo sapien* evolution occurred in Pleistocene hunting-gathering groups, Cosmides and Tooby (1987) suggest that the length of evolutionary time since then is insufficient for the displacement of human adaptations that evolved during the Pleistocene era. Evolutionary psychologists contend that psychological and behavioral mechanisms that evolved to deal with Pleistocene living conditions are still in existence (Crawford, 1989); even though our contemporary environment is radically different from that of our hunter-gatherer ancestors, the mechanisms that evolved to deal with the ancestral environment still influence behavior. Thus, contemporary intrasexual competition may be a reflection of ultimate mechanisms, shaped in the Pleistocene environment, that still influence behavior. The ways in

which individuals compete with members of the same sex in the contemporary environment are proximate mechanisms of intrasexual competition; thus, the relationship between ultimate and proximate mechanisms of competitive behavior is akin to the relationship between "why" and "how" (Mayr, 1961). This study will use evidence concerning the ultimate nature of intrasexual competition to generate hypotheses concerning how individuals compete with members of the same sex in the contemporary environment.

The present study adapts a methodology developed by Buss (e.g. Buss, 1988a;1988b) in his studies of tactics of mate attraction and mate retention. I will attempt to replicate Buss's (1988a) findings of sex differences in intrasexual competition and to extend the context of the investigation from mate attraction to intrasexual competition in general. The present study comprises three parts. In Study 1) a taxonomy of intrasexual competitive acts is obtained, and acts are placed into categories, called tactics; in Study 2) the reported frequency with which these acts are performed by men and women is obtained, and sex differences in tactic performance frequency are analyzed; in Study 3) judgements are obtained by men and women regarding the effectiveness of these acts as strategies of intrasexual competition for male and female actors.

Defining Competitiveness

Trivers (1972) defines competition as the mechanisms of aggression and territorial defence that, when used successfully, result in the differential acquisition of resources. According to Barash (1982), competition occurs when individuals seek access to a fitness-enhancing resource that has limited availability; the optimal utilization

of the resource by one individual means that other individuals have to do either with less or without. Wilson (1972) states that competition includes the utilization of resources to the detriment of other individuals, without necessarily including aggression. To summarize, the biological definition of competition involves attempts by individuals to acquire resources that are in potentially limited supply. Intrasexual competition in the present study is defined as the attempt by individuals to acquire more valuable and potentially limited resources than other individuals of the same sex.

Competition and Sexual Selection

The existence of intrasexual competition and sexual selection were associated with the following adaptive problems for ancestral humans: minimal parental investment, sexual dimorphism, polygyny, and sexual bimaturation. In the following paragraphs I will argue that sex-specific patterns of competitive behavior reflect important human adaptations designed by natural selection to deal with these problems; these patterns suggest hypotheses about the nature of intrasexual competition in contemporary humans.

In Darwin's original conceptualization of sexual selection (1859), he proposed that two processes occurred in the selection of mates: 1) male-male competition for access to females, and for resources required by females, and 2) female choice, in which females choose mates based on whether they possess some attribute considered "attractive", that is somehow related to reproductive success. "This (sexual selection) depends, not on a struggle for existence, but on a struggle between the male for possession of the female . . ." (Darwin, 1859/1968, p. 136). ". . . successive males display their

gorgeous plumage and perform strange antics before the females, which standing by as spectators, at last choose the most attractive partner" (Darwin, 1859/1968, p. 137).

Current terms for the processes of sexual selection are intrasexual selection and epigamic choice (Huxley, 1938), implying that the processes of sexual selection are not necessarily sex-linked.

Darwin (1871) believed that sexual selection was responsible for physical and behavioral differences between male and female members of the same species. While sexual selection is not necessarily the only factor influencing intrasexual competition, its primacy in evolutionary theory and the evidence of the operation of sexual selection in both animals (e.g. Darwin, 1871; Barash, 1982; Trivers, 1985; Gould and Gould, 1989) and humans (e.g. Wilson, 1975; Turke and Betzig, 1985; Buss, 1989) predicts that ultimately it is the driving force that explains why humans possess behavioral and psychological adaptations for dealing with intrasexual competition. Therefore, sexual selection and its associated phenomena will be used to make evolution-based predictions about the nature of intrasexual competition.

I will first discuss the processes of sexual selection in their traditional forms, then argue that in humans, both men and women compete with members of the same sex, and that in both men and women, the preferences of the opposite sex motivate the nature of intrasexual competition.

Intrasexual Selection in Men and Women

Male-male competition for females takes many forms (see Barash, 1982); it includes the overt, loud, dominance displays of some male animals such as elephant seal bulls, and other, less noticeable forms, such as the copulatory plugs used by

parasitic worms and other species which prevent the male's sperm from leaking out as well as prevent other males from successfully inseminating that female. Furthermore, male-male competition involves acquiring and displaying resources needed or preferred by women, such as the nuptial gift offered to females by male hangingflies (Thornhill, 1980) or the wealth and materials offered to wives by polygynous husbands (Chagnon, 1979).

The animal literature contains many examples of female-female competition, such as: competition for status and reproductive dominance in elephants (Dublin, 1983); competition in yellow baboons (Wasser, 1983) involving suppression of the reproduction of others, monopolization of males when other females are likely to conceive, and interference with a mother's attempt to nurse a newborn; and in lions, competition for access to males (Barash, 1982). Research suggests that, in primate species, females compete with each other to maximize their own reproductive success at the expense of other females (Hrdy, 1981). For instance, the presence of dominant female talapoin monkeys is associated with an alteration in hormone levels in subordinate monkeys that causes suppression of ovulation (Bowman, Dilley & Keverne, 1978). Female-female competition has been reviewed by Hrdy (1981). She characterizes female-female competition as often subtle and covert, lacking the loud and overtly aggressive displays found frequently in competing males. According to Hrdy, methodological problems with quantifying competition among women and a preference by male researchers to study men are responsible for a lack of empirical research on intrasexual competition in women.

Competition in modern women has largely been ignored in the social sciences literature. A literature search was initially disappointing. A closer look revealed

that women do behave competitively; however, this behavior is frequently described as an aspect of some other phenomena. For instance, competitiveness is an important component of achievement motivation, and research shows that men score significantly higher than women on the competitiveness scale of an achievement motivation measure (Spence & Helmreich, 1978; Spence & Helmreich, 1983). These researchers suggest that higher male competitiveness scores, which appear regardless of occupation, reflect a greater parental emphasis on competitiveness for sons than for daughters. However, this finding is eliminated when individuals compete at more stereotypically feminine tasks (Deaux, 1976.) Taken together, these results suggest that researchers, in investigating competitiveness in women, must look at areas that are important and of interest to women. These findings are important, in part, because they are the result of empirical research in an area that is dominated by speculation and anecdotes. Much of the speculation regarding competition in women is by feminist authors, whose speculations, a sample of which is presented below, clearly reflect confusion about reconciling sisterhood and competition.

According to Caplan (1981) women are socialized to see their role as that of nurturer. She asserts that women perceive pressure to act nice, never get angry, be helpful, look attractive and be self-denying. These demands are inconsistent with the demands of competition. Caplan acknowledges competition in women for youth and attractiveness, however, she suggests that woman's nurturant role has subjugated women to feeling powerless at anything else. In a recent feminist anthology about competition among women, Miner and Longino (1987) describe competition among women as being traditionally confined to the traditional areas of dating, marriage, and beauty contests. These areas lack the prestige of traditionally male-dominated competitive

arenas such as business, finance, etc. Miner and Longino contend that women are woefully unprepared for competition in these arenas, since women experience not only fear of failure, but also fear of success, fear of winning, fear of winning unfairly, and fear of risk-taking. While the authors contend that modern women now compete in many more traditionally male pursuits, they pretend not to, since competition among women is perceived as unwomanly and unsisterly. The importance of uniting in a common struggle against oppression makes competition unsavoury especially for feminist women; this is ironic considering that feminist women are especially concerned with gaining access to areas in which it has traditionally been denied to women and in which competition is clearly required if one is to become more successful than others. In the same volume, Pogrebin (1987) observes that men compete for rewards and achievement while women compete for men. She suggests that the root cause of this female behaviour is identification as a member of an oppressed group; Pogrebin contends that if women start sharing, presumably in helping other women to overcome oppression, there will be no need for women to compete. She suggests, in fact, that women won't like each other until they stop competing for the same men. In effect, Pogrebin exhorts women to retain their nurturant role, ironically this is the same role that Caplan (1981) feels is responsible for women's inability to perceive themselves as powerful or competitive.

Clearly, current thought regarding competition in women remains confused and somewhat idealistic. While many writers acknowledge women's competition in traditionally and stereotypically female pursuits, there is the feeling that women should be competing in other, nontraditional areas. At the same time, there appears to be distaste for what is perceived to be the negative side of competition - the necessity

of winning, and of having to appear, if not unfriendly, at least not very nice. The "imposter phenomenon" (Clance & Imes, 1978) describes the feelings of some women about their success and competence. It appears that modern women, while asserting their right to entry into nontraditional fields, feel badly about competing against other women. Clearly, there is a widely-held conception that competition in women is unseemly or masculine.

The consensus among all these non-evolutionary writers is that women compete in what they describe as "traditional " areas, that is, physical appearance and marriage. From an evolutionary perspective, such stereotypical behavior may reflect adaptations for finding the best mate possible. The movement of women into less traditional roles is likely to be associated with proximate forms of intrasexual competition that are similar to those enacted by men. Similarity of intrasexual competition in the present study may, in fact, reflect women's work in non-traditional areas.

Epigamic Choice in Men and Women

Epigamic selection, traditionally assumed to be expressed as female choice, operates through the preference of individuals of one sex for differentially attractive individuals of the opposite sex. The definition of attractiveness varies from species to species (Barash, 1982), and may not necessarily be related to physical appearance; it may be the dazzling tail feathers of the male peacock or the elaborate bower constructed by a male bowerbird. The assumption is that the form of attractiveness in each species is somehow related to reproductive potential (Barash, 1982); therefore, those males with the greatest reproductive potential are likely to be chosen as mates

over less "attractive" individuals. In this way, a female is ensuring that her own sons will possess at least some of these attractive male characteristics, thereby ensuring survival of her genes in future generations, since these "sexy sons" (Weatherhead & Robertson, 1979) will be preferred mates for future females.

Empirical research of epigamic selection has largely been confined to study of female choice of males. Because women are generally the sex investing most in reproduction, it makes sense that women, having the most to lose through choosing an inappropriate mate, would consequently be choosier than men. The differences in human parental investment will be discussed shortly, however, as a prologue to this discussion, it should be pointed out that in socially imposed monogamous systems where minimal parental investment approaches equality for both sexes, as it does in humans, men can attempt to maximize their own fitness by choosing women likely to be successful mothers. Therefore, it is probable that epigamic choice also operates in men, although the literature on epigamic choice centers largely on investigation of choice as a female sexual selection process (e.g. Barash, 1982; Daly & Wilson, 1983; Gould & Gould, 1989).

