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Aspects of cognition in human mate selection

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ABSTRACT

Evolutionary perspectives on human mating have provided testable hypotheses regarding what qualities people desire in their mates and why they want them. One study was conducted to replicate previous findings in mate preference using a more sophisticated paired comparison methodology to develop scales. Paired comparison scaling generally replicated gender differences in mate preferences consistent with evolutionary predictions. Further, decision-making reaction time (ms) suggested the presence of an underlying psychological continuum of selection criteria. A series of studies were then conducted applying the information processing approach (IPA) to investigate attention and knowledge organization in mate preference. The dot-probe paradigm was used to measure attention to preference-relevant stimuli words; no effect of gender, mating context, or word type on reaction time (ms) was found. Finally, semantic networks generated by the Pathfinder algorithm revealed that men and women associated concepts into meanings about human mating in a way that partially supported evolutionary predictions.

INTRODUCTION

Introduction

Empirical findings over the past two decades reveal clear gender differences in the qualities that men and women desire in their mates. For example, seemingly consistent are findings that men place a higher value on physical attractiveness and youth in a mate than do women, while women place a higher value on financial success, high status, and commitment in a mate than do men (Ben Hamida et al., 1998; Buss et al., 1986; Buss, 1989). Researchers have advanced two major theories--social structural and evolutionary--to account for these differences. Accordingly, desire for specific mate qualities is conceived of as mainly due to either differing placement of women and men in the social structure or to sex differences in evolved preferences (Eagly & Wood, 1999). One evolutionary theory of mate selection, Sexual Strategies Theory (Buss & Schmitt, 1993), has provided the conceptual framework for much of this project.

Little research has been conducted on gender differences in cognitive processes in human mate selection. Such work is needed to better understand the relationship between self-reported mate preference variables and the cognitive processes that underlie them. Therefore, the current project adopts three main goals: (a) Replication and extension of previous findings regarding mate preference choices using the more methodologically sophisticated paired comparison procedure to construct scales, (b) Development of normative data for stimuli sets to be used in future studies of cognitive processing in human mate selection, and (c) Completion of two separate studies to investigate aspects of mate selection using experimental paradigms from the information processing approach (IPA) to cognitive psychology. One of the primary questions raised by this work is

whether IPA methodologies previously used in the study of attentional processes and knowledge representation can be successfully applied to research in the area of mate selection.

Perspectives in Mate Selection

Researchers have long been interested in studying what attracts people to one another. Baron and Graziano (1987) note that one determinant of liking someone is propinquity--the physical distance between one person and another. For example, Festinger, Schacter, and Back (1950) studied the degree to which individuals living in an apartment complex knew and liked each other. They found that people living on the same floor knew each other better and liked each other more than those living on different floors. The authors concluded that propinquity was the major determinant of whether the apartment residents knew and liked each other.

Another early theory of attractiveness, the matching principle, stated that couples who were similar in physical attractiveness would be more satisfied with each other than those who were dissimilar (Baron & Graziano, 1987). Walster, Aronson, Abrahams, and Rottman (1966), however, found evidence contrary to the matching principle in a large sample of students who were led to believe that a computer had matched them with a dance partner. The data showed that couples matched on either personality variables or physical attractiveness did not, in fact, report a higher level of liking for their partner, nor did these variables influence whether individuals desired to go out with their partners again. Only the judged physical attractiveness of one's dance partner predicted whether that individual desired to see the partner again.

The concept of assortive mating has also been advanced to account for human mate selection. Symons (1987) defines assortive mating as "the tendency of individuals to choose mates

who resemble themselves (positive assortive mating) or who do not resemble themselves (negative assortive mating)" (p. 111). Evidence of positive assortive mating is found in nonhuman animals in the process of sexual imprinting (Bateson, 1979) whereby preferred mates look different, but not extremely so, from one's kin. There is some indication that the rules of assortive mating also apply to humans. For example, Thiessen and Greg (1980) report that spouses tend to resemble each other. However, if positive assortive mating were the rule for humans, then standards of attractiveness would be highly idiosyncratic, which they are not. There is a high level of agreement between people about physically attractive qualities. Thus, the relationship between similarity and sexual attraction in humans is probably weak (Symons, 1987).

Sex differences in human mating behavior have been discussed recently from social structural and evolutionary perspectives. The social structural view attempts to explain sex differences through the historical roles of men and women in society. Eagly and Wood (1999) argue that "a society's division of labor between the sexes is the engine of sex-differentiated behavior, because it summarizes the social constraints under which men and women carry out their lives" (p. 409). For example, women maintain less status and economic power in many societies throughout the world. An important component of the social structuralist view is the allowance of some genetically-related sex differences, such as men's greater physical size and women's childbearing capacity, that interact with cultural and economic beliefs to influence societal roles. Social structuralists, however, disagree with the main evolutionist tenet that solutions to reproductive problems over time have resulted in enduring sex-specific psychological dispositions.

One basic assumption of evolutionary psychology is that human sexual mechanisms exist because of evolution by selection (Buss, 1998, p. 23). Charles Darwin observed that male peacocks exhibited bright plumage that made them more visible to prey and wondered about the evolutionary advantage of such a trait. In 1871 he formulated a theory of sexual selection as a type of natural selection whereby a certain trait was favored if the reproductive advantage it provided—to attract a mate in the case of the peacock—outweighed the potential cost of being preyed upon (Gualin & McBurney, 2001).

Trivers (1972) argued that the key variable in sexual selection was the amount of parental investment each gender devoted to offspring. Parental investment is any behavior that increases the likelihood that an individual offspring will survive and thus reproduce. In humans, as in other mammals, women and men differ in minimum amounts of parental investment they must provide to their offspring. Parental investment is necessarily higher for women than for men, since women's minimum parental investment involves gestation and lactation *at the very least*. As the more investing sex, women are therefore more selective in choosing a mate. While many men also invest in their offspring, their necessary minimum investment can be only a fraction of that for women. Since the genders differ in minimum level of parental investment, the argument follows that different traits would have been favored by women and men to maximize their respective reproductive potentials (Bailey, et al., 1994). Therefore, traits favored by women should increase their reproductive success, e.g., preferences for men who were willing and able to invest economic resources. Similarly, traits favored by men should also lead to reproductive success, e.g., preferences for access to large numbers of fertile women.

It is important to note that this work is not designed to test the merits of social structural versus evolutionary theories of mate preference. In fact, these theories are not mutually exclusive in explaining human mating behavior, and indeed it would be difficult to conceive of such a study. However, a formidable strength to the evolutionary perspective is that it provides a set of testable hypotheses that may be disproved as part of the scientific endeavor. Therefore, the aim of this work is to collect empirical data to test evolutionary hypotheses in mate selection.

Recent Evolutionary Findings

The influence of evolutionary perspectives in psychology appears to have grown steadily since the early 1990's. For example, a computer database (PsycINFO) search for the term "evolutionary psychology" for the years prior to 1988 yielded only 6 article hits. A subsequent search for the same term for the years 1993-97 yielded 52 hits, 10 of which were books or book chapters. A final search for the years 1998-present showed 127 hits, 41 of which were books or book chapters. Even from this cursory examination, one may reasonably argue that the evolutionary perspective has stimulated increasing interest and research over the last decade. Examples of findings from the evolutionary view are presented here.

An interesting series of mate preference studies examined the social structuralist notion that men's preferences for physical attractiveness and women' preferences for economic status are the result of patriarchal societies where power and access to resources are controlled by men. Townsend (1987) deduced that if the social structuralist view were correct, then mate selection preferences should vary as women achieved high social and economic status. He tested this assumption by administering open-ended questions regarding mate preferences to a small sample

of second-year medical students. Contrary to the social structuralist view, the results showed that as women's socioeconomic (SES) status increased, they showed greater preferences for men who earned more money than they did, thus actually decreasing their pool of acceptable mates. SES was defined in this study as a combination of earning power, occupational prestige, and education. A noteworthy confound to these results was that the interviewers were aware of the study's theoretical framework. However, these results were replicated in a college student sample in which the largest gender difference was found when participants were asked about the prospect of supporting a spouse. Women were much less satisfied by this prospect than were men.

Townsend and Roberts (1993) continued this line of inquiry by examining "tradeoffs" between physical attractiveness and economic status in a sample of 160 law students. Participants viewed color photographs of models that varied from low to high attractiveness and from low to high status. For example, low status models were pictured wearing the uniform of a popular fast-food chain and described as waiters who expected to earn 15,000 dollars per year after training. Several significant sex differences were found in participant willingness to engage in various kinds of relationships (i.e., a date, unqualified sex, marriage) with models depicted in the photographs. In all conditions, men were more willing to engage in sex than were women, while women preferred the prospect of a date. Regardless of status, men always preferred the prospect of sex above marriage. However, for high status models women preferred the prospect of marriage above sex. Additionally, 80% of women with expectedly high incomes declined the prospect of marriage with good-looking yet low status models. While this study had more findings than those presented here, these mate preference data suggested that for male law students physical

attractiveness compensated for low status, while for female law students high status compensated for low physical attractiveness.

Behavioral data from one study demonstrated clear gender differences in preference for sexual relationships. Clark and Hatfield (1989) had undergraduate confederates approach opposite sex students on campus and ask whether later that evening they would be willing to either a) go out on a date with the confederate, b) visit the confederate's apartment, or c) have sex with the confederate. The results showed that women and men were about equally as likely to go out on a date with the confederate (50% agreed). However, women were significantly less likely than were men to agree to visit the confederate's apartment that evening (6% versus 69%, respectively). Lastly, 75% of men agreed to have sex with the confederate that evening, while none of the women agreed to this proposition. This study is important because it illustrates, at least in this sample, startling gender differences in preferences for immediate sexual access to mates.

There is evidence that male body scent is an olfactory cue to physical attraction (and hence gene quality) for normally ovulating women during the period of highest fertility. Thornhill and Gangestad (1999) examined the influence of body scent and fluctuating asymmetry on ratings of attractiveness in an undergraduate sample. Fluctuating asymmetry (FA) is a deviation from perfect body symmetry, and low FA is thought to be a phenotypic marker of good genes because it demonstrates the individual's response to genetic and environmental stress during development (p. 177). Symmetry was measured on the right and left sides of the body using a digital caliper to measure ear length, ear width, elbow width, wrist width, ankle width, and finger lengths (excluding the thumb). Participants slept for 2 nights in a plain white t-shirt to collect body scent; during the

day they refrained from washing with scented soaps, wearing perfume or cologne, and eating strong foods such as garlic or pepperoni. T-shirt scents were rated on Likert scales for pleasantness, sexiness, and intensity. The results showed that women with high fertility risk (based on self-reported menstrual cycle information) preferred body scents associated with both symmetric men and facially attractive men. These findings were absent for normally ovulating women during periods of low fertility risk and also for women taking hormone-based contraceptives. The authors conclude that the "pheromone of male symmetry" might be the scent-related chemical androstenone or its precursor androstenol, which are derived from other androgens such as testosterone (p. 196).

Sexual Strategies Theory

A major evolutionary theory of mate selection is Sexual Strategies Theory (Buss and Schmitt, 1993). A main tenet of this theory holds that mating is strategic (goal directed), and that mate preferences exist as solutions to reproductive problems faced by our human ancestors. For example, it would have been reproductively advantageous for ancestral women and men to recognize and avoid potential mates who suffered from disease. Also of theoretical importance is the assertion that while mating is universal in humans, lifetime monogamy is not characteristic of most people in most societies (p. 204). Additionally, long-term relationships do not account for all mating behavior, since mating relationships can last for short periods of time in the form of casual sex or brief affairs. Sexual Strategies Theory refers to these temporal differences as short-term versus long-term mating and proposes that mating context itself influences sex differences in human mate preferences. Finally, an important assumption is that the pursuit of these strategies is

nonconscious—evolved preferences are experienced as desires for certain mate qualities over others. Selected core components of the theory in the authors' words are as follows:

1. In human evolutionary history, both men and women have pursued short-term and long-term matings under certain conditions where the reproductive benefits have outweighed the costs.
2. Different adaptive problems must be solved when pursuing a short-term sexual strategy as opposed to pursuing a long-term sexual strategy.
3. Because of fundamental asymmetry between the sexes in minimum level of parental investment, men devote a larger proportion of their total mating effort to short-term mating than do women.
4. Because the reproductive opportunities and reproductive constraints differ for men and women in these two contexts, the adaptive problems that women must solve when pursing each strategy are different from those that men must solve, although some problems are common to both sexes. (pgs. 205-206).

One constraint on reproductive success for ancestral women was the quantity of external resources—e.g., food, shelter, and clothing—that was available for their own use and for use by their children. Short-term mating was associated with considerable risks and costs. For example, women pursuing short-term mating strategies risked sexually transmitted diseases, physical or sexual abuse, and negative social reputations. Nevertheless, Buss and Schmitt propose that women who engaged in short-term mating faced the following reproductive problems: 1. Immediate

access to resources, 2. Evaluating prospective long-term mates, 3. Evaluating gene quality, and 4. Mate switching, expulsion, or backup (p. 207). Therefore, women presumably solved these short-term problems through evolved preferences for men who were immediately generous, physically healthy, and who were capable and willing to invest over the longer term.

Long-term mating strategies for women were associated with less cost. Major advantages for women in pursing this mating strategy included the prospect of securing continuous economic investment for themselves and their children, physical protection (particularly during pregnancy), and genetic benefits for offspring. The authors propose several problems women confronted when following a long-term mating strategy: 1. Identifying men who are able and willing to invest, 2. Identifying men who can offer physical protection, 3. Commitment, 4. Good parenting skills, and 5. Gene quality. Parental investment here is characterized as resources controlled by men that may be "accrued, defended, and monopolized," such as money, land, and goods (p. 223). Sexual Strategies Theory asserts that women should have solved these mating problems through evolved psychological preferences for long-term mates who are willing and able to invest these kinds of resources. Therefore, women should prefer cues that signal a man's ability to invest, such as social status, material possessions, ambition, and intelligence. Ancestors of both genders did presumably confront some common problems when pursuing long-term mating strategies. For example, choosing a mate who possessed good parenting skills would have been reproductively advantageous to both partners, since well-adjusted and healthy children were more likely to thrive and reproduce.

One reproductive problem for men over evolutionary time has been access to fertile partners. Ancestral males increased the likelihood of passing on their genes to future generations if they mated with large number of non-related females, i.e., spent a majority of time engaging in short-term mating behavior. Buss and Schmitt proposed that our male ancestors needed to solve four problems in the short-term mating context: 1. Increasing the number of mating partners, 2. Identifying women who were sexually accessible, 3. Identifying women who were fertile, and 4. Minimizing their commitment and investment in order to pursue this short-term strategy. While men's preferences for qualities in a mate presumably evolved as solutions to these problems, for one of these problems the solution is not as straightforward. For example, how could ancestral men reliably identify fertile women given that ovulation is concealed? One explanation is that men posses an evolved preference for cues to fertility—notably age and health, since young women in good health are most likely to be fertile. In turn, physical attractiveness is presumably an important cue to age and health as evidenced by clear skin and eyes, symmetry, and good muscle tone. Other cues to age and health include youthful behavior and social reputation (p. 208).

Ancestral men pursing a long-term mating strategy would have benefited from exclusive access to reproductively valuable women. Reproductive value in women refers to an expected quantity of future reproduction, which is higher for younger women. However, they also likely confronted potentially high costs when pursuing this strategy. For example, men who continually invested parental resources in offspring would facilitate transmission of their genes only if they invested these resources in their own children and not in those of other men. As such, men's sexual jealousy can be viewed as an evolved adaptation to solve the ancestral problem of paternity

certainty. In addition to the problem of paternity certainty, Buss and Schmitt identified several other problems that confronted men when they pursed a long-term mating strategy: 1. Female reproductive value, 2. Commitment, 3. Good parenting skills, and 4. Gene quality. Sexual Strategies Theory proposes that ancestral men solved these long-term mating problems through evolved preferring mates who were sexually faithful, young and physically attractive (cues to reproductive value), and who possessed good parenting skills.

Evolutionary hypotheses regarding mate selection have been supported in a large cross-cultural study conducted by Buss (1989b) in collaboration with researchers in 37 cultures. Self-reported mate preference data was collected from over ten thousand people. Analyses focused on gender differences in the values placed on earning capacity, ambition-industriousness, youth, physical attractiveness, and chastity. Results revealed that males valued reproductive cues such as youth and physical attractiveness more than women, while women valued earning capacity significantly more than men. Research over the past decade has provided considerable support for evolutionary hypotheses in mate selection (Kenrick, et al., 1993; Townsend, 1989; Townsend et al., 1993; Wiederman, et al., 1992).

