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COGNITIVE PRIMING OF SEXUAL STRATEGIES

by

ALEXANDER NUSSBAUM

A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

1996

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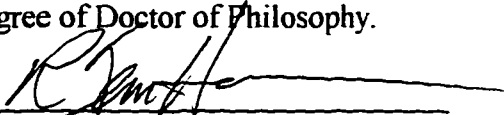
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This manuscript has been read and accepted for the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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THE CITY UNIVERSITY OF NEW YORK

Abstract**COGNITIVE PRIMING OF SEXUAL STRATEGIES**

by

Alexander Nussbaum

Adviser: Professor R.Glen Hass

An evolutionary theory of mating predicts that males and females possess different psychological mechanisms (resulting from their differential minimal parental investment, and potential reproductive rates) that lead to greater preference by males for short-term sexual relationships compared to females, and greater female selectiveness of sexual partners and resistance to utilizing short-term strategies.

There are, however, circumstances under which males are willing to employ long-term strategies, and females are willing to employ short-term strategies. The primary purpose of the present experiment was to investigate environmental contexts that affect the current interest of males and females in these two mating strategies.

The main hypotheses, which stemmed from an evolutionary theory of mating are as follows: (1) For males, if their preferred short-term strategy is made saliently unavailable, their interest in pursuing a long-term strategy will increase; and (2) if the likely success of short-term strategy is made salient, interest in long-term strategy will decrease. (3) For females, if a dominant male is made salient, their interest in

short-term mating will increase (since a dominant male is a major factor in making short-term mating more profitable for females).

Participants in five priming conditions read a statement purportedly written by an opposite sex college student which conveyed either the student's: (1) availability for a short-term sexual relationship (2) unavailability short-term (3) availability for a long-term relationship, (4) unavailability long-term, or (5) interpersonal dominance. Participants in a control group did not receive a priming statement. All participants were then asked about their own willingness and eagerness to engage in short-term and long-term romantic relationships.

The results showed no appreciable support for the hypotheses concerning males. For female participants, as predicted, the Dominant Prime condition elicited the highest stated willingness for engaging in a brief sexual relationship. Unexpectedly the dominant prime decreased male participants' interest in a short-term relationship and eliminated the difference between male and female participants' reported willingness to engage in a short-term relationship. The theoretical and research implications of the effects of the Dominant Prime and the failure of the other primes to affect male participants are discussed.

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This work is dedicated to my wonderful, loving and devoted parents, Henry and Leonia Nussbaum, and to my dear aunt, Eda Langer.

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Cognitive Priming of Sexual Strategies

The question of what individuals find attractive and seek in mating partners is one that holds enormous interest to the general public, as can be seen by glancing through the contents of popular magazines. This issue does not merely incite great interest, being central to genetic survival and sensitive to evolutionary pressures, it may hold the key to understanding the evolution of problem solving abilities of the human brain. Reproduction strategies and partner selection are activities at which any successful, that is, surviving, species would have to be proficient. Consequently, they occupy a prominent place in a species' evolved behavioral repertoire.

Polls asking “What do men want in a woman? What do women want in a man? What do men *really* want?” seem ubiquitous. But being self-reports from a self-chosen sample, generally these surveys offer rather pedestrian results: sense of humor and sensitivity are very important, looks and money are not, and there are no apparent male and female differences in the choosing process (Parents Magazine, 1990; Newsweek Magazine, 1990).

Serious attempts at a comprehensive explanation of the phenomena associated with mating partner choice and sexual behavior, taking into account their origin and purpose, have only recently been attempted. In a fascinating experiment, Clark and Hatfield (1989) had attractive male and female confederates approach opposite sex strangers on a college campus with the provocative question, “Would you go to bed with me tonight?”. The results: 75% of men agreed, 0% of females agreed. A rather

dramatic difference between males and females occurred. Does this result make sense in a larger context?

A framework for this larger context was provided by Trivers (1972) who maintained that the differences between male and female mating strategies, across any species, were produced by the differences between the sexes in the level of parental investment in offspring. Trivers defines parental investment as any behavior toward an offspring that increases the chance of the offspring's survival at the cost of the parent's ability to invest in other offspring. Trivers proposed that the relationship between parental investment and sexual behavior is as follows: (1) The sex investing more in offspring will be choosier about mating partners, and develop mechanisms that seek to maximize partner quality; (2) The sex investing less in offspring will develop mechanisms that seek to maximize partner quantity. This simple idea goes a long way toward explaining many of the nuances of the human courting process. In mammals, females typically make greater investment in offspring because ova are more costly to produce than sperm and females internally carry the fetus and nurse infants. Women, because they invest more in offspring, are more selective about mating partners. Men, because they can invest little in offspring, compete to maximize partners.

Attracting a Sexual Partner

Humans are social animals; a major part of their lives are spent interacting with others of their species, whether in business, friendship or romantic situations. In each of these types of social relationships, individuals exert choice in determining with

whom to interact and how much to value another as a potential relationship partner. This evaluating process is based on specific determinants. The most intimate social interactions occur with sexual partners.

Finding others sexually attractive is an expression of a biological need. It has long been noted by anthropologists that tremendous cultural differences exist in the expression of sexuality (Gregersen, 1982), yet sexuality itself must exist in every culture. Likewise, what characteristics are found attractive are to some extent influenced by societal norms and beliefs; nevertheless, in every culture some individuals are more valued as sexual partners than others and many characteristics have been found to be valued cross-culturally and universally. This is an expression of the same underlying biological reality and evolutionary history all humans share (Buss, 1989).

Characteristics related to an individual being attractive as a sexual partner can be divided into physical characteristics, such as physical appearance, or nonphysical qualities, such as competence, status (economic and social), and personality. Also, similarity to a prospective partner, both in attitudes and physical characteristics, seems to play a role in attractiveness (Price & Vandenburg, 1980).

The Importance of Attractiveness

“Beauty is a greater recommendation than any letter of introduction.” This quotation is not from *Cosmopolitan*, rather from a somewhat older source—Aristotle (quoted in Deaux & Wrightsman, 1988). The advantages of being attractive are legion,

and strongly oppose the cliché “beauty is only skin deep”.

“We would hate to find . . . that beautiful women are better liked than homely women—somehow this seems undemocratic” (Aronson, quoted in Berscheid, Dion, Walster & Walster, 1971).

There is something unsettling about the advantages the beautiful receive. It violates our need to believe in a just world. However, the importance of attractiveness and the benefits it brings are well known and have been confirmed in a large body of research (Berscheid, 1985).

Perhaps the most surprising finding in attractiveness research is the extent to which level of attractiveness affects how an individual will be treated in a wide range of situations. Many investigations have dealt with the social effects of an individual's attractiveness. The conclusion that has constantly emerged is that attractive people are treated better by society than unattractive people.

It has been shown by Dion, Berscheid, and Walster (1972) and Stroebe, Insko, Thompson, and Layton (1971) that the more attractive an individual is, the more he or she is valued as a companion whether in work, dating, marriage, or friendship. Unattractive people have less influence on others than better-looking people do (Kahn, Hottes, & Davis, 1971; Sigall, Page, & Brown, 1971) and even associating with an unattractive person is socially disadvantageous (Sigall & Landy, 1973). Berscheid,

Dion, Walster, and Walster (1971) and Kirkpatrick and Cotton (1961) found that attractive individuals have more friends, and are more likely to be happy in marriages. If an individual suffers misfortune, the less attractive he is, the less sympathy he receives (Shaw, 1972). It has also been shown that unattractive people are expected to do more misdeeds, and that their misdeeds are considered more serious than if the same actions are done by more attractive people (Dion, 1972; Miller, Gillen & Schlenker, 1974). Attractive individuals are rated as kinder, happier, more self-confident and successful than less attractive individuals (Jones, Hannson, & Phillips, 1978). Attractive people are preferred as dating partners (Stretch & Figley, 1980; Shanteau & Nagy, 1979).

Attractive people are perceived as lesser violators of personal space when close by (Kmiecik, Mausar & Banziger, 1979). Ugly people are helped less in emergencies (Piliavin, Piliavin & Rodin 1975). Attractive defendants receive more lenient treatment (Piehl, 1977). Attractive plaintiffs are favored by simulated juries over the unattractive ones (Stephan & Tully, 1977). Judges and juries are more likely to be lenient with good looking criminals (Sigall & Ostrove, 1975).

Teachers discipline attractive children more leniently and consider them smarter, nicer, better adjusted and more likely to succeed (Langolois & Stephan, 1981). Teachers give better report card grades to attractive than unattractive children when the test scores are the same (Salvia, Algozzine, & Sheare, 1977).

At West Point, cadets with strong jaws and masculine features rise to higher ranks

than those with softer features (Keating, 1985). Hiring preferences are shown for attractive over unattractive applicants (Cash & Kilcullen, 1985; Miller & Routh, 1985; Dipboye, Arvey, & Terpstra, 1977). Dipboye, Fromkin, and Wiback (1975) found that when participants, including professional interviewers, had to choose between attractive and unattractive applicants for a position, the attractive applicant was chosen 81% of the time. Attractive men and women have more prestigious and higher paying jobs (Umberson & Hughes, 1984). So, apparently attractive individuals have a great advantage in achieving economic success. In short it pays to look good.

Similarity and Market Value

Similarity is one factor that causes attraction. Physical and behavioral similarity exist between spouses (Spuhler, 1968; Vandenberg, 1972) and social pressures encourage similarity in characteristics such as age, religion, race, and social class.

Spouse similarity can be the product of initial assortment, with the similarity existing before the relationship, or can be caused by convergence due to the relationship.

Furthermore, social circumstances exert pressure for similarity to exist on some characteristics, and this can confound findings of similarity in other characteristics. If a couple is similar in age, race, religion and social class, they cannot help but be similar in many other areas that are correlated with these characteristics.

Price and Vandenberg (1980) found significant correlations for height and weight of marriage partners, as well as significant correlations for fathers' status, years of education, personality traits of conformity, compulsiveness and trust, alcohol

consumption, smoking and foods eaten. The correlation between degree of similarity on a particular variable and length of marriage was significant only for degree of social activity and food and alcohol consumption. This provides evidence that similarity on the other variables was due to initial assortment.

Hill, Rubin & Peplau (1976) followed the histories of 231 dating couples over the course of two years. At the end of this period about 45% had broken up. It was found that for all couples similarities between partners with respect to age, SAT scores, physical attractiveness, height, religion, and sexual attitudes were all above chance. But it was also found that similarity in age, SAT scores, and physical attractiveness were greater for couples who stayed together than for those who did not; the correlations for these three variables were not significant for the couples who broke up. This indicates that similarity with respect to key variables is important for a lasting relationship.

Murstein (1972) found that the levels of attractiveness of engaged couples were correlated significantly higher with each other than those of randomly matched couples were. In analyzing the effect of rejection possibility on partner choice, Murstein noted that while physical attractiveness is immediately noticeable and desirable in a partner, other factors play a role in sustaining a longer term relationship, producing their own benefits and costs, and "Unfortunately, the supply of physically attractive partners is limited, whereas the desire to marry is experienced by well over 90% of the population." (p. 9). This interplay between cost in effort and chance of rejection

versus reward would then produce the similarity in attractiveness in couples, as individuals choose the best partner who will also desire them. Terry and Macklin (1977) found participants could find a male's wife from a set of photographs well above chance.

A social exchange theory (Blau, 1964) would predict that both partners share a similar level of attractiveness, unless one partner makes up for lacking in looks with some other characteristic that would benefit the other partner. And the values of particular characteristics in heterosexual relationships differ depending on the sex of their possessor. Here we approach the sex differences that are so typical in mating and which we will see so much more of below.

One example of the exchange of valuable resources is the common rich older man and beautiful younger woman situation. Bar-Tal and Saxe (1976) showed participants slides of what were supposed to be married couples. The physical attractiveness of each member of the couple was varied. When participants were asked to judge the male's income level, unattractive men paired with attractive women were judged to have the highest income.

It is common for a wealthy man to have a gorgeous "decoration" on his arm. Sigall and Landy (1973) found that a male is viewed most positively when accompanied by an attractive woman and most negatively when with an unattractive woman. To the extent that men are aware of this effect and that wealthy men are able to exchange their financial assets for an attractive female partner, they can enhance their

image in the eyes of others by “acquiring” a beautiful mate.

Women care more about their partners' socioeconomic status than men do, and a high status but average looking man is as desirable to women as a highly physically attractive man of moderate status; but men prefer physically attractive women regardless of status (Townsend & Levy, 1990a). For women, the socioeconomic status of a man's dress affected their ratings of his attractiveness (Townsend & Levy, 1990b). Furthermore, high occupational status significantly affected the physical attractiveness rating of a man, but not of a woman (Hickling, Noel & Yutzler, 1979). This last finding means that women's very conception of a man's physical attractiveness is tied to his status, while for men, a woman's physical attractiveness is simply based on her looks.

Indeed the process of mate finding may be seen as a market in which females exchange their physical attractiveness for the status males supply. Not surprisingly, it has been found that attractive women tend to obtain husbands of high status (Elder, 1969, Udry, 1977, Taylor & Glenn, 1976). Udry and Eckland (1984) examined the connection between attractiveness ratings of individuals' high school yearbook pictures and their socioeconomic status 15 years later. A female's personal income and occupational status were found unrelated to her attractiveness, but her household income was positively correlated with her attractiveness, evidence that attractive women marry successful men. In longitudinal studies, a woman's attractiveness was found to be a predictor of her future husband's financial standing (Taylor & Glen, 1976). Unmarried women expect their future husbands to be more successful than

unmarried men do their future wives, and women expect that their future husbands will make significantly more money than they will (Ganong & Coleman, 1992).

Hirschman (1987) maintains that “personal” advertisements, like any other advertisements, are attempts to emphasize aspects of a product that will appeal most to the prospective buyer. Personal advertisements offer a source of evidence regarding both what the sexes value in a mating partner and what they feel is a valuable asset to offer in return. And as such, Hirschman found that women offered physical attractiveness resources and sought monetary resources; men offered monetary resources and sought physical attractiveness. It has been found, in looking through personal ads, that women were more likely to advertise their physical attractiveness, and men more likely to seek it; men were more likely to advertise their financial security and women to seek this benefit (Harrison and Saeed, 1977). The personal advertisement market can be characterized as men seeking to exchange their resource status for young, attractive women and women seeking to exchange their attractiveness for financially successful men (Thiessen, Young & Burroughs, 1993).

Wiederman, (1993) in analyzing gender differences in the content of personal advertisements, found that men were more likely than women to claim financial resources and sincerity, and seek an attractive body shape, while women were more likely than men to claim an attractive body shape, and seek financial resources and sincerity. In addition women more likely than men to make it clear that long-term involvement was a prerequisite for a sexual relationship.

In analyzing personal advertisements for body type sought, Andersen, Woodward, Spalter and Koss (1993) found that males looked for women who were five years younger, fit and thin, and females looked for men who were tall, fit, athletic and three years older. In personal advertisements, men largely emphasized appearance as the characteristic sought, females sought financial status and commitment, as well as appearance (Davis, 1990); men sought attractive physical appearance and youth, while women sought resources from potential partners and men were more likely to seek casual relationships, while women were more likely to seek long-term relationships (Greenlees & McGrew, 1994). Men were more likely to seek a slim weight and offer height, while women were more likely to offer weight and seek height (Koestner & Wheeler, 1988). In addition, women were more likely to seek specific personality traits such as sincerity, maturity, sense of humor, intelligence and spirituality than men were (Deaux & Hanna, 1984).

What Comprises Attractiveness?

A fascinating question is what makes us find a given appearance attractive. Why do we find attractive the people we find attractive? Although the cliché would have it that “beauty is in the eye of the beholder,” that is clearly not the case, the existence of “supermodels” clearly demonstrates some consensus. It is certainly possible to determine the features we associate with attractiveness. What then, however, makes these features special? Cultural factors? To some extent. Anthropologists can testify to the bizarre (to us) features other cultures consider attractive: protruding lips, stretched

out necks, deformed feet (Cover, 1971; Morton, 1995). Even in our culture ideas of attractiveness seem to change. Nineteenth century beauties look corpulent today. Since the sixties, the height of Miss America contestants has increased and the weight decreased (Goleman & Bennet-Goleman, 1987).

Nevertheless major aspects of attractiveness go beyond mere cultural vogue and, having their roots in evolution and the struggle for survival, are part of what it means to be human. In fact, what constitutes physical attractiveness has been found to be largely the same cross-culturally (Cunningham, Roberts, Barbee, Druen & Wu, 1995; Maret & Harling, 1985; Singh, 1993; Thakerar & Iwawaki, 1979).

Why do men find Kathy Ireland more attractive than, say, Barbara Walters? It sounds like a stupid question. Obviously because Kathy Ireland is young, firm, with long legs and an hour glass figure. But just why is that attractive? Some might answer because our society teaches us so (e.g., Wolf, 1991). But then why does society teach us that some people are attractive and others are not? Some things seem so obvious to us that we do not bother asking "why?". Yet this question is interesting. Why do we find some individuals appealing as sexual partners and others not appealing? Why are some women able to parlay looks into economic gain? If we accept the idea that humans are the product of evolution via differential reproductive success, then this process may hold the key to answering the above questions.

According to a theory proposed by David Buss (1987), the features men find attractive in women are those which are signs of peak child bearing ability, namely

health, vitality, and youth. The level of female physical attractiveness is tied to the reproductive potential of the woman; it rises in mid-teens and goes down by the late 20's. Witness that men who are powerful and rich enough often choose female companions in their teens or early twenties no matter how advanced their own age (Gordon, 1988). A man's value as a mating partner is less closely correlated with youth, and so less correlated with youthful physical attractiveness. It is also related to ability to provide for his offspring, and this depends on power, ability and status. While men of above average size and strength stood a better chance of bringing food and providing protection and those features remain attractive to women, the power inherent in rank and money is also important or, in other words, "power is an aphrodisiac" (Henry Kissinger, quoted in Kalb & Kalb, 1974. P.10).

Evolution and Social Behavior

The question "What is man?" is probably the most profound that can be asked by man. It has always been central to any system of philosophy or of theology. The point I want to make now is that all attempts to answer that question before 1859 are worthless and that we will be better off if we ignore them completely (Simpson, 1986, p. 472).

So wrote George Gaylord Simpson referring to Darwin's publication in 1859 of *The Origin of Species*. According to Simpson, without an understanding of evolution we have no understanding of mankind and its behavior.

In 1975 Edward O. Wilson published *Sociobiology: The New Synthesis* which

focused on “the systematic study of the biological basis of all social behavior” (p. 4).

Wilson maintains that social behaviors are selected by evolution because they contribute to the biological fitness (survival) of the organisms that engage in them.

Humans are born with behavioral tendencies. How humans express or inhibit these tendencies are culturally determined. Social behaviors in all species, including humans, are performed because the genes that allow for them have been selected for by evolution since they have contributed to genetic survival (that is, have survived), and they therefore have a biological basis.

An evolutionary theory of social behavior is interested in examining cultural universals, behaviors that occur in all cultures and thus reflect the “biogrammar” (Barash, 1979), an underlying system resulting from mankind's common evolutionary history, which provides structure for social behaviors by predisposing and limiting their range. A human nature thus exists in genetically determined behavioral tendencies. All cultures have language, some pattern of dress and adornment, status hierarchies, and some form of ritualized sanctioning of male-female association (Daly and Wilson, 1983).

Evolutionary Implications for Sexual Behavior

In virtually all species males are selected to be aggressive sexual advertisers, while females are selected to be choosier comparison shoppers (Barash, 1979, p. 48).

If the master reason behind all our varied behaviors is to perpetuate our genes, it

can be immediately seen that the “mating game” and all it entails—the romancing, choosing and dating, the infinite array of rituals adopted by cultures to promote and regulate the pairing of males and females—must be an expression of this overriding reason. And the above quotation illustrates a universal rule of the game.

DeVore (quoted in Fisher, 1982) emphasizes the idea that women tend to choose their sex partners, not the other way around, and said “Males are a vast breeding experiment run by females.” (p. 144). DeVore maintains that men will stop being aggressive and macho when women stop choosing these kind of men, and that women in effect determine what males will be like. While male aggressiveness can cause matings independent of female choice (through forced mating and elimination of competition), male aggressiveness itself probably developed in part through female choice. Women have great choice in mating selection but the choices they make have tremendous importance for their genetic survival. A male's genetic survival is based less on choosing than winning, whether winning the female or beating other males in direct competition. Women are a valuable resource for males to battle over and it means genetic extinction (at least in term of direct descendants) for males who fail to win this battle.

Sexual differences in strategies for choosing mating partners occur, because as Dawkins (1989) points out, these differences arise from the very definitions of maleness and femaleness. Dawkins noted that while in mammals (including humans), for example, the differences between the sexes is defined by a whole set of

characteristics, these differences do not hold for animals and plants in general. In frogs, for example, neither sex has the standard male sexual organ. The basic and fundamental definition of the sexes is that the male has smaller and more numerous sex cells than the female, and thus invests less energy in each one. So in humans, for example, male and female, through sperm and eggs, contribute an equal number of genes to the offspring, but the food reservoir and offspring bearing is entirely the female contribution.

Humans engage in intraspecies competition for the resources necessary for reproduction, namely healthy members of the opposite sex. This competition is an aspect of the larger intra-species battle for the perpetuation of genetic endowment.

Darwin (1871) differentiated between intrasexual selection and intersexual selection. Intrasexual selection consists of direct competition between same sex members, such as the competition between males for females. It produces size, strength or other characteristics which determine victory in this competition. Intersexual selection constitutes differential choice by members of one sex for individuals in the other sex. Darwin noted that females in most species were choosier than males and so intersexual selection was also termed "female choice."

Sexual attractiveness can be defined as those characteristics possessed by an individual which aid it in being chosen over another individual by a mating partner and thus help in winning this fundamental survival competition. How vital a competition this is can be grasped in a phenomenon elaborated by Darwin (1859); characteristics

that actually impair physical survival, (i.e., bright colors, long tails, huge horns), are maintained by evolution if they increase chances of obtaining a mating partner. It follows that a winning strategy for mating access success would be the acquisition and display of those characteristics valued and chosen by opposite sex members.

What determines which characteristics will be valued in a mating partner? The answer in an evolutionary framework must be those which promote genetic survival, through the production of offspring with the highest survival probability, be it through fitness or numbers. The preferred strategies adopted in choosing mating partners will be the ones that produce the above results. For males such a strategy is to maximize copulating opportunities, since any copulation potentially produces an offspring at minimal cost. For females such a strategy is to wait for the “best male”, one who provides genes or resources that maximize survival of offspring.

Human females are unique among primates in that their sexual receptiveness is not limited to a specific time of being in “heat.” A possible explanation of this characteristic lies in the fact that human infants are particularly dependent on parenting for survival for an unusually long period of time. Thus, having a father share in parenting responsibility is a great advantage for infant survival. Continuous sexual availability may have evolved as a tool for keeping the father around (Fisher, 1982). When promiscuous behavior is found among female primates, the explanation seems to be that the estrus cycle provides a limited window of opportunity, and the female must choose before the window is gone, leading to “last minute” lowering of standards

(Small, 1992). This is akin to scalper's prices falling as the game is about to start. But human females are not sexually active just during estrus, the "window" is not as clear cut, so both the opportunity and need for selectivity is constant.

Sexual Differences in an Evolutionary Light

According to an evolutionary theory the features that men find attractive in a woman will be conveyed by her physical appearance, however the features women find attractive in men are, in addition to purely physical features, signs of his power, status, and success in that given society (Townsend & Levy, 1990a; Townsend & Levy, 1990b). This theory implies consequences that may be observable in society. In our society it has been more acceptable for men to find women attractive on the basis of purely physical factors, indeed for men to judge women solely on looks, than for women to judge men in purely physical terms.

As an interesting side point, magazines aimed at women often have an attractive, provocatively clad woman on the cover. Magazines aimed at men would never have a similarly presented man on the cover (unless aimed at homosexual males). However, they might have an athlete on the cover. One explanation for this observation could be that women are valuing themselves based on looks, and men valuing themselves based on dominant performance. This sex difference in the relative importance of appearance and status in attractiveness should be seen not only in behavior but also reflected in the cognitive processing for attractiveness.