Parental Investment and Competition

The processes of sexual selection are related to the minimal amount of parental investment required by each sex (Trivers, 1972). Evidence from some animal species shows that the pattern of intrasexual competition and epigamic choice are reversed when, contrary to the usual case, males make a larger investment in parenting than females, e.g. in phalaropes (Hohn, 1969) and in water bugs (Smith, 1979).

In most species including humans, the minimal necessary investment by women in the production and care of offspring is far greater than that required by men (Hrdy,

1981). Women, as opposed to men, can produce a limited number of children due to the time, energy, and resources necessary for pregnancy, childbirth, lactation, and child-care and to their relatively shorter reproductive life. Post-pubertal males, on the other hand, are limited mainly by the success of their sperm; a man with viable sperm could theoretically produce as many children as he could find ovulating women to mate with. Obviously, it would be wrong to conclude that men invest in their children no more than minimally, however, the potential inequity remains, and should be associated with greater female choosiness with respect to mate selection.

Because of this difference in minimal parental investment the opportunity exists for "cheating". Men are able to cheat by promising investment (e.g. resources, care, good genes, etc), and then investing nothing following a sexual encounter resulting in pregnancy. Women then, should be motivated to choose mates who appear to exhibit low potential for cheating, that is, mates who can and will provide more than the minimal investment in childrearing. Buss (1989) has shown that in 37 cultures, women, more than men, value high providing capacity in a mate.

Female preference for high providing capacity can motivate male-male competition (Trivers, 1985). Buss (1988a) studied competitive tactics used in attracting mates, and found that men more than women used tactics related to resource display; these tactics were also perceived to be more effective for men than for women. In ancestral populations, men were likely to demonstrate hunting prowess, their ability to acquire food, strength, status, etc. In modern society, provision of resources might translate, for example, into competing for a place at university, and then competing for marks in order to get the best job offers. Competition for resources might involve acquiring and displaying greater amounts of money, material goods, shelter, food, etc.

than other men. Competition between men could have several components: the acquisition of more resources than other men, and the display of resources both to women in order to impress and to other men in order to intimidate. Dominance and status should consequently be important to men, as display of these attributes may help to intimidate other men and gain access to resources.

Women may also cheat by deceiving men about paternity of a child, thus obtaining investment from men who may not be the child's biological father. Men should select mates who are unlikely to be promiscuous, thereby ensuring that resources they invest will indeed benefit their own children. While Buss (1988a) predicted that women would compete by acting coy, this prediction is not made in the present study. By definition it is improbable that women would compete to appear coy or non-promiscuous, since coyness or chastity are not limited resources. Buss's prediction regarding coy behavior was only partially supported; he found that married women reported higher frequency of coy behavior during the time they dated their future husbands than did their spouses. While women may, in fact, behave coyly to a greater extent than men, this behavior is not conceptualized in the present study as competitive. It is likely that phenomena such as female claustration (Dickemann, 1981), double standards regarding pre- and extramarital sex (Broude & Greene, 1976), relatively severe punishment for female adultery (Daly & Wilson, 1983) obligate virginity in brides (Dickemann, 1981), female genital mutilation such as clitoridectomy or infibulation (Hosken, 1982), patrilocal residence (Gaulin & Schlegel, 1980), and male sexual jealousy (Daly, Wilson & Weghorst, 1982) have existed as attempts to reduce cuckoldry and ensure a husband's paternity.

While the majority of human societies permit polygynous marriages, most marriages are monogamous (Murdock, 1967) due to economic restraints and availability of potential mates. Marshall (1959), for example, studied a sample of 353 !Kung hunter gatherers and found only 10 percent of the men had more than one wife, and of these men, none had more than two wives. The fact that polygyny appears to be a cross-culturally preferred system of marriage suggests that monogamy exists as a preferred form of marriage due to resource limitations, social conventions, and religious laws. Socially imposed monogamy is likely to be associated with relatively high male parental investment, and female-female competition for these investment-minded men (Low, 1979). Because relatively high male parental investment is likely to be costly in terms of time, money, energy, and resources, men should be selected to ensure that the women they are willing to provide parental investment and resources for are fertile and likely to reproduce. It appears that youth and physical attractiveness are indicators of fertility in women (Symons, 1979; Buss, 1989). Buss (1989) found that men in 37 cultures valued relative youth and physical attractiveness in mates more than women did. Female-female competition in women is likely, therefore, to involve enhancing one's appearance of health and fertility by attempting to look young and physically attractive. While the correlation in contemporary humans between attractiveness and fertility may be weak or non-existent, i.e. all things being equal, physically unattractive women are equally capable of becoming pregnant and bearing healthy children, it is likely that a youthful, healthy, and therefore attractive, physique in women evolved as an indicator to men of likely fertility, and that the psychological mechanisms still exist, both for men to choose young and attractive mates, and for women to optimize their appearance. Buss (1988a) found that North American women

competed with one another in attracting mates by using tactics related to enhancing appearance through the use of makeup, clothes, body adornments, etc. Furthermore, tactics related to enhancing and displaying one's appearance were considered more effective for women than for men in attracting potential mates. Low (1979) described four categories of female ornamentation; three of them signal sexual availability: 1) mimics of maternal fitness, such as padded brassieres, 2) signals of sexual receptivity, such as the wearing of lipstick and rouge, and 3) signals of sexual availability, such as different styles of hair and dress for girls and women. She reported a trend for female ornamentation to distinguish sexual availability, while male ornamentation distinguished rank.

To summarize the association of minimal parental investment with intrasexual competition, females are generally the high investment sex, and concomitantly, are choosier with respect to mates. Male-male competition is likely to occur in demonstrating evidence that one will be a good choice as a husband. Because male investment often approaches equality with female investment in humans, particularly in socially imposed monogamous societies, men should be motivated to choose mates who are likely to be worth investing for, i.e. who will be successful mothers (Low, 1979). Men, therefore, can motivate female-female competition by asserting choice for healthy, fertile women. Female-female competition should therefore involve displaying an attractive, healthy, reproductively fit appearance.

Sexual Dimorphism

According to Darwin (1871), sexual dimorphism in size and ornamentation is the result of sexual selection. High levels of male-male competition result in need for

larger size, for organs of threat such as antlers, and for ornamental display organs, such as the brightly colored feathers of a peacock's tail. Evidence shows that in species where there is great variation in reproductive success in one sex, members of that sex engage in relatively intense levels of intrasexual competition (Trivers, 1985). High intrasexual competition selects for larger, more aggressive, and more intimidating members. Monogamous species generally show little sexual dimorphism, however, Darwin observed that sexual dimorphism appears in polygynous species where reproductive success in males involves intense levels of competition.

Humans are further dimorphic in age of puberty. Evidence suggests that the sex that matures latest is the sex that competes most vigorously (Barash, 1982). In humans, boys generally reach puberty later than girls (Santrock, 1987). This differential developmental milestone has been used to argue that male-male intrasexual competition is more important and intense than female-female competition; delayed sexual maturation may be advantageous in allowing prepubertal men who would be poor competitors due to smaller size and inexperience, to delay competing with more experienced competitors (Barash, 1982). While pubertal delay does not necessarily imply anything about the nature of intrasexual competition in that sex, the existence of this delay in humans can be used as evidence that humans are a sexually selected species. This evidence suggests that the processes of sexual selection are of evolutionary importance to humans.

The Role of Polygyny

Humans appear to be mildly polygynous; in a sample of 862 societies, Murdock (1967) found that 83 percent were polygynous while only 16 percent were monogamous.

There is a correspondingly mild sexual dimorphism. Barash (1982) noted that men are 5 to 12 % taller, and comparably heavier than women and Alexander, Hoogland, Howard, Noonan and Sherman (1979) reported that polygyny in humans is associated with greater sexual dimorphism than monogamy as measured by the male-to-female height ratio.

Having access to more than one sexual partner can have a considerable effect on a man's fitness while having little effect on a woman's. Male fitness can profit from increased number of copulations, while female fitness is biologically constrained by her relatively large investment in pregnancy and childbearing. Furthermore, once women become pregnant, further copulations have no effect on reproductive success for a number of months; this period can extend to 3 to 4 years if the women breastfeeds on demand, since there is an associated suppression of ovulation (Konner & Worthman, 1980). Women should, therefore, be more cautious than men about becoming sexually involved. Men, on the other hand, should be motivated to maximize their fitness in a polygynous society, and should seek sexual opportunities accordingly. Because men in a polygynous society possessing the wherewithal to attract multiple sexual partners can be greatly successful in terms of fitness, men should be concerned with the acquisition of such resources.

While polygynous marriages in all societies are rarer than monogamous ones, it continues to be a preferred option, probably because men in polygynous marriages can have exceptional reproductive success. For example, in some societies such as the Yanomamo (van den Berghe, 1979) adolescent girls commonly become the second wives of older men, leaving adolescent and post-adolescent men with few women to mate with. Clearly, while the cost of being a polygynous man in terms of resources are

expensive, these costs are outweighed by the benefit to fitness. Dorjahn (1958) found that the fitness of polygynous Temne men in Sierra Leone increased with number of wives. Similar findings for nineteenth-century Mormons were reported by Smith and Kunz (1976).

While polygyny appears to have evolved as an adaptation for maximizing reproductive success, it need not be a preferred system in contemporary society to have an impact on behavior. North American marriages are monogamous in principle, although men may have sexual access to more than one woman by having extramarital affairs, by remaining unmarried and being sexually promiscuous, by marrying more than once, etc. Assuming that evolution has shaped in men the desire to be as reproductively successful as possible, and that polygyny has evolved as an effective strategy for achieving this end, it can also be assumed that men will tend to behave in ways that would maximize their reproductive potential in a polygynous society. Therefore, an overall male tendency to amass the resources that would enable him to support more than one wife and family in a polygynous society is expected; it is hypothesized, therefore, that men will compete intensely for resources. In the contemporary environment resources may include a variety of provisions such as money, consumer goods, education, etc.

Male-male competition in the ancestral environment could have had important fitness consequences. Acquisition of resources and high status would have made a man an attractive potential mate. The acquisition of resources and the intimidation of male competitors would have been associated with intense male-male competition. It is likely therefore, that intense competition would involve some degree of aggression and risk-taking. Wilson and Daly (1985) investigated homicide, daredevilry, and

gambling, and concluded that "taste for risk" is primarily a male attribute that is facilitated by peers who are engaged in pursuit of the same goals. Risky male behavior may thus be viewed as a by-product of male-male competition. It is hypothesized that competition involving risk will be performed more frequently by men than women.

Competition in Contemporary Life

Using an evolutionary perspective to make hypotheses about the nature of intrasexual competition explicitly assumes that sexual selection mechanisms should predict the nature of intrasexual competition; the preferences in one sex for qualities in potential mates of the other drives the focus of intrasexual competition. The processes of choice and competition are inter-twined and complementary. Clearly, mechanisms regulating intrasexual competition are human adaptations that have been selected because of their positive impact on reproductive success. The use of an evolutionary perspective to explain human behavior raises several an important issue with respect to the use of contemporary humans as subjects.