Mating context has also been shown to influence mate preference. Wiederman and Dubois, (1998) examined sex differences in short-term mating using a policy-capturing methodology, where "policy" referred to factors used in making judgments about the importance of preference cues. Participants read 50 descriptions of potential short-term mates in which the following variables were manipulated: physical attractiveness, financial resources, generosity, sexual experience / interest, current relationship status, and desired level of relationship commitment. The data were

analyzed using multiple regression where the relative weights (betas) of each variable were used to predict an individual's preference decision. The results revealed that both men and women placed the most emphasis on physical attractiveness in potential short-term partners, although men emphasized this variable more than did women. Women placed higher emphasis on generosity in the short-term than did men. Interestingly, self-report data also collected in this study was found to differ from the policy-capturing results. For both women and men, only physical attraction preferences in the policy-capturing portion of the study were significantly correlated with self-reported data for that variable. While this finding does underscore the question of quality in self-reported data in mate preference research, the data in this study was collected during 1 trial (versus 50 policy capturing trials) thus weakening its reliability.

There is also evidence that evolutionary predictions of mate preference are supported when sexual orientation is varied. Bailey et al., (1994) asked heterosexual and homosexual women and men to rate their preferences across five dimensions: interest in uncommitted sex, preference for explicit visual stimuli, concern for partner's status, age, and physical attractiveness. The results showed that gender influenced partner preferences significantly more that sexual orientation. For example, both heterosexual and homosexual men showed significantly greater preferences than did women for uncommitted sex, for explicit visual stimuli, and for younger partners. Homosexual women did indicate a higher interest in explicit visual stimuli than heterosexual women, but his effect was minimal (15% difference). The authors speculate that the high numbers of sex partners reported by some homosexual men represent increased opportunities for sex (versus that of a

married heterosexual male) and do not suggest a psychological difference from heterosexual men in preference for uncommitted sex.

Evolutionary Cognitive Perspectives

How do evolutionary theories account for specific cognitive abilities or capacities in humans? Dellarosa Cummins & Cummins (1999) have discussed this issue, and the following summary draws upon their review. Evolutionary explanations for cognition often focus on the concepts of innateness and modularity. The term *innate* is often used in a cognitive context to refer to an ability or capacity that is specified in the genetic code and is present at birth. For example, newborns appear to have the innate capacity to orient towards other human faces within only a few hours. The term *module* has been advanced by Tooby & Cosmides (1995) to designate a functionally dedicated [neural] computer designed to solve adaptive problems endemic to our hunter-gatherer ancestors (pp. xiii-xiv). The concept of a module is important to evolutionary psychology theory to specify how independent computational units can, in theory, be adaptively selected for.

One criticism leveled against the innate modules view centers on neural plasticity. While the innate modules view fits well with what we now know about the functional specificity of the adult brain, it offers less of an explanation for the neural plasticity in the developing brain. For example, Gazzaniga, Ivry, and Mangun (1998) note the capacity for change in the neural system during development including the location, type, and connectivity of cells. Similarly, the environment has been found to have a profound effect on the brain during development such that some have argued that cognitive functions develop from environmental contingencies.

However, Dellarosa Cummins and Cummins (1999), argue that the nature-nurture debate regarding cognitive capacity is in itself misdirected. Instead, they submit that neither innateness nor modularity is necessary to account for evolution of cognitive capacity and that a more fruitful issue involves the degree to which biological and environmental factors influence cognition. The crux of their argument is that the concept of innateness is best understood in terms of biological preparedness or biases in acquisition/learning. Further, evolution of these learning biases may influence the degree to which a particular cognitive capacity is *canalized*, i.e. the degree to which the development of a trait is robust across normal environmental variations (p. B37).

Two examples from psychology are offered to support their canalization argument. First, the authors cite Banich (1997) in noting that binocular columns used in depth perception are not present at birth, but develop only after visual input during a critical developmental period. Further, Hubel (1988) has found that at birth visual cortex cells show 'preferences' to respond to lines of a certain orientation, but also fire to a lesser degree to other orientations. But, after visual input, these cells respond only to lines of one orientation. A second example involves language development, which demonstrate how innate biases interact with environmental input. Infants initially exhibit innate auditory biases in processing speech sounds such that phonemes stand out and all other sounds are treated as 'noise'. Further environmental input shapes this bias to recognize only phonemes of the child's native language (p. B46). Thus, the capacity for language acquisition is highly canalized, yet the specific language learned is dependent upon the child's culture. This biological preparedness or biased learning view may also prove useful in explaining human mate preferences.

How could preferences in mate selection have evolved such that some traits are favored over others? In applying the argument advanced by Dellarosa Cummins and Cummins, males and females may be biologically prepared to desire specific mate characteristics that signaled reproductive success in ancestral environments, also known as the *environment of evolutionary adaptedness* (EEA). Janicki & Krebs (1998) refer to the EEA as the time in our ancestral history, corresponding roughly to the Pleistocene period, under which social and environmental conditions prompted adaptation. Evolutionary pressures may have influenced learning biases such that male preferences for attractiveness cues and female preferences for resource cues have become highly canalized traits in our species. However, these preferences may not be so highly canalized as to remove all variability within cultures. Thus, while males may be prepared to desire physically attractive women, cultural norms may influence those standards of attractiveness. Similarly, women in industrialized countries may value monetary resources in mates, while women in non-industrialized cultures would learn to desire alternative resource cues (e.g., skillful farming). It also may be possible to argue that various domain-specific cues are canalized differently. For example, within the domain of physical attractiveness, cues to facial symmetry may be more highly canalized than other cues (e.g., body weight) and thus less likely to be influenced by cultural learning.

Gender Differences in Cognition for Sexual Material

Research in cognitive psychology has helped to clarify how the human brain processes sexual information. One approach to studying cognition is known as the information processing approach (IPA). The IPA conceptualizes individuals as active processing units whereby both

internal and external information is input, encoded, stored, transformed, and retrieved in efforts to guide responding (Geer & Manguno-Mire, 1998). Over the past decade, Geer and his colleagues have applied the IPA to the study gender differences in sexuality. For example, research from Geer's laboratory has identified a phenomenon called the Sexual Content-Induced Delay (SCID), named to describe a slowing of participant responses in erotic contexts. This delay appears to be accentuated in women. Research findings in this area are both theoretically and methodologically relevant to the current study since they elucidate gender differences in the processing of sexual information and also suggest potentially useful paradigms with which to study cognition in mate selection.

Some effort has been made to study the effect of cognitive priming in mate selection from an evolutionary perspective. Nussbaum (1996) completed a dissertation to test the hypothesis that perceived availability of potential mates for various kinds of relationships would prime participants' mating strategy preferences (short-term versus long term). Four priming conditions were included in the form of a passage reportedly written by an opposite sex college student stating his or her willingness to engage in short versus long-term mating. A dominant prime condition was also included. None of the relationship availability primes influenced participants' stated willingness to engage in short or long-term mating. However, for women the dominant prime was associated with increased willingness to engage in a brief sexual relationship. Surprisingly, for men the dominant prime was associated with decreased willingness to engage in a brief sexual relationship. This study is noteworthy because it attempted establish a link between priming and mate selection preference, although a traditional information processing paradigm was

not used. Further relevant findings using the IPA to study cognition in sexuality and their implications for the current work will be highlighted next.

Attention

Attention (stimulus selection) is an important component of the IPA. Best (1992) broadly defines attention as "the concentration and focusing of mental effort that is selective, shiftable, and divisible" (p. 36). Selectivity is the ability to focus one's attention on particular stimuli while excluding others, such as when an architect concentrates on drawing precise lines while tuning out traffic noise. Shiftable attention describes situations in which one can choose to switch mental effort from one stimuli to another, as in changing one's focus from one exam question to the next. Divisibility suggests that one's attentional capacity can be simultaneously allocated to more than one stimuli, such a when the driver of a car attends to the environmental stimuli and converses with a passenger at the same time.

The role of selective attention in processing sexual material has been studied previously. Bush, Stasio, and Geer (1999) reported on a study utilizing the visual dot probe paradigm (MacLeod, Mathews, & Tata, 1986) to study selective attention to sexual, violent, and neutral words in participants with a history of sexual trauma. It was predicted that participants would behave as anxious individuals do in anxiety research, i.e., focus their attention towards threat-related cues. Unexpectedly, participants took longer to detect visual dot probes replacing both sexual and violent words, suggesting that they actually looked away from threatening stimuli. It was suggested that the passage of time since the experienced sexual trauma might have moderated the influence of threat-related cues to selective attention in those individuals.

The role of selective attention in mate preference has yet to be studied from the IPA perspective. Evolutionary theories would appear to be compatible with the notion that gender differences may exist in selective attentional mechanisms for preferred qualities in mates. Buss (1998) has proposed that evolved mechanisms in mate selection are "usefully described in psychological or information processing terms" (p. 23). Further, Buss has advanced the theory that desire is *the* central mechanism in human sexual psychology. If Buss is indeed on the right track, then it is reasonable to ask whether there are gender differences in selective attention that presumably reflect aspects of the evolution of desire. Furthermore, as discussed earlier, Dellarosa Cummins & Cummins (1999) have argued that innate (and thus heritable) capacities are best thought of as biases in learning, "especially in categorization and attention, that function to canalize the development of a social reasoning system" (p. B49). Thus, it is plausible based on these theories to investigate whether gender differences may exist in selective attention to desirable mate qualities.

Knowledge Representation

How knowledge is represented in memory is another important component of the IPA. Cognitive psychologists investigate how humans organize information by studying our word knowledge or lexicon. Best (1989) notes that our lexicon is like a "mental dictionary" that defines words and describes the relationship between words (p. 212). One formal way to represent relationships between words and concepts is by using a network model approach. Concepts in a network model are referred to as *nodes*, and the relationship between nodes may be represented graphically by a line and an arrow. For example, since the word *saxophone* and the phrase

woodwind instruments are associated concepts, each node would be connected by a line and arrow suggesting that saxophone is member of the superordinate (higher) category of woodwind instruments.

Best (1989) points out a number of assumptions concerning network models. First, "searching our memory" is analogous to searching among the nodes of the network (p. 218). Thus, there is some cognitive process that exists whereby nodes are searched, the information contained on them is read, and the search either continues or stops. Second, network models are assumed to account for knowledge that is not entirely verbal. For example, activation of nodes for particular words may activate other nodes containing procedural (motor) or bioinformational (emotional) knowledge. Third, network models are assumed to account for both semantic and episodic knowledge. Best refers to this as the type-token distinction (p. 219) in which nodes for a general category of knowledge (semantic type) are distinguishable from familiar examples of that category (episodic token). Thus, a jazz musician's associative network contains the semantic concept of saxophone type, and also nodes for episodic knowledge about his or her particular horn. Research by Geer and his associates (Rabalais & Geer, 1992; Geer, 1996) has shown that gender differences in networks emerge for sexual material. There is no available data concerning possible gender differences in associate networks when the domain is mate selection information.

STUDY 1: MATE SELECTION DECISIONS

Introduction

What characteristics do humans value when choosing potential mates? The method of paired comparisons was utilized in this study to develop scales that may help to describe the relationship among important mate preference criteria identified from prior research. One of its purposes is to replicate previous research findings in this area suggesting that both sex and mating context (short-term vs. long-term) influence what people judge to be important in mate selection. A third context—Undefined Information—was included in this investigation to explore its effects on mate preference decisions. Using a scaling methodology is important because it may provide a better understanding of the relationship between human mate preferences on the underlying psychological continuum of mate selection preferences

Most previous methodologies involved subjective ratings of preferred traits and behaviors in potential mates used a Likert scale format. These ratings were then submitted to some form of item analysis (typically factor analysis) to reduce items into common factors. For example, Buss (1986a) identified a number of important domains through factor analysis: Interpersonal skill and responsiveness (relaxed in social situations, good sense of humor), Intellect (intellectual, cultured), Physical attractiveness (physically attractive, sexy, healthy), Social status (high social status, popular, good earning capacity), Interpersonal power (powerful, dominant, aggressive), and Family orientation (religious, ambitious, wants children). While these items have been used in subsequent research, the list does not contain items of recent theoretical interest (e.g., evaluation of potential long term mates, and mate expulsion / switching).

One methodological alternative to Likert scale ratings consists of asking participants to estimate their minimum acceptable criterion level for specific traits in a partner. Kenrick, Groth, Trost, and Sadalla (1993) used this methodology to examine mate selection preferences and integrate evolutionary theories, which emphasize sex differences, and social exchange theories, which emphasize self-appraisals. First, participants estimated the minimum percentile of each of 24 trait characteristics that they would find acceptable in a partner in each of five mating conditions: a) date, b) sexual partner, c) 1-night sexual liaison, d) exclusive dating, and e) marriage. The 24 trait characteristics were drawn from previous studies (Buss & Barnes, 1986; Kenrick et al, 1990) and included such items as kind and understanding, religious, exciting personality, and good earning capacity. Participants also rated themselves on the same traits. The results revealed the most conspicuous sex difference in the 1-night sexual liaison condition in which men's minimum criteria was significantly below that of women. Furthermore, women's self-appraisals (estimates of their own mate value) were more related to their minimum acceptable criteria in a mate than were men's self-appraisals. The authors conclude that these data support a social evolutionary view of mate selection.

In a similar study, Regan (1998) has investigated to what degree mate preferences are "malleable" by examining participants' willingness to compromise ideal standards in choosing a mate. Participants were shown 32 mate characteristics (adapted from Buss) and asked to assign each an "ideal percentage" desired in a mate. Participants also assigned a minimum and maximum percentage to each trait indicating how willing they would be to compromise on that trait but still accept the potential partner. Independent variables were gender, mate value, and relationship

context (casual sex, romantic). The results revealed that women were less willing to compromise interpersonal skills, social status, and interpersonal power (dominance, aggression) in a mate than were men. In the casual sex condition, both women and men were more willing to compromise on the traits of intellect, family orientation, and interpersonal power. Further, women but not men were more willing to compromise physical attractiveness in the long-term romantic context. While these studies rely on self-reported percentage estimates, they are important because they attempt to weigh particular preference items according to mating context and thus represent a methodological improvement over previous single-rating factor analytic studies.

Mate selection preferences in this study were scaled using a paired comparison methodology (Edwards, 1953) in which participants judge the relative importance of a number of different items. The items themselves were assembled by this author based on their relevance to Sexual Strategies Theory as outlined in Buss and Schmitt (1993). Items such as "This person is physically attractive," "This person is generous with money," and "This person would be sexually faithful" were included based on past empirical findings. Items of theoretical interest to women's short-term mating preferences, but for which no empirical data was available, were also used. These items included "I am unhappy with my current partner," "It may become a serious relationship," and "I want to experiment with sex". Note the final grouping of mate preference items included here do not represent an exhaustive list of those identified in past research. While one aim of this study was to replicate past findings, another equally important goal was to assess the utility of the method of paired comparisons. Comparisons using this method increase

exponentially with the addition of items, and thus the number of criteria items was limited to 17 to minimize participant fatigue effects.

The method of paired comparison couples each item with every other item in successive trials, and participants choose which item is more important than the other. This procedure yields a weighted list of items whose scale values describe the rankings of criteria from least to most important. Previous work has not identified any scale of the importance of preference criteria, and this study will provide a better basis from which to discriminate among preference variables than earlier studies. Furthermore, the method of paired comparisons is essentially a procedure to study decision-making and information processing because each successive judgment in the task is by itself a decision comparing each preference item to all the other items in the list. Decision-making involves complex cognitive processes, and this study may serve as a starting point from which to better understand how mate preference decisions are made.

In general, two-choice discrimination tasks such as the one used here involve both encoding and decision-making processes. Considering the latter, Maule and Svenson (1993) have identified several distinctions used in decision-making research. The first main distinction is between structural and process approaches to decision-making. Structural approaches focus on how information provided about each alternative (input) is related to the choice between alternatives (output). One example of a structural model is Information Integration Theory, Anderson (1981), which holds that individuals subjectively weigh stimulus information input and then apply decision rules specific to that information. In contrast, process approaches in decision-making research are primarily concerned with examining underlying cognitive processes. Methodological

examples from this approach include collecting eye fixation data to determine information acquisition patterns and developing verbal protocols in which participants actually think aloud while making decisions.