According to an evolutionary model of mating, the chief characteristic males

look for in a female is reproductive value. Because reproductive value is correlated with age and health (Buss, 1987), and physical appearance provides the most readily apparent cues for it, it follows that males will seek physical attractiveness. Males should value (and find attractive) those physical features in a woman that are strong indicators of youth and health. Buss (1987) reviewed studies of mate selection criteria done over the last 40 years, and noted that they show, regardless of the decade in which they were done, that men place a higher value on physical attractiveness than resources and that women value resources more than physical attractiveness. Buss concluded "The magnitude of this sex differences does not appear to have changed over the past 40 years."(p. 344).

Greater male use and perceived effectiveness of resource display and greater female use and perceived effectiveness of enhancing physical appearance have been found (Barnes and Buss, 1985). Men were more likely to brag about or display resources, women more likely to work on appearance. Women are shown to be more likely to engage in "seductive attire" behaviors, and men more likely to perform "initiative behavior." Barnes and Buss used self and spouse reports to identify the frequency of performance of specific acts by members of married couples. In both of the data sources (self reports and spouse reports) women were found to perform the wearing of seductive attire more than men were, and men were found to perform behavior showing initiative more than women were. Tooke and Camire (1991) found that male deceptive intra sexual mating behaviors involve the exaggeration of desire for

commitment and resource acquisition ability and female deceptive intersexual mating behaviors involve alteration of looks.

Rosenwasser, Adams and Tansil (1983) tested the hypothesis that women are more concerned with the appearance of other women than men are concerned with the appearance of other men. They found that given opportunity to view slides of men and women, both men and women looked the longest at women.

Buss (1989) using data collected in 33 countries found that across cultures males valued physical attractiveness and youth in potential partners more than females did, and that females valued financial success and characteristics associated with it more than males did, when choosing a mate. Gregersen (1982), summarizing thirty years of research in almost 300 societies, concluded that cross-culturally men are more sexually attracted by physical appearances, while their own attractiveness is dependent on status, prowess, and ability.

Physical attractiveness has commonly been considered a more important asset for females than males in the attraction of a mating partner. This idea is also supported by research utilizing a wide variety of methods. Feingold (1990) found this effect in more than 20 studies utilizing a questionnaire paradigm: six studies examining the content of personal ads, 10 studies that correlated physical attractiveness with romantic success, and four studies that correlated physical attractiveness with level of liking in one on one or blind date situations. This effect was found both in procedures that examined self-reports as well as those that examined actual behavior. Townsend and Levy (1990a)

found that women actually preferred high status, homely males over low status, physically attractive males as partners, but for men, females' status made no difference.

However, the differences in how much males and females value the attractiveness of a partner were larger when examining stated preferences than when examining actual behavior. So males and females seem to differ even more in how much they think they value physical attractiveness, or are willing to state so, than in how much they actually value appearance. This last result seemed somewhat puzzling, since, as Feingold (1990) stated, women may value appearance, yet be forced by economic considerations to settle for rich but not handsome men. Perhaps the answer lies in possible powerful societal pressures on females for them not to claim that a man's looks are of great importance to them. These may be a manifestation of societal pressure for engaging committed relationships as opposed to short-term sexual relationships, since a male's physical attractiveness may be relatively more valuable in a short-term than long-term relationship, and economic resources more valuable in a long-term relationship. We will be dealing more with this idea further below.

As Symons (1987) put it "females rarely can promote their reproductive success by mating with many males, but they have a great deal to gain by mating with the best males." (p. 100). From this simple fact Symons points out that a number of sexual differences follow not only reasonably, but demonstrably, in experimental research, everyday life and literature. For example: men are sexually aroused by the mere sight

of a nubile woman, women are aroused tactually by favored males. Pornography, with its indiscriminate sexual behavior, is almost exclusively a male interest; romantic literature with the heroine being won by the powerful, almost superman like, male hero, is its female equivalent.

Sexual attractiveness is the measure of mate value. We do not simply find attractive what others find attractive, or simply find attractive what we are told to find attractive, as theories of attractiveness that focus merely on societal input and do not consider its biological underpinnings, are apt to stress. There is certainly cultural diversity in standards of attractiveness, but Symons (1987) points out that much of this diversity is due to the happenstance of what the signs of status in a particular society happen to be. While cultural input and social learning are powerful forces in promoting what constitutes attractiveness, there is an inherent nonrandomness in what is taught, and common underlying aspects to notions of attractiveness in different cultures (e.g., Cunningham et al., 1995; Singh, 1993). Simply put, we find those features in another sexually attractive that signal an increase in odds of our genetic survival if we mate with that person.

As we have seen, men in all cultures prefer young nubile females; women in all cultures look for signs of status in a male. Social input merely changes what those signs of status are. A woman's sexual attractiveness is determined by her physical appearance, while a man's physical appearance is important in sexual attractiveness where it contains signs of his health, vigor and status.

In the words of Flood (1981) "A man seeing a desirable woman walking down the street can easily imagine her undressed and available to him. He needs no response from her to continue his fantasy or even to get an erection. A woman's fantasy, on the other hand, revolves around who the man is, how he fits into the world, she doesn't make that automatic mental leap into bed." (p. 36)

Or, in other words, is he successful?, what is his status?, is he a winner?, is he dominant?, will he be willing to share his resources? Green, Buchanan and Heuer (1984) looked at the partner choices dating service members made. The members looked at potential partners' photographs and profiles, and then decided whether they wanted to date the person. Women cared about status the most in deciding whether a man was, in the experimenters' words, a "winner" (worth dating) or a "loser" (not worth dating), while men cared only about the women's physical appearance as shown in the photograph in deciding her desirability as a date. Women need to be selective, and are, while most men would be willing to engage in sex with any moderately attractive female stranger, especially under circumstances where no societal punishment would result.

Males and females were found to differ in the nature of their sexual fantasies (Ellis & Symons, 1990). In women's fantasies, feelings and ongoing relationships often played the prominent role, male fantasies were about impersonal sex acts featuring partner variety. Ehrlichman and Eichenstein (1992) found that males and females differ in how much they wish "To have sex with anyone I choose," more males wishing

for this than females.

Wallace (1979) facetiously suggested an experiment that in its original form would definitely not get through a human participants research committee. A male and female experimenter would enter a bar and the amount of time it took them to persuade a stranger to have sex with them would be measured. Wallace anticipated that “The success of most women could be measured with a stop watch, but that the men might well require a calendar.” (p. 71). But recall the Clark and Hatfield (1989) study cited above, where they managed to conduct a not dissimilar experiment, and found that 75% of males agreed to have sex with a stranger, while 0% of females agreed. Men show a far greater interest in uncommitted sex than women (e.g., Buss & Schmitt, 1993; Symons, 1979). Males' desire for partner variety and low investment relationships allows almost any woman to have as many short-term sex partners as she wants (Symons, 1979). Males and females were found to differ even in what they desire in sexual activities, females seeking intimacy and males seeking arousal (Hatfield, Sprecher, Pillemer & Greenberger, 1988).

Note that physical attractiveness was seen to be a more important component of a female's mating worth than a male's. However, men have less to lose by a poor short-term partner choice, as they have a smaller minimum investment in each pregnancy. Therefore, women when judging men, even for physical attractiveness, may need to be “right” more. Women rating men for physical attractiveness were found to be influenced by other women's rating especially negative ones, while men were

relatively uninfluenced by other men's ratings, when rating females for attractiveness (Graziano, Jensen-Campbell, Shebilske & Lundgren, 1993). These results may be explained in terms of social training and social influence sexual differences; but it is also possible that, from an evolutionary perspective, women have more to lose by being wrong on this judgement and so informational social influence has a more important effect on this decision for women.

Reis, Nezlek and Wheeler (1980), in analyzing journal records kept by undergraduates, found that one's physical attractiveness was positively correlated with the quantity of opposite sex social interactions for males, but that there was no significant correlation between physical attractiveness and opposite sex interactions for females. Women are choosers, and attractive men get chosen more. Though physical attractiveness is a relatively less important component of male sexual attractiveness than female sexual attractiveness, because of the importance "success" plays in determining male sexual attractiveness, since males are more indiscriminate even unattractive females can find males willing to interact with them. It is also likely that attractive men more actively seek out women, for they have learned that these actions will result in success, while unattractive men may become discouraged or hesitant following rejection.

An evolutionary viewpoint allows for the formulation and evaluation of hypotheses about what is attractive and indeed a number of such hypotheses have clear experimental as well as intuitive and anecdotal evidence behind them. Youth, signs of

good health and vigor are sexually attractive. Signs of status and dominance are especially important as determinants of male attractiveness. Variety in partners is very appealing to males. Men who are in the rare situation where they can engage in low risk, temporary sex with unlimited partners, such as rock stars and athletes, almost always do so (Carrol, 1992, Elston, 1991). Indeed, the sex lives of athletes and rock stars on the road can offer a window into male sexual preferences unencumbered by the limitations that intrude on lesser men. And the fact that there is an unlimited supply of young women who play hard to get or ignore “the boy next door,” but are eager to throw themselves at celebrities, tells us something about what women find attractive (Des Barres, 1990).

Symons (1979) offered a rather fascinating theory giving another window into male and female “undiluted” sexual preferences. According to Symons, while homosexuals and lesbians differ from the heterosexual population in what sex they prefer, their preferences for and behavior with their sexual partners reflects undiluted male and female preferences with no need to “compromise” with the opposite sex. Thus, homosexuality is uncompromised male sexuality in everything but sexual object.

It was common for many gay males (at least pre-AIDS) to have dozens of different partners in a year. Unlike their heterosexual counterparts, in male homosexual encounters there was no female with a different mating strategy to restrain the males' more unrestrained sexual orientation. Also similar to heterosexual males, among gay males looks and youth were all important in attractiveness, social status largely

irrelevant. Lesbians tend to be monogamous, and have fewer partners than gay males (Symons, 1986).

Symons (1979) concluded "That there is a substantial male homosexual market for pornography and no lesbian market whatsoever suggests that the tendency to be sexually aroused by "objectified" visual stimuli is simply a male tendency, not, as is often claimed, an expression of contempt for women."(p. 301). And indeed while male homosexual prostitutes are as common as female prostitutes for men, prostitution for lesbians is unknown. This idea that homosexual mating preferences offer a glimpse into heterosexual mating mechanisms has recently been subjected to experimental verification in a number of studies. Bailey, Gaulin, Agyei and Gladue (1994) found that on a number of sexual attitudes in which males and females differ, homosexuals were similar to same-sex heterosexuals. Homosexual males did not differ from heterosexual males in interest in uncommitted sex, importance of partner's physical attractiveness, unimportance of partner's status, and interest in visual sexual stimuli. Homosexual women did not differ from heterosexual women in interest in uncommitted sex, but differed in interest in visual sexual stimuli (homosexual women being more interested) and importance of partner's status (homosexual women being less concerned). The similarity between heterosexual and homosexual women's attitudes about casual sex indicates that heterosexual women's reluctance to engage in casual sexual relationships are not primarily due to a conscious appraisal of the risks involved, such as pregnancy. Kenrick and Keefe (1992) found that female age preferences concerning their mates

remain constant relative to their own age through their life span, from up to about ten years older than themselves to a few years younger. Males, however, while in their twenties were attracted by women from about five years older to five years younger than themselves, but as they aged preferred partners increasingly younger than themselves. So in effect the absolute age of their preferred partners were somewhat stable as they themselves aged.

Homosexual males, like their heterosexual counterparts, prefer progressively younger partners, relative to themselves, as they age (Kenrick, Keefe, Bryan, Barr & Brown, 1995). The male heterosexual and homosexual patterns concerning partner's age preferences were almost identical, except that homosexual males preferred even somewhat younger partners as they age than heterosexual males. Homosexual female's partner age preference patterns were between those of heterosexual females and males, somewhat younger partner's preferred through the life span, but not nearly to the degree shown by males.

Male and female differences arise from evolutionary adaptations to the different problems the sexes need solve. Symons (1987) noted while many studies found male-female differences, "few of the investigators responsible for those studies even entertained the notion that men and women may act and feel differently because they are really different," (p. 119) and wrote "Harlequin Romances do not cause female sexuality any more than fast food restaurants cause tastes for sugar, salt, and fat. And men are not partial to signs of female youth because they read playboy magazine; if

photographs of women with gray hair and wrinkles promoted magazine sales, such photographs would be featured in Playboy's pages. . . . But the very existence of these enormously successful publications constitutes important evidence about female and male sexuality." (p. 121).

Dominance

As expected from an evolutionary perspective, dominance is a key component of a male's sexual attractiveness. Sadalla, Kenrick and Vershire (1987) found that dominance increased the sexual attractiveness of males, but not females; and it increased only sexual attractiveness, but not likability. Dominant males compete successfully for access to females, as females who mate with such males increase their genetic survival. Indeed Cicone and Ruble (1978) found that dominance was the primary component of the male role as defined in our society. Evolutionary theory would predict that females are attracted to dominant males and males are attracted to receptive females.

In some species, dominance on the part of a male is close to a prerequisite for mating at all. Trivers and Willard (1973) noted that in many species, large, powerful males mate at a disproportionately high frequency, while many smaller, weaker males do not mate at all, but nearly all females mate. In elephant seals, for example, the top 6% of the dominance hierarchy impregnate 88% of all females (Le Boeuf, 1974).

In a study by Brown, Humm and Fischer (1988), male hamsters matched for size

were paired and allowed to establish dominance one over the other. They were then placed on leashes to limit their movement, and an ovulating female was introduced. It was totally her choice with whom to mate, as the males could neither approach her nor drive away the other male. In every single instance, females chose the dominant male, apparently able to detect differences in dominance, even in the absence of cues obvious to humans.

For chimpanzees, mankind's closest living relatives, the dominance hierarchy is the main factor in the social order. To human observers, chimps seem to be obsessed by dominance and submission. Though in chimpanzee society, females are normally submissive and sexually available to any male, when a female is showing signs of ovulation, and a high status male is around, the high status male keeps lower ranking males away from her in order to have exclusive access to her at the time when she is likely to become pregnant. Female chimpanzees display a preference for mating with males high on the dominance hierarchy. In order to sexually monopolize her during estrus, a male will take a female chimp away from the others for an extended period of time. Females tend to go more easily with higher ranking males (De Waal, 1982). The evolutionary advantage of sexual swelling in female chimpanzees during estrus may be to signal being in estrus to the high ranking males, who then maintain exclusive mating rights over such females (Goodall, 1986).

Getting back to humans, signs of dominance are an essential part of a man's acceptability as sex partner (Townsend 1987, 1989; Townsend and Roberts 1993).

Models of sexual strategies, such as Buss and Schmitt (1993), emphasize the importance for females of male investment as a prerequisite for sexual relationships and specifically the importance of high immediate investment as a condition for and benefit of short-term relationships. Townsend, Kline, and Wasserman (1995) maintain that in short-term relationships with dominant men, women exchange sexual access for a particular form of immediate benefit, namely sharing for a little while in the male's status.

Dominant males and vulnerable females were rated as more attractive and desirable to date by male and female participants than dominant females and vulnerable males (Rainville & Gallagher, 1990). Dominant looking teenage males have more opportunities for sex than non-dominant ones (Mazur, Halpern & Udry, 1994).

Keating (1985) found that facial features associated with dominance, namely mature features such as relatively small eye size, caused male faces to be judged more attractive, and female faces less attractive. Facial features associated with submissiveness, namely immature features, made female faces more attractive, and male faces less attractive.

Dominance is signaled by nonverbal gestures, many cross-cultural. High status individuals when talking to low status individuals tend to seldom smile, assume casual poses, and look at the other person when talking, not when listening (Mehrabian, 1968). An erect posture is a cross-species indicator of dominance (Weisfeld & Beresford, 1982). Height is cross-culturally associated with dominance (Handwerker & Crosbie,

1982; Hensley, 1993; Melamed, 1992, 1994; Montepare, 1995). Personality characteristics such as intelligence and masculinity contribute to dominance (Lord, De Vader, & Alliger, 1986) as does economic status (Buss, 1989). Green and Kenrick (1994) found that both males and females preferred romantic partners who were high both in instrumentality (dominance characteristics such as decisiveness and superiority) and expressiveness, however when the expressiveness of the potential partner was not given, females considered low instrumentality to be more of a negative for attractiveness than males did. Also when the potential romantic partner was high in expressiveness, females considered high instrumentality to be more of a positive for attractiveness than males did. Thus, in the Green and Kenrick (1994) study, while both attributes indicating dominance and nurturance are valued by both males and females, females are still especially concerned with dominance characteristics in a potential mate.

The Sociocultural Perspective

From a sociocultural perspective, males and females are trained by their society to behave in appropriate ways and to play the correct social roles (Ickes & Barnes, 1978). While, from this perspective, the composition of those roles is somewhat arbitrary, they are promoted in a culture because of the benefits of everybody being on the same page; and they tend to be perpetuated by modeling, rewards and expectations (Eagly, 1987; Hoffman, 1977; Rubin, Provenzano & Luria, 1974).

The sociocultural explanation of sexual attitude/behavior differences between

males and females postulates that, because women have been excluded from power roles in society, they seek resources from males during the mating process; males, by contrast can financially afford to view females as objects of exchange (Brehm 1985, Buss & Barnes, 1986; Hill, Rubin & Peplau, 1976; Howard, Blumstein, & Schwartz, 1987). Sociocultural theories, while explaining how and why sexual differences are maintained, must assume that the status quo being maintained by socialization is initially arbitrary and should be arbitrarily different in separate cultures. Furthermore, this theory should predict that for women who have access to monetary resources, sex differences in mating preferences should diminish. As women in our culture are increasingly in formerly traditional male power roles, overall population sex differences in mating preferences should have rapidly dropped over the last several decades. However evidence seems to indicate that none of the above predictions from a sociocultural perspective is supported, whether cross-cultural (Buss, 1989), cross-generational (Buss, 1987) or cross-economic status (Townsend & Levy, 1990; Townsend & Roberts, 1993). Higher socioeconomic status for women does not serve to decrease sex differences in mate selection criteria, but serves to decrease the pool of available and acceptable romantic partners for females, while higher socio-economic status increases this pool for males (Townsend, 1987, 1989). Males saw increasing economic status as a ticket to short-term relationships, while women whose economic status was increasing became even more selective, wanting commitment from a male whose status was even higher than their own (Townsend, 1987).

Cognitive Mechanisms

Evidence exists that males and females differ in how they cognitively process attractiveness information. Hass and Nussbaum (1996) found that males were faster in rating photographs of women for attractiveness after they first rated the women for their sexual availability, rather than for how successful they appeared. Women, however, were faster in rating photographs of men for attractiveness after they first rated the men for success, rather than sexual availability. Hass and Nussbaum also found that males were faster in rating photographs of women for sexual availability after they first rated the women for attractiveness, rather than the extent to which the women appeared to be in a hurry. Women were faster in rating men for success after they first rated the men for attractiveness rather than the extent to which they appeared to be in a hurry.

The fact that performing a first task facilitates the performance of a second task is evidence that the two tasks are mentally related. The above research indicates that when women rate men for success, some of the same cognitive processing is utilized when women rate men for attractiveness. Likewise when women rate men for attractiveness, some of the same cognitive processing is utilized in rating men for success. In men, however, the process of rating women for attractiveness overlaps with rating them for sexual availability and vice versa. This occurred even though Hass and Nussbaum found that the correlation between men's rating of attractiveness and sexual availability of photos of women was low, as was the correlation between women's

rating of the men's successfulness and attractiveness.

If we accept that humans did evolve, the apparatus of thought is obviously subject to evolutionary pressures. Cognitive processes and their organ, the brain, were shaped through the same evolutionary forces as all other aspects of life. The mind thus should be well adapted to make decisions on the problems most important for genetic survival; and who to find desirable for mating is a vital problem to solve. As noted by Kenrick (1992), evolutionary social psychologists tend to see the brain as primarily designed to facilitate survival in social groups. Behaviors related to reproductive functions are “expensive” in terms of energy invested and essential for survival. The information processing mechanisms that comprise the human mind were designed by successful solutions to precisely such problems.

Tooby and Cosmides (1992) have outlined an Integrated Causal Model of science that demonstrates both the interconnection of all branches of science concerning humans, and the dependence of the entire enterprise on evolution. The principal features of their model are:

- a. The human mind consists of evolved information- processing mechanisms instantiated in the human nervous system;
- b. these mechanisms, and the developmental programs that produce them, are adaptations, produced by natural selection over evolutionary time in ancestral environments; and
- c. many of these mechanisms are functionally specialized to produce behavior

that solves particular adaptive problems, such as mate selection, language acquisition, family relations, and cooperation (p. 24).

Cosmides (1989) labeled the evolutionary significance of cognitive structures as Darwinian algorithms, and Tooby and Cosmides (1989) maintain that the mind is best equipped to handle precisely those types of problems to which it evolved as a response. Cosmides (1989) has shown, for example, that the human mind more efficiently solves logic problems dealing with catching social cheaters than identical logic problems dealing with neutral material. Likewise, the human mind should contain mechanisms to cope with problem solving in the realm of mating. In fact, of all the areas in which sex differences have been explored, it makes most sense for those differences to appear in areas directly related to reproduction. Evolutionary differences arise when different species or members of a species have to solve different problems in order to survive. Because human males and females both have to solve problems such as thermal regulation, bipedal locomotion and depth perception, one would not expect to find a difference between males and females in these areas. However, males and females differ most in the areas of acquisition of partners for reproduction, males acquiring females and females acquiring males. Therefore, one should expect cognitive differences related to acquiring mates to be among the most likely sex differences to occur (Buss, 1995).

Possessing these adaptive cognitive structures does not necessarily mean the human mind is well equipped to deal with the environment presently encountered,

rather than the Pleistocene environment where almost all human evolution occurred. The latter environment, in which humans spent more than 99% of their history as hunter-gatherers, has been termed the environment of evolutionary adaptedness by Symons (1992). Symons points out that a fundamental error often made is assuming that evolution produces behavioral mechanisms that maximize reproductive fitness per se, when in reality evolution produces psychological mechanisms adapted to particular environments and that they may not increase reproductive fitness in a novel environment.

Although large aspects to mating theory still are only beginning to be examined, it seems a fair assumption that, in the words of Cosmides, Tooby and Barkow (1992), “to propose a psychological concept that is incompatible with evolutionary biology is as problematic as proposing a chemical reaction that violates the laws of physics” (p. 4). It is a mistake, indeed an impossibility, to view any learned human behavior, even culture itself, as independent of biological processes and their evolutionary origins. Culture is the product of our evolved psychological mechanisms, not a purely arbitrary system of conventions. And psychological mechanisms are the product of the environment, which includes culture. These universal mechanisms make possible culture and cultural variability. It also must be understood that these mechanisms operate by being sensitive to environmental input, using such input while rendering it meaningful.

Specifically in the area of mating choice, Tooby and Cosmides (1992) have pointed out that studies such as those by Buss (1987, 1989) and Symons (1979) show that:

to cope with the structured richness of the situational factors processed by the differentiated sexual psychologies of men and women across culture. . . the existing theories of motivation will have to be replaced with theories positing a far more elaborate motivational architecture, equipped with an extensive set of evolved information- processing algorithms that are contingently sensitive to a long list of situational contents and contexts. (Tooby & Cosmides, 1992, p. 99).

Sexual Strategies

As we have seen, male and female differences in mate seeking ultimately result from the very differences that define the sexes. Sex-specific psychological mechanisms in the form of information-processing and problem solving algorithms have evolved based on those differences. As seen above, females have been found cross-culturally to value wealth in a man, while males have been found to value youth, signifying reproductive capacity, in a female (Buss 1987, Gregersen, 1982).

Also as seen above, because of their relatively greater emphasis on long-term mating, females require more commitment than men in order to have sex. But the sexes also differ among themselves as to how necessary commitment is before engaging in sexual relationships. These differences may represent responses to varying

environments as well as self-maintaining strategies for gene survival, existing in some critical proportion.