While the nature of intrasexual competition can be explained in terms of its adaptiveness for ancestral humans, it must be analyzed in light of the complexities and nature of the contemporary environment. Clearly, while the contemporary world contains situations also encountered by our ancestors, such as finding a mate and having children, the circumstances surrounding these situations are vastly different in terms of numbers of people in the population, the geographic spread of kin and reduced amount of available assistance, industrialization of the world, different working environments and types of work, and so on. Contemporary life is beset with circumstances unknown to our Pleistocene ancestors; these recent circumstances may include proximate mechanisms

of intrasexual competition. These mechanisms are the factors in the present environment that explain how intrasexual competition is enacted.

Contemporary society offers a complex array of opportunities for competing that are relatively recent in time, such as competing with others for limited openings in a university, or for the company position holding the greatest power. Clearly, modern humans are competitive in a variety of arenas including sports, games, business, finance, appearance, status, education, etc. Modern women enjoy a great deal of freedom in the roles they choose to pursue; women often juggle a variety of roles including mother, wife, employee, boss, academic, etc. Women currently work in many fields (e.g. engineering, politics, finance) that are traditionally male-dominated. The broadening of womens' choices regarding work and lifestyle is likely to be accompanied by a changing repertoire of competitive behaviors.

While intrasexual competition was adaptive in the ancestral environment, it need not direct impact on fitness now. It is assumed that the disposition to compete still exists, and intrasexual competition should, therefore, be of a predictable nature in men and women. It may or may not be clear that individuals are engaged in competition with members of the same sex. Furthermore, the competitive behavior may have no obvious association with reproductive success; for example, women may diet because they are overweight and wish to be healthier, or they may diet with the intention of becoming thinner, and therefore, more attractive, than other women. One could argue that competing successfully no longer influences reproductive success; for example, women with few resources are able to raise children alone, and individuals of low social status have healthy families. Because these factors may influence how men and women compete with members of the same sex, the scope of the present study was

extended beyond Buss's (1988a) original work on intrasexual competition in the context of attracting potential mates. If factors not related to sexual selection in even a proximate fashion influence intrasexual competition, it is hoped that they will be detected in the present study by utilizing a general conceptualization of intrasexual competition.

While hypotheses regarding the ultimate mechanisms of intrasexual competition are made in this study to investigate its evolutionary significance, these mechanisms shed little light on the proximate mechanisms that explain how intrasexual competition is actually carried out in the contemporary environment. This study will investigate competitive acts used by contemporary men and women in an attempt to demonstrate that natural selection has shaped human intrasexual competition in identifiable and predictable ways. It is predicted that sexual selection is primarily the process that has shaped intrasexual competition, however, it is hoped that the present study will shed light both on proximate factors of intrasexual competition that explain how this behavior is enacted in the contemporary environment, and on other factors, if any, not related to sexual selection that also influence intrasexual competition.

Hypotheses

This study is an attempt to replicate and extend Buss's (1988a) findings of sex differences in intrasexual competition in the context of mate attraction. Buss used Darwin's (1871) sexual selection theory as the basis for predicting sex differences in the way men and women compete with members of the same sex for potential mates. By extending the context of intrasexual competition outside mate attraction, the present

study attempts to gather data concerning a wider range of competitive tactics, thereby further defining some of the proximate mechanisms of intrasexual competition. While it is assumed that Buss's findings will be replicated, since by definition intrasexual competition involves acquiring the resources (including a mate) necessary for reproduction, it was felt that proximate strategies for intrasexual competition might be more clearly delineated by investigating intrasexual competition in general, without limiting the subjects in the study to consideration of mate attraction. Furthermore, if the hypotheses made in this study are confirmed without specifying the context of intrasexual competition, a stronger case is made for the assumption that sexual selection motivates intrasexual competition.

Buss (1988a) found that men reported greater performance frequency than women of the following tactics: display resources, boast about resources, act promiscuous, display strength, display athleticism, and show off. Women reported greater performance frequency than men of the following tactics: alter appearance, wear make-up, wear stylish clothes, keeping clean and well-groomed, and act nice. These findings were replicated using a different sample. Furthermore, Buss found that display of resources and acting nice were considered more effective in attracting potential mates for men than for women. The following tactics were considered more effective for women than men: wearing sexy clothes, acting in a provocative manner, wearing make-up, wearing stylish clothes, altering appearance, increasing exposure, flirting, acting promiscuous, and touching a member of the opposite sex. Buss concluded that an evolutionary perspective was partially accurate in generating hypotheses about the nature of intrasexual competition. Furthermore, the hypothesis that resource display was a more frequent and effective tactic for men was confirmed. Similar

conclusions were reached about the tactic of enhancing physical appearance for women. Finally, Buss's study suggests that mate selection criteria are associated with intrasexual competition. The present study will attempt to replicate these findings outside the specific context of mate attraction using a methodology adapted from that employed by Buss (1988a).

In general, this study will employ an evolutionary perspective to generate hypotheses concerning the nature of intrasexual competition with respect to sex differences. According to Darwin's (1871) theory of sexual selection, individuals of the same sex can be expected to compete with each other for reproductively important commodities. The present study uses contemporary humans to test predictions based on the following evolutionary hypotheses: (1) because reproductively important commodities for men include acquiring and displaying resources and dominance or social status, men more than women will compete using tactics related to the use of resources and dominance, and because male-male competition for these commodities is likely to be intense, men more than women are likely to engage in risk-taking behaviors; (2) because reproductively important commodities for women include enhancing one's appearance of health and fertility, women more than men will use tactics related to the display of an attractive physical appearance; (3) that tactics related to the use of resources, dominance, and risk-taking will be considered more effective for men than women; (4) that tactics related to the display of an attractive physical appearance will be considered more effective for women than men; and (5) that tactics considered to be more effective will also be performed more frequently.

Study 1: Obtaining Competitive Acts.

Method

The goal of Study 1 was to identify a range of competitive acts used by men and women and group them into categories called tactics. Subjects were 127 undergraduate students (54 men and 73 women; average age=21 years) at Simon Fraser University. A questionnaire was developed to obtain examples of competitive acts (see Appendix A). In the questionnaire subjects were asked to give examples, either from their own behavior, or through observations of others, of instances in which individuals had competed with members of the same sex. All subjects were asked for examples involving both women and men, and they were asked to consider why the act was competitive; the latter instruction was used as a prompt in an attempt to obtain the most precise examples possible.

A taxonomy was constructed from these acts. First, redundant acts were eliminated, as were those acts considered too vague or nonspecific to constitute an identifiable act. Minor grammatical changes such as rewording an act into a sentence were made where necessary. No further acts were added.

The experimenter devised a general set of categories to group together acts appearing to have the same intent. The categories were created by reading the acts, and attempting to construct categories based on the general intent implied in the acts. The categories are called "tactics", implying that a group of acts constitute a tactic for competing with members of the same sex. This procedure resulted in the construction of a preliminary set of 45 superordinate tactics (see Appendix B).

Four independent judges naive to the hypotheses of the study then sorted the acts into these provisional tactic categories. If an act was judged not to belong to any of the categories, it was placed in a miscellaneous category, with the instruction to suggest

a new tactic for that act. Only acts that were consensually sorted by 3 or more of the judges were subsequently used.

Results

As shown in Table 1, this procedure resulted in 79 acts subsumed in 26 tactics being retained; each tactic subsumed between 1 and 8 acts. The 79 acts were then used to construct the questionnaires employed in Study 2 and Study 3.

Tactics are underlined, and tactics dealing with similar commodities appear together. All acts in this table are phrased in the first person, however, in Study 3, acts were worded in the third person. Where necessary, mostly minor wording changes were made so that the acts were specifically applicable to either men or women; the male version is shown in Table 1, with changes to the female version indicated in brackets.

Table 1

Acts and Tactics Retained in Study 1

Deception and Athletic Ability

I cheated at a game or sport in order to win.

Attract Attention To Athletic Ability

I boasted about my athletics skill.

Demonstrate Athletic Ability

I arm-wrestled other guys(women).

Acquire Athletic Ability

I worked out or lifted weights.

I took lessons in a sport.

Use Risk in Athletic Ability

I played sports that are fairly dangerous, such as hockey, football, or lacrosse.

table continues

Deception and Intelligence

When asked for help with an assignment, I pretended I didn't know the answer.

I cheated on an exam.

I didn't admit to other men(women) that I knew I was going to succeed at something; I acted surprised when I did.

Deception and Sexual Activity

I flirted with my friend's girlfriend(boyfriend).

I flirted with a woman(man) who was already going with someone.

I dated another guy's(girl's) girlfriend(boyfriend).

I pretended to my friends that I had had sex with a woman(man).

I dated a number of women(men) at the same time.

Attract Attention To Sexual Activity

I told the guys(girls) that I was a great lover.

I bragged to the guys(girls) about my sexual encounters.

I flirted with a woman(man) when other men(women) were around.

Acquire Sexual Activity

I told my friends about my "one-night-stand".

I boasted about having a steady girlfriend(boyfriend).

I broke up with a woman(man) so that I could go out with someone better looking.

Deception and Status

I hid some information about myself from my male(female)friends, so that they wouldn't think I was "uncool".

I told all my male(female)friends they were my "one" best friend.

Demonstrate Status

I physically fought with another guy(woman).

Attract Attention To Status

I stared at other men(women) to intimidate them.

I stole something on a dare to prove I could do it.

I boasted about the groups or organizations I belonged to.

Acquire Status

I applied for a higher status job.

I bought something another guy(woman) I knew had purchased.

I hung around with the "in" group.

I had a greater number of friends than most guys(women).

I picked a fight with a male(female) who makes me feel inferior.

I was the leader of a group of guys(women).

I dated someone I really didn't know or like, because it seemed important to have a girlfriend(boyfriend).

I tried to be "best friends" with more than one man(woman).

I went out with a woman(man) because it gave me greater status.

I became friends with the most popular men(women).

I tried to date the most popular woman(guy).

I went steady with my girlfriend(boyfriend) longer than I wanted to.

table continues

Manipulate Status

I avoided situations in which my male friends(female friends), who didn't know each other, would have to meet.

I passed gossip about other men(women).

Deception and Resources

I lied about my income.

Demonstrate Resources

I spent money entertaining women(men).

Attract Attention To Resources

I boasted about my bank account to the guys(girls).

I played my car stereo loudly, to attract attention.

I showed off in front of women(men) by buying something expensive.

I compared pay-cheques with the other guys(women).

I showed off that I could afford to buy the "best".

I boasted about my car.

Acquire Resources

I applied for a better-paying job.

I bought an expensive stereo or ghetto blaster.

I worked at two jobs at the same time.

I went out with wealthy women(men) only.

I tried to date or marry a woman(man) who was fairly well-off.

Manipulate Resources

I borrowed a lot of money so that I could buy something expensive.

I bought something expensive that I couldn't afford.

I bought clothes that I really couldn't afford.

Demonstrate Domestic Skill

I spent time cleaning my home and making it look nice.

Attract Attention To Domestic Skill

I cooked a lavish meal to outdo those cooked by other men(women).

I cooked a fancy meal to show off my homemaking skills.