A second important distinction exists between decisions with certain outcomes and those with uncertain or risky outcomes. One example of a decision under certainty would be a binary choice in which the most important cues are evaluated in sequence until one alternative is clearly better than the other (Maule & Svenson; 1993). Yet risky decisions involving uncertain outcomes have received the most research attention, probably since most decisions we make involve at least a minimum amount of uncertainty. Theories of expected value and expected utility have been extensively used to study risky decisions. Expected value theory applies to objective decisions in which each outcome is associated with a probability, while expected utility theory applies to decisions that are consistent with an individual's personal values (Medin & Ross, 1996). However, Kahneman and Tversky (1982) have reported that individuals do not always make objective or rational decisions as predicted by expected value and utility theories. Individuals instead often rely on rules of thumb or heuristics, such as representativeness and availability, to make risky decisions. The representativeness heuristic operates when individuals quickly compare the case in question to a prototype, while the availability heuristic operates when the case in question is compared to information available in memory.

Even this brief review of decision-making raises interesting issues regarding the process of deciding on a mate. First, the paired comparison task appears to combine both structural and process approaches to decision-making. For example, the stimuli criteria (input) and decision

responses (output) are related and observable, while reaction times measure underlying cognitive processing speed. Secondly, while the task itself is binary, it more closely reflects decision-making under uncertainty, since choices involve the relative importance of criteria items. In fact, actual mate choices are likely to reflect risky decisions, since the outcome of choosing a particular mate is uncertain. Finally, the directions instructed participants to choose the more important alternative as quickly as possible, thus introducing a slight time pressure into the decision task. The effect of time pressure on mate choice is unknown, but Maule & Svenson (1993) have reported that the effect of deadlines on judgments and decision-making is associated with a "minimization of cognitive effort" (p. 28). Thus, the slight time pressure introduced into the paired comparison task might provide information related to the heuristics of mate selection.

Hypotheses

The following predictions regarding gender differences in the importance of mate preferences were made based on evolutionary theory and findings from past research: 1. Women will judge the items "This person has a good financial future" and "this person is generous with money" as more important than will men in the casual sex / 1-night stand context, 2. Women will judge the item "This person has good parenting skills" as more important than will men in the casual sex / 1-night stand context 3. Women will judge the item "This person shows dominant traits" as more important than will men in both the casual sex / 1-night stand (short-term) and long term dating / marriage (long-term) mating contexts, 4. Men will judge the item "This person is physical attractive" as more important than will women in both the casual sex / 1-night stand (short-term) and long term dating / marriage (long-term) mating contexts, and 5. Men will judge the

item “This person would be sexually faithful” as more important than will women in the long term dating / marriage context. Hypotheses # 6, inferred from Sexual Strategies Theory, predicts that when the mating context is undefined, decision preferences for women will most resemble those associated with long-term mating strategies, while decision preferences for men will most similar to those associated with short-term mating.

Method

Participants

Participants in Study 1 consisted of 204 undergraduate psychology students (102 female, 102 male). All participants were native English speakers who were 18 years or older. Those who participated in the earlier pilot studies were excluded. The mean ages for females (M=20.59, SD=. 35) and for males (M=20.97, SD= .35) were not significantly different from each other. A summary of gender and age by relationship context is presented in Table 1.

Table 1
Mean Ages of Participants in Study 1

Context	Female			Male		
	n	M	SD	n	M	SD
Casual Sex / 1-Night Stand	34	20.32	0.61	34	21.21	0.61
Long-Term Dating / Marriage	34	20.62	0.61	34	21.38	0.61
Undefined Relationship	34	20.82	0.61	34	20.32	0.61
Total	102	20.59	0.35	102	20.97	0.35

Mean differences not statistically significant

Procedure

Gender and mating context served as the primary experimental variables of interest in this study. Short Term Mating was defined as "casual sex or 1 night stand," Long Term Mating was defined as "long term dating, cohabitation, or marriage, " and Undefined Information simply said "relationship". The short term mating context was manipulated by presenting the following sentence at the top of each trial screen: "You are deciding whether to have casual sex / 1 night stand with a mate. Which of the two statements below is more important in your decision"? The long term mating context was manipulated by presenting the following sentence at the top of each trial screen: "You are deciding whether to date seriously, live with, or marry a mate. Which of the two statements below is more important in your decision"? The Undefined Information context was manipulated by presenting the following sentence at the top of each trial screen: "You are deciding whether to have a relationship with someone. Which of the two statements below is more important in your decision"? Each instruction sentence remained visible on the screen throughout the trial sequence in an attempt to focus the participant on the mating context condition. The purpose of adding the third Undefined Information condition was to investigate whether women and men were "defaulted" to a particular mating strategy when the mating context was undefined.

Participants were tested in same-sex pairs in the laboratory. Each participant was seated in front of a computer. The experimenter read aloud the consent form (see Appendix A), answered any questions, and then asked the participants to give informed consent. The consent forms were collected prior to the start of the experiment. The experimenter then instructed the participants to begin the computerized paired comparison task, which was presented using E-prime, a Windows-

based software program designed to generate and administer experimental research. The procedure led participants to read an introductory statement, learn the task through a block of practice trials, and then complete a longer block of experimental trials to conclude the study.

Participants first read an introductory screen that described the mating context condition (short or long term) and provided directions for the task. Students then pressed the space bar to begin 6 practice trials. When the practice trials concluded, participants again pressed the space bar to begin the 136 experimental trials. The sequence of trial events was identical for both the practice and experimental trials. To begin a trial, participants saw an instruction sentence (the context manipulation described at the beginning of this section) at the top of the screen and two '+' signs (fixation points) in the center left of the screen for 4 seconds. These '+' signs were then replaced by two randomly paired mate selection criteria; the instruction sentence remained visible. Students chose the more important item on the screen by pressing either the '1' or '2' key on either the keypad or the row of numbers at the top of the computer keyboard. When the response was made, both the instruction sentence and the two criteria items were replaced by a feedback screen stating the time it took for the participant to answer on that trial. After 1.5 seconds the feedback screen was replaced by the instruction sentence and the fixation sign again indicated the start of the next trial. At the conclusion of the task, the experimenter read a short summary statement describing the purpose of the experiment. The experimenter answered any questions from participants at this time. Students received extra credit slips to be used in their psychology classes on the way out of the room.

Results

A number of steps were used as a strategy to analyze the paired comparison data. The first was to construct the mate section criteria scales themselves from the item preference data. Scaling provided the degree of relative preference of items in each of the domains under investigation. The second step was to analyze differences in the mean percentages of scale items chosen in each domain. These data were analyzed using a 2 x 3 general linear model MANOVA with alpha levels adjusted to p= .001 to control for Type I errors. The between subject variables were Gender and Mating Context (short term, long term, and undefined), and the dependent variables were the percentages that each of the seventeen criteria items were chosen. Correlations among mean percentages of scale items chosen in each domain, as well as differences between them, were also calculated. The third step in the analysis procedure was to investigate the reliability of the scales in each domain using Cronbach's alpha statistic. Next, the slopes for scale values in each domain were calculated, and beta values were analyzed as a measure of criteria item discrimination. Finally, in step five the decision latencies (in milliseconds) for all paired comparison trials were assembled across individuals. Median decision latencies between criteria items of proximate versus distant scale values were then analyzed.

Scale Construction

All scales were constructed using procedures drawn from Guilford (1954). Initially, the choice percentage for each criteria item was calculated for all participants to indicate how often a given criteria item was selected against all other items. Criteria item scale values were calculated for each individual by standardizing the mean percentages of items chosen in each domain and then

adding the lowest resulting value to all item values. The resulting standardized scale has a minimum value of .000 that represents the least important criteria item. Progressively higher scale values correspond with more important preference criteria items. The scale values themselves have no inherent meaning; these numbers represent "distance" between items on a theoretical underlying continuum of mate preference. Statistical analyses among criteria scale items were performed using mean percentages of items chosen in each domain, while scale values were primarily used for graphical purposes. Note that analyses using either percentages of items chosen or their corresponding scale values yield equivalent results.

The Grand Scale

The first scale constructed using the procedure described above was the Grand Scale. Grand Scale values represent the overall importance of each item in decision-making regardless of the participant's gender or relationship context condition. Eleven additional scales were similarly constructed by varying sex and relationship context (casual sex / 1-night stand, long term dating / marriage, and undefined relationship information).

Visual examination of Grand Scale values revealed that the criteria item selected most often (and thus considered important) was "This person would be sexually faithful" (74.51%, scale value=2.98), followed by "This person is physically attractive" (71.63%, scale value=2.79) and "This person is cooperative and kind" (71.45%, scale value=2.77). Among the criteria items chosen least often (and thus considered less important) were "I am unhappy with my current partner" (31.74%, scale value=. 25), "This person is committed to another" (29.60%, scale value=. 12), and "My own social status may improve" (27.76%, scale value=. 00). The Grand Scale

values are presented in Table 2**.** The Grand Scale ordering of criteria items according to their scale values was preserved in all subsequent tables to facilitate data interpretation.

Table 2
Overall Scaling of Mate Selection Criteria Items

Mate Selection Criteria Items[a]	Mean % Chosen Overall	Grand Scale Value
17. My own social status may improve	27.76	.00
16. This person is committed to another	29.60	.12
15. I am unhappy with my current partner	31.74	.25
14. This person shows dominant traits	36.15	.53
13. This person is generous with money	37.41	.61
12. People find me physically attractive	39.80	.77
11. I want to experiment with sex	41.42	.87
10. My friends approve of this person	46.20	1.17
9. This person has a good sex drive	52.82	1.60
8. This person has good parenting skills	55.09	1.74
7. This person has a good financial future	55.12	1.74
6. This person is ready and willing	55.15	1.74
5. I have known this person a long time	62.78	2.23
4. It may become a serious relationship	69.67	2.67
3. This person is cooperative and kind	71.45	2.78
2. This person is physically attractive	71.63	2.79
1. This person would be sexually faithful	74.51	2.98

[a] Items listed from overall lowest to highest scale values
N=204

Scales by Gender

Mean percentages of criteria items selected and their corresponding scales values were compiled by gender. All values are presented in Table 3. Scale values by gender from Table 3

Table 3
Scaling Criteria Items by Gender

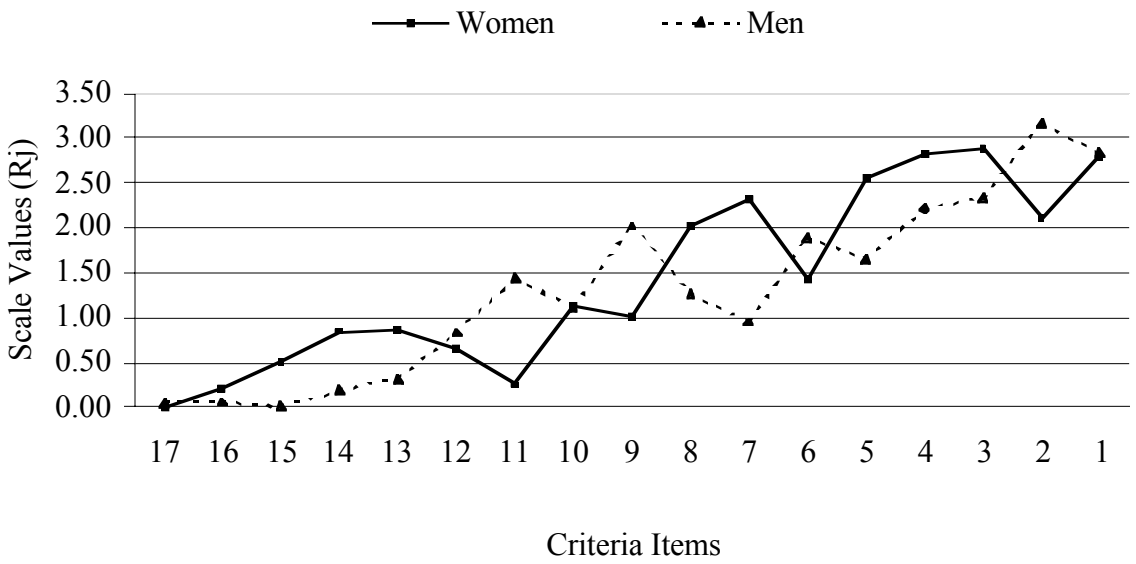
Mate Selection Criteria Items[a]	Mean % Chosen[b]		Scale Values	
	Female	Male	Female	Male
17. My own social status may improve	25.61	29.90	.00	.04
16. This person is committed to another	29.04	30.15	.20	.06
15. I am unhappy with my current partner	34.25	29.23	.51	.00
14. This person shows dominant traits	40.01 >	32.29*	.84	.18
13. This person is generous with money	40.26 >	34.56*	.86	.32
12. People find me physically attractive	36.64	42.95	.64	.83
11. I want to experiment with sex	29.90 <	52.94**	.25	1.43
10. My friends approve of this person	44.61	47.79	1.11	1.12
9. This person has a good sex drive	42.89 <	62.75**	1.01	2.02
8. This person has good parenting skills	59.80 >	50.37**	2.00	1.27
7. This person has a good financial future	65.20 >	45.04**	2.31	.95
6. This person is ready and willing	49.88 <	60.42*	1.42	1.88
5. I have known this person a long time	69.00 >	56.56**	2.54	1.65
4. It may become a serious relationship	73.59 >	65.75**	2.81	2.20
3. This person is cooperative and kind	75.00 >	67.89**	2.89	2.33
2. This person is physically attractive	61.76 <	81.50**	2.11	3.15
1. This person would be sexually faithful	73.10	75.92	2.78	2.82
	n=102	n=102		

[a] Items listed in original Grand Scale order from lowest to highest values

[b] All tests conducted using p=.001 to control for Type I errors.

*p < .05; **p < .01; sign indicates relationship direction

are presented in a graph as Figure 1. Mean percentages of scaled items chosen by sex were submitted to a general linear model (GLM) multivariate analysis of variance. The results revealed



Items and Significant Differences	(p <)
17. My own social status may improve	
16. This person is committed to another	
15. I am unhappy with my current partner	
14. This person shows dominant traits	.013
13. This person is generous with money	.023
12. People find me physically attractive	
11. I want to experiment with sex	.001
10. My friends approve of this person	
9. This person has a good sex drive	.001
8. This person has good parenting skills	.001
7. This person has a good financial future	.001
6. This person is ready and willing	.008
5. I have known this person a long time	.001
4. It may become a serious relationship	.001
3. This person is cooperative and kind	.001
2. This person is physically attractive	.001
1. This person would be sexually faithful	

Figure 1. Scale Values by Gender from Table 3

a significant overall multivariate effect of gender on percent of items chosen, F (17,186)=8.90, $p <$ .01. This significant overall effect allowed for the further univariate analyses using an adjusted p value=. 001 to help control for Type 1 errors. These results revealed sex differences in mean percentages of items chosen for a number of criteria. Females chose the item "This person has a good financial future" significantly more often than did males, F (1,202)=40.96, $p < .01$. Other items chosen by females significantly more frequently than by males include "I have known this person a long time," F (1,202)=22.65, $p < .01$; "This person is cooperative and kind," F (1,202)=11.67, $p < .01$; "It may become a serious relationship," F (1,202)=8.75, $p < .01$; "This person has good parenting skills," F (1,202)=7.09, $p < .01$; "This person shows dominant traits," F (1,202)=6.22, $p < .05$; and "This person is generous with money," F (1,202)=5.24, $p < .05$. Males chose the item "This person is physically attractive" significantly more often than did females, F (1,202)=53.46, $p < .01$. Other items selected significantly more often by males include "This person has a good sex drive," F (1,202)=42.01, $p < .01$; "I want to experiment with sex," F (1,202)=38.45, $p < .01$; and "This person is ready and willing," F (1,202)=9.03, $p < .01$. GLM results are presented in Table 4.