A genetic basis to a type of behavior does not minimize the importance of the environment to select from among the genetically predisposed possibilities. One of the criticisms of evolutionary psychology is its supposed biological determinism (Kitcher, 1985; Lewontin, Rose, & Kamin, 1984). However an evolutionary psychology is specifically interested in how one's environment affects evolved psychological characteristics (Buss, 1992). In a real sense it is impossible to separate evolved characteristics from the environment, because our genetic heritage is part of the environment in which we exist.

Behaviors that have evolutionary significance can be affected by environmental conditions. For example, male scorpionflies have three mating strategies, which are dependent on the degree of male-male competition in the environment (Thornhill, 1980). Mating tactics can thus be chosen by the environment or exist in critical proportions in a particular environment. But in each case the possible range of an individual's behavioral repertoire is genetically limited.

Draper and Belsky (1990) state that particular conditions in the environment trigger alternate mating and reproductive strategies, both of which are maintained in the same species by different conditions or critical proportions. According to Draper and Belsky, alternative reproductive strategies are based on the environments of early childhood. When the father is present, delayed puberty, delayed onset of sexual

activity, and stability of adult pair-bonds result, and when absent, early puberty, increased early sexual activity, instability of adult pair-bonds, and low parental investment result. Draper and Harpending (1982) likewise found that whether or not a mother lives with her children's father served to predict the children's later behaviors toward the opposite sex. Where the father is absent, men are more likely to be seen by girls as "poor risks" who are going to leave, so a promiscuous reproductive strategy is elicited. And boys in father absent homes tend to learn that getting a woman pregnant and moving on are what men do.

Buss and Schmitt (1993) have emphasized that mating strategies can be seen in context of short-term versus long-term mating. In addition to males and females having to face different mating problems, individuals within a sex differ on the mating problem that they have to solve, depending on the sexual strategy they are using. Indeed the differences between male and female mating behavior occur because men more often than women use short-term mating as a preferred strategy. Men devote a larger percentage of their mating efforts to short-term mating than do women, desiring a greater number of sexual partners than women do and being more anxious to engage in sex with strangers than women are (Buss & Schmitt, 1993).

The most prestigious cliques in high school consist of male athletes and female cheerleaders (Weisfeld, Block and Ivers, 1984; Eitzen, 1975). In high school a young man's place in the dominance hierarchy is usually determined by his athletic ability and a young woman gains prestige from her physical attractiveness. Later on, a man's place

also will be determined by his financial standing, but a woman has nothing to replace looks. Rich middle-aged men still date cheerleader types.

These two sources of male attractiveness reflect basic female strategies in choosing a mate. A basic male strategy is to maximize copulating opportunities. This strategy amounts to the male leaving after mating, forcing the female to take care of the offspring herself, and thus save his genes in their mutual offspring. The male who successfully adopts this strategy can thus potentially move on to other partners and maximize his genetic survival as a result (under circumstances in which the offspring have a chance to survive and reproduce).

What then will the female be looking for? Two obvious strategies can be utilized; look for an individual who can and will invest in his offspring, or look for an individual who will contribute genes that increase chances of offspring survival and reproduction. A potential mate's physical condition and ability to attract mates may reveal something about his genetic makeup, which will be passed on to the offspring of a woman who selects him. The female strategy is thus: insist on a long courtship period, with great pre-mating investment, and so create a situation where it is in the male's interest to invest in the offspring; alternatively, resign herself to the male leaving, and look for a male with the best genes, to help her part survive after the male leaves her "holding the bag."

Men pursue short term-mating in order to maximize number of partners and minimize investment in any one partner. Women pursue short-term mating in order to

maximize their partners' gene quality and for immediate resource benefits. Men pursue long-term mating strategy in order to have exclusivity over one woman and to obtain a woman they could not have without guaranteeing lifetime commitment and investment in offspring. Women prefer long-term mating in order to get that commitment and investment in offspring. As Buss and Schmitt put it "Most men can obtain a much more desirable mate if they are willing to invest and commit to a long-term relationship. Most women, in contrast, can obtain a much more desirable short-term mate with whom nothing but sex is exchanged (p. 215)."

Buss and Schmitt found that in both men and women, intra sex differences in what is sought from a mate occur depending on which sexual strategy is being used. Women value good financial prospects more when using long-term rather than short-term mating. Men value partner promiscuity in short-term mating but dislike it in long-term mating.

As noted by Trivers (1972), the sex that makes a higher investment in offspring is choosier about mating partners. Males may be forced into long-term relationships in order to fulfill the requirements for mating imposed by women. Therefore, males enter long term relationships when the benefits of committing outweigh the costs of lost opportunities, most likely because these opportunities are just not there. The implications of male choice in strategies on further research will be examined below.

Kenrick, Sadalla, Groth and Trost (1990) found that because of differential investment, females are more choosy about sexual partners than males are. However,

when it comes to just one date, or a committed relationship, the difference between how choosy males and females are largely vanishes. At these relationship levels there is less difference between male and female investment.

Kenrick (1992) likewise found that the desirability of characteristics differs when considering length of the relationship. Male-female differences are most prominent in casual mating; when choosing a marriage partner, males and females are equally selective. In characteristics such as intelligence and status, males require a lower minimum level for sexual relations than women do, but are as demanding if marriage is the question. Kenrick points out that differences in mating strategies occur within a sex, being due to individual differences, different environments, and density-dependent strategies within an environment.

Gangestad and Simpson (1990) have used the term sociosexuality to refer to differences in an individual's prerequisites for entering into a sexual relationship. Individuals at one extreme, those of restricted sociosexuality, require time, attachment to, and commitment from their partners before they are willing to have sex with them. At the other end of the spectrum, those with unrestricted sociosexuality require less time and do not need assurance of commitment before having sex.

Sociosexuality is measured through the Sociosexual Orientation Inventory, which assesses five markers of sociosexual orientation that are aggregated to form a composite measure. The markers are: reported number of "one night stands"; estimated number of partners within the next five years; reported number of sexual

partners in the last year; frequency of fantasies about new partners; and a survey of attitudes toward casual sex.

Simpson and Gangestad (1991) see differences in sociosexuality as having both a stable trait aspect and a genetic component. However, the strategies connected to it also depend on an assessment of what will work best under a particular set of environmental and personal conditions. Simpson and Gangestad (1992) characterize sociosexuality (in addition to having a genetic basis) as being to some extent an ecologically contingent strategy and also part of an attractiveness/ adaptive trait package. As we will see below, individuals of both sexes who are sexually unrestricted tend to be more physically attractive and, especially in the case of males, possess social dominance skills. Thus, genetic influences mediate environmentally contingent strategy choices. While sociosexuality may have lifetime consequences, Buss and Schmitt (1993) postulate that individuals can change strategies due to changes in age and life circumstances.

Restricted and unrestricted sociosexuality can be viewed as a reflection of the two basic strategies, long-term mating versus short-term mating. It is in the woman's interest to find a man who will stay and invest in her, but it is also in her interest to find a man with good genes; and such men often are unwilling to wait and may not remain afterwards because they have an abundance of alternatives.

A female can increase the chances of her mate investing in her offspring by being restricted in her sexual behavior and thereby assessing the level of a potential mate's

commitment to her. Thus the familiar, "If I have sex with you, how do I know that you will call again?". However, restricted sexual behavior will tend to prevent females from mating with dominant males. These males tend not to invest exclusively in a single female's offspring. As a woman once expressed it, "why are all real men bastards?". Well, because that is the strategy of dominant males.

Indeed, obtaining the very benefit restricted sexual behavior provides (namely, paternal investment) may serve to preclude mating with successful males. These males may not be able to exclusively invest in a single female's offspring. If they did, perhaps they would not be reproductively successful compared to males of similar status who do not parentally invest. Simpson and Gangestad (1992) see high genetic fitness on the part of a male as a cause for unwillingness to commit.

Gangestad and Simpson (1990) maintain that female sociosexuality represents an instance of frequency dependent adaptive strategies. Two different female answers to the problem of mate choosing are supported by the environment, a restricted style which insures greater male parental investment and an unrestricted style which insures that the best available genes are inherited by their offspring. They have found that sociosexuality: (1) tends to be bimodally distributed, (2) is different from sex drive and independent from it, (3) depends on environment and heredity, and (4) is related to extroversion, social dominance, lack of restraint, and high self-monitoring.

Simpson and Gangestad (1992) have found that sexually restrictive women differ from sexually unrestrictive women both in the qualities they prefer in men, and the

qualities of men they actually date. Sexually restrictive women prefer men who are faithful and responsible, and sexually unrestricted women prefer physically attractive and socially dominant men. A possible example of this: women preferred tall men as potential dates, but in a long-term relationship with a man, no longer cared about his height (Strathman & Shepperd, 1989).

As the genetic fitness of a male covaries negatively with his willingness to invest exclusively, unrestricted males are significantly more physically attractive than their restricted counterparts. Unrestricted females have been found to mate with males who have had a large number of partners themselves (Simpson & Gangestad, 1992). This conception of female mating strategies also explains what has been termed “the lure of the rogue” (Bailey, 1989), women rejecting “nice guys” for abusive but dominant men.

Therefore, high vs. low sexual restrictiveness on the part of women are two approaches to the problem of mating for genetic survival. Females utilizing each approach value different characteristics in males. A woman's sexual style is a genetic survival strategy that should be reflected in the characteristics she finds attractive and seeks in a man.

As we have seen above, socially dominant men tend to utilize short-term mating and a prime characteristic they seek from females is a high level of physical attractiveness (Buss 1992). Therefore short-term mating as a profitable mating strategy may be more appropriate for physically attractive women. And of course it also goes the other way; a woman who adopts such a strategy will tend to do more to enhance her

looks, with diet, dress, cosmetics, plastic surgery, etc. While it would also seem that an extremely attractive woman could more successfully hold out for commitment than a somewhat less attractive woman, it would also seem true that it takes a certain level of attractiveness on the part of a woman for her to mate with the men who have the most to offer in a short-term relationship. And indeed, Simpson and Gangestad (1992) reported that sexually unrestricted women are significantly more physically attractive than sexually restricted women.

While males tend to be more sexually unrestricted than females, there is considerable overlap (Simpson & Gangestad, 1991). However, Townsend et al. (1994) found that even when women used short-term strategies, there were differences compared to males using this strategy. Multi-partner women used their sexuality to obtain higher status partners, and experienced negative emotions over sex when they perceived an unwillingness in the male to commit. Women who engaged in no commitment sex often felt used and bad about themselves; men who did so, did not. These women used sexual availability in order to try to get investment; however they considered men who too readily offered signs of willingness to invest as “wimps, nerds and dorks” (Townsend et al., 1995).

A Warning

It should be pointed out that it is easy to fall into the mistake, especially through the use of imprecise language, that the evolved mechanism produces desire for children or a literal psychological desire to pass on one's genes or acquire good genes in a

partner rather than a desire for sex per se. It is very difficult to avoid using language that makes it sound as if an individual, human or animal, engages in a particular behavior because he/she/it “wants” to produce offspring or is trying to reproduce genes. And this misunderstanding leads to arguments such as “how can you say that sexual behavior reflects evolved genetic survival strategies, when we have invented contraceptives?”.

Sexual strategies as manifested in behavior reflect the powerful unconscious cognitive processing that produces them. On a conscious level, a long-term mating strategy is really the only one undertaken by both males and females when the goal is genetic reproduction, that is, children. The male athlete who has had thousands of partners does not think “Oh great I probably impregnated a whole bunch of them!”, if for no other reason than the desire to avoid paternity suits. Likewise the groupie who has just spent ten minutes with him probably is not thinking “If I’ve really lucked out I’m pregnant!”. Individuals who consciously wish to have children tend to adopt long term mating strategies for that purpose.

Unconscious directives on aggression, fear and sex are inherited from pre-human ancestors, perhaps lying in the R- complex which surrounds the brainstem and predates the emergence of mammals and the limbic system which surrounds the R-complex and predates the emergence of primates (MacLean, 1973). It is perhaps inaccurate to speak of these mechanisms as operating via desires, which implies consciousness. Being a dweller of New York, I have experienced the joy of cockroaches. Why do cockroaches

scatter when a light is turned on in a dark room? To avoid being killed? Yes, except cockroaches probably do not understand that there are humans out there who will squash them, and cockroaches probably do not even “want” to survive in the human sense of the term. It is just that cockroaches, being simply devilishly designed and programmed survival machines, have inherited the genes of predecessors who survived to multiply. Those cockroaches possessing genes which caused them to avoid light reproduced, passing down this characteristic.

This is analogous to sexual behavior in all animals, including humans. What is inherited is the mechanism for a drive to have sex with suitable partners, and a rule system, or at least a powerful predisposition toward a rule system, as to whom that partner should be.

The Implications of Cognitive Processing of Environmental Cues for Sexual Strategies

The decision with whom to mate and how to go about mating can be viewed as a complex problem, and a good solution which is essential for genetic survival.

Algorithms that control the strategies to solve the mating problem have been etched in the human mind through millions of years of evolution. Any viable organism must be efficient in utilizing information from the environment in order to decide what behavior to implement according to specific algorithms. Modifying available information about the environment should result in predictable changes in strategies chosen.

Human mating strategies are chosen, in part, based on assessment of environmental conditions, for strategies differ in their effectiveness in these differing

conditions. Individuals have lasting predispositions toward particular strategies, based perhaps on both genetics (Gangestad & Simpson, 1990) and early experiences (Draper & Harpending, 1982), but they are also sensitive to changing life circumstances (Buss & Schmitt, 1993).

It is apparent that it is rather useless to debate about how much of human sexual behavior is traceable to environmental causes versus hard-wired biological causes. A more fruitful approach emphasizes the operation of environmental cues on problem solving algorithms which choose from a range of potential behaviors.

The tremendous imbalance of minimum resource investment in offspring between male and female parents leads to different “ceiling” values for maximum genetic survival for the different sexes. For a female, to leave ten children requires at least about ten years of hard labor; for a male to leave 10 children may only require a really a active few days. A male's maximum number of children can only be approached using short-term mating, while a female generally cannot increase her number of children by increasing the number of her sexual partners. Males are therefore more “eager” to use short-term mating than females. However while a female can be sure to find males who will impregnate her for the maximum children she can physically bear (the only difference being male partner quality and resource investments in her), if a male is not to some extent dominant, his problem becomes finding any females to impregnate.

Although there are conditions under which male babies are favored over female babies, females are often favored by the parents because they are, genetically speaking,

a safer place in which to invest resources. In fact, Cronk (1991) found that, cross-culturally, parents preferentially invest in daughters over sons. (The relative mating value of males and females is also heavily dependant on the ratio of males to females in a population [Secord, 1983]; more on this will be found below.) Smith, Kish & Crawford (1987) found that wealthier will-makers favored sons while poorer will-makers favored daughters. Apparently, when a family had sufficient resources to make a male economically dominant, the tendency was to do just that and thus favored the male because of the higher male genetic survival ceiling. However, when enough resources were not available to make a son dominant, it paid to favor daughters as a surer, safer option.

Short-term mating is a not a very good strategy for females, unless done with a dominant male. Short-term mating produces the maximum potential genetic survival payoff for males, contingent upon the male being able to acquire numerous females for short-term relationships, and contingent upon the likelihood that offspring from those short-term unions themselves will survive and reproduce. Men's social status is positively correlated with number of sexual partners, but the same does not hold true for females (Perusse, 1994). Perusse (1993) found that while men's reproductive success (as measured by number of offspring) in industrial societies is not related to status, their mating success (as measured by number of sexual partners) is. Townsend, Kline and Wasserman (1995) found that the male college students with the greatest number of partners were athletes. The basketball and football stars all had more than

100 sex partners.

Landolt, Lalumiere and Quinsey (1995) found that successful males tend to prefer and more often select short-term mating, compared to less successful males. The same was not true of females. Self-perceived mating success was related to males', but not females', strategy selection. They concluded that successful participants "would select tactics associated with their sex-typical preferred tactics" (p.19), and that males' mating strategy was more malleable and more dependent on environmental conditions.

Men perceived as dominant were also perceived as more promiscuous (Sadalla, Kenrick & Vershure, 1987). Men who have less to offer genetically, as manifested by physical attractiveness and certain aspects of dominance, may only be able to mate by investing in a committed relationship (Kenrick, Groth, Trost & Sadalla, 1993).

High status male college students spent less money on dates than lower status college students (Whitbeck & Hoyt, 1991). Men who were unrestricted in sociosexuality were rated as more dominant (Simpson, Gangestad & Biek, 1993). Male athletes were found to be more approving of premarital sexual behavior, to be less likely to see women as equals, and to have a greater number of sexual partners than nonathletes (Caron, Carter & Brightman, 1985; Nattiv & Puffer, 1991).

Thus, an evolutionary theory of mating, emphasizing unequal minimum investment between the sexes in raising offspring, would predict that females would be willing to engage in long-term mating and they would be willing to engage in short-term mating only for the "king of the hill". And males on the other hand would

be eager for short-term mating and tend to commit only when females are not available for short-term relationships.

Specific Hypotheses

The question of when men and women will pursue short-term versus long-term sexual strategies can be seen as an adaptive problem requiring a solution. Evolutionary considerations must have resulted in that the preferred strategy is the one that potentially most closely approaches the ceiling effect, under conditions where it also produces the maximum number of surviving offspring. But as Gangestad and Simpson (1992) point out, this strategy is optimal only in an “all else being equal” sense and intrasex competition results in both males and females adopting alternative strategies.

Priming entails exposing individuals to categories and so causing these individuals to be more likely to use these ideas in interpreting subsequent information. Higgins, Rholes and Jones (1977) found that participants exposed to personality terms, such as “reckless”, “adventurous”, “self-confident”, and “conceited” subsequently used those terms to interpret the described behavior of an individual. Participants read about “Donald” who had shot rapids, climbed mountains, and piloted jet boats, had great confidence in his abilities, had few social contacts, and rarely changed his mind. In characterizing this person, participants used the traits that had previously been primed. That individual was also seen in positive or negative terms depending on the connotation of the primed trait terms. Beaver, Gold and Prisco (1992) had participants read paradigm stories, and found that these stories influenced participants' later

evaluation of the male's and female's responsibility when judging videotaped date-rape scenarios. An additional finding of the Hass and Nussbaum study cited previously was rather unexpected. Subsequent to photo rating procedures, participants were asked about their willingness to have an affair. It turned out that males who rated photographs for sexual availability were more willing to have an affair than males who rated photos for successfulness; and females who rated photos for successfulness were more willing to have an affair than females who rated photos for sexual availability. It should be pointed out that all participants here rated photographs of both sexes and for male participants the above effect was borne solely by males rating male photos.

We hypothesize that exposure to paradigm stories about relevant environmental criteria may influence male and female participants willingness to use long-term versus short-term mating strategies. The purpose of the research to follow was to test whether making certain environmental mating contexts mentally salient through stories would have predicted effects on male and female reported willingness to engage in the different sexual strategies consistent with an evolutionary view of mating. One of the advantages of such an evolutionary view is its ability to generate predictions open to experimental verification.

The specific hypotheses that stem from an evolutionary view are as follows: (1) Men having imagined a woman that is not available for short-term mating may be more willing to commit to long-term mating than men that did not imagine (and were not primed by) the above scenario. No such effect should occur when women imagine a

man who is not available for short-term mating. For males, if their preferred short-term strategy is made saliently unavailable, their interest in long-term may increase. One of the benefits of long-term mating is the monopoly over one woman's reproductive capacity. This benefit may loom larger when a profitable short-term option is unavailable. (2) Men having imagined that a woman is available to them for a short-term relationship may be less willing to commit to a long-term relationship, than men that did not imagine the above scenario. As before this effect should not occur when women imagine a man who is available for a short-term relationship. Since one of the costs for men of long-term mating is loss of opportunity for short-term mating, and with it access to the reproductive capabilities of many women, making such short-term opportunities mentally salient should make men less "eager" to engage in long-term strategies.

The above two hypotheses rely on a perhaps yet untested assumption made by Buss and Schmitt (1993) that long-term mating and short-term mating are to some extent mutually exclusive. Buss and Schmitt (1993) see long-term and short-term mating as "alternative strategies" (p. 215). They list one of the problems associated with short-term mating as being the problem of avoiding commitment and investment. They maintain that men who desire short-term mating need to try to avoid women who seek commitment, stating "The larger the investment in a particular mating, the fewer the number of sexual partners a given man can access" (p. 209). They list the loss of short-term mating opportunities as the main cost of long-term mating, stating that "The

primary cost to men is the opportunity cost—the copulations that the man could have obtained if he were not committed to a long-term mating” (p.215). There may be some experimental evidence to support viewing long-term and short-term mating as being partially mutually exclusive. Men, when exposed to photographs of female centerfolds, rated their own mates as being less attractive; a similar effect did not occur for women viewing male centerfolds (Kenrick, Gutierrez & Goldberg, 1989). Being exposed to attractive individuals also served to undermine males', but not females', level of commitment to their mate. However, exposure to dominant men undermined female commitment to their mates, and men were least committed to their mates after seeing non-dominant attractive women (Kenrick, Neuberg, Zierk, & Krones, 1994). The above is evidence that the prospect of sexually available women does serve to lessen males' interest in their committed relationship. This finding offers at least some support for the idea that if short-term mating is available, a male's interest in long-term mating diminishes.

Gangestad and Simpson (1990) see sociosexuality as having a genetic base, maintained through frequency-dependent selection, and have found it to be bimodally distributed. Simpson and Gangestad (1992) have found that sexually unrestricted men are more physically attractive than sexually restricted men. Unrestricted individuals date partners who are themselves unrestricted and unrestricted individuals date more attractive partners. For both male and female college students, those who are virgins view marriage more favorably than those who have had multiple sex partners (Salts,

Seismore, Lindholm & Smith, 1994). Cross-culturally, greater physical attractiveness is positively correlated with greater sexual permissiveness (Perlman, 1978). Thus there may be basic differences between the types of individuals who can profitably utilize the different strategies.

However, it is also probable that some individuals use both strategies simultaneously. The two strategies are almost certainly not totally mutually exclusive. It is likely that some men in particular use a long-term strategy as a conscious reproductive strategy and a short-term strategy, seen as a little fun on the side and not viewed as intended for reproduction, at the same time.

Evidence that long-term and short-term mating strategies are not always seen as mutually exclusive by males was found in survey questions that were part of the Hass and Nussbaum (1996) study mentioned above. Namely, males currently in a serious relationship expressed more willingness to have an affair than males who did not want to be in serious relationship. Townsend et al. (1995) found that among male college athletes: all had over 100 sex partners, most stated they would want to get married someday, but none said they were willing to be sexually faithful, and about one third had steady girlfriends but “cheated” on them.

The study proposed here may shed additional evidence on the question of whether short-term and long-term mating tend to be perceived by males as being mutually exclusive. For women, short-term mating usually holds more costs and fewer benefits than for men. Therefore women are generally less willing to engage in short-term

relationships than men. As seen above, mating with a dominant man is one factor which makes short-term a profitable strategy for females, thus (3) women imagining a dominant man may be more willing to engage in short-term strategies than women for whom a dominant man has not been made salient. No such effect is predicted for males imagining a dominant woman.

An Investment Model of Relationships

The predictions made above are consistent with, and derived from, an evolutionary theory of mating behaviors. The hypothesis concerning the effects of short-term partner availability/ nonavailability also fit in with an investment model of romantic relationships (Rusbult, 1980b). According to the investment model the level of romantic commitment is positively related to relationship satisfaction and magnitude of prior commitment and it is negatively related to the availability of romantic alternatives. Relationships are, after all, the mutual exchange of commodities operating under a cost and benefit analysis. Commitment to a relationship, just as to any sort of business arrangement, is a function of the factors which affect the value of staying in a relationship and the cost of leaving a relationship.

The investment model is an extension of the concepts of social exchange theory (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959) into the area of commitment in relationships. Social exchange theory identifies, as factors in the costs and rewards of a relationship, a comparison level analysis in which actual outcomes are compared to the outcome one feels one deserves and a comparison level of alternatives analysis in which

outcomes are compared to those available in an alternative relationship.