Acquire Domestic Skill

I paid attention to the neatness and tidiness of other men's(women's) houses, so that I could make my house look better.

I took cooking classes.

Attract Attention To Appearance

I wore clothes that would show off my physique.

I dressed in fashionable clothes.

I tried to look more attractive than other men(women).

I wore cologne(make-up)to something at which it is not usually worn, e.g. the beach, in order to look better than other men(women).

I tried to be handsomest(prettiest) when my male friends(girlfriends) and I went out.

I dressed to get attention.

table continues

Improve Appearance

I used a tanning salon.

I jogged to improve my body.

I had a facial.

I dressed to make my chest(breasts) appear larger.

I copied another attractive man's(woman's) hairstyle.

I had my nails done by a manicurist.

I exercised to have a flatter stomach.

I got my hair done at the hairdresser's.

Manipulate Appearance

I wore bulky clothes to make myself look larger.

I dieted when I was already thin.

Attract Attention To Alcohol Use

I had drinking competitions with my male(female) friends to see who could drink the most without getting sick.

I entered drinking contests where the winner was the person who could drink the most in the shortest time.

Discussion

The goal of Study 1 was to obtain acts that subjects classified as being examples of intrasexual competition, and to obtain more general categories, called tactics, based on these acts. The acts retained in Study 1 will comprise the questionnaires used in Study 2 and Study 3. Furthermore, Study 1 determined specifically what tactics related to resources, dominance, and risk-taking and, therefore, hypothesized to be used more by men than women, will be used in Studies 2 and 3. Similarly, the exact nature of tactics involving the display of an attractive physical appearance were unknown until the results of Study 1 were obtained.

With respect to the hypotheses of the study, several tactics emerged. For the hypotheses that men more than women would use tactics related to the use of resources, status, and risk-taking, the following tactics were relevant: Use Risk in Athletic Ability, Use Deception Concerning Status, Demonstrate Status, Attract Attention to Status, Acquire Status, Manipulate Status, Use Deception Concerning Resources,

Demonstrate Resources, Attract Attention to Resources, Acquire Resources, and Manipulate Resources. For greater female than male use, the following tactics emerged: Attract Attention to Appearance, Improve Appearance, and Manipulate Appearance. The remaining tactics were not predicted to show any sex differences.

The usefulness of an evolutionary perspective to make predictions about intrasexual competition was shown by the existence of several tactics related to the hypotheses, such as Demonstrate Resources, and Attract Attention to Appearance. The results of Study 1 included several tactics which were not predicted in advance, such as Attract Attention to Alcohol Use. It could be argued that alcohol use is an example of risk-taking; if that is the case, then it would be hypothesized that this tactic would be used more by men than women. However, since it is not clear that, in fact, alcohol use is related to risk-taking, this tactic was not added to the list of hypotheses. The tactics which were not predicted in advance, i.e. had no obvious evolutionary significance, may still be used frequently, and may be considered effective. If this is the case, as determined in Studies 2 and 3, then these tactics may be other important proximate mechanisms of intrasexual competition.

An advantage of using this procedure was that many individuals generated acts, thereby obtaining a wide range. The ultimate goal of the study was to investigate and clarify possible sex differences in intrasexual competition, therefore once an act was nominated it was not labelled as either a "male act" or a "female act". No findings regarding sex differences in intrasexual competition were, therefore, obtained in Study 1.

One disadvantage of the procedure used in Study 1 was that acts that could not be consensually sorted into a tactic by at least three judges were not retained. Such acts

may not necessarily be non-competitive, and in fact, may be good examples of subtle competition. An example of an act that was not included because the judges did not agree what tactic it belonged to was, "I stole my friend's eye-liner at a party so that she couldn't apply any more make-up." This particular act seems an excellent, if subtle, way for a woman to compete with her female friend. By not allowing her friend to apply make-up, in effect the woman was controlling her friend's appearance; furthermore, the woman could have applied her own make-up, thus, in her eyes, making herself more attractive than her friend. While using the above procedure to sort acts into tactics may be an effective way of determining what the intent is of competitive acts, it may be a poor procedure for categorizing subtle competitive acts. If one sex makes more use of subtle competitive tactics, the method used in this study may not detect or define such tactics.

Study 2: Assessment of Reported Act Performance.

Method

The goal of Study 2 was to obtain subjects' reports of how frequently they had performed the acts derived in Study 1. Using the 79 acts obtained in Study 1, two versions of a self-report questionnaire were constructed. In one version the acts were worded to pertain to male subjects, and in the other the acts pertained to female subjects. The construction of two versions required, in most cases, minor word changes such as changing the gender of pronouns. Where larger changes were required, an effort was made to retain the intent of the act. For instance, the following versions of one act were given to male and female subjects respectively: "I wore cologne to something at which it is not usually worn, e.g. the beach, in order to smell better than other guys."; "I

wore make-up to something at which it is not usually worn, e.g. the beach, in order to look better than other women." In this study, 105 subjects participated (54 men and 51 women; average age=23). Subjects were students at Simon Fraser University, and had not participated in any other phase of the study.

In this study, subjects reported the frequency with which they had performed the 79 acts in the previous year (see Appendix C). Scores for each act ranged from 1 (NEVER) to 4 (FREQUENTLY). The potential mean scores for each act ranged from 1.00 (no subjects report ever having performed the act) to 4.00 (all subjects report performing the act often.).

A composite score for each tactic was obtained by summing the scores from each of the acts within a tactic, and then dividing by the number of acts.

Results

A multiple regression using sex as the dependent variable was conducted on the data as a preliminary test of overall sex differences in performance frequency of tactics. A significant overall sex difference in frequency of use ($F=6.553$ (26,78); $p<.0001$; adjusted $R^2=.2940$; Cohen's $d=2.55$) was found. Cohen's d (Cohen, 1988) is a measure of effect size, and is interpreted as the degree of separation between the two levels of the criterion variable (male and female) in standard deviation units, according to the regression equation. A stepwise regression was then performed to determine which tactics were the best predictors of sex. Overall, the tactic Demonstrate Resources was the best predictor of sex ($F=44.59$ (1,103); $p<.01$; adjusted $R^2=0.2953$; Cohen's $d=1.30$), while the best subset of predictors ($F=12.29$ (15, 89); $p<.0001$; adjusted $R^2=0.6195$; Cohen's $d=2.65$) contained the following tactics: Use Deception Concerning Athletic

Ability, Attract Attention to Athletic Ability, Demonstrate Athletic Ability, Acquire Sexual Activity, Use Deception Concerning Status, Demonstrate Status, Manipulate Status, Use Deception Concerning Resources, Demonstrate Resources, Attract Attention to Resources, Acquire Resources, Manipulate Resources, Demonstrate Domestic Skill, Acquire Domestic Skill, and Attract Attention to Appearance. These results indicate a significant overall sex difference in the data set with respect to frequency of tactic performance.

Following the procedure employed by Buss (1988a) *t* tests were then conducted on the 26 tactics (see Table 2) to examine sex differences in performance frequency in finer detail. The Bonferroni correction was employed to account for the family-wise error rate. . In each case, the family-wise error rate was set at .05 divided by the number of tactics dealing with competition in a single area (e.g. tactics related to resources such as Demonstrate Resources and Attract Attention to Resources).

Table 2

Sex Differences in Performance Frequency of Tactics of Intrasexual Competition

Men predicted to be higher:

Tactic	Men		Women		<i>t</i> test
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Use Risk in Athletic Ability	2.63	1.20	1.75	0.98	4.15*
Deception and Resources	1.39	0.68	1.22	0.54	1.44
Demonstrate Resources	2.69	0.89	1.65	0.69	6.68*
Attract Attention to Resources	1.53	0.39	1.40	0.33	1.82
Acquire Resources	1.90	0.71	2.09	0.65	1.82
Manipulate Resources	1.70	0.69	2.04	0.71	-2.45
Deception and Status	1.70	0.44	1.72	0.42	-0.14
Demonstrate Status	1.57	0.69	1.08	0.34	4.72*
Attract Attention to Status	1.72	0.43	1.60	0.48	1.30
Acquire Status	1.65	0.49	1.81	0.40	-1.87
Manipulate Status	1.69	0.63	2.00	0.56	-2.71*

table continues

Women predicted to be higher:

Tactic	Men		Women		<i>t</i> test
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Attract Attention to Appearance	2.13	0.59	2.44	0.57	-2.78*
Improve Appearance	1.61	0.37	1.84	0.40	-3.01*
Manipulate Appearance	1.49	0.52	1.46	0.65	0.26

No sex differences predicted:

Tactic	Men		Women		<i>t</i> test
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Deception and Athletic Ability	1.69	0.77	1.63	0.69	0.40
Attract Attention to Athletic Ability	1.96	0.93	1.55	0.81	2.43
Demonstrate Athletic Ability	1.85	0.83	1.16	0.42	5.44
Acquire Athletic Ability	2.68	1.11	2.35	0.98	1.62
Deception and Intelligence	1.64	0.47	1.81	0.47	-1.85
Acquire Sexual Activity	1.38	0.51	1.39	0.54	-0.15
Deception and Sexual Activity	1.44	0.50	1.35	0.46	0.94
Attract Attention to Sexual Activity	1.63	0.54	1.54	0.45	0.96
Demonstrate Domestic Skill	2.85	0.83	3.04	0.94	-1.08
Attract Attention to Domestic Skill	1.86	0.83	1.79	0.75	0.43
Acquire Domestic Skill	1.31	0.50	1.49	0.54	-1.73
Attract Attention to Alcohol Use	1.47	0.76	1.21	0.44	2.23*

Note. All *t* tests were two-tailed.

**p*<.05 after Bonferroni correction for family-wise error

To examine sex differences in greater detail in those tactics with a significant sex difference in performance frequency, *t*-tests were then performed on all of the individual acts within those tactics (see Table 3). This was done to determine specifically which acts within significant tactics were performed with significantly different frequency by men and women. The Bonferroni correction was again employed to account for the family-wise error rate and was set at .05 divided by the number of acts within that particular tactic.

Table 3

t tests Performed on Acts Subsumed in Significant Tactics.

<u>Tactic - male means higher</u>	<u>Act</u>	<i>t</i> test	<i>M</i>	<i>SD</i>
Use Risk in Athletic Ability	I played sports that are fairly dangerous, such as hockey, football, or lacrosse.	4.12*	2.63	1.20
Demonstrate Resources	I spent money entertaining women (men).	6.68*	2.69	0.89
Demonstrate Status	I physically fought with another guy (woman).	4.64*	1.57	0.69
Attract Attention to Alcohol Use	I had drinking competitions with my male (female) friends to see who could drink the most without getting sick.	2.41*	1.63	0.90
<u>Tactic - female means higher</u>	<u>Act</u>	<i>t</i> test	<i>M</i>	<i>SD</i>
Manipulate Status	I passed gossip about other women (men).	2.14*	2.14	0.72
Attract Attention to Appearance		all ns		
Improve Appearance	I had a facial.	2.89*	1.55	0.97
" "	I got my hair done at the hairdresser's.	4.02*	2.88	0.99

* $p < .05$

Note. All other acts within the above tactics were non-significant.