Correlations between the Grand Scale and scales for each gender were computed to examine the strength of these relationships. It was revealed that the Grand Scale items were strongly positively correlated to item scale values for both women, $r = .93$, $p < .01$, and for men, $r = .93$, $p < .01$. Such high correlations between the Grand Scale and scales for women and men are not surprising, since a portion of data is shared between them. In considering gender, scale values for women were also positively correlated to item values for men, $r = .73$, $p < .01$. These

Table 4
Effect of Gender on Scale Percentage Values

Multivariate *F* Test	Value	df	*F*	*p value*
Gender (N=204)	.45	17	8.90	.001
Univariate Tests				
Criteria Items	SS	df	*F*	*p* value
17. My own social status may improve	.05	1	1.30	.260
16. This person is committed to another	.00	1	.06	.810
15. I am unhappy with my current partner	.15	1	2.30	.130
14. This person shows dominant traits	.26	1	6.22	.010*
13. This person is generous with money	.18	1	5.24	.020*
12. People find me physically attractive	.14	1	3.14	.080
11. I want to experiment with sex	2.44	1	38.45	.001**
10. My friends approve of this person	.02	1	.34	.560
9. This person has a good sex drive	1.75	1	42.01	.001**
8. This person has good parenting skills	.45	1	9.03	.001**
7. This person has a good financial future	2.15	1	40.96	.001**
6. This person is ready and willing	.57	1	7.09	.010*
5. I have known this person a long time	1.02	1	22.65	.001**
4. It may become a serious relationship	.38	1	8.75	.001**
3. This person is cooperative and kind	.33	1	11.67	.001**
2. This person is physically attractive	1.44	1	53.46	.001**
1. This person would be sexually faithful	.00	1	.05	.820

All tests conducted using p=.001 to control for Type I errors
*$p < .05$
**$p < .01$

results indicate significant overlap between the genders on the value placed on mate preference items. Nevertheless, it is also reasonable to ask whether these correlations are themselves meaningfully different from one another. The method to test the difference between two

correlations was drawn from Edwards (1967). The procedure uses the Fisher Z transformation to convert both correlations to a z-score which is then located along the standard normal curve. Using this procedure, it was found that the correlation between the Grand Scale and the scale for women was significantly greater than the correlation between the scales for women and men, $z = 3.42$, $p < .001$. Similarly the relationship between the Grand Scale and the scale for men was significantly stronger than the correlation between the scales for women and men, $z = 3.42$, $p < .001$. These results provide additional evidence that significant between-gender variability exists in mate preference choices.

Scales by Relationship Context

Mean percentages of criteria items selected and their corresponding scales values were complied by relationship context (Casual Sex / 1-Night Stand, Long-Term Dating / Marriage, and Undefined Information). Mean percentage values are presented in Table 5. Scale values by relationship context are presented in a graph as Figure 2. Mean scale percentage values by relationship context were then submitted to a general linear model (GLM) multivariate analysis of variance. The results of this analysis revealed a significant effect of relationship context on percent of items chosen, multivariate F (17,186)=5.00, $p < .01$, and allowed for further data analysis. Univariate tests using an adjusted p value=. 001 to help control for Type 1 errors revealed several context differences. For example, the largest differences were revealed for such items as "This person has good parenting skills," F (2,202)=47.09, $p < .01$; "I want to experiment with sex," F (2,202)=26.75, $p < .01$; and "This person is cooperative and kind," F (2,202)=19.12, $p < .01$.

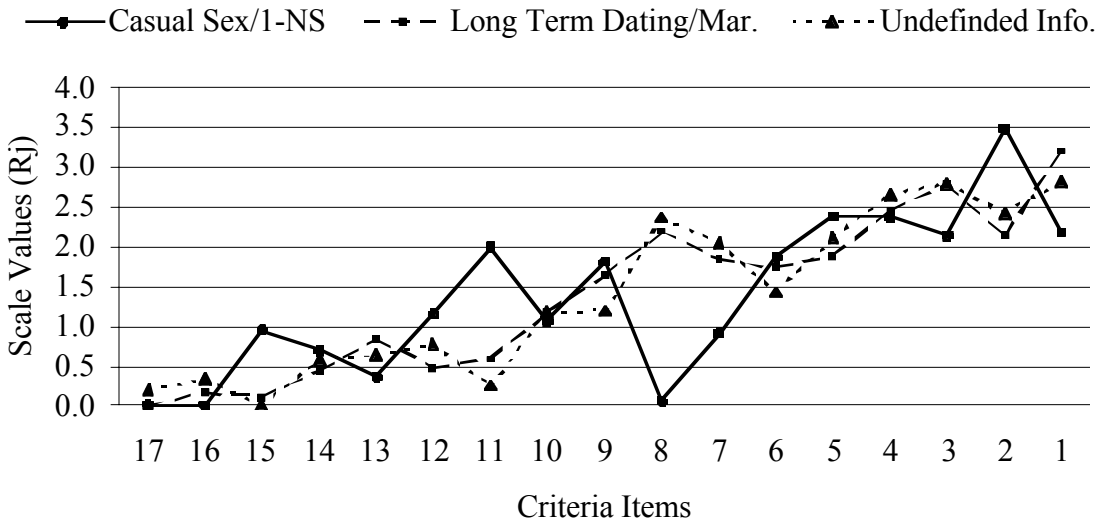
Table 5
Percentage of Items Chosen by Relationship Context

Mate Selection Criteria Items[a]	Mean % Chosen[b]			
	1	2	3	
	CS/1NS	LTD/M	UND	Post Hoc
17. My own social status may improve	30.97	23.71	28.58	
16. This person is committed to another	30.88	26.65	31.25	
15. I am unhappy with my current partner	44.49	25.74	25.00**	1>2,3
14. This person shows dominant traits	40.90	31.80	35.75	
13. This person is generous with money	36.03	39.52	36.67	
12. People find me physically attractive	47.33	32.81	39.25**	1>2,3
11. I want to experiment with sex	59.65	34.93	29.69**	1>2,3
10. My friends approve of this person	46.23	45.77	46.60	
9. This person has a good sex drive	57.08	54.50	46.88*	1,2>3
8. This person has good parenting skills	31.71	65.17	68.38**	2,3>1
7. This person has a good financial future	44.12	58.46	62.78**	2,3>1
6. This person is ready and willing	58.00	56.34	51.10**	1>3
5. I have known this person a long time	65.35	59.19	63.79	
4. It may become a serious relationship	64.98	70.04	73.99*	3>1
3. This person is cooperative and kind	61.67	76.38	76.29**	2,3>1
2. This person is physically attractive	81.25	64.06	69.58**	1>2,3
1. This person would be sexually faithful	62.50	84.10	76.93**	2>1,3
	n=68	n=68	n=68	

CS/1NS=Casual Sex/1-Night Stand
LTD/M=Long Term Dating / Marriage
UND=Undefined Information Instructions

[a] Items listed in original Grand Scale order from lowest to highest values

[b] All tests conducted using p=.001 to control for Type I errors.
*$p < .05$; **$p < .01$; sign indicates direction of Post Hoc differences



Items and Significant Differences	($p <$)	Post Hoc
17. My own social status may improve		
16. This person is committed to another		
15. I am unhappy with my current partner	.01	1>2,3
14. This person shows dominant traits		
13. This person is generous with money		
12. People find me physically attractive	.01	1>2,3
11. I want to experiment with sex	.01	1>2,3
10. My friends approve of this person		
9. This person has a good sex drive	.05	1,2>3
8. This person has good parenting skills		
7. This person has a good financial future	.01	2,3>1
6. This person is ready and willing	.01	1>3
5. I have known this person a long time		
4. It may become a serious relationship	.05	3>1
3. This person is cooperative and kind	.01	2,3>1
2. This person is physically attractive	.01	1>2,3
1. This person would be sexually faithful	.01	2>1,3

Figure 2. Relationship Context Scale Values

Post hoc analyses using Bonferroni's correction revealed that the percentage of item choice in the casual sex / 1-night stand context was most often different from choices in the other two relationship contexts. Thus, significantly higher value was placed on the items "I want to experiment with sex," "I am unhappy with my current partner," "This person is physically attractive," and "People find me physically attractive" in the casual sex / 1-night stand context than in either the long term dating / marriage or undefined information contexts. It was further revealed that significantly greater importance was given to the items "This person has good parenting skills," "This person is cooperative and kind," and "This person has a good financial future" in both the long term dating / marriage and undefined information contexts than in the casual sex / 1-night stand condition. Finally, the item "This person would be sexually faithful" was chosen significantly more often in the long term dating / marriage context than in either of the other two conditions. Univariate results are presented in Table 6.

Correlations between the six scales created thus far were assembled to examine the strength of these relationships. These values are presented in Table 7. The strongest positive correlation was found between the Long-Term Dating / Marriage scale and the Undefined Information Scale, $r = .96$, $p < .01$. This finding indicates that both women and men preferred criteria similar to that of Long-Term Dating / Marriage when the nature of the relationship was less defined. Item percentage values in the Casual Sex / 1-Night Stand scale were positively but less strongly related to values in both the Long-Term Dating / Marriage scale, $r = .61$, $p < .01$, and the Undefined Information scale, $r = .57$, $p < .05$. Testing for differences between two correlations as described earlier, results confirmed that the correlation between the Long-Term Dating / Marriage scale and

Table 6
Effect of Relationship Context on Scale Percentage Values

Multivariate *F* Test	Value	df	*F*	*p value*
Relationship Context (N=204)	.63	34	5.00	.001**

Univariate Tests

Criteria Items	SS	df	*F*	*p value*
17. My own social status may improve	.10	2	1.16	.320
16. This person is committed to another	.08	2	.49	.610
15. I am unhappy with my current partner	1.56	2	13.50	.001**
14. This person shows dominant traits	.15	2	1.83	.160
13. This person is generous with money	.06	2	.91	.400
12. People find me physically attractive	.59	2	7.03	.001**
11. I want to experiment with sex	3.21	2	26.75	.001**
10. My friends approve of this person	.00	2	.03	.970
9. This person has a good sex drive	.42	2	4.29	.020*
8. This person has good parenting skills	.25	2	2.44	.090
7. This person has a good financial future	1.33	2	11.74	.001**
6. This person is ready and willing	5.39	2	47.09	.001**
5. I have known this person a long time	.10	2	.98	.380
4. It may become a serious relationship	.34	2	3.82	.020*
3. This person is cooperative and kind	.96	2	19.12	.001**
2. This person is physically attractive	.69	2	11.18	.001**
1. This person would be sexually faithful	1.60	2	18.81	.001**

All tests conducted using p=.001 to control for Type I errors
*$p < .05$, ** $p < .01$

the Undefined Information scale was positive and significantly greater than the correlation between the Long-Term Dating / Marriage scale and the Casual Sex / 1-Night Stand scale, $z = 3.66$, $p < .001$.

Table 7
Correlation of Scale Percentage Values

Scale	1	2	3	4	5	6
1. Overall (Grand Scale)	-	.93**	.93**	.77**	.96**	.95**
2. Women		-	.73**	.58*	.93**	.96**
3. Men			-	.87**	.86**	.81**
4. Casual Sex / 1-Night Stand				-	.61**	.57*
5. Long Term Dating / Marriage					-	.96**
6. Undefined Information						-

** $p < .01$ (2-tailed)
* $p < .05$ level (2-tailed)

The correlations between the overall scales for women and men and those for relationship context were also examined. Scale percentage values for Women were strongly related to those in the Undefined Information scale, $r = .96$, $p < .01$, followed by the Long-Term Dating / Marriage scale, $r = .93$, $p < .01$. The scale for Women was positively but less strongly correlated with the Casual Sex / 1-Night Stand scale, $r = .58$, $p < .05$. Scale percentage values for men were positively related to those in Casual Sex / 1-Night Stand scale, $r = .87$, $p < .01$, Long-Term Dating / Marriage scale, $r = .86$, $p < .05$, and the Undefined Information scale, $r = .81$, $p < .05$.

In testing the differences between these correlations, it was revealed that the correlation between the overall Women's scale and the Long-Term Dating / Marriage scale was significantly

greater than the one between Women and Casual Sex / 1-Night Stand. $z = 6.23$, $p < .001$. Similarly, the correlation between the Women's scale and Undefined Information scale was significantly greater than the correlation between Women and Casual Sex / 1-Night Stand, $z = 6.03$, $p < .001$. Correlations between the overall Men's scale and scales each of the three relationship contexts were similar, and no significant differences were revealed between them. Further, the relationship between the Men's scale and the Casual Sex / 1-Night stand scale was significantly stronger than the correlation between the scales for Women and Casual Sex, $z = 2.64$, $p < .01$. Finally, the correlation between scales for Women and Long-Term Dating was greater than the correlation between scales for Men and Long Term Dating, but this relationship only approached statistical significance, $z = 1.43$, $p = .07$.

Individual Scales by Gender: Casual Sex / 1-Night Stand Context

The next series of scales were constructed by gender in each of the three relationship contexts. The initial two scales were for women and men in the Casual Sex / 1-Night Stand condition. Mean percentages of items chosen and their corresponding scale values appear in Table 8. Scale values are also presented in a graph in Figure 3. These data were submitted to a general linear model (GLM) multivariate analysis of variance. The results revealed a significant multivariate effect of gender on percent of items chosen in the casual sex / 1-night stand condition, $F(17,50) = 4.50$, $p < .01$. This significant finding allowed for the examination of univariate tests using an adjusted p value=. 001 to help control for Type 1 errors. Results revealed that females placed significantly higher value than did males on the items "This person has good parenting skills," $F(1,66) = 41.28$, $p < .01$; "This person has a good financial future,"

Table 8
Casual Sex / 1-Night Stand Scales by Gender

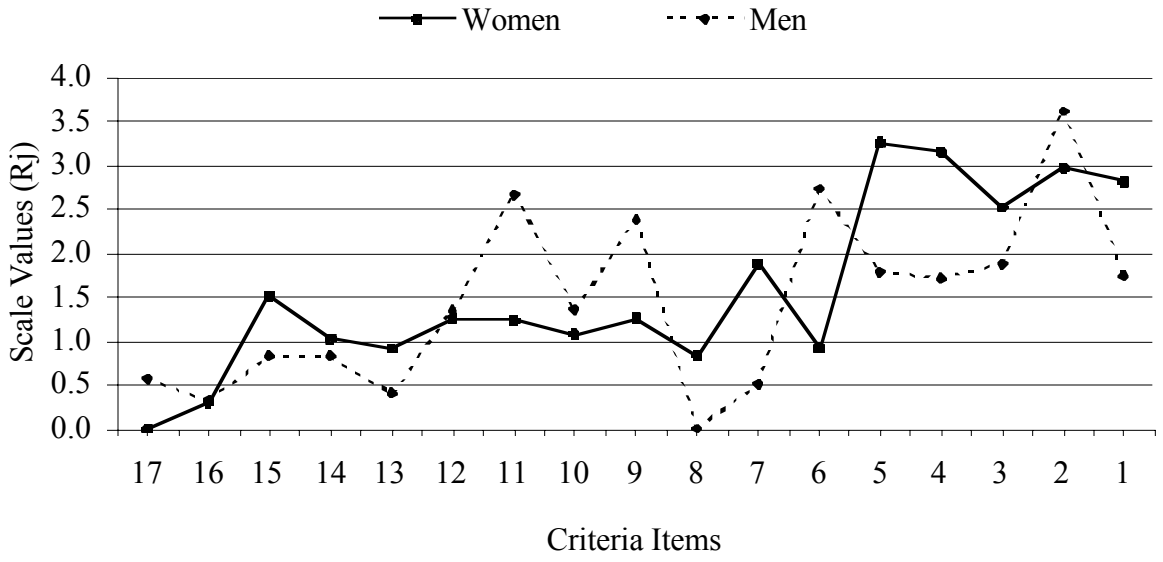
Mate Selection Criteria Items[a]	Casual Sex / 1-Night Stand			
	Mean % Chosen[b]		Scale Value (Rj)	
	Female	Male	Female	Male
17. My own social status may improve	27.02	34.93	.00	.57
16. This person is committed to another	31.43	30.33	.30	.32
15. I am unhappy with my current partner	49.08	39.89	1.51	.83
14. This person shows dominant traits	41.91	39.89	1.02	.83
13. This person is generous with money	40.26	31.80	.91	.40
12. People find me physically attractive	45.22	49.45	1.25	1.34
11. I want to experiment with sex	45.04 <	74.26**	1.23	2.66
10. My friends approve of this person	42.65	49.82	1.07	1.36
9. This person has a good sex drive	45.40 <	68.75**	1.26	2.37
8. This person has good parenting skills	39.15 >	24.26*	.83	.00
7. This person has a good financial future	54.41 >	33.82**	1.88	.51
6. This person is ready and willing	40.44 <	75.55**	.92	2.73
5. I have known this person a long time	73.71 >	57.72**	3.25	1.78
4. It may become a serious relationship	72.98 >	56.25**	3.15	1.70
3. This person is cooperative and kind	63.79	59.56	2.52	1.88
2. This person is physically attractive	70.40 <	92.10**	2.97	3.61
1. This person would be sexually faithful	68.01 >	56.99*	2.81	1.74
	n=34	n=34		

[a] Items listed in original Grand Scale order from lowest to highest values

[b] All tests conducted using p=.001 to control for Type I errors.