Simpson (1987) found that the ease with which alternative romantic partners could be found was one of the factors that predicted whether a current romantic relationship would endure. Individuals who believed they could relatively easily acquire a high quality alternative partner were less likely to remain with their current partner.

Even if satisfaction in an ongoing relationship is relatively low, if alternatives are not available, individuals may continue to invest heavily in the relationships (Rusbult, 1983). According to the investment model, level of commitment to a relationship is also positively related to level of investment in the relationship (Rusbult, 1980b). Having heavily invested in a relationship increases the costs of leaving the relationship and so promotes commitment to it. This connection between investment and commitment has been repeatedly found (Rusbult, 1980a; Rusbult, 1983; Rusbult, Johnson & Morrow, 1986; Rusbult, Zembrodt & Gunn, 1982).

Jemmott, Ashby and Lindenfeld (1989) found that students who thought that relatively few opposite-sex individuals were available on their campus were more committed to, and willing to invest in, their current romantic relationships. Here again level of commitment was related to perceived availability of alternatives. Alternatives to a relationship prevent commitment and promote ending of the relationship (Rusbult, Zembrodt & Gunn, 1982).

Rusbult (1983) found that for individuals staying in a relationship, alternatives declined during the course of relationship and for those leaving a relationship,

alternatives increased. She suggested that declines in available alternatives worked against the relationship breaking up and vice versa.

That commitment to a relationship is negatively correlated with availability of alternatives has been found in a wide variety of different populations and settings. Rusbult, Johnson and Morrow (1986) found it across marriage status, length of relationship, age, income and education levels. That availability of alternatives undercuts commitment and non-availability of alternatives promotes commitment has also been found to occur in friendships (Rusbult, 1980a), and in job settings (Farrell & Rusbult, 1981; Rusbult & Farrell, 1983).

If as described above, males tend to seek partner variety more than females do then, logically, according to the investment model, they should on average be less committed to their relationships than females. Duffy and Rusbult (1986) found that women reported greater commitment to maintaining their relationships than men did.

In circumstances where men need to invest less in a relationship, whether because of their desirable characteristics or ease of alternative availability, they should be disinclined to commit. The ease of alternative availability depends heavily on the sex ratio in a population. Secord (1983) examined the historical consequences of imbalanced sex ratios; namely, how have mating relationships between males and females been affected when there was an imbalance between the number of males and females in a society? Secord concludes that historically the impact of imbalanced sex ratios has followed the predictable patterns that social exchange theory would expect.

In societies with a surplus of men, men are eager to marry and willing to make heavy commitments in order to do so. In such societies marriage, commitment and monogamy are highly valued, as is chastity for women. Societies where there is a shortage of men are marked by a greater acceptance of short-term sexual relationships. Men are less willing to marry, more willing to divorce, and tend to go from partner to partner. Therefore, the historic impact of female availability- nonavailability on societal attitudes has paralleled this study's hypotheses concerning female availability-nonavailability to the individual.

Secondary Hypotheses

In addition to the hypotheses above, this study will also examine a number of secondary hypotheses that are either colloraries of the main hypotheses or possible additional effects of the priming procedure. For males, (1a) If the female not available for short-term relationship priming produces the hypothesized effects, this increase in interest in long-term is not expected to result in any decrease in interest in short-term (since it is still preferred), and (2a) if the availability of the preferred short-term strategy is made salient, interest in it will rise. For Females, (3a) Any increased interest in short-term strategies produced by a dominant male is not expected to result in any decrease in interest in long-term. Also for females, if the likely success of their preferred long-term strategy is made salient, (4) interest in short-term will decrease, and (4a) interest in long-term strategy will rise.

Summary

Trivers (1972) argued that psychology should “view human sexual plasticity as an adaptation to permit the individual to choose the mixed strategy best suited to local conditions and his own attributes” (p. 146). Males should be susceptible to environmental conditions (women available for short-term mating or women not available for short-term mating) influencing their willingness to commit. Women should be susceptible to environmental conditions (whether or not a dominant man is out there) that influence their willingness to engage in short-term mating. Individuals should tend to try to carry out their gender's potentially most profitable mating strategy, unless circumstances lead them to adopt an alternate strategy. The study may provide insight on the situations that mating decision mechanisms focus.

Method

Participants

Two hundred seventy-nine ethnically and racially diverse college undergraduates (155 females and 124 males), taking an introductory psychology course, took part in the experiment in partial fulfillment of a research participation requirement.¹

Participants were free to choose the particular experiments in which they participated from among a large number available during the semester. The experiments were listed on a bulletin board from which students signed up for an appointment to participate.

This experiment was entitled "Dating Attitudes". Male and female participants were randomly assigned to one of six experimental conditions (described below) designed to prime different cognitive orientations, producing an overall 2 (male, female participants) by 6 (type of prime) design.

Procedure

At their appointed time, participants entered a classroom in which an awaiting experimenter² gave them a stapled booklet and an envelope. Participants in four of the priming conditions were told that the research was investigating the relationship between dating philosophy and the perception of opposite sex strangers. They were informed that they would read a statement written by a college student describing his/her dating philosophy and that they would be asked to answer questions about their

¹ Although the hypotheses refer to heterosexuals, all subject data was reported for completeness, since the number of self-reported homosexuals was minute (see Appendix A, Table A-6).

²The experimenter was a 36 year old male.

perception of that individual. They were also to answer questions about their own dating attitudes.

Participants in the fifth priming condition were told the experiment was on the relationship between life philosophy and the perception of opposite sex strangers. They were to read a quote describing a college student's philosophy of life and answer questions about their perception of that individual. They were also to answer questions about their own attitudes.

Participants in the control group (no prime) were told that the experimenter was interested in obtaining information about dating attitudes. Participants in the five priming conditions received a booklet containing a supposed quotation attributed to an opposite sex 20 year old college junior, "Michael" or "Michele". The statements were intended to convey either: (1) "Michael's" or "Michele's" availability for a short-term sexual relationship (in a general sense, not necessarily for the subject), (2) his/her unavailability for such a relationship, (3) his/her availability for a long-term relationship, (4) his/her unavailability long-term, or (5) his/her interpersonal dominance. Participants in the control group did not receive a priming statement.

The quotations served to prime or create a salient mental image of an opposite-sex individual who had one of the relationship orientations or dominance characteristics described above. The quotation was supposedly selected from statements written by college students in response to being asked about their primary aims in dating ("availability" conditions, 1-4 above) or primary aims in life (dominant condition, 5 above).

The quotations and brief biographical information about “Michael” and “Michele” were handwritten in a legible style that was neither distinctly masculine nor distinctly feminine. The handwriting was judged by a university faculty member, the experimenter, and two other graduate students. This was done so that all the quotes, whether attributed to a male or female, could be in the same handwriting.

The full text of the quotes were as follows:

The available short-term condition:

“I like to have fun and experiment when I’m dating. I think its important to play the field and meet as many guys (girls) as possible. I want to have relationships with all kinds of guys (girls), especially those who are nice and down to earth. I think it's important to have a wide range of sexual partners.”

The not available short-term condition:

“ I like going out, but I'm not interested in jumping into bed with someone I've only known for a while. It just results in hurt feelings, and I'm not comfortable with it.”

The available long-term condition:

“I really want to meet that right person, someone I'm compatible with, someone I can spend a lifetime with. And at this point in my life I'm ready to do that.”

The not available long-term condition:

“ I'm not interested in romantic relationships. At this point in my life I think it's important to concentrate on other things. I have time before I get involved in romantic relationships.”

The dominant condition:

“ Competitive sports are important to me. Competition and winning are what life is about. Sometimes I can just see the doubt in my opponent's eyes, and I know I can run her (him) off the court.”

The dominant condition prime was partially based on the description of a dominant individual used by Sadalla, Kenrick and Vershure (1987).

Care was taken in writing the primes to minimize “leakage” between them. For example, the available short-term prime was attempted to be written in such a way as to carry no statement or implication regarding the stimulus person's availability or lack of availability long-term, or his/her dominance. Similarly, the priming quote intended to convey that its supposed author was available for a long-term relationship does not give the reader any information about its author, other than the intended availability for a long-term relationship. There were inherent difficulties in trying to keep the primes totally independent of each other. For example it was hard to compose the not available long-term quote that did not carry some implications about short-term availability. Manipulation checks (described below) explored the extent to which

participants drew information about one form of availability from the other. As will be described in the results section, the primes were independent except that to some extent participants inferred that not available for one strategy meant available for the other and vice versa.

Each quotation was accompanied by brief biographical information about its supposed author. Included in the booklet on the same page as the quote was what looked like a photocopy of a form filled out by the quote-giver that asked his/her name (Michael or Michele, followed by a last name that had been crossed out, apparently to protect the individual), sex, age (20), college (“Queens College” or “University of”, the rest crossed out), and college year (junior).

The purpose of this information was to establish the supposed writer's sex and to lend realism to the notion that the quote represented the response of a real person. To accompany the availability/unavailability quote, Queens College was used, a college similar to the participants' own Brooklyn College, so as to establish that the “writer” was similar to the subject. To accompany the dominant quote, University of (crossed out) was used, to make it seem that the “writer” may be attending a prestigious university. (This was done in order to encompass a broad definition of dominance.)

In the dominant condition the quote was immediately followed by typed “interviewer's comments”, intended to reinforce the quote-giver's dominance throughout a range of activities. These consisted of the following:

“Michael (Michele) is an accomplished skier and tennis player. He (she) is a take charge person in other areas of his (her) life, and a leader among his (her) peers.”

The same description was used for both male and female stimulus persons and skiing and tennis were listed as the sports the dominant stimulus person excelled at, because they are ones in which both males and females commonly participate. Appendix B contains a sample of the priming materials presented in the availability or unavailability for long-term or short-term relationship conditions. Appendix C presents the priming materials used in the dominant condition.

After receiving the booklet containing the experimental tasks, participants were shown a box with a slot on top that stood on a desk in front of the room. On two sides of the room, there were halls that lead to a series of small cubicle-sized rooms. Participants were told that they were to fill out the booklet in their own small room. When they finished, they were to fold the booklet, put it in the envelope provided and, on their way out, to drop the envelope into the box. In this way, all their responses would remain completely anonymous, even to the experimenter. The complete oral instructions given to participants in all the different conditions are contained in Appendix D.

The reinforcement/manipulation check questions. In the priming conditions, after reading the priming material, participants answered questions about their perception of the stimulus person. These questions were intended to reinforce the primes, and also to act as manipulation checks.

Three series of questions were used to assess participants' perception of "Michael" or "Michele". Each series was designed to focus on, and correspond to, one of the basic situations the experiment dealt with and that the primes were intended to make salient, namely: 1. short-term relationships, 2. long-term relationships, 3. interpersonal dominance.

For participants in a priming condition, the series of corresponding reinforcement-manipulation check questions immediately followed the priming material, while the two non-corresponding series of manipulation check questions came last, following the dependent measures (see ordering of booklet, below). The corresponding series of questions reinforced the primes by asking the subject questions about the stimulus person that had answers which are obvious from the quote, and thus were intended to cause the subject to be mentally immersed in the quote once again by recalling the information it contained.

Six items served as a manipulation check to insure that participants in the dominant condition did indeed pick up on the dominant qualities of the stimulus person that the experimenter desired to make salient. Participants rated Michael/Michele on the following categories: dominant, successful, strong, vigorous, leader and winner. In each category a 1 to 9 scale was used, with 1 the most dominant and 9 the least dominant.

Four items served as a manipulation check for the stimulus person's availability or unavailability for short-term sexual relationships. Participants in the priming conditions were asked to rate on a 1 to 9 scale, (with 1 being "I strongly disagree" and

9 being “ I strongly agree”), how well the following four statements described the stimulus person:

1. Sex without love is OK for him/her.
2. I can imagine him/her being comfortable and enjoying ”casual” sex with different partners.
3. I can foresee him/her having a one night stand.
4. He/She would be comfortable and fully enjoy sex with someone even if he/she was not closely attached to her/him.

Four items served as a manipulation check for the stimulus person's availability or unavailability for long-term relationships. Participants were asked to judge (again, on a 1 to 9 scale) how well the following statements described the stimulus person:

1. It is important for him/her to currently be in a relationship with someone.
2. I can foresee him/her settling down with someone in the near future.
3. To what extent do you see him/her as interested in having a long term relationship?
4. He/She would want to be closely attached to a partner (both emotionally and psychologically).

In addition to reinforcing the respective prime, the above items functioned as a manipulation check. Participants in each condition were expected to rate the stimulus

person in a way that corresponded to the quote they had read, and to differ from other conditions in their rating of those dimensions.

For example, participants given the available short-term quote, should have been more likely than participants in other conditions to agree with the following statements about the writer: “I can imagine him/her being comfortable and enjoying casual sex with different partners.” and “I can foresee him/her having a one night stand.”. Likewise, participants given the unavailable short term quote should have expressed disagreement with whether these two items described Michael/Michele.

Dependent measures. After reading the priming information and answering the manipulation check items, participants were asked about their own dating philosophy. They were to fill out a survey which measured their willingness and eagerness to engage in short-term and long-term relationships. They also completed a series of items designed to provide background and demographic information about them. The first four items on this survey served as the primary dependent variables. They were as follows:

1. If no negative consequences could result, how willing would you be to have a brief sexual relationship with a desirable partner?

Extremely 1 2 3 4 5 6 7 8 9 Extremely
Unwilling Willing

2. How eager are you at the present time to seek a brief sexual relationship?

Absolutely 1 2 3 4 5 6 7 8 9 Extremely
Not Eager

3. If a desirable partner was available to you, how willing would you be to have a monogamous, committed relationship or marry?

Extremely 1 2 3 4 5 6 7 8 9 Extremely
Unwilling Willing

4. How eager are you at the present time to seek a monogamous, committed relationship or marry?

Absolutely 1 2 3 4 5 6 7 8 9 Extremely
Not Eager

Subsequent items on the survey dealt with the following questions: How willing are men and women, in general, to have brief or monogamous relationships; How forceful are men and women; Whether the subject was willing to be sexually monogamous for life; How soon after starting to date would the subject be willing to have sex; How many sexual partners would the subject want in his/her lifetime; The subject's attitudes toward casual sex; and information about the subject's ethnicity, religion, and relationship status (Appendix E contains entire survey).

Ordering of the stimuli/questionnaire booklet. For the five priming conditions, the ordering of the booklet was as follows: the instruction sheet (which reiterated the instructions and the steps taken to insure privacy), biographical information about the supposed author of the priming quotation, the priming quotation, interviewer's comments (dominant condition only), the series of questions about the participants' perception of the stimulus person designed to act as reinforcement of the prime and

manipulation check, the dependent variable series of questions that requested participants' own attitudes toward short-term and long-term relationships, a few questions that solicited other self-descriptive information about the participants, and finally, the remaining series of questions about participants' perception of the stimulus person (the prime reinforcement/manipulation check items relevant for the conditions other than the one in which the subject participated). A final question asked how attractive Michael/Michele was.

Participants in the control condition received a booklet that did not have any of the prime reinforcement/manipulation check items about the stimulus person. (These items would have been meaningless to participants in the control condition, since they had not read any of the supposed personal statements by another writer.) Control participants received a booklet containing only the instruction sheet and dependent variable questions.

For the dependent variable questions, Question 1 and Question 2 dealt with willingness and eagerness to engage in a brief sexual relationship, while Questions 3 and Question 4 dealt with willingness and eagerness for a monogamous relationship or marriage. The order of Questions 1 and 2 was counterbalanced with Questions 3 and 4, so half of the participants of each sex in each condition got the questions dealing with their attitudes toward long term relationships first, and half got the short-term items first. These items were counterbalanced in order to examine whether being asked about their attitudes toward short-term or long-term relationships first would affect participants' responses to these questions. For example, would thinking

about and answering a question regarding their interest in a long-term relationship affect participants' reported interest in having a short-term relationship when compared to those who had not been asked to think about being in a long-term relationship prior to answering the short-term question?

Question 5 and Question 6 asked participants about most men's willingness to engage in short-term and long-term relationships. Question 7 and Question 8 asked about most women's willingness for such relationships. The order of Question group 5 and 6 and Question group 7 and 8 was alternated so that males were always asked about females first, and females were always asked about males first.

Debriefing. Following their completion of the experimental task, participants received a brief description of the purpose of the experiment. Participants in the priming conditions were told that the experimenter was interested in seeing if their own attitudes were affected by the quote they read. The different quotes others had read were also described to them at that point. Participants in the control condition were told that the experimenter was interested in obtaining information on attitudes toward relationships, to serve as a comparison base, and were informed of the quotes other participants had read. Participants were given the opportunity to ask any questions they might have regarding the experiment and its procedure. All questions were fully answered.

Results

Order Effects

As described in the method section, the order of the items measuring participants' interest in a short-term relationship (items 1 & 2) was counter-balanced with the items assessing their interest in a long-term relationship (items 3 & 4). Half of the participants of each sex in each condition received the items dealing with their attitudes toward long-term relationships first, and half completed the items regarding interest in short-term relationships first.

In a preliminary analysis, responses to each of these items were compared using a sex of subject by priming quote by order of items ANOVA. On all four of these items the order of presentation of the items produced no significant outcome, either as a main effect, or in interaction with sex of subject or type of priming story (see Appendix F for complete results). Consequently, the order of presentation factor was collapsed in subsequent data analyses.

Manipulation Checks

Dominant Condition. The manipulation check for the dominant priming quote consisted of participants rating the supposed author of the priming quote, Michael/Michele, on the following six characteristics: dominant, successful, strong, vigorous, leader and winner. These items were combined into a single scale, Cronbach's coefficient alpha = .85.

When these six items were combined into a single scale, it was apparent that participants in the dominant condition did consider Michael/Michele to be most

dominant, with a mean of 47.38 for “Michael” in the dominant condition, compared to means ranging from 39.41 to 32.92 for “Michael” in the four other priming conditions, and a mean of 46.94 for “Michele” in the dominant condition compared to means ranging from 38.96 to 29.50 in the other four priming conditions. (The dominance scale items are reversed score; a higher score indicates a higher level of dominance. See Table 1 for means and Table 2 for ANOVA.)

Note that it was not possible to compare any of the primed conditions to a control condition on any of the manipulation checks. Because control participants did not receive a priming quote, questions about the person described in the various quotes would have been meaningless to participants in the control condition. As a result, manipulation check items for a given condition were compared to each of the other same sex experimental conditions individually, using Duncan's new multiple range test.

As can be seen on Table 1, for both male and female participants, the dominant condition mean was significantly different from each of the other groups ($p < .05$ in each case). Of the four conditions other than the dominant condition, males rated the available short-term stimulus person as least dominant, and significantly different from each of the other three groups ($p < .05$ in each case). Females rated the available short-term male as less dominant than the not available long-term male ($p < .05$).

The individual items that make up the dominance scale were also examined. They showed a similar pattern as the overall scale in that greater dominance was attributed to the quote giver in the dominant condition than the others. (Means and statistical analyses of the individual items are reported in Appendix G).

Table 1
Means for Dominant Manipulation Check Scale.

Sex of Subject	Priming Quote				Dominant
	Short-Term Available	Short-Term Not Av.	Long-Term Available	Long-Term Not Av.	
Females	32.92 ^a	36.78 ^{ab}	36.42 ^{ab}	39.41 ^b	47.38 ^c
<i>SD</i>	8.92	8.46	5.03	7.65	5.97
<i>n</i>	(26)	(23)	(24)	(29)	(26)
Males	29.50 ^a	35.65 ^b	34.63 ^b	38.96 ^b	46.94 ^c
<i>SD</i>	7.16	8.56	6.60	7.41	8.21
<i>n</i>	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 6 (least dominant) to 54 (most dominant). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table 2
Analysis of Variance, Dominant scale.

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	116.054	2.072	.151
Priming Quote (B)	4	1482.442	26.469	.000
A x B	4	17.409	.311	.871
Residual	221	56.006		

The manipulation check individual items also allow a look into the inferences participants made about other attributes of opposite sex individuals who are presented as dominant, available for long-term or short-term relationships, or unavailable for such. The individual items of the dominance scale reveal that males considered the available short-term women to be significantly less successful, weaker, more of a follower and more of a loser than any of the other conditions ($p < .05$, in each case). It has been known that females can suffer negative evaluation for being sexually available (Buss & Dedden, 1990; Buss & Schmitt, 1993) and the above results dramatically bear this out. Females considered the available short-term male to be significantly less successful than all the other conditions except the not available short-term and more of a loser than all the other conditions ($p < .05$ in each case).

Available Short-Term and Not Available Short-Term conditions. Four items served as a manipulation check to insure that participants in the available short-term condition perceived the stimulus person's stated availability for short-term sexual relationships, as intended. Conversely, these items served to test whether participants in the unavailable short-term condition perceived the stimulus person's stated unavailability for short term relationships, as intended.

Participants in the priming conditions were asked to rate, on a 1 to 9 scale (with 1 being "I strongly disagree" and 9 being "I strongly agree"), how well the following four statements described the stimulus person:

1. Sex without love is OK for him/her.

2. I can imagine him/her being comfortable and enjoying “casual” sex with different partners.
3. I can foresee him/her having a one night stand?
4. He/She would be comfortable and fully enjoy sex with someone even if he/she was not closely attached to her/him.

These items were combined into a single scale, Cronbach’s coefficient alpha = .93. When the four short-term availability items were combined into a single scale (See Table 3 for means and Table 4 for ANOVA.), it was found that females in the available short term condition rated “Michael” as most sexually available, significantly higher ($p < .05$) than the means of all other conditions except the dominant man. In the dominant condition, female participants judged “Michael” to be about as sexually available short-term as did female participants in the available short-term condition (respective means of 27.8 and 31.1, difference not significant). In other words, females considered the dominant man, about whom all they knew was his dominant qualities, to be about as willing and likely to engage in casual sex as the man in the available short-term condition (about whom all they knew was his stated willingness to engage in short-term sex). The dominant man was rated as more sexually available than the available long-term man, or the not available long-term man ($p < .05$ in each case). For male participants, the available short-term woman scored significantly higher on the short-term availability scale than each of the four other priming conditions ($p < .05$ in each case, see Table 3).

The not-available short-term man was scored significantly lower on the

Table 3
*Means for Short-Term Availability/Nonavailability Manipulation
 Check Scale.*

Sex of Subject	Priming Quote					
	Short-Term Available		Long-Term Available		Dominant	
	Not Av.	Not Av.	Not Av.	Not Av.	Not Av.	Not Av.
Females	31.15 ^a	9.35 ^c	13.54 ^c	19.62 ^b	27.77 ^a	
SD	5.15	7.65	7.41	10.61	6.63	
n	(26)	(23)	(24)	(29)	(26)	
Males	30.10 ^a	8.17 ^c	8.26 ^c	19.92 ^b	20.63 ^b	
SD	5.08	4.67	4.02	9.68	8.38	
n	(20)	(23)	(19)	(25)	(16)	

Note. Scores range from 4 (least available) to 36 (most available). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table 4
Analysis of Variance, Short-Term Manipulation Check Scale.

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	386.739	7.107	.008
Priming Quote (B)	4	3753.972	68.984	.000
A x B	4	110.970	2.039	.090
Residual	221	54.418		

short-term availability scale than each of the groups other than the available long-term condition ($p < .05$), and the unavailable short-term female was scored significantly lower than each other condition except for the available long-term condition ($p < .05$). Males considered the available long-term stimulus woman to be as unlikely to engage in a casual sexual relationship as the woman who says she will not, and likewise, for female participants these two conditions did not differ on perceived male short-term availability. Note that here again participants made inferences about the stimulus person, the implications of which for the experiment, will be dealt with below.

There was a significant male-female overall effect, with the male stimulus person seen by female participants as more available short term than the female person by the male participants when combining all of the priming manipulations ($F(1, 221) = 7.1$, $p = .008$). This is an example of the overall male-female differences, that while not a primary focus of the experiment, will be discussed briefly below.

The individual items that make up the short-term scale also reflected the efficacy of the manipulation, following the same pattern as the overall scale, for both male and female participants (see Appendix H).

Available Long-Term and Not Available Long-Term conditions. Four items served as a manipulation check to insure that participants in the available long-term condition perceived the stimulus person's availability for long-term involvement and that participants in the unavailable long-term condition perceived the stimulus person's unavailability for long-term involvement.