The tactics performed with the highest frequency by both sexes are reported in Table 4. Only those tactics with a composite score of 2 or greater are reported; these tactics are performed with at least "rare" frequency. These results are reported to indicate the degree of similarity in tactics performed relatively frequently by men and women.

Table 4

Most Frequently Performed Tactics for Men and Women.

<u>Most frequent male tactics:</u>	<i>M</i>	<i>SD</i>
Demonstrate Domestic Ability	2.85	0.83
Attract Attention to Resources	2.69	0.89
Acquire Athletic Ability	2.69	1.11
Use Risk in Athletic Ability	2.63	1.20
Attract Attention to Appearance	2.13	0.59

<u>Most frequent female tactics:</u>	<i>M</i>	<i>SD</i>
Demonstrate Domestic Ability	3.04	0.94
Attract Attention to Appearance	2.44	0.57
Acquire Athletic Ability	2.35	0.98
Acquire Resources	2.09	0.65
Manipulate Resources	2.04	0.71
Manipulate Status	2.00	0.57

Discussion

In Study 2, subjects rated how frequently they had performed the acts obtained in Study 1, and the hypotheses concerning sex differences in the frequency of performance of competitive acts were tested. The results of study 2 provide partial support for the hypotheses related to higher male frequency of performance. Specifically, the only tactic concerned with risk-taking behavior, Use Risk in Athletic Ability, was performed significantly more frequently by men than women. The only tactic concerning use of resources that showed a significant sex difference in the predicted direction was Demonstrate Resources; the other tactics concerning resources were nonsignificant, although in the predicted direction. Of the tactics related to use

of status, Demonstrate Status was significantly more frequent for men, although Manipulate Status was performed significantly more frequently by women, which was contrary to prediction. The results concerning status suggest that demonstrating status is, as predicted, important for men, while women are more concerned with raising their own status, possibly by manipulating the situation.

Partial support was also provided for the hypothesis that women, more than men, will use tactics related to the display of an attractive physical appearance. The tactics Attract Attention to Appearance and Improve Appearance were performed significantly more frequently by women than men. The tactic Manipulate Appearance did not differ significantly in frequency between men and women.

The tactics for which no sex differences regarding performance frequency was predicted were nonsignificant, with the exception of Attract Attention to Alcohol Use, which was performed significantly more frequently by men. This finding may be related to some aspect of risk-taking, although the judges in Study 1 did not categorize the acts in this tactic as risky behavior. Alternatively, most of the subjects in this study were only a few years older than the legal drinking age, and possibly try "proving" themselves at this still somewhat novel activity.

It is important to point out that while some of the predictions concerning frequency of tactic use were confirmed, the majority of tactics showed no significant sex difference in performance frequency. The correlation between male and female performance means across the 26 tactics is .71, indicating a fairly high degree of similarity in performance of tactics by men and women. It is interesting to note that both men and women report performance of the tactic Demonstrate Domestic Ability more frequently than any other. It is unclear why this is the case, however, one might

speculate that the university environment from which the subjects were recruited is fairly egalitarian. This suggests that it is important for men to demonstrate prowess in a traditionally female area. The other tactics most frequently performed by men and women show a surprising degree of similarity; tactics related to the use of resources, to athletic ability, and to appearance are all used with relatively high frequency by both sexes. While there was a range of responses for all acts, even for those tactics showing a significant sex difference, the majority of tactics showed a composite mean score of less than 2. Therefore, the majority of tactics appear not to be very frequently performed, although this might reflect an inability in a 4-point scale to provide fine enough frequency gradations. Further study might elucidate whether competitive behaviors occur relatively infrequently, whether a reporting bias against appearing competitive appears, and whether other acts not defined by the present study may be more competitive and more frequently performed.

The results of Study 2 indicate that significant sex differences exist in performance frequency of tactics. At the level of the acts themselves, further statistical analysis could be employed to determine specifically which acts were important within tactics, however, this would mainly be interesting in terms of developing a scale to measure competitiveness, and therefore, is beyond the scope of the present study.

Study 3: Judgements of Tactic Effectiveness.

Method

The goal of Study 3 was to obtain subjects' judgements of the degree of effectiveness for each act, as a strategy for the actor to use in competing with a member

of the same sex. The purposes of this study were to identify which acts and tactics were considered most effective in the context of intrasexual competition; to provide another independent test of the sex-differentiated hypotheses regarding use of tactics; and to test the hypothesis that acts judged to be highly effective will be performed more frequently than acts judged to be less effective. Two versions of a questionnaire were constructed using the acts obtained in Study 1. Both male actor and female actor versions of the questionnaire were constructed, and both versions were completed by male and female subjects (see Appendix D). One hundred and six Simon Fraser University undergraduates (54 men and 52 women; average age=22) who had not been tested in the previous two studies participated.

Each act had a possible score ranging from 1 - "not very likely to be effective" to 7 - "very likely to be effective". Half of the men and half of the women received a male actor version (He), and the other half of each sex received a female-actor version (She). A composite score was obtained for each tactic using the same procedure employed in Study 2. For the analysis of variance of each tactic, a 2 X 2 design was employed, with the first factor being sex of rater (male, female) and the second factor sex of actor (male, female). The second factor refers to the sex of the actor for which judgements are made regarding the effectiveness of competitive acts. Numbers of subjects in each cell of the 2X2 design are as follows: 30 (male rater - effectiveness for male actor), 27 (male rater - effectiveness for female actor), 24 (female rater - effectiveness for male actor), and 25 (female rater - effectiveness for female actor).

Results

The reliability of act effectiveness judgements were computed using Cronbach's alpha coefficients (Cronbach, 1951) for each of the 4 cells in the 2 X 2 matrix, and are as follows: .95 (male rater - effectiveness for male actor); .96 (male rater - effectiveness for female actor); .98 (female rater - effectiveness for male actor); and .95 (female rater - effectiveness for female actor). These reliability coefficients suggest that high composite reliability has been achieved in judges' ratings of which acts are more and less effective as strategies for intrasexual competition..

The twenty acts judged to be the most effective for male and female actors respectively are reported in Table.5. It is interesting to note that eleven of the most effective acts are identical for men and women, although not in the same order.

Table 5

The 20 Most Effective Acts for Men and Women.

<u>The 20 most effective acts for men:</u>	<i>M</i>	<i>SD</i>
He lied about his income.*	5.30	1.74
He dressed to get attention.*	4.82	1.72
He hid some information about himself from his friends, so that they wouldn't think he was "uncool".*	4.80	1.75
He bought an expensive stereo or ghetto blaster.	4.74	1.63
He paid attention to the neatness and tidiness of other men's houses, so that he could make his house look better.*	4.74	1.52
He became friends with the most popular guy.*	4.70	1.50
He wore clothes that would show off his physique.	4.61	1.65
He showed off in front of women by buying something expensive.*	4.50	1.31
He cheated at a game or sport in order to win.	4.48	1.65
He played sports that are fairly dangerous, such as hockey, football, or lacrosse.*	4.48	1.90
He tried to date or marry a woman who was fairly well-off.*	4.43	1.66
He told the guys that he was a great lover.*	4.43	1.89

table continues

He took lessons in a sport.*	4.37	1.72
He flirted with his friend's girlfriend.	4.35	1.67
He boasted about his athletics skill.	4.33	1.79
He exercised to have a flatter stomach.*	4.32	1.59
He tried to look more attractive than other men.*	4.30	1.48
He tried to be the handsomest when he and his male friends went out.	4.23	1.57
He got his hair done at the hairdresser's.	4.23	1.77
He boasted about having a steady girlfriend.	4.22	1.73

The 20 most effective acts for women:

	<i>M</i>	<i>SD</i>
She became friends with the most popular women.*	5.42	1.35
She lied about her income.*	5.31	1.44
She worked out or lifted weights.	5.23	1.55
She tried to date the most popular guy.*	4.87	1.59
She tried to date or marry a man who was fairly well-off.*	4.83	1.48
She exercised to have a flatter stomach.*	4.83	1.57
She dressed to make her breasts appear larger.*	4.81	1.60
She hid some information about herself from her friends, so that they wouldn't think she was "uncool".*	4.79	1.70
She paid attention to the neatness and tidiness of other women's houses, so that she could make her house look better.*	4.70	1.69
She told the girls that she was a great lover.*	4.67	1.35
She dressed to get attention.*	4.60	1.56
She showed off in front of men by buying something expensive.*	4.58	1.58
She played sports that are fairly dangerous, such as hockey, football, or lacrosse.*	4.44	1.73
She dressed in fashionable clothes.	4.44	1.71
She cooked a fancy meal to show off her homemaking skills.*	4.42	1.60
She showed off that she could afford to buy the "best".	4.40	1.58
She copied another attractive woman's hairstyle.*	4.40	1.76
She tried to look more attractive than other women.*	4.39	1.73
She flirted with a guy when other women were around.*	4.37	1.53
She arm-wrestled other women.*	4.21	1.73

*Indicates the item was on both male and female lists.

Fewer of the ten least effective acts, found in Table 6, are identical, although there are some similar acts.

Table 6

The 10 Least Effective Acts for Men and Women

<u>The 10 least effective items for men</u>	<i>M</i>	<i>SD</i>
He had his nails done by a manicurist.	1.78	1.16
He dieted when he was already thin.*	2.02	1.26
When asked for help with an assignment, he pretended he didn't know the answer.	2.32	1.26
He had a facial.	2.39	1.45
He passed gossip about another man.	2.44	1.41
He cheated on an exam.*	2.48	1.56
He borrowed a lot of money so that he could buy something expensive.*	2.65	1.40
He cheated at a game or sport in order to win.	2.74	1.63
He cooked a lavish meal to outdo those done by other men.	2.87	1.40
He told all of his friends that each was his "one" best friend.*	2.89	1.55
<u>The 10 least effective acts for women.</u>	<i>M</i>	<i>SD</i>
She physically fought with another woman.	2.33	1.26
She cheated on an exam.*	2.40	1.59
She boasted about her bank account to the girls.	2.52	1.55
She was the leader of a group of women.	2.58	1.59
She told all her friends that each was her "one" best friend.*	2.58	1.81
She borrowed a lot of money so that she could buy something expensive.*	2.59	1.68
She dieted when she was already thin.*	2.62	1.58
She spent money entertaining men.	2.69	1.80
She entered drinking contests where the winner was the person who could drink the most in the shortest time.	2.71	1.74

*Indicates act was on both male and female list.

Analysis of variance was used to determine which tactics were considered effective for men and women respectively. According to the hypotheses, those tactics predicted to be used more by men than women, namely tactics related to the use of resources, status, and risk-taking, would also be considered more effective for men than women. Furthermore, the hypothesis that women more than men would use tactics

related to displaying an attractive physical appearance, also predicted that these tactics would be considered more effective for women. An ANOVA (2 X 2) was conducted for each of the tactics to examine main effects for sex of actor and sex of rater, as well as the interactions between these factors. The family-wise error rate was accounted for using the Bonferroni correction; for each ANOVA the critical value of p was set at .05 divided by the number of tactics dealing with one area, e.g. resources.