*p < .05; **p < .01; sign indicates relationship direction

F (1,66)=17.14, p < .01; "I have known this person a long time," F (1,66)=12.19, p < .01; and "It may become a serious relationship," F (1,66)=10.27, p < .01. Males significantly more than females valued the items "I want to experiment with sex," F (1,66)=20.62, p < .01; "This person



Items and Significant Differences	(p <)
17. My own social status may improve	
16. This person is committed to another	
15. I am unhappy with my current partner	
14. This person shows dominant traits	
13. This person is generous with money	
12. People find me physically attractive	
11. I want to experiment with sex	.001
10. My friends approve of this person	
9. This person has a good sex drive	.001
8. This person has good parenting skills	.001
7. This person has a good financial future	.001
6. This person is ready and willing	.011
5. I have known this person a long time	.001
4. It may become a serious relationship	.002
3. This person is cooperative and kind	
2. This person is physically attractive	.001
1. This person would be sexually faithful	.020

Figure 3. Casual Sex Scales by Gender

Table 9
Effect of Gender on Casual Sex / 1-Night Stand Scale Values

Multivariate *F* Test	Value	df	*F*	*p value*
Gender (n=68)	0.605	17.00	4.50291	.001**

Univariate Tests

Criteria Items	SS	df	*F*	*p value*
17. My own social status may improve	.06	1	1.00	.320
16. This person is committed to another	.00	1	.01	.930
15. I am unhappy with my current partner	.17	1	2.25	.140
14. This person shows dominant traits	.01	1	.24	.630
13. This person is generous with money	.12	1	3.10	.080
12. People find me physically attractive	.00	1	.04	.850
11. I want to experiment with sex	1.24	1	21.62	.001**
10. My friends approve of this person	.06	1	1.55	.220
9. This person has a good sex drive	.71	1	14.67	.001**
8. This person has good parenting skills	1.66	1	41.28	.001**
7. This person has a good financial future	.73	1	17.14	.001**
6. This person is ready and willing	.42	1	6.90	.010*
5. I have known this person a long time	.59	1	12.19	.001**
4. It may become a serious relationship	.49	1	10.72	.001**
3. This person is cooperative and kind	.06	1	1.88	.170
2. This person is physically attractive	.51	1	20.56	.001**
1. This person would be sexually faithful	.30	1	5.66	.020*

All tests conducted using p=.001 to control for Type I errors
*$p < .05$
**$p < .01$

is physically attractive," F (1,66)=20.56, $p < .01$; "This person has a good sex drive," F (1,66) =14.64, $p < .01$; and "This person is ready and willing," F (1,66)=6.90, $p < .05$. These analyses are presented in Table 9. A moderately positive correlation was found between scales for women and men in the Casual Sex / 1- Night Stand context, $r = .50$, $p < .05$.

Individual Scales by Gender: Long-Term Dating / Marriage Context

The next two scales constructed in this series were for women and men in the Long-Term Dating / Marriage relationship context. Mean percentages of criteria items chosen and their associated scale values appear in Table 10. Scale values by gender in this relationship context are

Table 10
Long Term Dating / Marriage Scales by Gender

Mate Selection Criteria Items[a]	Long Term Dating / Marriage				
	Mean % Chosen[b]			Scale Values	
	Female		Male	Female	Male
17. My own social status may improve	18.75	<	28.68*	.00	.28
16. This person is committed to another	29.96		23.35	.55	.00
15. I am unhappy with my current partner	25.37		26.11	.32	.15
14. This person shows dominant traits	39.15	>	24.45*	1.00	.06
13. This person is generous with money	40.63		38.42	1.07	.80
12. People find me physically attractive	27.39	<	38.24*	.42	.79
11. I want to experiment with sex	27.21	<	42.65*	.41	1.02
10. My friends approve of this person	44.12		47.43	1.24	1.28
9. This person has a good sex drive	47.79	<	61.21**	1.42	2.01
8. This person has good parenting skills	68.01		62.32	2.41	2.07
7. This person has a good financial future	66.18	>	50.74**	2.32	1.45
6. This person is ready and willing	62.13	>	50.55*	2.12	1.44
5. I have known this person a long time	65.44	>	52.94*	2.28	1.57
4. It may become a serious relationship	70.40		69.67	2.52	2.46
3. This person is cooperative and kind	81.07	>	71.69*	3.04	2.56
2. This person is physically attractive	54.41	<	73.71**	1.74	2.67
1. This person would be sexually faithful	82.72		85.48	3.13	3.30
	n=34		n=34		

[a] Items listed in original Grand Scale order

[b] All tests conducted using p=.001 to control for Type I errors

*p < .05; **p < .01; sign indicates relationship direction

Items and Significant Differences	($p <$)
17. My own social status may improve	
16. This person is committed to another	
15. I am unhappy with my current partner	
14. This person shows dominant traits	.014
13. This person is generous with money	
12. People find me physically attractive	.009
11. I want to experiment with sex	.006
10. My friends approve of this person	
9. This person has a good sex drive	.002
8. This person has good parenting skills	
7. This person has a good financial future	.004
6. This person is ready and willing	.009
5. I have known this person a long time	.013
4. It may become a serious relationship	
3. This person is cooperative and kind	.014
2. This person is physically attractive	.001
1. This person would be sexually faithful	

Figure 4. Long Term Dating Scales by Gender

presented in a graph as Figure 4. These data were submitted to a general linear model (GLM) multivariate analysis of variance. The results revealed a significant multivariate effect of gender on the percentage of items chosen in the long term dating / marriage context, F (17,50)=2.98, $p <$ .05. This significant finding allowed for the further examination of univariate tests using an adjusted p value=. 001 to control for Type 1 errors. It was revealed that females significantly more than males valued the items "This person has a good financial future," F (1,66)=8.68, $p < .01$; "I have known this person a long time," F (1,66)=6.53, $p < .05$; "This person shows dominant traits," F (1,66)=6.44, $p < .05$; and "This person is cooperative and kind" F (1,66)= 6.36, $p < .05$. Males placed significantly greater value than did females on the items "This person is physically attractive," F (1,66)=19.94, $p < .01$; "This person has a good sex drive," F (1,66)=10.91, $p < .01$; "I want to experiment with sex," F (1,66)=8.16, $p < .05$; "People find me physically attractive," F (1,66)=7.33, $p < .05$; and finally "My own social status may improve," F (1,66)=6.47, $p < .05$. These analyses are presented in Table 11. Scales for women and men in the Long-Term Dating / Marriage context were highly positively correlated, $r = .85$, $p < .01$.

Individual Scales by Gender: Undefined Information Context

The final two scales constructed in this series were for women and men in the Undefined Information relationship context. Mean percentages of criteria items chosen by women and men and their corresponding scale values are presented in Table 12. Scale values by sex in the undefined information condition are presented in a graph in Figure 5. Percentage data were submitted to a general linear model multivariate analysis of variance. There was a significant overall multivariate effect of gender on percent of items chosen in the undefined information

Table 11
Effect of Gender on Long Term Dating / Marriage Scale Values

Multivariate *F* Test	Value	df	*F*	*p value*
Gender (n=68)	.50	17	2.98	.001**

Univariate Tests

Criteria Items	SS	df	*F*	*p value*
17. My own social status may improve	.16	1	6.47	.011*
16. This person is committed to another	.09	1	1.06	.312
15. I am unhappy with my current partner	.00	1	.02	.880
14. This person shows dominant traits	.26	1	6.44	.011*
13. This person is generous with money	.01	1	.38	.540
12. People find me physically attractive	.24	1	7.33	.010*
11. I want to experiment with sex	.43	1	8.16	.010*
10. My friends approve of this person	.01	1	.10	.750
9. This person has a good sex drive	.37	1	10.91	.001**
8. This person has good parenting skills	.15	1	3.63	.062
7. This person has a good financial future	.39	1	8.68	.001*
6. This person is ready and willing	.26	1	5.35	.010*
5. I have known this person a long time	.32	1	6.53	.010*
4. It may become a serious relationship	.00	1	.02	.901
3. This person is cooperative and kind	.13	1	6.36	.010*
2. This person is physically attractive	.53	1	19.94	.001**
1. This person would be sexually faithful	.00	1	.19	.662

All tests conducted using p=.001 to control for Type I errors
*p < .05
**p < .01

context, F (17,50)=4.67, p < .01. This significant finding allowed for the interpretation of subsequent univariate tests using an adjusted p value=. 001 to control for Type 1 errors. It was revealed that females placed significantly greater importance than did males on the items “This

Table 12
Undefined Information Scale Values

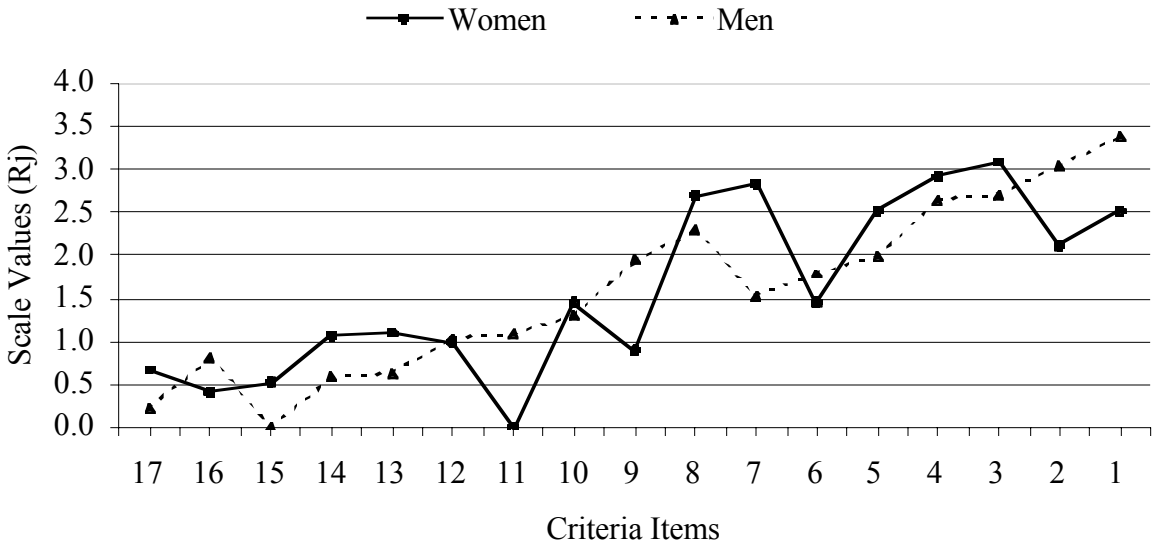
Mate Selection Criteria Items[a]	Undefined Relationship Information			
	Mean % Chosen[b]		Scale Values	
	Female	Male	Female	Male
17. My own social status may improve	31.07	26.11	.67	.23
16. This person is committed to another	25.74	36.76	.41	.80
15. I am unhappy with my current partner	28.31	21.69	.53	.00
14. This person shows dominant traits	38.97	32.54	1.06	.58
13. This person is generous with money	39.89	33.46	1.10	.63
12. People find me physically attractive	37.32	41.18	.98	1.04
11. I want to experiment with sex	17.46 <	41.91**	.00	1.08
10. My friends approve of this person	47.06	46.14	1.45	1.30
9. This person has a good sex drive	35.48 <	58.27**	.89	1.94
8. This person has good parenting skills	72.24	64.52	2.69	2.28
7. This person has a good financial future	75.00 >	50.55**	2.83	1.53
6. This person is ready and willing	47.06	55.15	1.45	1.78
5. I have known this person a long time	68.57 >	59.01*	2.51	1.98
4. It may become a serious relationship	76.65	71.32	2.91	2.64
3. This person is cooperative and kind	80.15 >	72.43*	3.08	2.70
2. This person is physically attractive	60.48 <	78.68**	2.11	3.03
1. This person would be sexually faithful	68.57 <	85.29*	2.51	3.38
	n=34	n=34		

[a] Items listed in original Grand Scale order from lowest to highest values

[b] All tests conducted using p=.001 to control for Type I errors

*p < .05; **p < .01; sign indicates relationship direction

person has a good financial future," F (1,66)=21.83, p < .01; "This person is cooperative and kind," F (1,66)=7.29, p < .05; and "I have known this person a long time," F (1,66)=5.02, p < .05. Males placed a significantly greater value than did females on the items "I want to



Items and Significant Differences	($p <$)
17. My own social status may improve	
16. This person is committed to another	
15. I am unhappy with my current partner	
14. This person shows dominant traits	
13. This person is generous with money	
12. People find me physically attractive	
11. I want to experiment with sex	.001
10. My friends approve of this person	
9. This person has a good sex drive	.001
8. This person has good parenting skills	
7. This person has a good financial future	.001
6. This person is ready and willing	
5. I have known this person a long time	.028
4. It may become a serious relationship	
3. This person is cooperative and kind	
2. This person is physically attractive	.001
1. This person would be sexually faithful	.008

Figure 5. Undefined Information Scales by Gender

experiment with sex," F (1,66)=26.05, $p < .01$; "This person is physically attractive," F (1,66)=19.70, $p < .01$; "This person has a good sex drive," F (1,66)=18.42, $p < .01$; and "This person would be sexually faithful," F (1,66)=7.52, $p < .05$. Results are summarized in Table 13.

Table 13
Effect of Gender on Undefined Information Scale Values

Multivariate *F* Test	Value	df	*F*	*p value*
Gender (n=68)	.60	17	4.67	.001**

Univariate Tests

Criteria Items	SS	df	*F*	*p value*
17. My own social status may improve	.06	1	1.33	.251
16. This person is committed to another	.20	1	2.43	.120
15. I am unhappy with my current partner	.08	1	1.51	.220
14. This person shows dominant traits	.08	1	1.62	.212
13. This person is generous with money	.07	1	2.29	.140
12. People find me physically attractive	.01	1	.37	.553
11. I want to experiment with sex	.87	1	26.05	.001**
10. My friends approve of this person	.01	1	.17	.680
9. This person has a good sex drive	.71	1	18.42	.001**
8. This person has good parenting skills	.07	1	1.49	.233
7. This person has a good financial future	1.13	1	21.83	.001**
6. This person is ready and willing	.17	1	2.94	.091
5. I have known this person a long time	.24	1	5.02	.030*
4. It may become a serious relationship	.08	1	2.10	.150
3. This person is cooperative and kind	.16	1	7.29	.011*
2. This person is physically attractive	.41	1	19.70	.001**
1. This person would be sexually faithful	.32	1	7.52	.011*

All tests conducted using p=.001 to control for Type I errors
*$p < .05$
**$p < .01$

Correlations between these final six individual gender by relationship context scales were assembled to examine the strengths of the relationships between them. The correlation matrix for these scales is presented in Table 14. It was revealed that most scales were significantly positively

Table 14
Correlation of Scale Percentage Values by Gender and Mating Context

Group	1	2	3	4	5	6
1. Women CS/1NS[a]	-	0.68**	.70**	.50*	0.72**	0.73**
2. Women LTD/M[b]		-	0.91**	0.22	0.85**	0.86**
3. Women UND[c]			-	0.06	0.75**	0.77**
4. Men CS/1NS				-	0.51*	0.52*
5. Men LTD/M					-	0.97**
6. Men UND						-

[a] Casual Sex / 1-Night Stand
[b] Long Term Dating / Marriage
[c] Undefined Relationship Information
** $p < .01$ (2-tailed)
* $p < .05$ level (2-tailed)

correlated (range: $r = .51$ to $r = .97$), with two notable exceptions. These exceptions were that scales for women in the both the Long-Term Dating / Marriage and the Undefined Information contexts were non-significantly related to scales for men in the Casual Sex / 1-Night Stand condition, $r = .28$, $p = .40$ and $r = .06$, $p = .83$, respectively. Furthermore, the strength of the

relationship between scale percentage values for women and men in the casual sex / 1-night stand context was only moderate, $r = .51$, $p < .05$. These results suggest between-gender differences in preferences for mates with respect to mating context. Lastly, the Undefined Information scale was more strongly related to the Long-Term Dating / Marriage Scale than to the Casual Sex / 1-Night Stand scale for both women, $r = .91$ versus $r = .70$, and for men, $r = .97$ versus $r = .52$.

Tests for significant differences between correlations were again performed using the method described earlier. It was revealed that scales for women and men in the Casual Sex / 1-Night relationship condition were significantly less related to one another than were their Long-Term Dating / Marriage scales, $z = -2.78$, $p < .001$. No gender differences were found for correlations between scales for women and men in the Long-Term Dating / Marriage context and scales in the Undefined Information context, $z = .92$, $p = .17$. The most striking differences were found when the correlation between scales for women in the Undefined Information context and men in the Casual Sex /1-Night stand context ($r = .06$) was tested against other correlations. This correlation was significantly lower than all other matrix values except one—the correlation between scales for women in the Long-Term Dating / Marriage and men in the Casual Sex / 1-Night Stand condition, $z = -1.2$, $p = 09$. These findings suggest that items valued by women in both the Long-Term Dating / Marriage and Undefined Information conditions are the most unrelated to those preferred by men in the Casual Sex / 1-Night Stand context.