Participants in all priming conditions were asked to judge how well the following four statements described the stimulus person:

1. It is important for him/her to currently be in a relationship with someone.
2. I can foresee him/her settling down with someone in the near future.
3. To what extent do you see him/her as interested in having a long term relationship?
4. He/She would want to be closely attached to a partner (both emotionally and psychologically).

The four long-term availability items were combined into a single scale, in which higher numbers indicate a greater interest in committing, Cronbach's coefficient alpha = .64. The Cronbach's coefficient alpha for this scale was not all that high, especially when compared to the other manipulation scales. Item 3 on the scale ("To what extent do you see her/him as interested in having a long-term relationship?") was written in such a way that a "9" indicated perceived extreme disinterest on the part of the stimulus person for a long-term relationship, as opposed to the other items where it indicated extreme perceived interest in such. This may have confused a few participants into giving the opposite of their intended response. (The correlation between Item 3 and Item 1 was only $r = .18$.) Also the correlation between Item 1 on the scale and Item 4 was only $r = .30$, perhaps because in retrospect Item 1 ("It is important for her/him to currently be in a relationship with someone.") did not make it sufficiently clear that what was meant was a long-term relationship. It was found that participants in the available long-term condition rated the stimulus person as most willing to commit, with a mean of 28.79 for "Michael" and 27.68 for "Michele", these means significantly

different from the means of the each of other conditions (See Table 5 for means, and Table 6 for ANOVA).

The not-available short-term male was also rated as relatively willing to commit with means of 24.7 for “Michael” significantly higher than each of the remaining three conditions. Participants in the unavailable long-term condition rated the stimulus person as unwilling to commit (mean of 14.59 for “Michael” and 16.28 for “Michele”). But so did participants in the available short-term and dominant conditions (respective means of 16.5 and 17.5 for “Michael” and 16.3 and 18.5 for “Michele”). For females participants, each of these three conditions were significantly lower on the long-term availability scale than the available long-term or unavailable short-term conditions and not significantly different from each other.

In other words, female participants inferred that for a man, short-term sexual willingness means an unwillingness to commit, as does dominance. The pooled correlation, across combined conditions, between how dominant the stimulus man was perceived and how available short-term he was perceived to be was $r = .24$, $p < .01$. There was no correlation between a man's perceived dominance and willingness to commit (pooled $r = -.09$). The pooled correlation between how available short-term a man was perceived to be and how available long-term he was perceived to be was negative, combined across all conditions ($r = -.29$, $p < .01$). Females thus considered long-term availability and short-term availability of men to be inversely related. Likewise males also considered long-term availability and short-term availability on the

Table 5
*Means for Long-Term Availability Nonavailability Manipulation
 Check Scale.*

Sex of Subject	Priming Quote				
	Short-Term Available Not Av.		Long-Term Available Not Av.		Dominant
Females	16.50 ^c	24.70 ^b	28.79 ^a	14.59 ^c	17.50 ^c
	<i>SD</i> 6.11	6.10	5.40	6.10	5.85
	<i>n</i> (26)	(23)	(24)	(29)	(26)
Males	16.30 ^c	22.04 ^b	27.68 ^a	16.28 ^c	18.50 ^{bc}
	<i>SD</i> 4.79	5.20	4.29	6.62	6.23
	<i>n</i> (20)	(23)	(19)	(25)	(16)

Note. Scores range from 4 (*least available*) to 36 (*most available*). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table 6
Analysis of Variance, Long-Term Manipulation Check Scale

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	2.479	.075	.785
Priming Quote (B)	4	1356.556	40.961	.000
A x B	4	35.073	1.059	.378
Residual	221	33.118		

part of females to be inversely related ($r = -.20, p < .05$). There was also no overall correlation between how dominant a female was perceived to be and her perceived short-term (pooled $r = .12$) or long-term availability (pooled $r = .04$).

There was no overall male-female difference in the rating of how willing to commit the stimulus person was ($F < 1, ns$, see Table 5). Here too, the individual long-term scale items, for both male and female participants, followed the overall results (see Appendix I).

As seen above, females considered the available short-term man to be relatively not dominant, considering him unsuccessful and a loser; but they considered the dominant man to be relatively available for short-term sexual relationships. This experiment seems to offer experimental evidence for women perceiving an interesting relationship between dominance and sexual availability. Sexually available men are thought to be not dominant, probably because non-dominant men are not in high demand by women and hence available whenever a short-term opportunity does occur. Dominant men, however, are perceived as sexually available, since they are appealing to women and in demand and therefore have many opportunities to exercise short-term interest. This perception that dominant men are sexually available, may lead females also to think that they must be willing to engage in short-term sexual relationships if they wish to have access to dominant males. Indeed, Simpson and Gangestad (1992) reported that sociosexually unrestricted females dated partners who were more socially prominent and attractive than those dated by restricted females.

Also, as noted above, women saw the dominant man as no more willing to commit than the available short-term man. The dominance manipulation and the available short-term manipulation seemed to have primed two different categories of men who are available for short term, one is a man who is dominant and capitalizes on that desirability for short-term conquests and the second who is undesirable, and so always available.

Manipulation Effectiveness

As seen above, the manipulations were effective in conveying their intended stimulus person characteristics. However, as also noted above, participants made inferences about additional characteristics of the stimulus person. Participants seemed to feel that short-term availability inherently implied long-term unavailability, and vice versa. Therefore, as will be discussed below, supplementary analyses (combining the available short-term and not available long-term conditions and combining the not available short-term and available long-term conditions) were performed.

Main Hypotheses

Males prefer to utilize short-term mating strategies more than females do (Buss & Schmitt, 1993; Symons, 1987) and, in general, females display a greater resistance to utilizing short-term strategies (Townsend, Kline & Wasserman, 1994), while long-term strategies occupy a larger part of their mating behaviors (e.g. Oliver & Hyde, 1993).

The primary purpose of the present experiment was to investigate environmental contexts that would affect the current interest of males and females in each of these two mating strategies. The main hypotheses, which were theorized as stemming from an

evolutionary view of mating were as follows:

For Males:

(1) If their preferred short-term strategy is made saliently unavailable, their interest in long-term will increase (relative to the control group).

(1a) This increase in interest in long-term is not expected to result in any decrease in interest in short-term (since it is still preferred).

(2) If the likely success of their preferred short-term strategy is made salient, interest in long-term will decrease. (If the more preferred strategy is available the less preferred strategy will appear even less desirable.)

(2a) If the availability of the preferred short-term strategy is made salient, interest in it will rise.

For Females:

(3) If a dominant male is made salient, their interest in short-term will increase (since a dominant male is a major factor in making short-term more profitable for females (Gangestad & Simpson, 1990)).

(3a) This interest in short-term is not expected to result in any decrease in interest in long-term.

(4) If the likely success of their preferred long-term strategy is made salient, interest in short-term will decrease.

(4a) If the availability of the preferred long-term strategy is made salient, interest in it will rise.

Hypotheses Concerning Males

The experiment produced no appreciable support for any of the hypotheses concerning males.

Hypothesis 1. Item 3 asked participants how willing they were to have a monogamous, committed relationship or marry. Item 4 asked participants how eager they were to do the same. Hypothesis 1 predicted that if short-term relationships are unavailable, male interest in long-term relationships will increase. Therefore the prediction was that on the above two items the Not Available Short-Term condition will have higher means than the Control condition. However this was not borne out by Item 3 ($F [1,267] < 1$, *ns*, see Table 7 .) or by Item 4 ($F [1, 267] < 1$, *ns*, see Table 9.). Despite being in the overall direction predicted by hypothesis 1, the combined mean on these two items in the Unavailable Short-Term group (12.30) was not significantly different from the combined control mean (11.11), $F[1, 267] < 1$ (see Table 11). (These analyses were planned contrasts using the overall MS error term, as are all the analyses below concerning the hypotheses.)

However, priming had an effect on how many different sexual partners males stated they would want in the rest of their lives (see Table 13). The Available Short-Term condition mean and the Not Available Long-Term condition mean did not differ from the Control condition mean ($F [1, 260] < 1$, in each case.). However, the Not Available Short-Term mean (5.09) was significantly lower than the Control Mean of 21.56 ($F [1, 260] = 11.12$, $p = .001$). Reading about a female not being available for a short-term sexual relationship reduced the number of different sexual partners men said

Table 7

Means for "How willing would you be to have a monogamous, committed relationship or marry?"

Sex of Subject	Priming Quote					
	Short-Term		Long-Term		Dominant	Control
	Available	Not Av.	Available	Not Av.		
Females	7.50	6.83	6.67	6.76	7.07	7.66
	<i>SD</i> 1.88	2.14	2.61	2.57	1.92	1.97
	<i>n</i> (26)	(23)	(24)	(29)	(27)	(29)
Males	6.25	6.57	6.32	5.84	5.31	6.11
	<i>SD</i> 2.20	2.27	2.54	2.49	2.70	2.63
	<i>n</i> (20)	(23)	(19)	(25)	(16)	(18)

Note. Scores range from 1 to 9, higher scores indicating greater willingness

Table 8

Analysis of Variance, How Willing Monogamous

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	68.075	12.667	.000
Priming Quote (B)	5	3.996	.744	.591
A x B	5	4.132	.769	.573
Residual	267	5.374		

Table 9
Means for "How eager are you at the present time to seek a monogamous committed relationship?"

Sex of Subject	Priming Quote					
	Short-Term		Long-Term		Dominant	Control
	Available	Not Av.	Available	Not Av.		
Females	5.62	5.87	6.00	5.24	6.70	6.90
<i>SD</i>	2.94	2.51	2.36	2.90	2.00	2.01
<i>n</i>	(26)	(23)	(24)	(29)	(27)	(29)
Males	5.00	5.74	4.89	4.64	5.00	5.00
<i>SD</i>	2.10	2.61	2.56	2.22	2.71	3.12
<i>n</i>	(20)	(23)	(19)	(25)	(16)	(18)

Note. Scores range from 1 (*absolutely not*) to 9 (*extremely eager*).

Table 10
Analysis of Variance, How Eager Monogamous

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	64.911	10.314	.001
Priming Quote (B)	5	9.242	1.468	.200
A x B	5	5.297	.842	.521
Residual	267	6.294		

Table 11
Means for Willing and Eager Long-Term Items Combined.

		Priming Quote					
Sex of Subject		Short-Term		Long-Term		Dominant	Control
		Available	Not Av.	Available	Not Av.		
Females		13.12	12.70	12.67	12.00	13.78	14.55
	<i>SD</i>	3.68	4.11	4.53	5.08	3.04	3.03
	<i>n</i>	(26)	(23)	(24)	(29)	(27)	(29)
Males		11.25	12.30	11.21	10.48	10.31	11.11
	<i>SD</i>	3.77	4.65	4.83	4.01	4.85	5.36
	<i>n</i>	(20)	(23)	(19)	(25)	(16)	(18)

Note. Scores range from 2 to 18.

Table 12
Analysis of Variance, Long-Term Items

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	265.934	14.818	.000
Priming Quote (B)	5	17.789	.991	.423
A x B	5	16.156	.900	.481
Residual	267	17.947		

Table 13
Means for "How many different sexual partners would you want to have?"

Sex of Subject	Priming Quote					
	Short-Term Available		Long-Term Available		Dominant	Control
	Not Av.	Not Av.	Not Av.	Not Av.		
Females	2.42	2.43	2.00	1.79	2.15	1.72
SD	3.83	4.02	2.17	1.79	1.49	1.49
n	(26)	(23)	(24)	(28)	(27)	(29)
Males	17.30	5.09	8.67	19.77	6.21	21.56
SD	24.85	5.82	23.22	33.64	12.87	30.13
n	(20)	(23)	(18)	(22)	(14)	(18)

Table 14
Analysis of Variance, How Many Different Sexual Partners

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	8479.291	34.424	.000
Priming Quote (B)	5	410.918	1.668	.143
A x B	5	613.396	2.490	.032
Residual	260	246.318		

they desired. Males primed with a woman not being available for a short-term relationship did not state an increased interest in commitment per se, but they were clearly thinking in terms of fewer desired lifetime partners. While this does not directly offer evidence that women not being available for short-term relationships increase male desire for commitment, it does show that such a condition serves to temper male stated desire for partner variety and thus head them toward greater partner exclusivity. The Available Long-Term mean (8.67) was also significantly lower than the Control mean ($F [1, 260] = 6.07, p = .01$).

Hypothesis 2. Items 3 and 4 also provided no evidence for hypothesis 2 (if short-term availability is made salient, male interest in long term will decrease). Hypothesis 2 would predict that on these items, the available short-term condition would have means lower than the control condition. However on these two items, the combined Available Short-Term Condition mean (11.25) was no different than the Control mean (11.11) ($F [1, 267] < 1$, see Table 11). Likewise no difference was found individually for either the “willing” or the “eager” items ($F < 1$ in each case, see Tables 7 & 9). However on Item 17, (“I would have to be closely attached to someone (both emotionally and psychologically), before I could feel comfortable and fully enjoy having sex with her.”) for males, the Control mean was 6.22 and the female Available Short-Term mean was 4.20 ($F [1, 267] = 7.7, p = .006$, see Table 15). This indicates that males to whom a female available for a short-term relationship was made salient, felt that close attachment was less important for a sexual relationship.

Table 15

Means for "I would have to be closely attached to someone . . . before I could feel comfortable and fully enjoy having sex with him/her."

Sex of Subject		Priming Quote					
		Short-Term		Long-Term		Dominant	Control
		Available	Not Av.	Available	Not Av.		
Females		7.81	8.13	7.83	7.72	8.19	8.00
	<i>SD</i>	1.86	1.42	2.01	2.02	1.39	1.46
	<i>n</i>	(26)	(23)	(24)	(29)	(27)	(29)
Males		4.20	5.70	6.21	4.88	6.00	6.22
	<i>SD</i>	3.16	2.70	2.64	2.65	3.03	2.71
	<i>n</i>	(20)	(23)	(19)	(25)	(16)	(18)

Note. Scores range from 1 (*strongly disagree*) to 9 (*strongly agree*).

Table 16

Analysis of Variance, I Would Have to be Closely Attached Before Fully Enjoying Sex.

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	404.699	79.755	.000
Priming Quote (B)	5	8.330	1.642	.149
A x B	5	6.042	1.191	.314
Residual	267	5.074		

Hypothesis 2a. Hypothesis 2a (If availability of short-term partners is made salient, interest in it will rise) predicts that males in the Available Short-Term condition will have higher means on Item 1 (“How willing would you be to have a brief sexual relationship”) and on Item 2 (“How eager are you at the present time to seek a brief sexual relationship?”) than those in the Control condition. On Item 1, the woman available short-term condition did not differ from the Control condition ($F [1, 267] < 1$, see Table 17). On Item 2, the woman available short-term condition and the control condition did not differ significantly ($F [1, 267] < 1$, see Table 19). Combining the above two items likewise lent no support for hypothesis 2a (available short-term mean of 13.75, control mean of 12.72, $F [1, 267] < 1$, *ns*, see Table 21).

Item 7 asked the participants' perception of how willing most men are to have a brief sexual relationship and Item 8 asked about how willing most men are to have a monogamous committed relationship. It was thought that in the event priming had no effect on participants' own stated interest in long and short-term relationships, the effect might appear on the more indirect measure of asking about most individuals' interest. However these items did not produce results which offer support for any of the male hypotheses.

Item 7 produced a mean of 8.40 for men in the available Short-Term condition, and a mean of 7.89 in the Control condition ($F [1, 267] = 1.00$, *n.s.*, see Table 23). For male participants, on Item 8, the female available short-term and the female not-available short term groups did not differ from the control group (in both cases, $F [1, 267] < 1$, see Table 25 for means, and Table 26 for ANOVA). It is interesting that

Table 17
Means for "How willing would you be to have a brief sexual relationship with a desirable partner?"

Sex of Subject	Priming Quote					
	Short-Term Available		Long-Term Available		Dominant	Control
Females	4.00	3.17	3.96	3.48	5.22	3.93
<i>SD</i>	3.05	2.55	2.51	2.97	2.87	2.93
<i>n</i>	(26)	(23)	(24)	(29)	(27)	(29)
Males	7.55	7.35	6.58	6.84	5.56	7.17
<i>SD</i>	1.79	2.17	3.06	1.91	2.76	2.75
<i>n</i>	(20)	(23)	(19)	(25)	(16)	(18)
Comparison of male and female scores by priming quote:						
<i>F</i>	20.3	28.6	10.2	21.3	.165	16.54
Sig. Level	.00001	.00000	.00157	.00001	.68492	.0006

Note. Scores range from 1 to 9, higher scores indicating greater willingness

Table 18
Analysis of Variance, How Willing Brief

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	590.402	83.644	.000
Priming Quote (B)	5	2.974	.421	.834
A x B	5	18.800	2.663	.023
Residual	267	7.059		

Table 19

Means for "How eager are you at the present time to seek a brief sexual relationship?"

Priming Quote						
Sex of Subject	Short-Term		Long-Term		Dominant	Control
	Available	Not Av.	Available	Not Av.		
Females	2.88	2.09	3.38	2.41	2.89	2.24
SD	2.50	2.04	2.58	2.32	2.37	2.03
n	(26)	(23)	(24)	(29)	(27)	(29)
Males	6.20	4.96	5.21	5.08	4.56	5.56
SD	1.96	2.53	2.92	2.12	2.80	2.57
n	(20)	(23)	(19)	(25)	(16)	(18)

Note. Scores range from 1 (*absolutely not*) to 9 (*extremely eager*).

Table 20

Analysis of Variance, How eager brief

Source of Variation	DF	Sum of Square	F	Sig of F
Sex of Subject (A)	1	473.184	83.083	.000
Priming Quote (B)	5	6.451	1.133	.343
A x B	5	5.413	.950	.449
Residual	267	5.695		

Table 21
Means For Willing and Eager Short-Term Items Combined.

Priming Quote						
Sex of Subject	Short-Term		Long-Term		Dominant	Control
	Available	Not Av.	Available	Not Av.		
Females	6.88	5.26	7.33	5.90	8.11	6.17
<i>SD</i>	4.97	3.44	4.78	4.74	4.74	4.41
<i>n</i>	(26)	(23)	(24)	(29)	(27)	(29)
Males	13.75	12.30	11.79	11.92	10.13	12.72
<i>SD</i>	3.43	3.30	5.67	3.70	4.44	4.78
<i>n</i>	(20)	(23)	(19)	(25)	(16)	(18)

Note. Scores range from 2 to 18

Table 22
Analysis of Variance, Short-Term Items

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	2120.693	108.620	.000
Priming Quote (B)	5	13.404	.687	.634
A x B	5	39.510	2.024	.076
Residual	267	19.524		

Table 23
Means for "How willing do you think most men are to engage in a brief sexual relationship?"

Sex of Subject	Priming Quote					
	Short-Term		Long-Term		Dominant	Control
	Available	Not Av.	Available	Not Av.		
Females	7.42	7.61	7.54	7.69	7.48	7.62
SD	1.27	1.53	1.96	1.39	1.72	1.68
n	(26)	(23)	(24)	(29)	(27)	(29)
Males	8.40	7.70	7.68	7.32	8.00	7.89
SD	0.75	1.46	1.29	2.12	0.97	1.81
n	(20)	(23)	(19)	(25)	(16)	(18)

Note. Scores range from 1 to 9, higher scores indicating greater willingness.

Table 24
Analysis of Variance, How Willing Most Men Brief

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	4.142	1.689	.195
Priming Quote (B)	5	.654	.267	.931
A x B	5	2.457	1.002	.417
Residual	267	2.452		

Table 25
Means for "How willing do you think most men are to have a monogamous relationship or marry?"

Sex of Subject	Priming Quote					
	Short-Term		Long-Term		Dominant	Control
	Available	Not Av.	Available	Not Av.		
Females	4.88	5.09	4.75	3.93	4.81	4.34
SD	1.48	1.78	1.82	1.87	1.67	2.09
n	(26)	(23)	(24)	(29)	(27)	(29)
Males	5.40	5.61	5.37	4.20	5.50	5.17
SD	1.54	1.34	1.38	1.71	2.00	1.29
n	(20)	(23)	(19)	(25)	(16)	(18)

Note. Scores range from 1 to 9, higher scores indicating greater willingness.

Table 26
Analysis of Variance, "How willing...most men are to have a monogamous relationship?"

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	21.247	7.361	.007
Priming Quote (B)	5	10.713	3.712	.003
A x B	5	.426	.148	.981
Residual	267	2.886		

across priming conditions men thought they were more willing to have a monogamous relationship than men in general (respective means of 6.09 and 5.17, $t(120) = 3.77, p < .001$).

The primes were written to be as independent of each other as possible, however participants spontaneously made some inferences regarding the stimulus persons' characteristics from information the primes supplied regarding other characteristics. Notably, as mentioned above, males considered the available long-term stimulus woman to be as unlikely to engage in casual sexual relationships as the unavailable short-term stimulus woman. And males considered the available short-term woman to be as unlikely to want to commit long-term as the unavailable long-term woman. Because these manipulations were not as psychologically independent as intended, the data were re-analyzed after combining the available short-term and not available long-term conditions and combining the not available short-term and available long-term conditions. It was thought that these analyses would perhaps offer some support for the male hypotheses. However, analyses performed after combining the conditions this way made no difference in the results regarding any of the hypotheses, relative to those described above. These analyses are reported in Appendix J.

Hypotheses Concerning Females

Results Concerning Hypothesis 3 (If a dominant male is made salient, interest in a short-term relationship will increase). Item 1 (“How willing would you be to have a brief sexual relationship with a desirable partner?”) generated support for hypothesis 3. For female participants, the Dominant primed condition had the highest stated

willingness for engaging in a brief sexual relationship of all the groups ($M = 5.22$ compared to Control group mean of 3.93, $F[1, 267] = 3.30, p = .07$, see Table 17 for means and Table 18 for ANOVA).

Item 2 (“How eager . . . brief sexual relationship?”) resulted in means that were in the hypothesized direction, but did not reach statistical significance ($F [1,267] = 1.03, ns$, see Table 19 for means and Table 20 for ANOVA). Apparently “eager” is too strong a term in connection with a brief sexual relationship for females to agree to.

When Item 2 (“How eager are you . . . to seek a brief sexual relationship ?”) was combined with Item 1, for female participants, the dominant primed condition also had the highest short-term score of all the groups ($M = 8.11$, compared to control group mean of 6.17, $F[1, 267] = 2.69, p = .10$, see Table 21 for means and Table 22 for ANOVA.).

Item 5 asked participants “On average, how willing do you think most women are to engage in a brief sexual relationship?”. While Items 1 and 2 were intended to be the primary test of hypothesis 3, Item 5 was included because in the event that female participants might be unwilling to express willingness for a short-term relationship, the dominance priming effect might emerge when female participants estimated the willingness of women in general to have a brief sexual relationship.

As it turned out, dominance priming did not produce a significant difference in Item 5 (for female participants, Dominant condition mean of 5.07, Control mean of 5.38, $F [1, 267] < 1, ns$, see Table 27 for means, and Table 28 for ANOVA). However, Item 5 did offer an insight, when paired with the scores on Item 1, into how willing to

Table 27

Means for "How willing do you think most women are to engage in a brief sexual relationship?"

Sex of Subject	Priming Quote					
	Short-Term		Long-Term		Dominant	Control
	Available	Not Av.	Available	Not Av.		
Females	5.54	5.17	4.88	4.48	5.07	5.38
SD	1.36	1.85	1.57	1.21	1.30	1.54
n	(26)	(23)	(24)	(29)	(27)	(29)
Males	5.65	4.91	4.16	4.24	4.50	5.00
SD	1.53	1.24	1.57	1.92	1.97	1.88
n	(20)	(23)	(19)	(25)	(16)	(18)

Note. Scores range from 1 to 9, higher scores indicating greater willingness.

Table 28

Analysis of Variance, "How willing do you think most women are to engage in a brief sexual relationship?"