There were no significant interactions. Of the 26 tactics, there were two with main effects for sex of rater: Deception and Sexual Activity, and Acquire Sexual Activity. In both cases, male raters judged these tactics to be more effective than did female raters. There were nine tactics with a main effect for sex of actor; these are reported in Table 7.

Table 7

Beliefs about Tactic Effectiveness for Male and Female Actors.

<u>Tactics predicted to be more effective for men than for women:</u>	$F(1,102)$
Use Risk in Athletic Ability	32.92* ^a
Deception and Resources	0.56
Demonstrate Resources	7.21* ^a
Attract Attention to Resources	2.90
Acquire Resources	0.11
Manipulate Resources	0.90
Deception and Status	0.02
Demonstrate Status	19.28* ^a
Attract Attention to Status	1.07
Acquire Status	0.00
Manipulate Status	0.00
 <u>Tactics predicted to be more effective for women than men:</u>	
Attract Attention to Appearance	11.04* ^b
Improve Appearance	7.89* ^b
Manipulate Appearance	1.07

table continues

Tactics for which no predictions made:

Deception and Athletic Ability	0.50
Attract Attention to Athletic Ability	0.96
Demonstrate Athletic Ability	16.66 ^{*a}
Acquire Athletic Ability	3.47
Deception and Intelligence	0.75
Deception and Sexual Activity	6.19 ^{*a}
Attract Attention to Sexual Activity	3.97
Acquire Sexual Activity	6.06 ^{*a}
Demonstrate Domestic Skill	2.73
Attract Attention to Domestic Skill	2.40
Acquire Domestic Skill	11.22 ^{*b}
Attract Attention to Alcohol Use	14.09 ^{*a}

*p<.05

^aJudged to be significantly more effective for men.^bJudged to be significantly more effective for women.

To test the hypothesis that more effective competitive acts will be performed more frequently than relatively ineffective competitive acts, correlations were computed between the 79 act frequency means from Study 2, and the corresponding act effectiveness judgement means from Study 3. Specifically, the correlations between act frequency and act effectiveness as judged by both male and female raters are calculated for male and female actors and are reported in Table 8.

Table 8**Correlations between Act Frequency and Ratings of Act Effectiveness**

	Male Rater		Female Rater	
	Effectiveness for male actor	Effectiveness for female actor	Effectiveness for male actor	Effectiveness for female actor
Frequency in men	.45	.38	.58	.46
Frequency in women	.27	.56	.51	.59

Discussion

In Study 3, subjects judged the effectiveness of the competitive acts obtained in Study 1 as strategies for men and women actors to use in competing with members of the same sex.

The results of Study 3 provide mixed support for the hypotheses. There were several main effects for sex of actor. Specifically, the tactic Risk in Athletic Ability was considered significantly more effective for men than women, as was one of the tactics concerned with resources, namely, Demonstrate Resources. Of those tactics dealing with status, Demonstrate Status was considered to be significantly more effective for men than women.

As predicted, the tactics Attract Attention to Appearance and Improve Appearance were considered to be significantly more effective for female than male actors.

The remainder of the tactics hypothesized to be considered more effective for male or female actors respectively were non-significant (see Table 7). These predictive failures suggest that, in this university sample at least, men and women consider these tactics to be available to or effective for individuals of both sexes. On the other hand, subjects may have considered any of these tactics to be poor competitive strategies for either men or women. It may be that the acts subsumed in these tactics were poor representations of competitive acts. Future research might have subjects assess the inherent competitiveness of acts or tactics.

There were several significant main effects for sex of actor that were not predicted. For male actors, these included Demonstrate Athletic Ability, Acquire Sexual Activity, and Attract Attention to Alcohol Use. For female actors, the tactic

Acquire Domestic Skill was considered to be significantly more effective than for male actors. Interpretation of these non-predicted significant main effects can only be speculative without further research, however, there are several possible explanations. These unpredicted sex differences in act effectiveness may reflect competitiveness in areas outside those predicted by sexual selection theory. Or, these results may be explained as proximate mechanisms of intrasexual competition; that is, these tactics may reflect how contemporary men and women compete with members of the same sex in ways that are concordant with sexual selection. For men, activities related to showing off one's ability to consume alcohol, and to demonstrating one's physical strength and endurance may all be associated with risk-taking. These activities carry some inherent risk, and men that are good at these activities as judged by their peers may be able to capitalize on them in acquiring status. Furthermore, showing off a certain amount of risk may be attractive to women in demonstrating that these men, in an evolutionary sense, have "good genes". In terms of evolutionary theory (Darwin, 1871), men are predicted to seek sexual opportunities to a greater extent than women, due to the relatively low costs and potential high benefits in terms of reproductive success.

The finding that acquiring domestic skill was judged to be more significant for women is not surprising, given the traditional responsibility of women in this area. Demonstrating one's skills in this particular area may be a proximate mechanism for attracting potential mates. Alternatively, this finding may be interpreted in light of traditional ideas about male and female competence; domestic talent has traditionally been more important for women, who were more likely to be in the home caring for children. On the other hand, activities associated with athletics, acquiring sexual

activity, and alcohol use are more stereotypically male. While these tactics may be considered significantly more effective for one sex over the other, this may be a reflection of stereotyped attitudes rather than behavioral differences.

Men raters judged the tactics Deception and Sexual Activity, and Acquire Sexual Activity to be more effective than did female raters. These results are concomitant with the presumption in evolutionary theory that men more than women will be concerned with finding opportunities to have sexual intercourse; since the potential cost to men in terms of prospective pregnancy is far less than it is for women, men should be less discriminate in seeking sexual opportunities, even using deception if necessary (Trivers, 1985). Therefore, relative to women, men may consider these tactics to be desirable and effective.

Correlations between act performance frequency and act effectiveness judgements were calculated to test the hypothesis that acts judged to be relatively effective would be performed frequently (see Table 8). Overall, the same-sex correlations between frequency of act performance and act effectiveness were modest, ranging from .45 to .59. Four such correlations were computed: (1) male performance with male effectiveness when effectiveness was judged by men; (2) male performance with female effectiveness when effectiveness was judged by women; (3) female performance and female effectiveness when effectiveness was judged by women; and (4) female performance and female effectiveness when effectiveness was judged by men. The cross-sex correlations between male frequency and female effectiveness and between female frequency and male effectiveness were also computed, in each case for both male and female raters; correlations range from .27 to .51. The same-sex correlations provide modest support for the hypothesis that act performance frequency is related to act

effectiveness. There is a slight tendency for the same-sex correlations to be higher when the rater is female, suggesting that women may be more astute than men at monitoring the effectiveness of competitive tactics. The cross-sex correlations are generally lower than the same-sex correlations. This finding is not unexpected, since what is considered to be effective for women, for example, is more likely to be performed by women than by men. However, the cross-sex correlations are also higher when the effectiveness is judged by women; this finding may negate the suggestion that women are more accurate judges of effective competitive tactics. For instance, the cross-sex correlation between female performance frequency and effectiveness for males, when judged by female raters is .51; this correlation is greater than the same-sex correlation between male performance frequency and male effectiveness when judged by male raters. Interpretation of these correlations is confusing; the results may reflect the similarity between the sexes in act performance frequency shown in Study 2, or the similarity in acts that are judged to be competitive tactics for both men and women.

A greater number of tactics were considered to be effective for men than for women - six for men versus two for women. This finding may reflect a relatively greater importance of competition for men; from an evolutionary perspective, the reproductive stakes for men are higher than they are for women, and success may require finding and keeping a female, as well as intimidating and subduing other men. Alternatively, this finding may be related to traditional values concerning men's and women's areas of competence and sex roles. Traditionally, men have been involved in a greater variety of activities outside the home, while women have participated less in work outside the home, and been largely responsible for most domestic duties.

There is a high degree of similarity in acts judged to be the most effective for men and women: 11 of the 20 most effective acts are identical for both sexes. The correlation between male and female actor effectiveness calculated across sex of rater is .47, indicating modest similarity in tactics judged to be effective for both men and women in competing with others of the same sex. Similarity in effectiveness indicates that a variety of tactics are available to both men and women, in competing with the same sex. Furthermore, this implies that the demands for succeeding in life may be more similar than different for the sexes; while traditionally, men and women have experienced a division of labour by sex, this is no longer necessarily the case. At university particularly, there are identical demands on men and women, such as the need for obtaining high marks. Lying about one's income, becoming friends with the most popular man or woman, and lying about information about oneself to one's friends are considered to be effective acts for both men and women, as are acts associated with improving and displaying one's appearance. The deception involved may be associated with the fact that subjects in this study were dealing with up to hundreds of other students on a regular basis, where much of the interaction is likely to be on a superficial basis with relative strangers. The probability of future interactions among them may be relatively small, hence making the benefit of controlling one's appearance and even using deception, greater than the cost.

General Discussion

The results of this study provide at least modest support for the utility of an evolutionary perspective in generating hypotheses about intrasexual competition. The

hypotheses of this study were partially supported. The hypothesis that men would perform tactics involving use of resources, status and risk-taking more frequently than women was supported in Study 2 by greater male than female use of the following tactics: Use Risk in Athletic Ability, Demonstrate Resources, and Demonstrate Status. Analyses of the other tactics involving resources and status did not support the hypothesis. Similarly, support was obtained for the hypothesis that women, more than men, would compete using tactics related to the display of an attractive physical appearance by the greater female frequency of the tactics Attract Attention to Appearance and Improve Appearance. The remaining tactic concerned with appearance showed no significant sex difference in frequency.

The hypothesis that tactics related to the use of resources, dominance, and risk-taking will be considered more effective for men than women was partially supported in Study 3 by greater ratings of male effectiveness for the tactics Use Risk in Athletic Ability, Demonstrate Resources, and Demonstrate Status. Analyses of the other tactics involving resources and status did not support the hypothesis. Greater female effectiveness for the tactics Attract Attention to Appearance and Improve Appearance partially supported the hypothesis that tactics related to the display of an attractive physical appearance will be considered more effective for women than men, although this hypothesis was not supported by results from the remaining tactic concerned with appearance. Finally, the hypothesis that tactics judged to be effective would also be relatively frequently performed was supported.

While the present study used both different acts and tactics from those employed by Buss (1988a), his findings were largely replicated. Buss found that men reported performing tactics associated with the display of resources significantly more

frequently than women, and that these tactics were considered more effective in attracting potential mates for men than women. Furthermore, women reported performing tactics associated with enhancing one's physical appearance significantly more frequently than men, and these tactics were considered more effective in attracting potential mates for women than men. As in the present study, Buss reported only partial support for the hypotheses, and found a relatively strong similarity in tactics used by both men and women. Buss's study was conducted in the context of competition for attracting mates; the replication of his results in the present study suggests that intrasexual competition and mate attraction are closely related. Indeed, Buss assumes that the nature of intrasexual competition in humans can be predicted from knowledge of mate selection criteria.