Analysis of Scale Reliability

Scale reliability, a prerequisite to scale validity, was examined next. The reliability coefficient describes the degree to which scale items correlate with other scale items from parallel

forms of a given test. Cronbach's alpha coefficient was used here, since it provides a good estimate of the reliability of parallel form tests (Glass & Hopkins, 1996; pg. 577). Scale percentage values across individuals were analyzed first. Results revealed that each criteria item was related to other scaled items with very high consistency across participants, Cronbach's alpha = .97. Similar tests of internal consistency were then performed on aggregate scales by gender. Reliability coefficients were again found to be highly consistent across scales for women, alpha = .98, and for men, alpha = .96. These initial reliability measures indicate that the value hierarchy for criteria items is extremely consistent both within and between genders.

Analysis of Item Discrimination

The scaling procedure also allowed for the examination of line slopes as indicators of item discrimination. To this end, linear regression was used to determine beta for the scale values for each individual participant. Beta is the standardized slope of the regression line and can be used as an indicator of discrimination among criteria items (higher betas associated with better item discrimination). The mean overall betas were .564 for females versus .535 for males. In the casual sex / 1-night stand context, mean betas were .456 for females versus .352 for males. In the long term dating / marriage context, mean betas were identical for females and males (.643) and were .593 for females and .535 for males in the undefined context. Betas are presented in Table 15.

These data were then submitted to a general linear model analysis of variance. The results revealed no gender effect on individual betas. However, a significant context effect on betas was revealed, F (2,202)=24.73, $p < .01$. Post hoc analyses indicated that criteria items in the long term dating / marriage context were more discriminable than those in the casual sex / 1-night

Table 15
Scale Slopes for Each Individual by Sex and Mating Context

Context	Gender	*b*	Std. Error	Beta
Casual sex / 1-night stand				
	Female	1.673	.809	.456
	Male	1.276	.826	.352
	Total	1.474	.818	.404
Long term dating / marriage				
	Female	2.275	.675	.643
	Male	2.383	.721	.643
	Total	2.329	.698	.643
Ambiguous information				
	Female	2.069	.703	.593
	Male	2.170	.708	.610
	Total	2.120	.706	.602
	Female total	2.006	.729	.564
	Male total	1.943	.752	.535

stand condition, Mean Difference = -.24, $p < .01$. Criteria items in the undefined information context were found to be significantly more discriminable than items the casual sex / 1-night stand context, Mean Difference = -.20, $p < .01$. No difference was found between betas in the long term dating / marriage and undefined information contexts. This analysis is presented in Table 16**.**

Analysis of Response Decision Time

Final analyses of the paired-comparison data examined participants' decision time (in milliseconds) when selecting the more important item from the criteria pair. The criterion item with the largest Grand Scale value, "This person would be sexually faithful" (scale value=2.98)

Table 16
Effect of Sex and Mating Context on Slope Betas

Between Subjects Effects	SS	df	MS	*F*	*p value*	Sig.
Sex	.04	1	.04	.96	.329	
Mating Context	2.21	2	1.11	24.73	.001*	
S X MC	.15	2	.07	1.64	.196	

Post Hoc Comparisons[a]		Mean Diff.	Std. Err.	*p value*	Sig.
1. Casual sex / 1-NS 2. Long term dating / Mar.	vs.	-.24	.04	.001*	
1. Casual sex / 1-NS 3. Undefined Info.	vs.	-.20	.04	.001*	
2. Long term dating / Mar. 3. Undefined Info.	vs.	.04	.04	.257	

[a] Bonferroni correction used to control for Type I errors
* $p < .01$

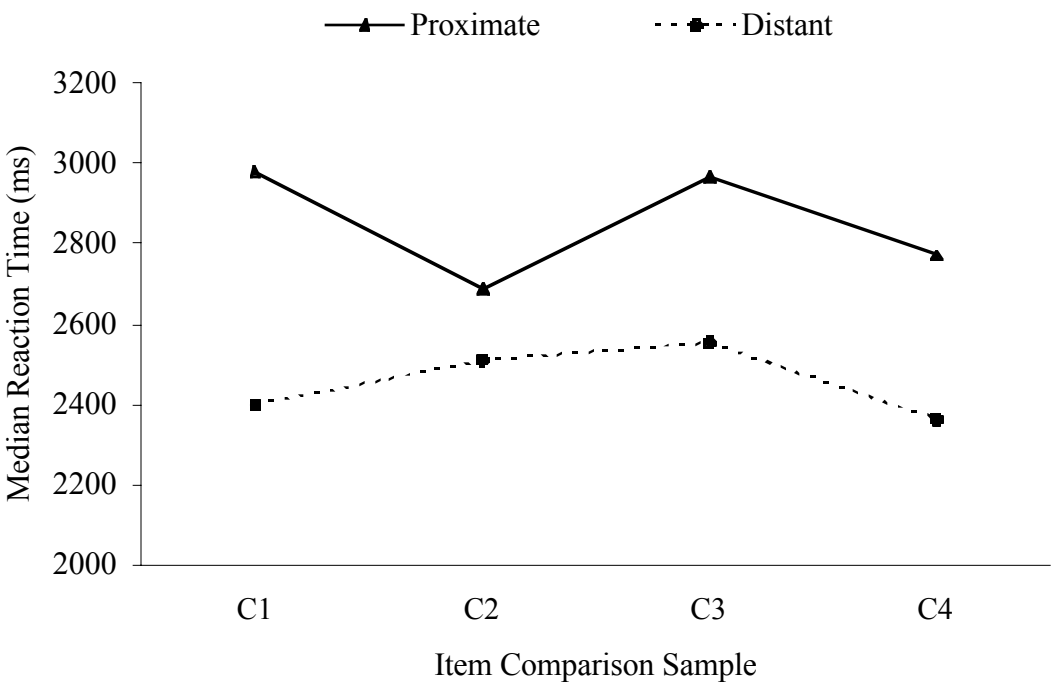
was chosen as an anchor point from which to compare proximate and distant items along the Grand Scale continuum. First, the median decision times were computed across participants for comparisons in which the highest Grand Scale value item (anchor item) was paired with each of four proximate items of successively lower Grand Scale value. The results yielded four decision times for pairings of the anchor with the proximate items "This person is physically attractive" (2979 ms), "This person is cooperative and kind" (2688 ms), "It may become a serious relationship" (2966 ms), and "I have known this person a long time" (2770 ms). The median

decision time for these proximate pairings was 3170 ms (SD=1457). Next, the median decision times were computed across participants for comparisons in which the same anchor item was paired with each of four distant items representing the lowest Grand Scale values along the continuum. These results yielded four decision times for pairings of the anchor with the distant items "This person shows dominant traits" (2397 ms), "I am unhappy with my current partner" (2509 ms), "This person is committed to another" (2554 ms), and "My own social status may improve" (2362 ms). Median DT was 2732 ms (SD=1033). This data is presented in Figure 6.

Finally, decision time data were submitted to a related samples T-test. Results revealed that median decision times across participants were significantly faster for distant item pairings than for proximate item pairings, t (203) = 5.00, $p < .001$. Analysis of these sample pairings indicated that decision times were significantly faster when the difference in scale values between the items was maximized. Decision times were slower when items in the pair shared similar scale values on the mate preference continuum. This analysis is presented in Table 17.

Discussion

In general, these data replicate many previous evolutionary findings regarding mate selection preferences. Mating context, as predicted by Sexual Strategies Theory, clearly influenced the importance that both genders placed on certain individual criteria items. Results supportive of past findings also illustrate that the method of paired comparisons may be appropriately applied to future research in this area. This method allows for each item to be directly compared to every other item yielding a reliable hierarchy of item values that describe relationships among criteria thought to be part of the same underlying psychological continuum.



Comparison Summary

	Anchor Item	Grand Scale Value
1. This person would be sexually faithful		2.98
	Proximate Items:	
C1	2. This person is physically Attractive	2.79
C2	3. This person is cooperative and kind	2.78
C3	4. It may become a serious relationship	2.67
C4	5. I have known this person a long time	2.61
	Distant Items:	
C1	14. This person shows dominant traits	.53
C2	15. I am unhappy with my current partner	.25
C3	16. This person is committed to another	.12
C4	17. My own social status may improve	.00

Figure 6. Decision RT as a Function of Grand Scale Value

Table 17
Effect of Item Grand Scale Value on Median Decision Times

Scale Value Relationship	Decision Time (ms) [a]	
	M	SD
Proximate	3169.90	1457.76
Distant	2732.68	1033.76

[a] t (203) = 5.00, $p < .001$

Initial indications are that the scales developed here using this methodology are reliable within and between genders. Furthermore, the finding that participant decision time in choosing between two alternative preference items varied with item location along a scale value continuum offers an empirical glimpse into how such items may be cognitively related. The strengths and limitations of relevant findings will be highlighted here.

The initial series of hypothesis made predictions about women's mate preferences in a short-term context. Hypothesis # 1 predicted that women would judge the item "This person has a good financial future" as more important than would men in a casual sex / 1-night stand situation. This difference would presumably reflect an evolved preference for women to value economic status in a casual sex partner to offset the potentially high cost of this kind of mating (e.g., disease, physical abuse, or pregnancy without paternal support). The data supported this hypothesis. Significantly more women than men selected financial status of a partner to be important in

deciding whether to engage in a casual sex relationship. Women's relatively high scale value ranking of this item (6th most valued criterion) indicates that whether a potential casual sex partner has a good financial future is more important than the majority of items judged here. Finally, collapsing across mating context, women selected a similar item, "This person is generous with money," significantly more often than did men.

Hypothesis # 2 predicted that women would place more value on the criteria item "This person has good parenting skills" than would men in a casual sex /1-night stand context. This difference presumably would be due to evolved psychological preferences in women for mates who would be willing and able to invest parental resources in offspring. Thus, if a woman engaged in casual sex, choosing a partner who appeared interested in and capable of caring for children would offset the risks associated with such a mating strategy and serve to benefit her children (and ultimately transmission of her genetic material). The data supported this hypothesis, with women selecting this item as important significantly more often than men. Interestingly, the low scale value rank of this item (15th most valued criterion) suggests that women, in fact, valued good parenting skills in a casual sex partner less than they valued most other criteria items in this context. This finding suggests that women do not engage in short-term mating primarily to secure long-term investing partners. Finally, men valued good parenting skills in a partner least of any item (scale value= .00) in the casual sex / 1-night stand context.

Sexual Strategies Theory also holds that women and men would not differ in their preference for a partner with good parenting skills in a long-term mating context, where presumably both genders would be heavily invested the livelihood of their children. Indeed, the

data from this study also supported this prediction. While women did select as important the item "This person has good parenting skills" more often than did men in the long-term dating / marriage context, this difference was not statistically meaningful. Women's scale value rank for this item was high (4th most valued criterion) suggesting that parenting skills in a partner was very important to mate decisions in the long-term dating / marriage context. Similarly, men valued good parenting skills in the long-term context over the majority of other qualities as indicated by the item's high scale value rank (5th most valued criterion).

Hypothesis # 3 predicted that women would judge the item "This person shows dominant traits" as more important than would men in both mating contexts. This difference presumably would be due to women's evolved preferences for mates who are capable of protecting them and their offspring from various environmental threats. This hypothesis was only partially supported by the data. Women valued dominant traits in deciding on a mate significantly more than did men in the long term dating / marriage context, although its scale value rank indicated that it was relatively less importance among preferences (11th most valued criterion). In the casual sex / 1-night stand context however, the data did not show a significant difference between the genders on the importance of dominant traits to casual mating decisions. Again, women ranked this item relatively low among preferences (12th most valued criterion), suggesting that dominant traits in a partner were of less importance to women deciding on a short-term mate.

One explanation for the absence of a significant gender effect on preference for dominant traits in the casual sex context may involve the inexact wording of the criterion item itself. Thus, the sentence "This person shows dominant traits" may not have sufficiently captured the meaning

of dominance as it applies to human mating psychology. Hinde (1978) has argued in favor of both dyadic and group dominance, which are essentially separate phenomena. Dyadic dominance refers to a power imbalance between two people, while group dominance refers to influence over social structures. It follows, as Ellis (1992) points out, that there is no evolutionary reason why women would prefer mates who attempt to dominate them in dyadic relationships. Instead, male dominance in social hierarchies over other males would likely be associated with the type of status and resource accumulation preferred by women (p. 274). It may be useful to change the wording of this item in future research to a variant resembling "This person is dominant in social groups" or "This person is dominant over men".

The next series of hypothesis made predictions about men's preferences in short and long-term mating contexts. Hypothesis # 4 stated that men would judge the item "This person is physical attractive" as more important than would women in both the casual sex / 1-night stand and long term dating / marriage contexts. This difference presumably would be due to evolved psychological preference in men for mates whose attributes signal health and fertility—e.g., youth, clear skin, symmetrical facial features, low waist-to-hip ratio. The data supported these predictions and replicated previous findings regarding the role of physical attractiveness in mate choice. Men selected physical attractiveness as important in deciding on a casual sex partner significantly more often than did women. In fact, scale values indicated that men ranked this item as most important criterion in deciding on a partner in a casual sex context. Despite this clear gender difference, women also judged physical attractiveness to be important in deciding on a mate in a casual sex context as indicated by a high scale value rank among items (3rd most valued

criterion). This latter result supported findings by Reagan (1998), who showed that women as well as men valued physical attractiveness in a short-term mate, although women were more willing to compromise partner attractiveness in this context than were men. Buss and Schmidt (1993) have suggested that women may desire physical attractiveness in a short-term mate because appearance signals gene quality and hence may be a cue to social and economic status.

The data indicated similar results for the item "This person is physically attractive" in the long-term dating / marriage context. Men selected physical attractiveness as important in deciding on a mate in this context significantly more often than did women. The scale value rank for physical attractiveness was again very high (2^{nd} most valued criterion), indicating the overall importance of this quality to men in deciding on a mate. Women, however, valued physical attractiveness markedly less in deciding on a mate for a long-term dating or marriage relationship (10^{th} most valued criterion), than they did in the casual sex / 1-night stand context. These results, in line with previous findings, suggest that the importance of physical attractiveness in a partner varies with mating context for women but not for men.

Hypothesis # 5 predicted that men would judge the item "This person would be sexually faithful" as more important than would women in the long term dating / marriage context. This difference would be presumably due to an evolved preference in men for fidelity in a long-term partner to ensure paternity confidence and prevent the investment of economic and parental resources to offspring fathered by another male. The data did not support this hypothesis. Men selected this criterion item as important in choosing a mate slightly more often than did women in this context, but the difference was not statistically meaningful. The data, in fact, showed that

sexual faithfulness was judged to be the most important criterion among the 17 alternatives for both women and men in deciding on a long-term mate. Explanations for this result are unclear. Future research might seek to discriminate between emotional and sexual infidelity. For example, Buss, et al. (1992) found that 85% of women self-reported that emotional infidelity in a mate—developing a meaningful friendship with a member of the opposite sex—would be more upsetting to them than sexual infidelity. Conversely, 60% of men reported that sexual infidelity would be more undesirable in a mate than emotional infidelity. The current study did not, of course, allow for a direct comparison between emotional and sexual infidelity.

Hypotheses # 6 stated that when the mating context is undefined, decision preferences for women will most resemble those associated with long-term dating or marriage, while decision preferences for men will most similar to those associated with casual sex or 1-night stand. Since the genders differ in minimum parental investment, women would presumably spend a greater proportion of effort following a long-term mating strategy, while men would spend the majority of their efforts pursing short-term mating strategies. Therefore, we were interesting in examining whether the genders appeared "defaulted" to a particular criteria preference pattern when the mating context was undefined. The hypothesis for women was largely supported by the data, although the hypothesis for men was not supported. While women's preference scales were significantly correlated in all three relationship contexts, the strongest relationship was found between women's scales in the Long-Term Dating / Marriage and Undefined Information contexts. Further testing revealed that the correlation between women's scales in the Long-Term Dating / Marriage and Undefined Information contexts was significantly higher than the one between

women's scales in the Undefined Information and Casual Sex / 1-Night Stand contexts as predicted. As with women, men's scales in all three relationship contexts were significantly and positively correlated. Also as with women, scale items in the Undefined Information context were more strongly related to items in the Long-Term Dating / marriage context than to those in the casual sex / 1-night stand context. Further testing reveled that, contrary to prediction, the correlation between men's scales in the Long-Term Dating / Marriage and Undefined Information contexts was also significantly higher than the one between scales in the Casual Sex / 1-Night Stand and Undefined Information contexts.