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	7.501	3.036	.083
Priming Quote (B)	5	9.424	3.814	.002
A x B	5	.915	.370	.869
Residual	267	2.471		

engage in brief sexual relationships, females saw themselves as compared to the average woman. Overall, combining all priming conditions, females saw themselves as much less willing to have a brief sexual relationship than the average woman, with a mean of 5.08 for willingness of most women, compared to the mean of 3.97 for their own willingness, $t(157)= 4.69, p < .001$.

The dominant primed group was the only group in which women stated they were at least as willing to engage in a brief sexual relationship as the average woman. Difference scores were computed between participants' own willingness for a short-term relationship and their perception of the willingness of the average same sex individual. Female participants who had just read the description of the dominant man reported themselves as about equal to the average woman in willingness to have a brief sexual relationship ($M = 0.15$), while women in the Control group saw themselves as less likely than the average woman to do so ($M = -1.45, F(1, 267)= 4.46, p=.036$, as may be seen in Table 29). In other words, the strong effect of females seeing themselves as less willing to have a brief sexual relationship than the average woman, vanished after reading about the dominant man. This finding offers additional support for hypothesis 3.

Results Concerning Hypothesis 3a (Female increased interest in short-term will not result in any decrease in interest in long-term.) . Female participants primed with the dominant stimulus male did not significantly differ from the Control group in how willing they were to have a monogamous, committed relationships (Item 3), or in how eager they were to seek a monogamous, committed relationship (Item 4). The means

Table 29
Means for Willing Brief Compared to Willingness of Most Same Sex Individuals.

Sex of Subject		Priming Quote					
		Short-Term		Long-Term		Dominant	Control
		Available	Not Av.	Available	Not Av.		
Females		-1.54	-2.00	-.92	-1.00	.15	-1.45
	<i>SD</i>	3.19	3.40	2.62	2.63	2.84	2.93
	<i>n</i>	(26)	(23)	(24)	(29)	(27)	(29)
Males		-.85	-.35	-1.11	-.48	-2.44	-.72
	<i>SD</i>	1.76	2.29	3.05	2.74	2.53	3.56
	<i>n</i>	(20)	(23)	(19)	(25)	(16)	(18)

Note. Scores obtained by subtracting the willingness of most same sex individuals from own willingness.

Table 30
Analysis of Variance, Willing Brief Compared to Willingness of Most Same Sex Individuals.

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	2.822	.351	.554
Priming Quote (B)	5	1.999	.249	.940
A x B	5	22.191	2.763	.019
Residual	267	8.031		

for Item 3, for the Dominant primed condition and Control condition were, respectively, 7.07 and 7.66 ($F [1, 267] < 1$, see Table 7 for means and Table 8 for ANOVA), and the means for these conditions on Item 4 were, respectively, 6.70 and 6.90 ($F [1, 267] < 1$, see Table 9 for means and Table 10 for ANOVA).

Although reading about a dominant man increased female participants' interest in having a short-term relationship, there was no evidence that the dominant priming condition resulted in any change in interest in long-term relationships on the part of female participants. This suggests an independence of long-term and short-term mechanisms in females. If, for females, interest in long-term and short-term relationships were alternatives, we might expect a decrease in long-term interest to accompany any increase in short-term interest. It seems that even females who actively pursue short-term strategies, may prefer long-term strategies (Townsend, Kline & Wasserman, 1994). Townsend et al. (1994) and Buss and Schmitt (1993) cite the assessment of potential long-term partners as one of the benefits of female use of short-term strategies. Alternatively, we might have seen an increase in long-term interest, if dominance simply served to increase interest in mating in general.

Results Concerning Hypothesis 4 and 4a ([4.] For females, if long-term partners seem more available, interest in a short-term relationship should decrease, and, [4a]. if an available long-term partner is made salient, interest in a long-term relationship should increase.). No evidence was found in the results for hypothesis 4. There was no difference between the Control condition and Available Long-Term condition in how willing they were to have a brief relationship (Item 1). The respective

means were 3.93 and 3.96, $F [1, 267] < 1$, see Table 17). On the contrary, females primed with the available long-term stimulus person, were more eager to have a brief sexual relationship (Item 2) than the Control group by a marginal effect (respective means 3.38 and 2.24, $F(1, 267) = 3.02, p = .08$, see Table 19). For the above two items combined, there was no significant difference between the control group and the available long-term condition ($F [1,267] < 1$, see Table 21).

There was also no evidence in the results for hypothesis 4a. On Item 3 (How willing would you be to have a monogamous, committed relationship or marry?), the Control condition mean was 7.66, and the Available Long-Term condition mean was 6.67 ($F [1, 267] = 2.39, p = .12$, see Table 7). On Item 4 (“How eager . . . monogamous”), the Control condition mean was 6.90, and the Available Long-Term mean was 6.00 ($F [1, 267] = 1.69, p = .19$, see Table 9). On the above two items, the differences were in the opposite direction from those predicted by the hypothesis, although not significantly so. The combined mean on Items 3 and 4 for females in the available long-term condition was 12.67, and in the control condition it was 14.55 ($F [1, 267] = 2.58, p = .11$, see Table 11).

The Effects of Dominance

As seen in the results above, this experiment presents some evidence that for women, just thinking about a dominant male increased their stated willingness to engage in a short-term sexual relationship. As discussed earlier, an evolutionary mating perspective suggests that dominance is a key component of males' sexual attractiveness to females. Consistent with this analysis, experimental evidence has shown that a man's

dominance increased his attractiveness to females and that dominance did not increase the sexual attractiveness of females to males (Sadalla, Kenrick and Vershire, 1987).

Research also has shown that exposure to dominant men weakened, at least temporarily, female commitment to their current partners (Kenrick et.al., 1994). By contrast, men's commitment to their partners was reduced after seeing non-dominant attractive women (Kenrick et.al., 1989). Kenrick et al. found that the effect of female dominance on men's interest in their partners was most influenced by attractive women perceived as nondominant. However, when exposed to unattractive women, nondominant women were less effective than dominant women in undercutting commitment. There were similarities in both the priming manipulations used (i.e., exposing women to dominant stimulus men) and the results obtained in the above two studies, and the present research. As will be described in detail below, the present research found a dominance by sex-of-subject interaction in which exposure to a dominant woman per se produced an effect on male participants, reducing desire for short-term relationships.

A major hypothesis of this experiment was that reading about a dominant male should affect women's willingness to engage in short term sexual relationships. Reading about a dominant woman was expected to have no discernible effect on male willingness. Unexpectedly, however, the results of the present experiment indicated that reading about a dominant woman appeared to decrease male participants' interest in a short-term relationship. On Item 1, "How willing would you be to have a brief sexual relationship with a desirable partner?", for males the control group mean was

7.17 and the dominant group mean was 5.56, $F[1, 267]= 3.11, p = .08$ (see Table 17). The 4 cell interaction between sex of subject and dominant condition was significant at the .01 level ($F[1,267] = 6.16$). It is this interaction which is perhaps the most powerful finding of this experiment. Seemingly, just having read about a dominant woman, reduced the men's stated willingness to have a brief sexual relationship, not necessarily or just with this dominant woman, but even with a desirable partner, in the same manner as having read about a dominant man increased female short-term willingness.

A powerful and persistent finding throughout the research literature is a greater male than female interest in short term sexual relationships. Regardless of the explanation of this phenomenon, it is an extremely powerful effect that has been replicated many times (Oliver & Hyde, 1993). Oliver and Hyde found that across 177 studies there was a large effect size ($d = .81$) for more favorable male attitudes compared to female attitudes about casual sex.

Not unexpectedly, the above effect strongly occurs in the current research and finds expression in numerous dependent variable items. For example, males and females differed in how many different sexual partners they would want in the rest of their lives. The female mean was 2.07 different partners, the male mean was 13.3 ($F(1, 260)= 34.4, p < .0005$), see Table 13 for means and Table 14 for ANOVA. (We will examine the overall male-female differences in more detail in a later section).

When asked how willing they would be to have a brief sexual relationship (Item 1), a statistically powerful difference was found between males and females. Overall,

males were more willing than females to have a brief affair (Mean of 6.89 for males, compared to an overall mean of 3.97 for females, $F[1, 267] = 83.6, p < .0001$), see Table 17. This strong male/female difference in willingness for short-term relationships, so common in the literature, occurred in all but one of the different priming conditions. When we look at the different priming conditions, for all but one, not only does the male-female difference show up, but in all these cases the difference was significant at least to the .002 level (See Table 17). However the dominant priming condition tells a different and unique story. Here males had a mean of 5.56 and females had a mean of 5.22 ($F [1, 267] < 1, ns$).

Response on this scale could range from 1 (extremely unwilling to have a short-term relationship) to 9 (extremely willing). For the five conditions other than the dominant condition, female means ranged from 3.17 to 4.00, all well on the unwilling side of the scale, male means ranged from 6.58 to 7.55, all well on the willing side. These results are typical of responses to similar items given by participants in other research. However, reading about a dominant opposite-sex stranger pushed down the willingness of “eager” males, and pushed up the willingness of “hesitant” females till they were statistically indistinguishable and near the midpoint of the scale. After merely reading a simple quote about a dominant individual, according to their statements, males are no more willing to have a brief sexual relationship than females, at least temporarily.

The interaction between sex of subject and dominant condition was so great that it made one of the most powerful and reliable effects in psychological literature

disappear.

Insights Into Priming Effects

As noted above, for males, priming had an effect on how many different sexual partners they would want in the rest of their lives (see Table 13). As seen, the Not Available Short-Term mean and the Available Long-Term mean were both significantly lower than the Control mean. The Dominant condition mean (6.21) was also significantly lower than the Control mean ($F(1, 260) = 7.53, p = .006$). As hypothesized, the Not-Available Short-Term prime may have put males in a long-term frame of mind. And the Available Long-Term prime may have done likewise. These conditions also may have made males more reality oriented and motivated to reduce the discrepancy between number of partners desired and expected number of partners. The Dominant prime, similar to the effects it had on willingness for a short-term relationships, reduced male desire for partner variety.

Items 15-17 solicited attitudes toward short-term sexual involvement and were taken from Simpson and Gangestad's Sociosexuality Scale (1991). Women in the Dominant condition agreed with the statement "Sex without love is OK" (Item 15) more than women in the control group (respective means of 3.78 and 2.21, $F[1, 267] = 5.03, p = .025$, see Table 31).

However, for the other two attitude items from the Sociosexuality Scale, priming produced no significant effects on female participants. For female participants, Item 16 ("I can imagine myself being comfortable and enjoying casual sex with different partners.") produced no significant difference between the Control condition and

Table 31
Means for "Sex without love is OK"

Sex of Subject	Priming Quote					
	Short-Term		Long-Term		Dominant	Control
	Available	Not Av.	Available	Not Av.		
Females	2.92	3.00	2.42	2.07	3.78	2.21
SD	2.80	2.81	2.47	1.89	2.87	1.90
n	(26)	(23)	(24)	(29)	(27)	(29)
Males	6.45	5.35	4.58	5.56	4.63	5.94
SD	2.21	2.99	2.63	2.69	3.28	2.96
n	(20)	(23)	(19)	(25)	(16)	(18)

Note. Scores range from 1 (*strongly disagree*) to 9 (*strongly agree*).

Table 32
Analysis of Variance, Sex Without Love is OK

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	512.652	75.017	.000
Priming Quote (B)	5	7.708	1.128	.346
A x B	5	13.385	1.959	.085
Residual	267	6.834		

Table 33

Means for "I can imagine myself comfortable and enjoying casual sex with different partners?"

Sex of Subject	Priming Quote				Dominant	Control
	Short-Term		Long-Term			
	Available	Not Av.	Available	Not Av.		
Females	2.19	2.74	1.92	2.38	1.78	1.59
SD	2.38	2.82	1.77	2.29	1.31	1.35
n	(26)	(23)	(24)	(29)	(27)	(29)
Males	5.95	5.13	4.37	5.56	4.88	5.78
SD	2.50	3.22	2.95	2.77	3.32	3.21
n	(20)	(23)	(19)	(25)	(16)	(18)

Note. Scores range from 1 (*strongly disagree*) to 9 (*strongly agree*).

Table 34

Analysis of Variance, Comfortable with Casual Sex

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	688.475	19.780	.000
Priming Quote (B)	5	5.880	.946	.452
A x B	5	5.597	.900	.481
Residual	267	6.217		

Dominant condition (respective means of 1.59 and 1.78, $F < 1$, see Table 33). For female participants, Item 17 (“ I would have to be closely attached to someone, both emotionally and psychologically, before I could feel comfortable and fully enjoy having sex with him”) also produced no significant difference between the above two groups (respective means of 8.00 and 8.19, $F < 1$, see Table 15).

Females primed with a dominant male did not change attitudes toward sex with different partners or need for attachment before fully enjoying sex, but did change attitudes about how much they disapproved of sex without love. This last finding supports hypothesis 3 (if a dominant man was made salient, interest in a short-term relationship increased) and coincides with the effect that the Dominant prime had on female participants' willingness for a brief sexual relationship. The above finding may mean that women, in response to the dominant man, are willing to enter in to sexual relationships with a reduced requirement for love, but they are not necessarily more comfortable with multiple partners or sex without any attachment. One possible explanation may be that females engage in short-term relationships to maximize partner quality rather than quantity and that feeling attachment is different than love and necessary for females to be fully comfortable with a partner.

Participants were asked “On average, how forceful, capable and in control do you think men are?”. Women who were primed with the dominant stimulus male answered that men in general were more forceful than women in the control condition did ($F [1, 267] = 3.94, p = .048$, see Table 35 for means and Table 36 for ANOVA).

Table 35
Means for "How forceful are men?"

Sex of Subject	Priming Quote					
	Short-Term		Long-Term		Dominant	Control
	Available	Not Av.	Available	Not Av.		
Females	5.04	6.17	4.92	5.69	6.48	5.62
SD	1.71	1.44	1.79	1.89	1.28	1.72
n	(26)	(23)	(24)	(29)	(27)	(29)
Males	6.00	6.09	5.68	5.48	6.06	6.56
SD	0.97	1.31	1.46	1.85	2.05	1.62
n	(20)	(23)	(19)	(25)	(16)	(18)

Note. Scores range from 1 (*not at all*) to 9 (*extremely*).

Table 36
Analysis of Variance, How Forceful Men.

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	6.716	2.556	.111
Priming Quote (B)	5	7.938	3.021	.011
A x B	5	4.426	1.685	.138
Residual	267	2.627		

This result provides not just additional evidence that the priming quotes produced an effect, but perhaps offers a glimpse into why priming had the effect on female short-term willingness that it did. Reading about a dominant male had an effect on how forceful, capable, and in control women saw men to be. Thus perhaps the women were more willing to have a brief sexual relationship, because the prime called to mind an image of men that was more dominant and so possessing more of the qualities that make a short-term relationship worthwhile from the woman's point of view. A possible problem with this explanation may be that if men in general are seen as forceful and capable, that lessens the value of such a man because his qualities are common; and it becomes less worthwhile for females to sacrifice commitment to have access to him. However, the prime would be unlikely to change long-lasting anchor points, just the images brought up; thus producing the effect that a more dominant image of men results in more short-term willingness.

In the broader examination of the relationship between male dominance and female attitudes toward short-term relationships, based on some of our above results, a reasonable hypothesis would be that the more dominant a female participant finds the stimulus man, the more willing for a short-term relationship she is likely to be. And indeed, across all the priming conditions, the correlation between how dominant the stimulus man was perceived to be on the dominant-submissive continuum (Item 1 on the dominant manipulation check scale), and female participants' willingness short-term was .20 ($p = .02$); and the correlation between the stimulus man's dominant manipulation

check scale score and female participants' willingness short-term was .17 ($p = .06$).

These results offer further support for a positive relationship between male dominance and female willingness for brief relationships.

As noted above, the male hypotheses were largely not supported. These hypotheses depended on short-term strategies and long-term strategies being, to some degree, mutually exclusive. For male participants, the correlation between their combined willing-eager short-term score and their combined willing-eager long-term score was $-.17$ ($p = .05$). So to some degree, male participants who were more interested in short-term relationships were less interested in long-term relationships (For female participants, the correlation between these two strategies was $-.11$, $p = .17$).

There was no correlation, across all priming conditions, between how willing a male participant was to have a monogamous relationship (Item 3) and how available short-term he thought the stimulus woman to be (the short-term availability scale), $r = -.05$, $p > .5$ or between how eager a male participant was to have a monogamous relationship (Item 4) and how available short-term he thought the stimulus woman to be, $r = -.04$, $p > .5$. So, perception of the woman stimulus person's short-term sexual availability did not have a relationship with the male participant's interest in monogamous relationships.

The dominant priming manipulation made no difference in the minimum time females would be willing to wait, after first beginning to date a man, before having sexual intercourse with him (Item 12). On this item, women in the Control condition and women in the Dominant male condition had respective means of 6.43 and 6.19, (F

Table 37

Means for "How soon after beginning to date your partner would you be willing to have sexual intercourse?"

Sex of Subject	Priming Quote					
	Short-Term		Long-Term		Dominant	Control
	Available	Not Av.	Available	Not Av.		
Females	5.62	6.00	5.88	5.93	6.19	6.43
SD	1.92	1.68	1.92	1.85	1.39	1.60
n	(26)	(23)	(24)	(29)	(27)	(28)
Males	3.25	3.52	3.78	3.56	4.13	3.83
SD	1.83	2.06	2.51	1.80	2.03	2.12
n	(20)	(23)	(18)	(25)	(16)	(18)

Note. Scores range from 1 (*first date*) to 8 (*only after marriage*)

Table 38

Analysis of Variance, How Soon Willing to Have Sex.

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	368.687	104.541	.000
Priming Quote (B)	5	3.269	.927	.464
A x B	5	.469	.133	.985
Residual	265	3.527		

< 1, See Table 37). It is possible that because of the way the question was phrased, with the words “your partner”, females were led to focus more on the males they actually dated, rather than the dominant priming male; and women might have based their answer on how long they had tended to wait in the past.

Other Findings

Our design allowed a very tentative look at some of the effects associated with the priming procedure for which there were no hypotheses.

On Item 2 (“How eager are you at the present time to seek a brief sexual relationship?”), the male condition with the highest mean (6.2) was the female Available Short-Term, and the male condition with the lowest mean (4.56) was the Dominant woman condition (reflecting the general damping of male interest that the dominant female condition produced) and the difference between the two conditions was significant at the .04 level ($F [1, 267] = 4.2$, see Table 19). Thus, males, having read about a sexually available female, stated a significantly higher eagerness for a brief sexual relationship, than males who read about a dominant female. Although, as seen above, there is a Control group to serve as the primary comparison here, it is interesting to see the results produced by the Available Short-Term female prime versus the Dominant woman prime.

Reading about a man who indicated his disinterest in long-term relationships lowered female participants' stated eagerness for a long-term relationship. The male Not Available Long-Term condition affected female's stated eagerness for a monogamous, committed relationship or marriage (Item 4), with a male not available

long-term condition mean of 5.24 and a control condition mean of 6.9 ($F[1, 267]=6.34$, $p = .01$, see Table 9). In some ways this is perhaps an analogous phenomenon to the effect a dominant woman had on males, in that each may serve to reduce the preferred sexual strategies of their respective sexes, short-term relationships for males and long-term relationships for females.

Effects of Being in a Monogamous Relationship

On overall effects. Item 26 asked participants “are you currently in a monogamous relationship?”. Three response choices were offered, namely: 1. yes, 2. no, but like to be, and 3. no, and don't want to be. The usefulness of this item is diminished by the fact that when participants are placed into categories based on their responses and by priming condition, the number in each category is too low to examine all possible effects of relationship status. Although examining the effect of relationship status was not a major goal of this experiment, nevertheless some interesting, if less than definitive, results were produced by this item.

There was a significant interaction ($F(2, 243)=7.46$, $p = .001$) between relationship status and subject gender on overall eagerness to seek a brief sexual relationship (Item 2). Males currently in a monogamous sexual relationship were to a significant degree less eager to seek a brief sexual relationship than those not in a monogamous relationship, while females in a monogamous sexual relationship were no less eager to seek a brief sexual relationship than those not in one.

The stated eagerness for a brief sexual relationship for women currently in a monogamous relationship was 2.84, the combined mean for the other two female

relationship status group was 2.41, this difference was not significant, but for males, the means were 4.35 and 6.06, respectively, the difference significant at the .0001 level ($F(1, 243) = 15.9$, See Table 39).

Being in a monogamous sexual relationship cuts down male, but not female, eagerness for a brief sexual relationship. Of course, females were very low in eagerness to begin with, and even in the “currently in a monogamous sexual relationship” group, males were far more eager for a brief sexual relationship than females ($F(1, 243) = 14.0, p < .001$). Also, since female eagerness for a short-term sexual relationship is so low across all relationship groups, a ceiling effect may have prevented relationship status from having an effect on short-term eagerness.

This result offers some evidence that either (a) males who are less eager for a brief sexual relationship enter a monogamous relationship, or (b) that males who wish to maintain a monogamous sexual relationship become less eager for a brief sexual relationships.

On priming effects. The effects of reading about a dominant stimulus person on willingness to have a brief sexual relationship (Item 1), detailed above, seem to be borne to a greater degree, both for male and female participants, by participants who were not currently in a monogamous relationship (see Table 40). For female participants, those currently in a monogamous relationship, had willingness means of 4.77 and 4.00, for dominant condition and control conditions, respectively ($F(1, 243) < 1, ns$). Those not currently in relationships, had means of 5.64 and 3.88 for those two

Table 39
Means for Eager Short-Term by Monogamous Relationship Status

Sex of Subject		Relationship Status		
		Yes	Want	Don't
Females		2.84	2.29	2.61
	<i>SD</i>	2.43	2.18	2.20
	<i>n</i>	(85)	(45)	(28)
Males		4.35	5.89	6.59
	<i>SD</i>	2.52	2.15	2.12
	<i>n</i>	(57)	(47)	(17)

Note: yes= in monogamous relationship
 want= no, but I'd like to be
 don't = no, and I don't want to be at the present

Table 40
Willingness for Brief Relationship by Relationship Status

		Priming Quote					
		Short-Term		Long-Term		Dominant	Control
		Available	Not Av.	Available	Not Av.		
Sex of Subj.		<i>In Monogamous relationship</i>					
Females		5.07	3.44	4.29	3.88	4.77	4.00
	<i>SD</i>	2.89	2.56	2.30	2.92	2.80	3.36
	<i>n</i>	(14)	(16)	(14)	(16)	(13)	(12)
Males		7.29	7.67	5.83	6.73	6.00	6.11
	<i>SD</i>	1.89	1.94	3.32	1.79	3.00	3.10
	<i>n</i>	(7)	(9)	(12)	(15)	(5)	(9)
		<i>No, but like to be</i>					
Females		2.13	3.33	3.67	3.11	5.75	3.91
	<i>SD</i>	2.23	4.04	2.80	3.48	2.71	3.02
	<i>n</i>	(8)	(3)	(6)	(9)	(8)	(11)
Males		7.40	7.00	7.40	6.20	6.14	8.86
	<i>SD</i>	1.96	2.38	2.51	2.68	2.73	0.38
	<i>n</i>	(10)	(13)	(5)	(5)	(7)	(7)
		<i>No, and don't want to be</i>					
Females		4.00	2.00	3.25	2.75	5.50	3.83
	<i>SD</i>	3.83	1.41	3.30	2.36	3.56	2.23
	<i>n</i>	(4)	(4)	(4)	(4)	(6)	(6)
Males		8.67	9.00	9.00	7.80	4.00	6.00
	<i>SD</i>	0.58	-	0.00	1.30	2.58	4.24
	<i>n</i>	(3)	(1)	(2)	(5)	(4)	(2)

conditions ($F(1, 243) = 3.33, p = .07$). For male participants, the means were (Dominant and Control, respectively): those currently in a relationship, 6.00 and 6.11 ($F(1, 243) < 1, ns$), and those not in relationship, 5.36 and 8.22 ($F(1, 243) = 5.68, p = .02$). The effect on males seems particularly dramatic. Perhaps participants not currently in a relationship are more open to environmental input to modify current mating strategies.

Male - Female Overall Differences

The expected differences between males and females in interest in short-term sexual relationships occurred repeatedly and were not difficult to find.