The tactics derived in the present study are similar to those employed by Buss (1988a). For instance, the present study found that women used the tactics, Manipulate Status, Attract Attention to Appearance and Improve Appearance more frequently than men; Buss found the following tactics were used significantly more frequently by women: Wear make-up, Keep clean and groomed, Alter appearance, Wear stylish clothes, Wear jewelry, Act nice, Wear sexy clothes, and Act coy. Both studies support the prediction that women rather than men compete by optimizing their appearance.

In his study, Buss (1988a) makes no predictions regarding sex differences in intrasexual competition based on any other foundation besides mate attraction. The replication of his findings by the present study suggests strongly that mate attraction is a major area in which people compete with others of the same sex. However, mate selection criteria do not fully explain the significance of sex differences in intrasexual competition in the present study. For example, the tactic Attract Attention to Alcohol

Use was performed significantly more frequently by men than women, and furthermore, was considered to be more effective in competing with members of the same sex for men than for women. From the point of view of choosing a desirable mate, it seems unlikely that women would prefer a man who consumes large amounts of alcohol, particularly since that activity might detract from the time and resources he would be able to contribute to the family. However, if this activity reflects some aspect of risk-taking, it would be worthwhile determining whether women prefer as mates, men exhibiting high, low, or medium levels of risk-taking behavior.

The results of this study show that, for this sample, men and women share a good deal of similarity in their performance of competitive acts. This finding suggests that the proximate mechanisms of intrasexual competition may be similar for both sexes. That is, while ultimately, intrasexual competition was adaptive because it helped ancestral men and women find the "best" mate and reproduce, the proximate mechanisms that describe how intrasexual competition is enacted in the contemporary environment may be less associated with reproduction, and more involved with competing successfully in the modern world. The modern university environment, for example, requires individuals to compete academically, and for future employment; these factors require many of the same behaviors from men and women. The division of labour by gender associated with ancestral hunter-gatherer societies is no longer necessarily applicable; both men and women have to compete for limited high paying jobs, and certain types of work are no longer only generally available to one sex (e.g. female engineers and male primary care-givers are no longer unusual). It is understandable, therefore, that the proximate mechanisms of intrasexual competition

for men and women may be more similar than different in the contemporary industrialized world.

Speculation regarding the predictive failures in the study raises several possible explanations. The high degree of similarity of act frequency and act effectiveness for men and women may account for some of these failures. It is possible that the men and women who were subjects in the study experience similar demands for successful acquisition of desirable and potentially limited resources, i.e. both men and women need to be able to find a job and be self-supporting, and consequently, compete with members of the same sex in a similar manner. Immediate demands in the contemporary environment for succeeding at university may require competitive behavior not clearly predicted by sexual selection. Further research using subjects from other areas of life or in other cultures may shed light on this issue. Finally, some of the acts nominated in Study 1 may not be good examples of intrasexual competition. In this case, the results of Studies 2 and 3 may be somewhat invalid; future research could be concerned with obtaining more prototypically competitive acts.

Caution must be used in generalizing from this study to other samples. The subjects in this study were university students who, while undoubtedly in a highly competitive environment, may focus their competitive behavior towards academic goals. Furthermore, future research of intrasexual competition may include subjects' marital status as an important factor, since it is likely that psychological mechanisms mediating intrasexual competition may change when individuals are no longer looking for mates. In addition, individuals who have children may focus their competitive behavior around acquiring resources, status, etc. for children. Typical tactics might include enrolling one's children in enrichment programs, dressing one's children in

expensive, designer clothes, etc. Competition associated with children was not investigated in the present study, however, it will make interesting future research.

The competitive acts in this study were, for the most part, clearly competitive when taken at face value. What may be more interesting is to investigate more subtle intrasexual competition. If, as Hrdy (1981) suggests, women compete in more subtle ways than men, then it may take more in-depth analysis of female behavior and female groups to ascertain specifically how competition operates in women. For example, Hrdy's finding that dominant female primates can successfully suppress reproduction in subordinates may have important implications for women. The results of the present study are unable to fully address how subtle competitive acts may be, how frequently such hypothetical acts may be performed, or how effective they might be. Therefore, if women compete in a more subtle fashion than men, the present study may be incomplete with respect to female intrasexual competition.

The results of this study suggest that an evolutionary perspective can provide important insight into the origins of human social behavior. investigation of social behavior without examining its evolutionary significance is likely to be incomplete, and unable to provide ultimate causal accounts.

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Appendix A

Each subject received the following written instructions:

In this study we are interested in the things people do to compete with *members of the same sex*. Competition involves acquiring or attempting to acquire something *at the expense of other members of the same sex*. Competition occurs in a variety of life situations, not just in the traditional areas of athletics and games. For example, you might say, "*She diets to be thinner than other women.*" or "*He saved his money so that he could buy a flashier car than the other guys.*" Some behaviors might involve children; for example "*She makes her children's clothes and then sews designer labels onto them,*"

We are interested in *specific behaviors*. One should be able to answer the following questions from the acts you propose: Have you ever performed this act? How often have you performed this act? What is the intent of the act.

Please think of three people (including yourself) who have competed with *other members of the same sex*. First list the things that men(women) you know have done to compete with other men (women); then list the things that women(men) you know have done to compete with other women(men). For each act, please include what you think the intent of the act was; in other words, say *why* you think the act was competitive.

Following these instructions, five lines were provided for competitive male acts, and five for competitive female acts. Half of the subjects completed questionnaires with the male competitive acts first, and half completed those with female acts first.

Appendix B

The following table was derived by the author. The horizontal cells provided general words to describe the kind of action occurring in the preliminary list of competitive acts. Similarly, the vertical cells describe, in general, the objects or commodities being competed for. The judges placed the acts into tactics by choosing the word on each axis that best described (a) how the competition occurred, (e.g. the action), and (b) the object being competed for. The cell at the convergence point then became the tactic. Four independent raters judged each act on the preliminary list according to which tactic it belonged to. Acts that were judged not to belong to any of the above were placed in a miscellaneous category, and judges were asked to propose an appropriate tactic. Only those acts consensually judged by at least three of the raters were retained for further use in the study.

		<u>Attract</u>	<u>Acquire or</u>		
<u>ACTION</u>	<u>Use deception</u>	<u>Demonstrate</u>	<u>attention to</u>	<u>Improve</u>	<u>Manipulate</u>
<u>OBJECT</u>					
Appearance					
Self-control					
Athletic ability					
Intelligence					
Sexual activity					
Status					
Alcohol use					
Domestic skill					
Resources					

Appendix C

Subjects in Study 2 completed the following questionnaire to assess how often they had performed the 79 acts in the past year. Two versions of the act report were constructed: in one version all the items were worded so that the actor and any competitors were female, and the other version was similarly worded to pertain to men. The former were given to female subjects and the latter to male subjects. The male version is presented here. The instructions read as follows:

In this study we are interested in how frequently people perform certain acts. On the following pages are listed a series of acts. For each item, please circle the word that reflects your best estimate of how frequently you have performed that act in the past year. For example, if you have not performed that act in the last year, circle "NEVER". You need not try to determine whether an act is good or bad; we are only interested in how frequently you have performed these acts.

I dated another guy's girlfriend.

NEVER RARELY SOMETIMES OFTEN

I wore clothes that would show off my physique.

NEVER RARELY SOMETIMES OFTEN

I boasted about the groups or organizations I belonged to.

NEVER RARELY SOMETIMES OFTEN

I worked out or lifted weights.

NEVER RARELY SOMETIMES OFTEN

I bought something expensive that I couldn't afford.

NEVER RARELY SOMETIMES OFTEN

I cheated at a game or sport in order to win.

NEVER RARELY SOMETIMES OFTEN

I bought clothes that I couldn't afford.

NEVER RARELY SOMETIMES OFTEN

I applied for a better paying job.

NEVER RARELY SOMETIMES OFTEN

I dated a number of women at the same time.

NEVER RARELY SOMETIMES OFTEN

I played sports that are fairly dangerous, such as hockey, football, or lacrosse.

NEVER RARELY SOMETIMES OFTEN

I spent time cleaning my home and making it look nice.

NEVER RARELY SOMETIMES OFTEN

I showed off my expensive stereo or ghetto blaster.

NEVER RARELY SOMETIMES OFTEN

I avoided situations in which my male friends, who didn't know each other, would have to meet.

NEVER RARELY SOMETIMES OFTEN

I applied for a higher status job.

NEVER RARELY SOMETIMES OFTEN

I didn't admit to other men that I knew I was going to succeed at something; I pretended I was surprised when I did.

NEVER RARELY SOMETIMES OFTEN

I hid some information about myself from my male friends, so that they wouldn't think I was uncool.

NEVER RARELY SOMETIMES OFTEN

I dated someone I didn't know or like because it seemed important to have a girlfriend.

NEVER RARELY SOMETIMES OFTEN

I told my friends about my "one-night stand".

NEVER RARELY SOMETIMES OFTEN

I tried to be "best friends" with more than one guy.

NEVER RARELY SOMETIMES OFTEN

I boasted about having a steady girlfriend.

NEVER RARELY SOMETIMES OFTEN

I dieted when I was already thin.

NEVER RARELY SOMETIMES OFTEN

I hung around with the "in" group.

NEVER RARELY SOMETIMES OFTEN

I had a facial.

NEVER RARELY SOMETIMES OFTEN

- I told the guys I was great lover.
NEVER RARELY SOMETIMES OFTEN
- I went out with a woman because it gave me greater status.
NEVER RARELY SOMETIMES OFTEN
- I had drinking competitions with my male friends to see who could drink the most beer without getting sick.
NEVER RARELY SOMETIMES OFTEN
- I tried to look more attractive than other men.
NEVER RARELY SOMETIMES OFTEN
- I boasted about my athletics skill.
NEVER RARELY SOMETIMES OFTEN
- I became friends with the most popular guy.
NEVER RARELY SOMETIMES OFTEN
- I took lessons in a sport.
NEVER RARELY SOMETIMES OFTEN
- I tried to date or marry a woman who was fairly well-off.
NEVER RARELY SOMETIMES OFTEN
- I arm-wrestled other guys.
NEVER RARELY SOMETIMES OFTEN
- I flirted with a girl when other men were around.
NEVER RARELY SOMETIMES OFTEN
- I boasted about my bank account to the guys.
NEVER RARELY SOMETIMES OFTEN
- I flirted with my friend's girlfriend.
NEVER RARELY SOMETIMES OFTEN
- I entered drinking contests where the winner was the person who could drink the most in the shortest time.
NEVER RARELY SOMETIMES OFTEN
- I wore cologne to something at which it is not usually worn, e.g. the beach, in order to smell better than other guys.
NEVER RARELY SOMETIMES OFTEN
- I had a greater number of friends than most guys.
NEVER RARELY SOMETIMES OFTEN

I cooked a lavish meal to outdo those done by other men.
 NEVER RARELY SOMETIMES OFTEN

I showed off in front of girls by buying something expensive.
 NEVER RARELY SOMETIMES OFTEN

I cooked a fancy meal to show off my homemaking skills.
 NEVER RARELY SOMETIMES OFTEN

I worked at two jobs at the same time.
 NEVER RARELY SOMETIMES OFTEN

I showed off that I could afford to buy the "best".
 NEVER RARELY SOMETIMES OFTEN

I used a tanning salon.
 NEVER RARELY SOMETIMES OFTEN

I tried to be the handsomest when my male friends and I went out.
 NEVER RARELY SOMETIMES OFTEN

I borrowed a lot of money so that I could buy something expensive.
 NEVER RARELY SOMETIMES OFTEN

I tried to date the most popular girl.
 NEVER RARELY SOMETIMES OFTEN

I flirted with a woman who was already going with someone.
 NEVER RARELY SOMETIMES OFTEN

I dressed to get attention.
 NEVER RARELY SOMETIMES OFTEN

I bragged to the guys about my sexual encounters.
 NEVER RARELY SOMETIMES OFTEN

I dressed to make my chest appear larger.
 NEVER RARELY SOMETIMES OFTEN

I pretended to my friends that I had had sex with a woman.
 NEVER RARELY SOMETIMES OFTEN

I copied another attractive guy's hairstyle.
 NEVER RARELY SOMETIMES OFTEN

I physically fought with another guy.
 NEVER RARELY SOMETIMES OFTEN

When asked for help with an assignment, I pretended I didn't know the answer.