One explanation for the above findings is that the wording of the manipulation sentence in the undefined information context was misleading. Recall that participants were presented with the sentences "You are deciding whether to have a relationship with someone. Which of the two statements below is more important to your decision?" While the nature of the relationship is technically undefined here, it is reasonable to conclude that reading the word "relationship" itself implied a longer-term relationship context for many participants. If this is indeed what happened, then the results found in the undefined information context are not surprising. Examining sex differences in mate preferences when the mating context is undefined remains a worthwhile endeavor for future investigation.

Post-hoc examination of the remaining criteria items revealed several interesting sex differences. First, women judged the criteria item "I have known this person a long time" as significantly more important than did men when deciding on a mate in all three mating contexts. In fact, this item was found to have the highest scale value for women in the casual sex / 1-night stand

context, indicating that the length of time a women has known a potential partner is the most important criterion in her decision to engage in noncommittal sex. These data replicate previous findings on length of time before intercourse preferred by women and men (Clark & Hatfield, 1987; Buss & Schmitt, 1993). An evolutionary explanation for this result stems from the notion that for women sexual relationships with high numbers of sexual partners offer few reproductive advantages. Indeed, the potential costs and risks (e.g., physical abuse, pregnancy without support) are higher for women who have sex with men they have known for only a brief time and whose ability and willingness to invest resources are unknown. As such, women presumably have an evolved preference for extending the length of time before engaging in relationships.

Second, the data revealed an interesting interaction between gender and mating context for the criteria item "This person is ready and willing". Men valued these qualities in a potential mate significantly more than did women in deciding on a mate in the casual sex / 1-night stand context, ranking it quite high in scale value (2nd most valued criterion). Women placed significantly more importance on a partner's readiness and willingness in deciding on a mate in the long-term dating / marriage context than did men, although the item scale value rank was more moderate (7th most valued criterion). Evolutionary explanations for these findings would likely presume that the meaning of "ready and willing" varied according to mating context in this study. For example, it would be reproductively advantageous for men to identify women who were both ready and willing to engage in a casual sex relationship, while it would be reproductively advantageous for women to identify men who were both ready and willing to invest resources in a long-term, committed relationship. Lastly, the fact that we failed to find a significant gender difference for the

criterion item "This person is ready and willing" in the undefined information context, lends additional support to the idea that short and long-term mating contexts mediate mate preferences differently for the genders.

Attention was next focused on the criteria items "It may become a serious relationship" and "I am unhappy with my current partner" as possibly important to women in deciding on a casual sex partner. Buss and Schmitt (1993) have argued that women who engage in short-term mating may do so in part to identify males who are willing to invest or to switch from one mate to another. Considering the item "It may become a serious relationship," the data showed that women selected it as important in deciding on a mate in a casual sex situation significantly more often than did men. In fact, women's scale value ranking of this item was quite high (2^{nd} most valued item). Considering the second item "I am unhappy with my current partner," the data showed that while women valued it more than men in deciding on a casual sex partner, this difference was not statistically meaningful. Scale values confirm that this item is more important to women (7^{th} most valued criterion) than to men (11^{th} most valued criterion) in this context. Interestingly, there was a significant context effect for this item such that unhappiness with a current partner was selected as important in deciding on a mate by both genders significantly more often in the casual sex / 1-night stand context than in either of the other two mating contexts.

To summarize, these data support the notion that the possibility of casual sex becoming a serious relationship is significantly more important to women than to men in deciding whether to engage in this type of mating. However, the results do not clearly show that unhappiness with a current partner is significantly more important to women than to men in choosing a casual sex partner.

Finally, a somewhat surprising finding was revealed for the item "This person is committed to another". The evolutionary view holds that whether a partner is already committed to another would be important to women in deciding on a mate, since presumably it would be of less reproductive valuable for women to select partners whose economic and parenting resources were invested elsewhere. While the data showed that women selected this item as important in deciding on a mate slightly more than did men in the long-term dating / marriage context, the results failed to illuminate a significant effect of either gender or mating context. In fact, scale value ranks showed that whether a partner was committed to another was among the least important items overall in deciding on a mate for both women (16th most valued criterion) and men (15th most valued criterion). While these results are in line with the evolutionary view for men, they seem to contradict it for women. This finding may reflect Buss & Schmitt's (1993) assertion that, given the estimated rates of adultery (26-70%) and divorce (50%) among American married couples, lifelong mating with one person may not be the norm even in our largely monogamous culture (p. 204). Nevertheless, the finding that women place relatively little value on whether a potential mate is already committed to another in deciding on a mate—particularly in the long-term / marriage context—is unusual and may be related to a yet unknown mediator variable.

Scaling mate selection criteria was the second major purpose of this study. As such, this project marked the first known application of the method of paired comparisons to the domain of mate selection research. The resulting scales were found to have an extremely high internal consistency overall (Cronbach's Alpha= .97), suggesting that this method was a reliable way to assemble criteria relevant to this domain. Importantly, these scales may be conceptualized to

reflect relationships between mate selection criteria on an underlying psychological continuum. Future research is needed, of course, to establish the validity of these scales. One drawback to this scaling method is that the number of items included in the procedure is limited by the likelihood of participant fatigue when making a large number of comparison judgments. Researchers might consider using the method of successive intervals (Allen, 1953) when scaling larger numbers of items.

Another important facet of the method of paired comparisons is that the results provided unique scales for each individual participant. The standardized slope of each scale (beta) may then be calculated and interpreted as a general measure of discrimination among items. These slope data indicated that both women and men discriminated significantly more among items in the long-term dating / marriage context than in the casual sex / 1-night stand context. Also, while no gender effect was found, women discriminated slightly more among items in the casual sex / 1-night stand context than did men. These results may be interpreted from an evolutionary view such that both women and men should be more selective prior to investing resources (economic or parental) in a mate over the long term. Further, Buss and Schmitt (1993) have argued that men relax their preference standards for a casual sex partner, since this strategy would lead to a greater number of partners and thus be reproductively advantageous. Interestingly, men were found to discriminate the least among items in the casual sex / 1-night stand context.

Item discrimination during the decision-making task itself was also studied indirectly through the collection of decision reaction time (RT) data. Recall that decision RT was measured as the elapsed time in milliseconds until participants selected the more important of the two

alternative items under consideration. The data showed that participants took significantly more time to choose between two criteria items with proximate scale values versus those with distal values. This finding is provocative, since it provides evidence to suggest that self-reported judgments among mate selection criteria are reflected in underlying cognitive processes. The relationship between semantic relatedness and decision latency can be explained in terms of Anderson's (1993) most recent Adaptive Control of Thought (ACT-R) model of knowledge organization. ACT-R proposes two major components: declarative memory and a set of production rules that operate on this memory as chunks of "if-then" statements. Retrieval of information proceeds through a spreading activation process across semantically related nodes. Discrimination between concepts based on their degree of relatedness is compatible with the ACT-R model. Therefore, concepts with high semantic relatedness would require a greater number of production rules (and hence a longer period of time) to complete the discrimination task. Conversely, discrimination between nodes of lesser semantic relatedness would require few production rules and could be completed quickly.

There are limitations to this study. First, while one would expect these findings to generalize to other populations based on the results of prior research, for now these data apply only to an undergraduate sample. Second, since traditional college-aged students are less likely than older people to be married, these participants may not have had experiential knowledge of preferences for a short term versus long term partner. Finally, certain mate preference items identified as important in previous work—intelligent, ambitious, and religious—were included

among the practice items in the paired comparison task and were thus omitted from the main study. This oversight should be remedied in future mate selection scaling procedures.

STUDY 2: ATTENTION IN MATE SELECTION

Introduction

An attentional task using the visual dot-probe paradigm (MacLeod et al., 1986) was employed in this study. The visual dot-probe paradigm was developed to study attentional processes in anxious individuals, guided in part by Bower's (1981) theory that selective attention would be biased towards mood-congruent information. In this paradigm, two target words appear together on a computer screen (one above the other), and then the words disappear and one word is replaced by a dot probe in 50 percent of the trials. Participants' latency to detection of the probe is taken as measure of attention. Previous research (MacLeod et al., 1986) has demonstrated that the dot is detected faster when the participant is attending to the word that the dot replaces. This research applied the dot-probe methodology to the study of attention in the domain of mate selection. Its goal was to adopt the information processing approach (IPA) to investigate whether previously demonstrated gender differences in preferred mate qualities would be reflected in attentional processes as discussed earlier.

This study utilized words that reflected the domains of physical attractiveness, financial resources, and dominant behavior. These particular domains were chosen as variables because prior research had found gender differences among them as they related to preferred qualities in a mate. The stimulus words themselves were generated in Pilot A (see Appendix B). Stimulus words were then reliably judged by an independent sample in Pilot B to be members of one of the three mate selection domains (see Appendix C). Each of the three domains used in the attention task will be briefly reviewed here.

Physical Attractiveness

Physical appearance has been widely demonstrated to be important in choosing a mate, particularly for men (Buss, 1989b; Townsend, 1989; Townsend & Roberts, 1993), but also for women (Regan, 1998). In fact, data show that preference for attractive faces begins in infancy. Slater et al. (1998) showed infants 14-151 hours old pairs of faces that adults had previously rated as attractive or unattractive. The results indicated that male and female infants spent longer amounts of time looking at attractive rather than unattractive faces. Additionally, measures of symmetry in the human body and face correlate with physical attractiveness. Parrott, Burt, Penton-Voak, Lee, Rowland, and Edwards (1999) used an improved computer methodology to vary symmetry in a group of faces. The authors found that increased facial symmetry was significantly related to high attractiveness judgments for both male and female faces. The results suggested that symmetry might be a marker for phenotypic and genetic quality.

The evolutionary approach holds that men value physical attractiveness more than do women because of its cues to age and health that in turn signal potential reproductive value and success (Symons, 1979; Buss, 1993). Physical cues to attractiveness include clear skin and eyes, full lips, good muscle tone, neoteny, and facial symmetry. Additionally, it has been widely shown that men prefer low waist-to-hip ratios (WHR) in women Singh (1993a), although a recent study suggests that this preference may not be universal across cultures. Wetsman and Marlowe (1998) studied WHR preferences in the Hadza of Tanzania, a culture of approximately 1000 people who continue to forage for food. Compared to a sample of U.S. controls, the Hadza did not show a preference for low WHR.

Financial Resources

Historically, men have had greater access to and control of economic power than have women (Eagly & Wood, 1999). Evolutionary arguments hold that ancestral women increased the likelihood that their children would thrive and reproduce if they had continued access to economic and nutritional resources—e.g., food and shelter. Money is a primary means of economic status today. A large body of research has shown that women value economic status cues in selecting a mate more than do men (Buss, 1989b; 1993; Townsend, 1989; Kenrick et al, 1993; Townsend & Roberts, 1993). For example, Buss (1989b) found that women in 5 separate countries on 5 continents valued economic resources in long-term partners more than did men.

Ellis (1992) has reviewed research on what women find attractive in men. One conclusion is that highly sought after men are those with greater social status. High status cues include economic status and ornamentation (clothing, accessories), as well as dispositional traits such as ambitiousness, intelligence, and the willingness to work hard. Townsend and Levy (1990a) asked college students to look at photographs of models varied on physical attractiveness and social status and then state their willingness to engage in various kinds of relationships with depicted individuals. The results revealed that SES of the potential mating partner was significantly more important to women than to men, particularly in willingness to consider casual sex or marriage. While physical attractiveness was important to women, high status compensated for low physical attractiveness in a partner. Townsend and Roberts (1993) essentially replicated this study with a law student sample who themselves had high earning potential. Ornamentation was varied by

clothing some models in a fast-food chain uniform as part of the status manipulation (this study is discussed in the Introduction to this work).

Dominant Behavior

Dominance can be considered another variable related to social status. Ellis (1992) argues that natural selection should have designed preferences in ancestral women for high dominance men because they were more likely to a) acquire and retain resources, b) provide protection against competitors who could harm or intimidate her children, and c) help to increase her own standing in the social hierarchy (p. 274). Dominant physical traits in men are those associated with physical maturity, such as a square jaw, proportionately thin lips and eyes, and receding hairline (Keating, 1985). Height is another important variable related to power and status. A long history of research universally shows that women prefer men who are taller than them. Ellis (1992) cites a series of cross-cultural studies in concluding that taller men have more economic and political power that do shorter men in many parts of the world.

Sadalla, Kenrick, and Vershure (1987) note that dominance and status are universal features of human interaction related to sexual attractiveness. The authors conducted a series of studies to examine dominance and heterosexual attraction in an undergraduate sample. In one study, participants viewed silent videotapes that showed men and women engaging in either high or low dominance behavioral gestures. The results showed that high dominance increased sexual attractiveness ratings of men, but had no effect on women's sexual attractiveness. These findings were replicated with another sample using written descriptions to manipulate dominance levels. Finally, participants rated opposite sex targets according to the semantically related concepts of

dominance, domineering, and aggressiveness. Results showed that men were rated as more sexually and physically attractive in the high dominance condition, while the manipulation did not influence ratings of women's attractiveness. High domineering targets of both genders were assumed to be less likeable, less desirable as spouses, more promiscuous, and of higher social class than low domineering targets (p. 736).

Hypotheses

The evolutionary view leads to a number of predictions in the attentional task: 1. In both short and long term contexts, detection latency to visual dot-probes replacing words associated with physical attractiveness will be shorter for men, i.e., men should notice attractiveness cues faster than women, 2. In the short term mating context, detection latency to the dot-probe replacing words associated with financial resources will be shorter for women, i.e., women should notice resource cues faster than men, 3. In the short-term context, detection latency to dot-probes replacing words associated with dominant behavior will be shorter for women, and 4. There will be neither a context nor gender effect for detection latency for probes following neutral words.

Method

Participants

The participant sample in Study 2 consisted of 249 undergraduates (129 females, 126 males) who spoke English as their primary language. The mean age for females (M= 20.62, SD= 3.44) was not significantly different than the mean age for males (M= 21.05, SD= 2.99). Students were at least 18 years of age and received extra psychology credit for their participation. Those who participated in one of the other studies in this series were excluded from this investigation.

Procedure

The attention task using the dot-probe paradigm was constructed using target words generated in Pilot A (see Table B2), as well as neutral and filler words drawn from previous research. Neutral words consisted of items from the category of 'kitchen objects' that were judged as members of this neutral category by expert raters (fellow graduate students). Filler words consisted of items from the categories of 'colors' and 'animals'. Filler items were not subjectively judged by outside raters since these items were not included in this analysis. Mating context was manipulated by means of either a casual sex / 1 night stand story (Appendix G) or a long term dating / marriage story (Appendix H) presented prior to the beginning of the experimental trials. Mating context stories were written by this author and developed with accompanying questions to remind the participant of the context throughout the experiment. Again, expert raters (fellow graduate students) read each story and judged whether it best represented a story about casual sex / 1 night stand or long-term dating / marriage.

The presentation of word pairs followed a modification of the procedure used by MacLeod, Mathews, and Tata (1986). Target word pairs appeared throughout 5 blocks of trials interspersed by questions referring to the context manipulation story. The purpose of this procedure was to prompt the participant to actively remember the context manipulation while he or she completes the trials. A trial consisted of two words appearing simultaneously on the computer screen for a brief time and then being replaced by a visual probe 50% of the time. Each target word was paired with a neutral word matched on word length. The 10 target words in each mate preference category were equally divided among the 5 blocks of trials such that each word

appeared randomly 4 times across blocks. In each block, ten pairings contained a target and neutral word pair, and the remaining 30 word pairs contained neutral filler items. Target word position (upper screen or lower screen), and dot probe position (upper screen, lower screen) was also randomized throughout each block of trials. The dot probe appeared randomly following target words in 50% trials. Thus, over the course of the experiment, 20 target words were followed by probes and appeared equally in each of the four screen conditions: 1. Target up / probe up, 2. Target up / probe down, 3. Target down, probe up, and 4. Target down / probe down. An equal number of probes followed neutral words in equal proportions.