The male-female differences that occurred include the following:

Item 11 asked participants if they would be “willing to be sexually monogamous with one partner for the rest of your life”, 92% of females answered that they were willing to, while only 67% of males indicated willingness ($F[1, 267] = 29.6, p < .0006$). Item 3 (“How willing would you be to have a monogamous, committed relationship or marry”) produced the expected male-female difference, with means of 6.09 and 7.09 respectively ($F[1, 267] = 12.67, p < .001$, see Table 8). Item 4 (“How eager are you . . . to seek a monogamous, committed relationship or marry”) also produced an overall male-female difference (Respective means of 5.05 and 6.06, $F[1, 267] = 10.31, p = .001$, see Table 10). When the items concerning willingness and eagerness for monogamous relationships were combined into one scale, the male-female overall difference was significant (Means of 11.14 and 13.16, $F[1, 267] = 14.82, p < .001$, see Table 12), with males stating less interest.

On Item 15, (“Sex without love is OK”), the male overall mean was 5.45 and the female overall mean was 2.72 ($F[1, 267]= 75.02, p < .0006$, see Table 32). In other words, the male mean was essentially neutral, just a tiny bit on the agree side, while the female mean was strongly on the disagree side. Item 16 (“I can imagine myself being comfortable and enjoying casual sex with different partners”) tells the same story with the male overall mean at 5.30 and the female overall mean at 2.08 ($F[1, 267]=19.78, p < .001$, see Table 34). For Item 17, asking participants whether they would have to be closely attached to someone before fully enjoying sex, the female mean was almost on the extreme end on the agreement side of the continuum while the male mean was just over the midpoint (the male mean was 5.48, the female mean was 7.94, $F[1, 267]=79.75, p < .001$, see Table 16). As related above, Items 15-17 were taken from Simpson and Gangestad's (1991) Sociosexual Orientation Inventory, and the results obtained here mirror the overall results Simpson and Gangestad obtained using their inventory.

Item 12 asked participants “how soon after beginning to date your partner would you be willing to have sexual intercourse?”. Once again there was a huge male-female overall difference. The male average answer was between 2 weeks and one month, the female average answer was 6 months (female mean of 6.01, male mean of 3.65, $F(1,265)= 104.5, p < .001$, see Table 37). Item 13, “What is the maximum time you would be willing to wait . . . before having sexual intercourse”, also produced a sex difference (male mean of 5.63, female mean of 6.61, $F(1, 266)= 27.88, p < .001$, see Tables 41 & 42).

Table 41

Means for "Maximum time. . .willing to wait after beginning to date before having sexual intercourse?"

Sex of Subject	Priming Quote						
	Short-Term		Long-Term		Dominant	Control	
	Available	Not Av.	Available	Not Av.			
Females	6.46	6.48	6.46	6.55	6.67	6.96	
	<i>SD</i>	1.36	1.56	1.53	1.43	1.04	1.26
	<i>n</i>	(26)	(23)	(24)	(29)	(27)	(28)
Males	5.45	5.61	5.89	5.60	6.06	5.22	
	<i>SD</i>	1.10	1.80	2.05	1.55	1.57	1.77
	<i>n</i>	(20)	(23)	(19)	(25)	(16)	(18)

Table 42

Analysis of Variance, "Maximum time. . .before having sexual intercourse"

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	62.946	27.880	.000
Priming Quote (B)	5	.691	.306	.909
A x B	5	1.953	.865	.505
Residual	266	2.258		

An insight into the general sexual strategies behind male and female relationships can be obtained by comparing the results of Item 12 with those of Item 13. Both for males and females the minimum amount of time before they would be willing to have sexual intercourse was less than the maximum time they would wait; obviously, by definition, this would be so. However the male increase between minimum and maximum is larger than the female increase (respective means of 1.99 and .59, $F(1, 265) = 64.54$, $p < .0006$).

Relatively speaking, females do not state a large difference between their minimum and maximum waiting periods before having sexual intercourse. The long waiting time in each case represents a form of male investment. Males, on the other hand, state a large difference between their minimum and maximum waiting times. Generally speaking, they can do without a long wait, but may be willing to put in an extended wait, if necessary, before a sexual relationship begins.

Putting our obtained stated waiting periods into words, we see that while the average male minimum is just between 2 weeks and a month, the average male maximum is between 3 and 6 months and this approaches the average female minimum of 6 months. Males know that they may have to wait to fulfill female requirements.

Discussion

The experiment produced evidence for the evolutionary mating hypothesis that dominance on the part of males is a key factor for female utilization of short-term mating strategies. What the findings point to is not simply that women are more willing to have brief sexual relationships with dominant males than non-dominant males, but that being made more aware of dominance as a male characteristic leads to stated greater willingness to adopt a short-term general sexual strategy.

Female participants thought themselves to be less willing to engage in short-term sexual relationships than the average woman. This may be an indication of a desire on the part of females not to view themselves as promiscuous. This need seemed to be removed for females made aware of male dominance, as if male dominance eliminated some of the stigma of short-term sexual behavior for females. This interpretation suggests, for example, that women may brag about brief sexual encounters with celebrities, but would not want to admit to one with an average man.

The finding of greater male than female desire to engage in brief sexual relationships is a consistent and powerful effect in the literature. In fact, in their meta-analysis of the sex difference literature, Oliver and Hyde (1993) found that such differences in sexual attitudes are far and away the strongest, most pervasive and most consistently replicated sex differences in the literature. It was not surprising, therefore, that similar results were found in the present research. However, reading about a dominant individual eliminated this difference with regard to stated willingness to have

a brief sexual relationship, at least temporarily. It may be that greater reluctance by females to have a brief sexual relationship is, at least to some extent, attributable to reluctance to have a brief sexual relationship with anyone but a dominant male.

Dominance is a key male characteristic for female evolved mechanisms to focus on. Its importance results from being strongly associated with the genetic survival benefits a female can accrue from mating wisely (namely, physical protection, access to resources and successful genes to accompany her own in her offspring).

Dominance on the part of a mate offers benefits to females pursuing both long-term and short-term mating strategies. Gaining protection is important in both long-term and short-term relationships, though there seem to be reasons to think that physical protection offered is more closely related to dominance and is a more important consideration in short-term relationships.

Barkow (1989) argues that a male in a short-term relationship should offer physical protection for his mate only when the cost to himself is likely to be low and that the more dominant he is, the lower the cost of defense is likely to be. It may pay only for an extremely dominant male to offer any protection to a short-term mate. A man in a long-term relationship, having heavily invested in his female, is more motivated to fight to the death to protect her. Dominant males have access to resources valuable in both long-term and short-term mating. A benefit for females of a long-term relationship is a constant access to a mate's resources. A benefit for females in a short-term relationship is immediate acquisition of resources, likely to be only small

part of the total controlled by her mate (Buss & Schmitt, 1993). A dominant male, having access to greater resources, may be more likely to offer significant immediate resources. Dominant males provide their offspring with successful genes, in so far as those aspects of dominance have a genetic, hence hereditary, basis. These genes help insure the success of the offspring of females who mate with dominant males, even if the males do not stay around to provide other resources.

The above arguments point to a conclusion that while dominant males are desirable for females pursuing both long-term and short-term mating strategies, it is only dominant males who should be desirable for females pursuing short-term strategies. Potential access to a dominant male should increase females' willingness for short-term relationships, as all the benefits for females pursuing short-term relationships depend to an extent on dominance of the male. Indeed evaluating males for dominance is an inherent part of females evaluating them for suitability for sexual relationships (Townsend 1987, 1989; Townsend and Levy, 1990b). Dominance is multifaceted and can consist of personality, strength and possession of resources among other factors.

An unforeseen finding of this experiment was the effect that reading about a dominant woman had of reducing male reported willingness to have a short-term sexual relationship (as well as reducing reported number of different sexual partners wanted for the rest of one's life). The dependent variable items asked about attitudes toward a relationship with any desirable partner (not necessarily the individual read about).

Thus, the dominant women served to affect male attitudes toward short-term relationships with women in general.

A finding such as this (that is, female dominance being sexually unappealing to males, as opposed to simply not mattering) requires further research, both to determine its generality and to achieve a better understanding of the processes involved, as it does not seem to be necessarily predicted by an evolutionary theory of mating, nor as yet unambiguously supported by a wide body of research. It would be interesting to find out if there are situations in which dominant women are indeed unappealing to men and, if so, which characteristics associated with dominance produce this effect. For example, do dominant women arouse in men the hostility normally aroused by male competitors? D. Kenrick (personal communication, 1995) indicated that sexual situations in particular may be where this effect occurs.

There are reasons to think that dominance on the part of females is an undesirable characteristic, especially in the eyes of men. For example, Costrich, Feinstein, Kidder, Marecek and Pascale (1975) found that aggressive, assertive women were negatively evaluated. In their experiment, participants observed confederates act in an aggressive-dominant or a passive-dependent role. Participants, both male and female, liked the aggressive male more than the passive male. Male participants liked the passive female more than the aggressive female, while for female participants, the aggressive and passive female were both about equally liked. Buss (1981) had participants judge acts expressing dominance (phrased as sentences) for their social

desirability. He found that dominance acts expressing self-assertion were more negatively evaluated by mixed sex participants when performed by females than by males. Note that the above two studies found adverse judgements of female dominance in non-sexual areas.

Grammar (1990) found that males communicated interest to a female with dominance signals and that females communicated interest to a male with signals indicating submissiveness. Rainville and Gallagher (1990) found that vulnerable females were considered more sexually attractive than dominant females by individuals of both sexes. Thus, dominance served to make females less attractive paralleling how dominance served to make males more attractive in other research. And, in an experiment described earlier, Kenrick et. al. (1992) found that viewing pictures of non-dominant attractive women most undercut males' commitment to their partners. The model for dominance utilized in this experiment was to an extent patterned after that utilized by Sadalla, Kenrick and Vershure (1987). They had hypothesized that dominance diminished the sexual attractiveness of females, basing this on the Buss (1981) and Costrich et al. (1975) results described above. But they did not find that dominance of a female had an effect on her perceived sexual attractiveness in either direction, even when the person the female dominated was male. Sadalla et al. (1987) noted "the failure to find some relation between behavioral expressions of dominance and female attractiveness is intriguing" (p.737), and speculated that it was perhaps because among college students (the participants in their experiment) women routinely

competed with men for success. Thus male college students were used to successful women. However, the present experiment also used college students, making it less likely that this is the reason for the discrepancies on the effects of female dominance.

Kenrick, Sadalla, Groth and Trost (1990), and Kenrick, Groth, Trost, and Sadalla (1993), while looking at sexual differences in the importance of various traits when considering mating partners, did not find that males considered dominance to be a negative characteristic when possessed by females. In these two studies, participants rated the minimum criteria, in terms of a population percentile, for an acceptable partner. In the former study, dominance consisted of the trait "dominant", and in the later study it consisted of a composite of the traits "dominant", "aggressive" and "powerful". However, it is possible that dominance can mean different things when applied to males and females, as will be discussed below.

Sloman and Sloman (1988) conceptualized females competing for positions in their own dominance hierarchy, in order to secure partners who are at or above their own level. This is an element of social exchange theory (Homans, 1958, 61; Thibaut & Kelly, 1959) and its predictions on human mating (Hirschman, 1987). In order to obtain a valuable mating partner, one must possess valued qualities and this holds for both males and females. Therefore having a superior position in their social group is obviously a plus for females, as it is for males. But in this intrasexual competition, males and females differ in what determines their position, with earnings being more important for males and physical attractiveness more important for females (Buss &

Barnes, 1986). For teenagers, male status depends on athletic ability and female status depends on looks (Thirer & Wright, 1985; Weisfeld, Bloch & Ivers, 1984).

Dominance as a construct can differ in the elements it is composed of and one must be careful about this when assessing the literature. Buss (1981) found sex differences in the types of behaviors which expressed dominance on the part of males and females. Males expressed dominance more through self-assertive and self-enhancing acts. Examples of these acts included ordering others to perform menial tasks, getting their own way, and managing to manipulate others. Females expressed dominance more through communal acts, those concerned more with the group of which they were part. Examples of these found by Buss include initiating conversations, organizing group projects and settling disputes. (Interestingly, Goodall (1986) found that female chimpanzees are involved in dispute settling.) In the present experiment, the expression of dominance on the part of the stimulus person tended more toward the self-enhancement, assertive variety.

The difference between the effect female dominance had in the present experiment, in which it was sexually unappealing to males, and the Sadalla et al. experiment, where it did not matter to males, may be due to differences in the dominance manipulations employed. The current dominance manipulation may have had a more ruthless aspect to it. Although the Sadalla et al. manipulation included the phrase "He (she) tends to psychologically dominate his (her) opponents." (p. 733), in the present experiment, the stimulus person herself says, about her same sex opponent,

“Sometimes I can just see the doubt in my opponent's eyes, and I know I can run her off the court.”.

There is evidence that ruthlessness or aggressiveness is at least a subordinate characteristic of male dominance, whether in football in our society or among the Yanomamo Indians, where ax fights and killing opponents determines status (Chagnon, 1983, 1988). Ruthlessness on the part of females seems to be negatively valued by males (Buss, 1981).

Exploring the impact of dominance and submissiveness on sexual attraction has been complicated by the fact that some characteristics often associated with dominance, such as being demanding, unwilling to listen to others, or blaming others, are not considered desirable regardless of the sex their possessor (Buss, 1981). Likewise some characteristics associated with vulnerability such as pleasantness, sensitivity, awareness of the feelings of others, and agreeableness are considered positives both for males and females (Green & Kenrick, 1994; Jensen-Campbell, Graziano & West, 1995; Rainville & Gallagher, 1990). Thus, in the Jensen-Campbell et al. study and the Rainville and Gallagher study, dominance was not found to increase male attractiveness.

More research needs to be done to determine the effects of dominance, in its various manifestations, on the part of a woman for males, both in mating and non-mating situations. This is especially so, since women are increasingly acquiring dominant positions on the same hierarchy as males.

Admittedly, other than the dominant condition by sex-of-subject interaction, the effects produced on females by the dominant priming quote were not large. But it must be emphasized that this experiment utilized a rather weak manipulation. Laboratory research in which the goal is to affect participants' assessments of the long-term external conditions is by necessity limited to relatively weak manipulations. A simple quote by one alleged college student served in the attempt to alter a subject's perception of environmental conditions pertaining to opposite sexed individuals' availability and characteristics, albeit temporarily. The manipulation for conveying mating environment conditions to participants appears to be minimal.

For the above reasons (as well as for reasons discussed below, such as the primes presenting the statements of only a single individual), the manipulation probably was able to evoke only weakly the desired mechanism. The connection between the primes and the affect we were trying to evoke may be more complicated than anticipated or not as direct.

The experiment also used a weak measure to pick up any effects that may have taken place. The experiment used subjects' statements regarding their willingness to engage in the various mating strategies as the dependent variables. Predictions from an evolutionary mating theory pertain to individuals' differential use of mating strategies and the psychological mechanisms behind these behaviors. Using statements of willingness to engage in behaviors as the measure of whether such mechanisms have been evoked can result in problems with respect to participants' awareness of their

attitudes and their willingness to state them (more on this below). The experiment also used twelve different groups. Thus while the total number of participants run was substantial, the number in each group was limited.

As seen above, there was also no evidence for a number of the secondary hypotheses that were thought would be additional effects of the priming procedure, based on the idea that if the likely success of a preferred strategy is made salient, interest in it will rise, as it is piqued. This failure may demonstrate the weakness of the priming procedure. In view of the above limitations, any effects detected would seem to be attributable the strength of these phenomena outside the laboratory and not to the sensitivity of the method .

An obvious question to emerge from the experiment is why the hypotheses concerning males (i.e., that their interest in long-term mating strategies should be affected by prospects of short-term success) received no support (except for the effect the Not Available Short-Term condition had in reducing males' stated number of different sex partners they would want in the rest of their lives). Given the limitations of the experiment discussed above, it may be that the predicted effects on males are not strong enough to have emerged here. A number of other possibilities exist. The tendencies that were found showed that a woman available short-term did not reduce male willingness or eagerness for a long-term relationship, while a female not available for a short-term relationship did not significantly increase long-term interest.

It may be that even when women are readily available for short-term sexual relationships, males still desire long-term relationships to the same extent as ever. There are reasons, logical and theoretical, to suppose that this is the case. In fact, the current research found that although male participants indicated less desire for a long-term relationship than females, the mean for males was still on favorable side of the scale, rather than not the unfavorable side. There is no doubt that short-term sexual relationships offer men powerful benefits. But, at the same time, long-term relationships also offer men benefits, be they at high cost, that short-term relationships can not offer. As Buss and Schmitt (1993) point out, one of the benefits of long-term mating for males is that of long-term mutual cooperation and division of labor. In addition, there are benefits to long-term mating for males that may have gotten short shrift in most of the literature. These include those associated with having legitimate heirs and having emotionally attached and loving children.

Furthermore the opportunity costs of a long-term relationship (all the potential short-term matings lost because of commitment to a long-term relationship) are reduced by simultaneous covert short-term relationships (Buss & Schmitt, 1993). When such a dual-term strategy is pursued, long-term relationships actually become less expensive when other women are available for short-term sex. Thus, the prospect of women being available for short-term sexual relationships may not undermine male interest in long-term relationships as hypothesized, because this short-term availability is not only desirable for its own sake, but may also serve to reduce costs of long-term

relationships. (At least in circumstances where it is not not caught, or is tolerated by the females).

Ninety percent of males marry (Murstien, 1972). While high status males, who have access to large numbers of females for short-term sexual relationships, tend to take advantage of these opportunities (e.g., Nattiv & Puffer, 1991; Townsend, Kline, & Wasserman, 1995), high status males also tend to marry. Sander (1992) found that male employment status and marriage status are positively correlated. Townsend et al. (1995) found that all the college sports stars they interviewed had more than 100 sex partners, most planned to get married, and none were willing to remain faithful.

The investment model of romantic commitment (Rushbolt, 1980b) holds that the level of romantic commitment is negatively related to the availability of alternative partners. Jemmott, Ashby, and Lindenfeld (1989) found that, for both males and females, perception of availability of opposite-sex individuals was negatively correlated to commitment to current partner. This finding occurred across a variety of populations and situations (e.g. Duffy & Rushbolt, 1986, Simpson, 1987; Rushbolt, 1980a, 1983; Rushbolt, Johnson, & Morrow, 1986). Why it did not occur in the present research is then puzzling.

It would seem unlikely that males would not have an increased desire for long-term relationships, when short-term relationships are a less viable option. Historically, in populations in which females were scarce, this was found to be the case (Secord, 1983). Perhaps reasons other than the independence of partner availability and

mating strategies need to be advanced to explain the failure in this experiment to find increased male desire for long-term relationships when short-term relationships are less available.

A potential problem with research using attitude measures is the issue of how accurately self-reports represent attitudes (e.g. Sigall & Page, 1971). And it is certainly known that expressed attitudes are imperfectly related to behaviors (e.g. Ajzen & Fishbein, 1977; Schwartz & Tessler, 1972). Thus, information about environmental factors regarding female availability may affect males' desires, but they may not affect males' self-reports of their desires. It may also affect subsequent behavior without affecting reported desires. This explanation is made less likely by the parts of this experiment, specifically the dominance manipulation, in which the priming produced a clear finding using the attitude measure scales.

Another possible explanation may be that the primes were statements made by a single individual. The primes were intended to make mentally salient issues of opposite-sex availability for various relationships. Perhaps, however, mental salience of the availability of a single individual was insufficient. Perhaps stronger beliefs in the availability of women in general (or desirable women in general) is necessary to produce the hypotheses. Reading about one individual may not have affected males' perception of behavior of women in general to the extent needed to produce the hypothesized effects. On the other hand, some evidence was found in the present research that reading about one woman did affect males' perception of women in

general. For example, on the “ How willing do you think most women are to engage in a brief sexual relationship? “ item, males in the Woman Available Short-Term priming condition indicated that they thought women were more willing to have a short-term relationship than males in the Woman Available Long-Term condition did.

Nevertheless, it remains likely that priming involving the behavior of many or most women would have been stronger. A possible way to accomplish this in future research, that replicates most aspects of this experiment, might be to utilize a fictitious article, supposedly from a newspaper, that describes what most women are doing as the priming material.

Of course, the notion that the priming manipulation might be more effective if it dealt with women in general rests on the intention to affect the subject's belief about availability of partners to him or her. The primes concerned with availability for relationships, conveyed availability to general others, while what was really central to the male hypotheses was availability of others to the subject. For example, the crucial environmental issue for the subject is not simply whether women are available for short-term sexual relationships, but whether women are sexually available for him. An attempt was made to take this issue into account when composing the priming quotations. Women who are sexually available tend to be available particularly to certain males and less so or not at all to others. Thus, for example, the priming quotation for a woman available for short-term sexual relationships was carefully written to convey that she was available not just to a dominant man but also to the

average male and so by implication to the subject. (Part of the quote stated, “I want to have relationships with all kinds of guys, especially those who are nice and down to earth.”.)

Nevertheless, the priming of female availability geared toward male participants may have been more effective had it more strongly involved availability to the subject. Such a priming may have to involve many females, as one female specifically available to the subject may be taken as more informative about that particular female than females in general.

Getting across the female's availability to the subject by an indirect method may have made her seem too indiscriminant. Bailey and Garrou (1983) found that participants rated a too available for dating individual negatively. Walster, Walster, Piliavan, & Schmidt (1973) found that men found as most desirable a woman who was easily available to them, but not to others.

It may, however, be difficult to implement realistically priming that involves the availability of many females to each subject in particular. Ideally one would test the current hypotheses by directly manipulating participants' beliefs regarding the level of availability of desirable others for either long or short-term relationships to themselves specifically. Achieving such manipulations in a fashion credible to participants would be difficult and, if possible to achieve, would raise serious ethical issues.

The dominant priming quote, like the availability quotes, conveys dominance over an opponent unrelated to the subject. That may well be the type of dominance

that females find attractive. Females want a male who dominates others, not them. Sadalla, Kenrick, and Vershure (1987) found that domineering tendencies did not enhance the sexual attractiveness of males. In their study, Sadalla et al. described the dominant stimulus individual as powerful, commanding, in control, and authoritative, while the domineering stimulus individual was described as overbearing, bossy, and dictatorial. It would seem that the dominant characteristics require such a relationship with the larger social world, while the domineering ones require at a minimum that there be only one individual to boss around. Perhaps female participants realize that they may be that one individual, in a potential relationship with the domineering stimulus individual. Our experiment also seems to offer evidence that men do not prefer, as short-term partners, women who are dominant over others, perhaps because they find them threatening.

This experiment's findings open up a number of issues that lead to subsequent research possibilities. A more powerful method may need to be devised to look into whether the main male hypotheses have any validity. It still seems probable that male desire for long-term strategies would rise when short-term ones would not appear likely to succeed, as the primary costs of long-term mating are the opportunities for short-term mating that are lost by committing to a long-term strategy (Buss & Schmitt, 1993). And if male desire for long-term strategies is not changed by the prospects of short-term success, that would make for an interesting finding in itself, since conventional wisdom (not to mention evolutionary mating theory, the investment model, and historical

evidence) would maintain that men will be less willing to commit if they can easily get sexual relationships without committing.

Perhaps, even more importantly, the finding that exposure to the concept of male dominance leads to greater female willingness to use short-term strategies has meaningful implications for human sexual behavior. This seems to cry out for a more definitive demonstration, perhaps using stronger and more immediate priming and a more sensitive measure to gauge the extent of the effect.

It may also be interesting to know if female participants had someone specific in mind when they filled out the short-term items. Also, methods that test the strength and length of the effect may need to be devised. It would be fascinating to uncover this effect utilizing field experimentation, although such a methodology would be problematical, if at all possible, for this effect.

Lastly, while there is a wide body of evidence for the desirability of dominance, expressed as athletic ability, social status, or earning value, in males as mating partners, the effects of different expressions of dominance on the desirability of females, whether positive, negative or neutral, are as of yet not clearly determined. But clearly, they are a fertile topic for future research.