NEVER RARELY SOMETIMES OFTEN

I cheated on an exam.

NEVER RARELY SOMETIMES OFTEN

I had my nails done by a manicurist.

NEVER RARELY SOMETIMES OFTEN

I broke up with a woman so that I could go out with someone better looking.

NEVER RARELY SOMETIMES OFTEN

I exercised to have a flatter stomach.

NEVER RARELY SOMETIMES OFTEN

I wore bulky clothes to make myself look larger.

NEVER RARELY SOMETIMES OFTEN

I passed gossip about another man.

NEVER RARELY SOMETIMES OFTEN

I was the leader of a group of guys.

NEVER RARELY SOMETIMES OFTEN

I boasted about my car.

NEVER RARELY SOMETIMES OFTEN

I lied about my income.

NEVER RARELY SOMETIMES OFTEN

I got my hair done at the hairdresser's.

NEVER RARELY SOMETIMES OFTEN

I stared at other males to intimidate them.

NEVER RARELY SOMETIMES OFTEN

I took cooking classes.

NEVER RARELY SOMETIMES OFTEN

I stole something on a dare or to prove I could do it.

NEVER RARELY SOMETIMES OFTEN

I flirted with another guy's girlfriend.

NEVER RARELY SOMETIMES OFTEN

I picked a fight with a guy who makes me feel inferior.

NEVER RARELY SOMETIMES OFTEN

I told all my friends that each was my "one" best friend.

NEVER RARELY SOMETIMES OFTEN

I spent money entertaining women.

NEVER RARELY SOMETIMES OFTEN

I went steady with my girlfriend longer than I wanted to.

NEVER RARELY SOMETIMES OFTEN

I bought something another guy I knew had purchased.

NEVER RARELY SOMETIMES OFTEN

I jogged to improve my body.

NEVER RARELY SOMETIMES OFTEN

I played my car stereo loudly, secretly hoping to attract attention.

NEVER RARELY SOMETIMES OFTEN

I paid attention to the neatness and tidiness of other men's houses, so that I could make my house look better.

NEVER RARELY SOMETIMES OFTEN

I went out of my way to impress others with how nice and caring I was.

NEVER RARELY SOMETIMES OFTEN

I went out with wealthy women only.

NEVER RARELY SOMETIMES OFTEN

I dressed in fashionable clothes.

NEVER RARELY SOMETIMES OFTEN

I compared pay-cheques with the other guys.

NEVER RARELY SOMETIMES OFTEN

APPENDIX D

Subjects in Study 3 completed the following questionnaire which assessed their judgements of the effectiveness of the 79 acts in competing with other individuals of the same sex. Both male actor and female actor versions were constructed, and both versions were administered to both male and female subjects. The female actor version is presented here. The following instructions were given:

In this study we are interested in how effective you judge a list of acts to be in terms of competition between members of the same sex. Competition involves acquiring or trying to acquire something that is of limited availability and highly sought after by many members of the same sex. For example, individuals compete with members of the same sex for "commodities" such as status, or resources; they might compete in a variety of ways, such as by drawing attention to themselves, by deceiving others, etc.

You are asked to judge the effectiveness of each act as a way for that actor to compete against members of the same sex. It doesn't matter if you have or have not performed any of the acts yourself. Furthermore, it doesn't matter how wise you think a person would be to perform a particular act. We are only interested in how effective you think these acts are as strategies or tactics for competing with other members of the same sex.

Using the following 7-point scale, indicate your judgements, by circling the appropriate number:

1	2	3	4	5	6	7
not			moderately			very
very likely			likely to			likely to
to be effective			be effective			be effective

Use the intermediate numbers to indicate intermediate likelihoods of effectiveness.

She dated another girl's boyfriend.

1 2 3 4 5 6 7

She wore clothes that would show off her physique.

1 2 3 4 5 6 7

She boasted about the groups or organizations she belonged to.

1 2 3 4 5 6 7

She worked out or lifted weights.

1 2 3 4 5 6 7

She bought something expensive that she couldn't afford.

1 2 3 4 5 6 7

She cheated at a game or sport in order to win.

1 2 3 4 5 6 7

She bought clothes that she couldn't afford.

1 2 3 4 5 6 7

She applied for a better paying job.

1 2 3 4 5 6 7

She dated a number of men at the same time.

1 2 3 4 5 6 7

She played sports that are fairly dangerous, such as hockey, football, or lacrosse.

1 2 3 4 5 6 7

She spent time cleaning her home and making it look nice.

1 2 3 4 5 6 7

She showed off her expensive stereo or ghetto blaster.

1 2 3 4 5 6 7

She avoided situations in which her girlfriends, who didn't know each other, would have to meet.

1 2 3 4 5 6 7

She applied for a higher status job.

1 2 3 4 5 6 7

She didn't admit to other women that she knew she was going to succeed at something; she pretended she was surprised when she did.

1 2 3 4 5 6 7

She hid some information about herself from her female friends, so that they wouldn't think she was "uncool".

1 2 3 4 5 6 7

She dated someone she really didn't know or like because it seemed important to have a boyfriend.

1 2 3 4 5 6 7

She told her female friends about her "one-night stand".

1 2 3 4 5 6 7

She tried to be "best friends" with more than one woman.
1 2 3 4 5 6 7

She boasted about having a steady boyfriend.
1 2 3 4 5 6 7

She dieted when she was already thin.
1 2 3 4 5 6 7

She hung around with the "in" group.
1 2 3 4 5 6 7

She had a facial.
1 2 3 4 5 6 7

She told the girls she was a great lover.
1 2 3 4 5 6 7

She went out with a guy because it gave her greater status.
1 2 3 4 5 6 7

She had drinking competitions with her female friends to see who could drink the most
beer without getting sick.
1 2 3 4 5 6 7

She tried to look more attractive than other women.
1 2 3 4 5 6 7

She boasted about her athletics skill.
1 2 3 4 5 6 7

She became friends with the most popular woman.
1 2 3 4 5 6 7

She took lessons in a sport.
1 2 3 4 5 6 7

She tried to date or marry a man who was fairly well-off.
1 2 3 4 5 6 7

She arm-wrestled other women.
1 2 3 4 5 6 7

She flirted with a guy when other women were around.
1 2 3 4 5 6 7

She boasted about her bank account to the girls.
1 2 3 4 5 6 7

She flirted with her friend's boyfriend.

1 2 3 4 5 6 7

She entered drinking contests where the winner was the person who could drink the most in the shortest time.

1 2 3 4 5 6 7

She wore make-up to something at which it is not usually worn, e.g. the beach, in order to look better than the other women.

1 2 3 4 5 6 7

She had a greater number of friends than most women.

1 2 3 4 5 6 7

She cooked a lavish meal to outdo those done by other women.

1 2 3 4 5 6 7

She showed off in front of some men by buying something expensive.

1 2 3 4 5 6 7

She cooked a fancy meal to show off her homemaking skills.

1 2 3 4 5 6 7

She worked at two jobs at the same time.

1 2 3 4 5 6 7

She showed off that she could afford to buy the "best."

1 2 3 4 5 6 7

She used a tanning salon.

1 2 3 4 5 6 7

She tried to be prettiest when she and her girlfriends went out.

1 2 3 4 5 6 7

She borrowed a lot of money so that she could buy something expensive.

1 2 3 4 5 6 7

She tried to go out with the most popular guy.

1 2 3 4 5 6 7

She flirted with a man who was already going with someone.

1 2 3 4 5 6 7

She dressed to get attention.

1 2 3 4 5 6 7

She bragged to the other women about her sexual encounters.

1 2 3 4 5 6 7

She dressed to make her breasts appear larger.

1 2 3 4 5 6 7

She pretended to her friends that she had had sex with a man.

1 2 3 4 5 6 7

She copied another attractive woman's hairstyle.

1 2 3 4 5 6 7

She physically fought with another woman.

1 2 3 4 5 6 7

When asked for help with an assignment, she pretended she didn't know the answer.

1 2 3 4 5 6 7

She cheated on an exam.

1 2 3 4 5 6 7

She had her nails done by a manicurist.

1 2 3 4 5 6 7

She broke up with a man so that she could go out with someone better looking.

1 2 3 4 5 6 7

She exercised to have a flatter stomach.

1 2 3 4 5 6 7

She wore bulky clothes to make herself look larger.

1 2 3 4 5 6 7

She passed gossip about other women.

1 2 3 4 5 6 7

She was the leader of a group of women.

1 2 3 4 5 6 7

She boasted about her car.

1 2 3 4 5 6 7

She lied about her income.

1 2 3 4 5 6 7

She got her hair done at the hairdresser's.

1 2 3 4 5 6 7

She stared at other women to intimidate them.

1 2 3 4 5 6 7

She took cooking classes.

1 2 3 4 5 6 7

She stole something on a dare or to prove she could do it.

1 2 3 4 5 6 7

She flirted with another girl's boyfriend.

1 2 3 4 5 6 7

She picked a fight with a woman who makes her feel inferior.

1 2 3 4 5 6 7

She told all her friends that each was her "one" best friend.

1 2 3 4 5 6 7

She spent money entertaining guys.

1 2 3 4 5 6 7

She went steady with her boyfriend longer than she wanted to.

1 2 3 4 5 6 7

She bought something another woman she knew had purchased.

1 2 3 4 5 6 7

She jogged to improve her body.

1 2 3 4 5 6 7

She played her car stereo loudly, secretly hoping to attract attention.

1 2 3 4 5 6 7

She paid attention to the neatness and tidiness of other women's houses, so that she could make her house look better.

1 2 3 4 5 6 7

She went out of her way to impress others with how nice and caring she was.

1 2 3 4 5 6 7

She went out with wealthy males only.

1 2 3 4 5 6 7

She dressed in fashionable clothes.

1 2 3 4 5 6 7

She compared pay-cheques with other women.

1 2 3 4 5 6 7