Appendix A
Participant demographic data

Table A1
Participants' Country of Birth

Country of birth			<i>South & Central America</i>		
<i>Africa</i>	Females	Males		Females	Males
Egypt	2	1	Argentina	1	0
Ethiopia	0	1	Columbia	0	1
Ghana	1	0	Dominican Republic	6	2
			Ecuador	0	1
			Grenada	1	1
<i>Asia</i>			Guyana	7	2
China	14	4	Haiti	1	2
India	0	1	Honduras	1	0
Israel	0	2	Jamaica	3	2
Japan	0	1	Panama	1	0
Korea	1	1	Puerto Rico	1	0
Lebanon	0	1	St. Vincent	2	0
Turkey	1	1	Trinidad	5	3
Vietnam	1	0	Venezuela	1	0
			West Indies	0	1
			<i>Soviet Union</i>		
<i>Europe</i>				24	14
France	1	0			
Germany	1	0			
Greece	1	0			
Hungary	1	0			
Italy	1	1			
Poland	3	1			
Spain	0	1			
<i>North America</i>					
Canada	1	0			
United States	75	76			

Table A2

Participants' Ethnic Group

	Females	Males
African-American	33	21
Asian-American	17	15
European-American	69	63
Hispanic-American	20	8
Other	18	13

Table A3

Participants' Religion

	Females	Males
Catholic	42	36
Jewish	43	34
Moslem	4	3
Protestant	18	8
Other	23	18
None	28	22

Table A4

Participants' Ages

	Females	Males
16-17	5	1
18	36	21
19	38	33
20	24	18
21	17	11
22	10	10
23	8	5
24-29	8	11
30-39	6	6
40 +	6	5

Table A5

To what extent does your observance of religion limit your sexual behavior to only marriage or long term committed relationships?

	Females	Males
not at all	59	64
somewhat	41	34
to a great extent	32	9
totally	26	13

Table A6

Participants' Sexual Preference

	Females	Males
heterosexual	153	118
homosexual	1	1
bisexual	4	2

Appendix B
Available/ Not Available for Short/ Long-Term Relationships Priming.

Dating Attitudes- Page 1

Please fill out the following:

Name: Michele [REDACTED] Sex: female male

Age: 20 College: Queens College

College year: Freshman Sophomore
Junior Senior

Dating Attitudes- Page 3

Briefly state in your own words your primary aims in dating:

I like to have fun + experiment when I'm dating. I think its important to play the field and meet as many girls as possible. I want to have relationships with all kinds of girls, especially those who are nice and down to earth. I think its important to have a wide range of sexual partners.

Appendix C
Dominant Priming

Life Attitudes- Page 1

Please fill out the following:

Name: Michael ██████████ Sex: female [] male [X]

Age: 20 College: University of ██████████

College year: Freshman [] Sophomore []
Junior [X] Senior []

Life Attitudes- Page 3

Briefly write something about your primary aims in life

Competitive sports are important to me
competition and winning are what life is
about. Sometimes I can just see the doubt
in my opponents eyes, and I know I can run
him off the court.

Life Attitudes- Page 4

Interviewer's comments:

Michael is an accomplished skier and tennis player. He is a take charge person in other areas of his life, and a leader among his peers .

Appendix D

Complete Instructions to Subjects

1. Available Unavailable Long-Term/Short-Term Conditions

"This is an experiment on the perception of strangers based on their dating attitudes. You are going to read a quote by a college student about their attitudes on dating and then you are going to be asked about your perception of their attitudes as well as about your own attitudes on dating.

The first sheet contains the instructions so make sure you read it carefully. The second sheet contains the quote by the college student, so make sure you read it very carefully.

When you are finished, fold up the sheets, put them into the envelope provided, seal it, and drop the envelope into the box in the front of the room. The box will only be opened when it is filled up, and there will be no way of knowing who provided a particular set of responses. Also, to insure you have privacy, you will be filling this out in one of the smaller side rooms. "

2. Dominant Condition

"This is an experiment on the perception of strangers' dating attitudes based on their attitudes on life. You are going to read a quote by a college student about their attitudes on life and then you are going to be asked about your perception of their dating attitudes as well as your own attitudes on dating.

The first sheet contains the instructions so make sure you read it carefully. The

second sheet contains the quote by the college student, as well as interviewer's comments about them, so make sure you read it very carefully."

(The rest of the instructions were the same as the third paragraph of Instruction Set 1.)

3. Control Condition

"This an experiment on dating attitudes. You are going to fill out a short survey on your attitudes on dating."

(The rest of the instructions were the same as the third paragraph of Instruction Set 1.)

Appendix E
Dependent Variables Survey

For the following questions circle the ONE number that best expresses your opinion. Please do not circle the words at either end of the scale.

1. If no negative consequences could result, how willing would you be to have a brief sexual relationship with a desirable partner?

Extremely 1 2 3 4 5 6 7 8 9 Extremely
 Unwilling Willing

2. How eager are you at the present time to seek a brief sexual relationship?

Absolutely 1 2 3 4 5 6 7 8 9 Extremely
 Not Eager

3. If a desirable partner was available to you, how willing would you be to have a monogamous, committed relationship or marry?

Extremely 1 2 3 4 5 6 7 8 9 Extremely
 Unwilling Willing

4. How eager are you at the present time to seek a monogamous, committed relationship or marry?

Absolutely 1 2 3 4 5 6 7 8 9 Extremely
 Not Eager

5. On average, how willing do you think most women are to engage in a brief sexual relationship?

Extremely 1 2 3 4 5 6 7 8 9 Extremely
Unwilling Willing

6. On average, how willing do you think most women are to have a monogamous, committed relationship or marry?

Extremely 1 2 3 4 5 6 7 8 9 Extremely
Unwilling Willing

7. On average, how willing do you think most men are to engage in a brief sexual relationship?

Extremely 1 2 3 4 5 6 7 8 9 Extremely
Unwilling Willing

8. On average, how willing do you think most men are to have a monogamous, committed relationship or marry?

Extremely 1 2 3 4 5 6 7 8 9 Extremely
Unwilling Willing

9. On average, how forceful, capable and in control do you think men are?

Not at All 1 2 3 4 5 6 7 8 9 Extremely

10. On average, how forceful, capable and in control do you think women are?

Not at All 1 2 3 4 5 6 7 8 9 Extremely

11. Are you willing to be sexually monogamous with one partner for the rest of your life?
Yes No
12. How soon after beginning to date your partner would you be willing to have sexual intercourse? (circle one answer)
1. first date
 2. one week
 3. 2 weeks
 4. one month
 5. 3 months
 6. 6 months
 7. a year or more
 8. only after marriage
13. What is the maximum time you would be willing to wait after first beginning to date your partner before having sexual intercourse?
1. first date
 2. one week
 3. 2 weeks
 4. one month
 5. 3 months
 6. 6 months
 7. a year or more
 8. only after marriage
14. Ideally how many different sexual partners would you WANT to have in the rest of your life? (that is, from now on) _____

23. Your religion is
- | | |
|------------|--------------------------------|
| Catholic | <input type="checkbox"/> |
| Jewish | <input type="checkbox"/> |
| Moslem | <input type="checkbox"/> |
| Protestant | <input type="checkbox"/> |
| Other | <input type="checkbox"/> _____ |
| | (write in) |
| None | <input type="checkbox"/> |
24. To what extent does your observance of religion limit your sexual behavior to only marriage or long term committed relationships?
- | | |
|-------------------|--------------------------|
| not at all | <input type="checkbox"/> |
| somewhat | <input type="checkbox"/> |
| to a great extent | <input type="checkbox"/> |
| totally | <input type="checkbox"/> |
25. Your sexual preference is
- | | |
|--------------|--------------------------|
| heterosexual | <input type="checkbox"/> |
| homosexual | <input type="checkbox"/> |
| bisexual | <input type="checkbox"/> |
26. Are you currently in a monogamous relationship?
- | | |
|-------------------------------------------|--------------------------|
| Yes | <input type="checkbox"/> |
| No, but I'd like to be | <input type="checkbox"/> |
| No, and I don't want to be at the present | <input type="checkbox"/> |

Appendix F
Order of Presentation

Table F1
Analysis of Variance:
How willing are you, brief (by order of short and long term items).

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	590.727	81.681	.000
Priming Quote (B)	5	3.008	.416	.837
Item Order (C)	1	.347	.048	.827
A x B	5	18.237	2.522	.030
A x C	1	12.131	1.677	.196
B x C	5	4.926	.681	.638
A x B x C	5	.617	.085	.995
Residual	255	7.232		

Table F2
Analysis of Variance:
How eager are you, brief (by order of short and long term items).

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	472.198	80.982	.000
Priming Quote (B)	5	6.455	1.107	.357
Item Order (C)	1	1.090	.187	.666
A x B	5	5.443	.934	.460
A x C	1	3.826	.656	.419
B x C	5	3.013	.517	.764
A x B x C	5	2.673	.458	.807
Residual	255	5.831		

Table F3
Analysis of Variance:
How willing would you be, monogamous (by order of short and long term items).

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	67.848	12.664	.000
Priming Quote (B)	5	3.989	.745	.591
Item Order (C)	1	.458	.086	.770
A x B	5	3.964	.740	.594
A x C	1	1.000	.187	.666
B x C	5	10.196	1.903	.094
A x B x C	5	3.216	.600	.700
Residual	255	5.357		

Table F4
Analysis of Variance:
How eager are you, monogamous (by order of short and long term items).

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	65.692	10.383	.001
Priming Quote (B)	5	8.913	1.409	.221
Item Order (C)	1	7.396	1.169	.281
A x B	5	5.248	.829	.530
A x C	1	1.216	.192	.661
B x C	5	3.038	.480	.791
A x B x C	5	8.378	1.324	.254
Residual	255	6.327		

Appendix G
Dominant Scale Individual Items.

Table G1
Means for Dominant- Submissive Continuum.

Sex of Subject	Priming Quote					
	Short-Term		Long-Term		Dominant	
	Available	Not Av.	Available	Not Av.		
Females	6.00 ^b	5.70 ^b	4.96 ^b	6.00 ^b	7.54 ^a	
	<i>SD</i> 2.38	1.36	1.71	1.87	1.58	
	n (26)	(23)	(24)	(29)	(26)	
Males	5.30 ^{b^c}	5.78 ^{b^c}	5.05 ^c	6.28 ^b	8.19 ^a	
	<i>SD</i> 2.10	1.65	1.84	1.79	1.05	
	n (20)	(23)	(19)	(25)	(16)	

Note. Scores range from 1 to 9, higher score indicating greater dominance. Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table G2
Analysis of Variance, Dominant- Submissive continuum.

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	.322	.100	.752
Priming Quote (B)	4	46.202	14.405	.000
A x B	4	2.656	.828	.509
Residual	221	3.207		

Table G3
Means for Successful- Unsuccessful Continuum

Sex of Subject	Priming Quote					
	Short-Term		Long-Term		Dominant	
	Available	Not Av.	Available	Not Av.		
Females	5.38 ^a	6.27 ^{a,c}	6.71 ^{c,b}	7.17 ^{c,b}	7.54 ^b	
	<i>SD</i>	1.77	1.63	1.63	1.49	1.48
	<i>n</i>	(26)	(23)	(24)	(29)	(26)
Males	4.85 ^a	6.09 ^b	6.26 ^{b,c}	6.16 ^b	7.44 ^c	
	<i>SD</i>	1.53	1.62	1.56	2.27	1.96
	<i>n</i>	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 1 to 9, higher score indicating greater success. Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table G4
Analysis of Variance, Successful-Unsuccessful Continuum.

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	13.190	4.544	.034
Priming Quote (B)	4	31.928	10.999	.000
A x B	4	1.588	.547	.701
Residual	221	2.903		

Table G5
Means for Strong-Weak Continuum

Sex of Subject	Priming Quote				
	Short-Term		Long-Term		Dominant
	Available	Not Av.	Available	Not Av.	
Females	5.50 ^b	5.83 ^b	6.58 ^b	6.48 ^b	8.08 ^a
<i>SD</i>	2.42	2.06	1.56	2.21	1.02
<i>n</i>	(26)	(23)	(24)	(29)	(26)
Males	4.75 ^a	6.04 ^c	6.00 ^c	6.64 ^{cb}	7.50 ^b
<i>SD</i>	2.17	1.87	1.15	2.00	2.00
<i>n</i>	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 1 to 9, higher score indicating greater strength. Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table G6
Analysis of Variance, Strong-Weak Continuum.

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	4.382	1.203	.274
Priming Quote (B)	4	41.639	11.429	.000
A x B	4	2.439	.670	.614
Residual	221	3.643		

Table G7
Means for Vigorous-Feeble Continuum.

Sex of Subject		Priming Quote				Dominant
		Short-Term Available	Not Av.	Long-Term Available	Not Av.	
Females		6.12 ^{bc}	6.44 ^{bc}	5.67 ^b	6.62 ^c	7.62 ^a
	<i>SD</i>	1.77	1.59	1.46	1.47	1.50
	<i>n</i>	(26)	(23)	(24)	(29)	(26)
Males		5.85 ^{bc}	5.48 ^b	5.61 ^b	6.56 ^c	8.44 ^a
	<i>SD</i>	1.56	1.53	1.50	1.47	0.81
	<i>n</i>	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 1 to 9, higher score indicating greater vigor. Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table G8
Analysis of Variance, Vigorous-Feeble Continuum.

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	.874	.385	.535
Priming Quote (B)	4	34.758	15.319	.000
A x B	4	4.300	1.895	.112
Residual	221	2.269		

Table G9
Means for Leader-Follower Continuum.

Sex of Subject	Priming Quote				Dominant
	Short-Term Available	Short-Term Not Av.	Long-Term Available	Long-Term Not Av.	
Females	5.35 ^c	6.26 ^{bc}	5.83 ^{bc}	6.72 ^b	8.27 ^a
SD	2.23	2.28	1.40	1.96	1.43
n	(26)	(23)	(24)	(29)	(26)
Males	4.35 ^a	6.00 ^{bc}	5.47 ^b	6.96 ^{cd}	7.81 ^d
SD	1.87	1.88	1.31	1.95	1.52
n	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 1 (follower) to 9 (leader). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table G10
Analysis of Variance, Leader-Follower Continuum.

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	6.655	1.979	.161
Priming Quote (B)	4	63.561	18.900	.000
A x B	4	2.382	.708	.587
Residual	221	3.363		

Table G11
Means for Winner-Loser Continuum.

Sex of Subject	Priming Quote				Dominant
	Short-Term Available	Short-Term Not Av.	Long-Term Available	Long-Term Not Av.	
Females	4.58 ^a	6.30 ^b	6.67 ^b	6.41 ^b	8.35 ^c
SD	2.03	2.18	1.81	2.10	0.98
n	(26)	(23)	(24)	(29)	(26)
Males	4.40 ^a	6.26 ^b	6.21 ^b	6.36 ^b	7.56 ^c
SD	1.50	1.68	1.81	1.66	2.19
n	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 1 (*loser*) to 9 (*winner*). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table G12
Analysis of Variance, Winner-Loser Continuum.

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	4.412	1.333	.250
Priming Quote (B)	4	69.139	20.887	.000
A x B	4	1.073	.324	.862
Residual	221	3.310		

Appendix H
Short-Term Scale Individual Items.

Table H1
"Sex without love is OK for her/him".

		Priming Quote				
iSex of Subject		Short-Term		Long-Term		Dominant
		Available	Not Av.	Available	Not Av.	
Females		7.50 ^a	2.26 ^c	3.42 ^c	4.93 ^b	6.96 ^a
	<i>SD</i>	2.02	2.34	2.43	3.12	2.01
	<i>n</i>	(26)	(23)	(24)	(29)	(26)
Males		7.80 ^a	2.00 ^c	1.95 ^c	5.28 ^b	5.38 ^b
	<i>SD</i>	1.61	1.54	1.39	2.67	2.44
	<i>n</i>	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 1 (*strongly disagree*) to 9 (*strongly agree*). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table H2
Analysis of Variance, Sex Without Love is OK.

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	12.116	2.373	.125
Priming Quote (B)	4	241.837	47.359	.000
A x B	4	9.786	1.916	.109
Residual	221	5.106		

Table H3

"I can imagine her him being comfortable and enjoying "casual " sex with different partners."

		Priming Quote				
Sex of Subject		Short-Term		Long-Term		Dominant
		Available	Not Av.	Available	Not Av.	
Females		7.88 ^a	2.65 ^c	3.21 ^c	4.83 ^b	7.27 ^a
	SD	1.45	2.46	2.48	2.85	1.61
	n	(26)	(23)	(24)	(29)	(26)
Males		7.45 ^a	1.70 ^c	2.05 ^c	4.48 ^b	4.69 ^b
	SD	2.24	1.10	1.87	2.76	2.63
	n	(20)	(23)	(19)	(25)	(16)

Note Scores range from 1 (*strongly disagree*) to 9 (*strongly agree*). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table H4

Analysis of Variance, Imagine Enjoying Casual Sex.

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	60.123	12.173	.000
Priming Quote (B)	4	239.524	48.496	.000
A x B	4	8.585	1.738	.143
Residual	221	4.939		

Table H5
I can foresee her him having a one night stand.

Priming Quote					
Sex of Subject	Short-Term		Long-Term		Dominant
	Available	Not Av.	Available	Not Av.	
Females	8.19 ^a	2.43 ^d	3.79 ^c	5.03 ^b	6.96 ^a
SD	1.20	2.06	2.40	3.17	1.89
n	(26)	(23)	(24)	(29)	(26)
Males	7.75 ^a	2.22 ^c	1.89 ^c	5.20 ^b	5.25 ^b
SD	1.62	2.02	1.45	2.99	2.59
n	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 1 (*strongly disagree*) to 9 (*strongly agree*). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table H6
Analysis of Variance, Foresee Having One Night Stand..

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	31.604	6.214	.013
Priming Quote (B)	4	244.056	47.985	.000
A x B	4	9.673	1.902	.111
Residual	221	5.086		

Table H7

"She he would be comfortable and fully enjoy sex with someone even if she was not closely attached to him".

Priming Quote						
Sex of Subject	Short-Term		Long-Term		Dominant	
	Available	Not Av.	Available	Not Av.		
Females		7.58 ^a	2.00 ^c	3.13 ^c	4.83 ^b	6.58 ^a
	<i>SD</i>	1.63	2.04	2.11	2.79	1.94
	<i>n</i>	(26)	(23)	(24)	(29)	(26)
Males		7.10 ^a	2.26 ^c	2.37 ^c	4.96 ^b	5.31 ^b
	<i>SD</i>	1.77	1.79	1.54	2.73	2.60
	<i>n</i>	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 1 (*strongly disagree*) to 9 (*strongly agree*). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table H8

Analysis of Variance, Comfortable Even if Not Closely Attached.

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	7.892	1.699	.194
Priming Quote (B)	4	215.340	46.361	.000
A x B	4	4.401	.947	.437
Residual	221	4.645		

Appendix I
Long-Term Individual Items.

Table I1

"It is important for her/him to currently be in a relationship with someone".

Priming Quote					
Sex of Subject	Short-Term		Long-Term		Dominant
	Available	Not Av.	Available	Not Av.	
Females	5.23 ^b	5.35 ^b	7.25 ^a	2.62 ^c	4.58 ^b
<i>SD</i>	2.71	2.17	1.98	2.21	2.25
<i>n</i>	(26)	(23)	(24)	(29)	(26)
Males	4.65 ^b	5.04 ^b	7.00 ^a	3.04 ^c	4.69 ^b
<i>SD</i>	2.23	2.38	2.21	1.88	2.12
<i>n</i>	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 1 (*strongly disagree*) to 9 (*strongly agree*). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table I2

Analysis of Variance, Important Currently be in Relationship.

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	.633	.126	.723
Priming Quote (B)	4	114.344	22.819	.000
A x B	4	1.847	3.69	.831
Residual	221	5.011		

Table I3

"I can foresee her/him settling down with someone in the near future".

Sex of Subject		Priming Quote				
		Short-Term		Long-Term		Dominant
		Available	Not Av.	Available	Not Av.	
Females		3.50 ^b	6.43 ^a	7.33 ^a	4.10 ^b	4.27 ^b
	SD	2.18	2.11	1.71	2.58	2.38
	n	(26)	(23)	(24)	(29)	(26)
Males		3.45 ^c	5.09 ^b	7.58 ^a	4.08 ^{b,c}	4.31 ^{b,c}
	SD	2.14	2.52	1.68	2.43	2.02
	n	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 1 (*strongly disagree*) to 9 (*strongly agree*). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table I4

Analysis of Variance, Foresee Settling Down.

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	3.140	.635	.426
Priming Quote (B)	4	114.120	23.096	.000
A x B	4	4.611	.933	.445
Residual	221	4.941		

Table 15

"To what extent do you see her/him as interested in having a long term relationship".

Priming Quote						
Sex of Subject	Short-Term		Long-Term		Dominant	
	Available	Not Av.	Available	Not Av.		
Females	6.00 ^a	3.83 ^b	3.33 ^b	6.24 ^a	6.08 ^a	
	<i>SD</i>	2.19	2.64	2.94	2.89	1.55
	<i>n</i>	(26)	(23)	(24)	(29)	(26)
Males	6.15 ^a	4.43 ^{a,b}	4.00 ^b	5.48 ^{a,b}	5.38 ^{a,b}	
	<i>SD</i>	1.81	2.94	3.35	2.86	2.25
	<i>n</i>	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 1 (*very interested*) to 9 (*totally uninterested*). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table 16

Analysis of Variance, To What Extent Interested in Long-Term.

Source of Variation	DF	Mean Square	<i>F</i>	Sig of <i>F</i>
Sex of Subject (A)	1	0.35	.005	.943
Priming Quote (B)	4	58.310	8.637	.000
A x B	4	5.464	.809	.520
Residual	221	6.751		

Table 17
 "She he would want to be closely attached to a partner".

Priming Quote					
Sex of Subject	Short-Term		Long-Term		Dominant
	Available	Not Av.	Available	Not Av.	
Females	3.77 ^a	6.74 ^{bc}	7.54 ^c	4.10 ^a	4.73 ^{ab}
<i>SD</i>	2.16	2.65	2.15	2.82	2.20
<i>n</i>	(26)	(23)	(24)	(29)	(26)
Males	4.35 ^b	6.35 ^a	7.11 ^a	4.64 ^b	4.88 ^b
<i>SD</i>	2.37	2.93	2.60	2.84	2.60
<i>n</i>	(20)	(23)	(19)	(25)	(16)

Note. Scores range from 1 (*strongly disagree*) to 9 (*strongly agree*). Within rows, means with different superscripts significantly differ ($p < .05$) from one another. (Means compared only within sex.)

Table 18
 Analysis of Variance, Want to be Closely Attached.

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	.649	.100	.752
Priming Quote (B)	4	96.133	14.817	.000
A x B	4	2.754	.424	.791
Residual	221	6.488		

Appendix J
Combined Conditions

Table J1

Analysis of Variance:

How willing would you be, brief (available short-term and not available long-term combined, and not available short-term and available long-term combined.)

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	588.593	83.632	.000
Priming Quote (B)	3	2.075	.295	.829
A x B	3	26.667	3.789	.011
Residual	271	7.038		

Table J2

Analysis of Variance:

How eager would you be, brief (available short-term and not available long-term combined, and not available short-term and available long-term combined).

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	465.528	80.986	.000
Priming Quote (B)	3	1.125	.196	.899
A x B	3	6.271	1.091	.353
Residual	271	5.748		

Table J3

Analysis of Variance:

How willing would you be, monogamous (available short-term and not available long-term combined and not available short-term and available long-term combined)

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subject (A)	1	68.377	12.821	.000
Priming Quote (B)	3	3.295	.618	.604
A x B	3	6.803	1.276	.283
Residual	271	5.333		

Table J4

Analysis of Variance:

How eager are you, monogamous (available short-term and not available long-term combined and not available short-term and available long-term combined).

Source of Variation	DF	Mean Square	F	Sig of F
Sex of Subjects (A)	1	64.608	10.352	.001
Priming Quote (B)	3	13.440	2.154	.094
A x B	3	7.132	1.143	.332
Residual	271	6.241		

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