Participants were tested in same sex groups in the laboratory. Each participant sat at a computer terminal and was asked to give informed consent before completing the task (Appendix F). The experimenter then read the experiment instructions aloud, answered any questions, and waited in the adjoining office while the study was completed. Participants read an introductory message on the computer screen stating that the purpose of the experiment was to study memory for a relationship story while completing a series of visual tasks. Participants were then instructed to press a keyboard key in each trial whenever the dot probe followed the appearance of either word on the screen. After reading the context manipulation story, participants completed a block of practice trials and then began the 5 experimental trial blocks. All word pairs appeared centered on the screen one above the other and separated by 3 mm. Word pairs were presented briefly for 500 ms followed by the dot probe 25 ms later, which remained visible until a response was made. On those trials when the dot probe did not appear, the next trial began 1000 ms after the previous trial ended. Participants were debriefed and given an extra-credit voucher prior to dismissal.

Results

Most experimental cells in this study contained 21 persons, although 3 male cells contained 20 participants. The number of participants per cell is summarized in Table 18. These

Table 18
Number of Participants per Cell in Study 2

Context	Word Category	Gender		
		Female	Male	Total
CS/1NS	Physical Attraction	21	20	41
	Financial Resources	21	21	42
	Dominant Behavior	21	21	42
	Total	63	62	125
LTD/M	Physical Attraction	21	21	42
	Financial Resources	21	20	41
	Dominant Behavior	21	20	41
	Total	63	61	124
	Overall	126	123	249

CS/1NS=Casual sex / 1-night stand
LTD/M=Long term dating / marriage

data were analyzed using a 2 x 3 (2 x 2) general linear model ANOVA with alpha levels adjusted to p= .001 to control for Type I errors. Between-subjects independent variables included gender and target word type (physical attractiveness, financial resources, dominant behavior). Within-subjects variables included target position (upper screen, lower screen), and dot probe position (upper screen, lower screen). The primary dependent measure was participant reaction time (ms)

to seeing the dot probe on the computer screen. Stimuli ratings of both social acceptableness and emotionality were also used in these analyses as statistical controls. These controls were added based on the results of Pilot B (see Appendix C) that revealed significant effects of both gender and mating context on target word ratings. For example, women judged target words to be more emotional than did men.

Initially, median reaction times (ms) to the dot probe were calculated for target words versus neutral words appearing in the 4 screen position combinations. Median reaction times for both target and neutral words were highly similar, ranging from 413.6 ms to 449.4 ms. Faster median reaction times were revealed when the dot probe appeared in the top portion of the screen (417.0 ms), while slower times resulted from trials in which the dot probe appeared in the lower portion of the screen (437.3 ms). Median reaction times for target versus neutral words according to the 4 screen combinations are presented in Table 19. Further analysis of these data revealed that word type (target vs. neutral) did not significantly influence participants' reaction time to the dot probe. A graph of this target-neutral comparison presented in Figure 7 demonstrates the similarity of participant reaction times between both conditions. Finally, further analysis revealed a significant effect of probe position, such that regardless of all other variables, reaction times were significantly faster across participants when the probe appeared following words in the upper portion of the screen, F (1,235)= 3.24, $p < .05$.

The next set of analyses examined the influence of gender, mating context (casual sex / 1-night stand; long term dating / marriage), and target word type (physical attractiveness; financial resources; dominant behavior) on median reaction times to the dot probe. Median reaction times

Table 19

Median RT (ms) to the Dot Probe: Target vs. Neutral Words

Within-Subject Variables							
Probe Position		Word Position					
		UP		DOWN		Total	
		M	SD	M	SD	M	SD
UP	Targets	413.1	4.6	420.3	5.1	416.7	4.8
	Neutrals	418.1	5.0	416.5	4.9	417.3	5.0
	Total	415.6	4.8	418.4	5.0	417.0	4.9
DOWN							
	Targets	441.5	5.6	428.2	4.7	434.9	5.1
	Neutrals	449.4	5.6	430.0	5.3	439.7	5.5
	Total	445.5	5.6	429.1	5.0	437.3	5.3

Target vs. Neutral means differences not statistically significant

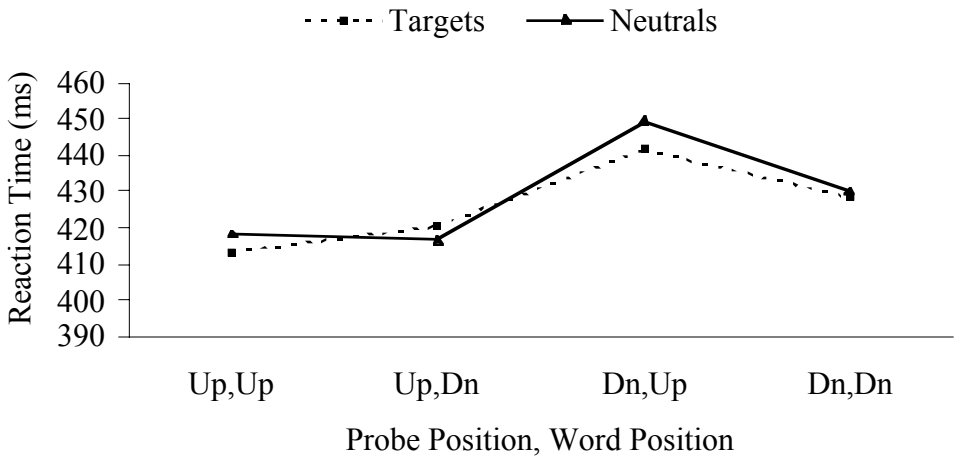


Figure 7. Median Decision RT (ms) for Screen Variables

and standard deviations were computed. The resulting reaction times for females and males were similar in both the casual sex / 1-night stand and long term dating / marriage contexts (430.3 ms and 420.8 ms, respectively). In the former context, reaction times ranged from 400.4 ms to 452.9 ms, while reaction times in the latter context ranged from 405.0 ms to 444.3 ms. Median reaction times to probes following physical attraction words were faster in the long term dating / marriage context (405.1 ms) than in the casual sex / 1-night stand context (454.0 ms). Reaction times to probes following financial words were slightly faster in the casual sex / 1-night stand context (406.6 ms) than in the long term dating / marriage context (425.7 ms). Finally, median reaction times to probes following dominant behavior words were virtually identical in both the casual sex context (431.3 ms) and the long term dating / marriage context (432.0 ms). Due to the large number of cells in this analysis, medians and standard deviations are presented separately by mating context: casual sex / 1-night stand data are presented in Table 20 and long-term dating / marriage data are presented in Table 21.

These data were submitted to a general linear model ANOVA to test the influence of gender, mating context, and target word type on median reaction times to the dot probe. Word rating data for social acceptableness and emotionality were included as covariates in this analysis. The results revealed no significant main effects of gender, mating context, or target word type on the dependent variable under investigation.

Discussion

The data collected in this experiment failed to support the hypotheses put forth here regarding attention to mate preference cue words. Hypothesis #1 stated that men's detection

Table 20
Median RT (ms) to the Dot Probe in the Casual Sex Context

Screen Positions	Target Type							
	Physical							
Gender	Attr.		Financial Res.		Dominant Bx.		Total	
	M	SD	M	SD	M	SD	M	SD
Probe UP, Word UP								
Female	437.5	102.2	404.3	43.8	444.2	67.6	428.7	76.0
Male	428.3	78.0	380.0	52.1	394.4	68.4	400.4	68.7
Total	432.9	90.1	392.2	47.9	419.3	68.0	414.6	72.4
Probe UP, Word DN								
Female	436.4	96.5	412.8	44.2	448.4	80.2	432.6	77.0
Male	464.4	140.2	383.4	43.5	403.4	61.4	416.3	95.7
Total	450.4	118.4	398.1	43.9	425.9	70.8	424.4	86.4
Probe DN, Word UP								
Female	459.7	109.0	430.7	49.8	468.3	87.7	452.9	85.9
Male	492.2	149.7	412.0	77.2	424.4	79.6	442.0	110.7
Total	475.9	129.4	421.3	63.5	446.4	83.7	447.5	98.3
Probe DN, Word DN								
Female	448.3	90.3	429.4	52.1	452.9	76.2	443.5	74.0
Male	464.9	122.5	400.6	53.0	414.0	54.3	425.9	85.6
Total	456.6	106.4	415.0	52.6	433.4	65.3	434.7	79.8
Overall	454.0	111.0	406.6	52.0	431.3	71.9	430.3	84.2

Physical Attr. = Physical Attraction Words
Financial Res. = Financial Resource Words
Dominant Bx. = Dominant Behavior Words

Table 21
Median RT (ms) to the Dot Probe in the Long Term Dating / Marriage Context

Screen Positions	Target Type							
Gender	Physical Attr.		Financial Res.		Dominant Bx.		Total	
	M	SD	M	SD	M	SD	M	SD
Probe UP, Word UP								
Female	391.9	61.5	433.5	65.9	427.4	46.6	417.6	60.5
Male	396.8	75.2	402.2	107.9	416.6	69.4	405.0	84.7
Total	394.3	68.3	417.8	86.9	422.0	58.0	411.3	72.6
Probe UP, Word DN								
Female	398.4	70.4	431.9	70.0	428.6	60.3	419.6	67.7
Male	399.9	66.8	418.8	111.4	417.0	60.6	411.7	81.6
Total	399.1	68.6	425.4	90.7	422.8	60.5	415.7	74.6
Probe DN, Word UP								
Female	427.1	72.7	453.3	63.9	452.4	73.0	444.3	69.9
Male	422.9	69.9	417.5	115.3	438.0	75.7	426.1	87.9
Total	425.0	71.3	435.4	89.6	445.2	74.3	435.2	78.9
Probe DN, Word DN								
Female	406.9	52.3	432.3	52.0	439.7	58.4	426.3	55.3
Male	397.1	50.4	415.9	109.3	436.6	68.2	416.2	79.8
Total	402.0	51.4	424.1	80.6	438.1	63.3	421.2	67.6
Overall	405.1	64.9	425.7	86.9	432.0	64.0	420.8	73.4

Physical Attr. = Physical Attraction Words
Financial Res. = Financial Resource Words
Dominant Bx. = Dominant Behavior Words

latencies to probes following physical attractiveness cue words would be shorter than those for women in both mating contexts. This hypothesis was not supported; no effect of either gender or mating context was found for reaction time to probes following physical attractiveness cue words. Hypotheses # 2 and # 3 stated that women's detection latencies to probes following both financial resource words and dominant behavior words would be shorter than those for men in the casual sex / 1-night stand context. These hypotheses were also not supported; no effect of gender or mating context was found for reaction times to probes following either financial resource or dominant behavior cue words. Finally, Hypothesis # 4 stated that detection latencies for probes following neutral cue words would not differ between genders or mating contexts. Although this hypothesis was supported by the data, detection latencies between neutral and target words were virtually equal across all conditions. This last finding indicates that participants' attention to target cue words in all conditions was not meaningfully different than their attention to neutral control words in those conditions.

One might speculate whether these results are due in part to participant noncompliance with instructions for the dot-probe task (e.g., failure to read the top word silently). The data, however, suggested that participants followed the directions correctly because the position of the probe itself—upper versus lower screen—had a significant effect on median detection latencies. This finding suggests that, regardless of whether participants saw a target or neutral cue word, they detected to the probe significantly faster when it followed words in the upper portion of the screen. This result is an expected one when participants read the top word silently at the start of

each trial as directed by the instructions. Therefore, based on this data we must conclude that participants complied with task directions.

Another explanation for these findings might be that any effects of gender and mating context on attention to cue words were small enough to have eluded detection using the present experimental equipment. During the task, for example, participants were required to press the spacebar on a standard computer keyboard when they saw the dot-probe in order for detection to be recorded. This keyboard response procedure might less sensitive to units of time in milliseconds than other data input methods, such as a hand-held response button. Given that detection latencies in this study varied within 100 milliseconds, a more sensitive input device may have helped to detect smaller effects if they were present. Such an option should be considered in future research.

A final explanation for why the data failed to support these hypotheses might be that the words used in this study imperfectly represented actual mate preference cues. For example, perhaps attractive persons capture attention, while words concerning attractive persons do not. Thus, although women did not turn their attention towards words associated with financial resources, this result says little about women's attention in response to actual visual or auditory stimuli signaling such resources. A parallel argument may be made for men in response to physical attractiveness stimuli.

STUDY 3: KNOWLEDGE ORGANIZATION IN MATE SELECTION

Introduction

Study 3 employed a cognitive experimental methodology known as Pathfinder (Schvaneveldt, 1990) to investigate how mate selection preferences may be systematically organized. Pathfinder is a computer program based on a network model of knowledge organization whereby concepts are represented as nodes and links between nodes represent weighted associations. Ratings of similarity between pairs of concepts are transformed into a graphical representation of a network showing association of links between nodes. Similarity scores of networks may be defined as the mean proportion of word links that two participants share. Much like correlation coefficients, similarity scores range from 0 (0% of links in common) to 1 (100% of links in common). Thus, the Pathfinder methodology makes it possible to study the associations (meanings) of concepts related to human mate preferences.

Geer (1996) has successfully employed this methodology to investigate gender differences in the organization of sexual information. Participants judged the relatedness of words from the following category clusters: sexual intercourse, interpersonal relationship, female genitalia, male genitalia, positive evaluation, and negative evaluation. Subsets of words in these domains were organized into high and low acceptability clusters and also included in the analysis. Analysis of network similarities revealed that men and women organize sexual information more similarly to members of their own sex than to members of the opposite sex.

Geer's study also examined links within and between clusters. Within-cluster links are a measure of the centrality or importance of a particular cluster within a domain. Between-cluster

links measure the degree of relatedness between two separate clusters within a given domain. Examination of links within clusters revealed that women had more links than did men within the interpersonal cluster. Males had more links within the female genitalia and low acceptability clusters than did women. Finally, between-cluster analyses revealed that women had more links between the positive evaluation and interpersonal relationships clusters. Men were found to have more links between clusters for positive evaluation and sexual intercourse, positive evaluation and female genitalia, and female genitalia and male genitalia. This study demonstrated empirically that there are gender differences in the meaning of words related to sexuality. Given these findings, the current study reasonably asks whether the semantic lexicon differs for men and women in the domain of mate selection. As in Studies 1 and 2, predictions in this study related to mate selection were made to reflect the evolutionary view.

Hypotheses

The hypotheses were as follows: 1. Women's network similarity scores will be more consistent with each other than with those of men; 2. Men's network similarity scores will be more consistent with each other than with those of women; 3. Women in the casual sex / 1-night stand context will have more links within the financial resource word cluster than will men; 4. Women in the casual sex / 1-night stand context will have more links within the dominant behavior word cluster than will men; 5. Men in both the casual sex / 1-night stand and long-term dating / marriage contexts will have more links within the physical attractiveness word cluster than will women, 6. Men in the casual sex / 1-night stand context will have more links between casual sex

words and positive evaluation words, and 7. Women in the long-term dating / marriage context will have more links between long-term dating words and positive evaluation words.

Method

Participants

The participant sample in Study 3 consisted of 140 undergraduates (70 females, 70 males). The mean age for females (M= 21.09, SD= 1.7) was not significantly different than the mean age for males (M= 20.81, SD= 1.7). Undergraduates in this study were at least 18 years of age and received extra psychology credit for their participation. Those who participated in one of the other studies in this series were excluded from this investigation.

Procedure

Words used in the Pathfinder task were selected using the criteria of 100% domain sorting accuracy from the early data in Pilot A (see Appendix B). Three such words were selected from each of the five domains under investigation—physical attractiveness, financial resources, dominant behavior, casual sex / 1-night stand, and long term dating / marriage. One additional domain comprised of positive evaluation words was also included: *pleasurable*, *enjoyable*, and *desirable*. These words were included in an attempt to replicate findings by Geer (1996) that showed men placed more links between sexual and positive evaluation words than did women. In the language of Pathfinder, each word is referred to as a "node" and domains of similar nodes are called "clusters". Thus, a total of 18 nodes across 6 clusters were used in Study 3. Individual nodes by cluster type are summarized in Table 22. The Pathfinder rating task is essentially a series of judgments about the degree of relatedness between two words. Each of the 18 stimulus

Table 22
Summary of Nodes (words) by Cluster Type

Cluster Type	Nodes (words)
1. Physical Attraction	eyes, hair, smile
2. Financial Resources	jobs, money, bank
3. Dominant Behavior	abuse, control, loud
4. Casual Sex / 1-Night Stand	immoral, disease, slut
5. Long Term Dating / Marriage	love, family, trust
6. Positive Evaluation	pleasurable, enjoyable, desirable

words was paired once with every other word during the experimental trials. Participants were presented with all 153 possible word pairs in succession and asked to rate the similarity of each pair according to a Likert-type rating scale ranging from 0-9 in which 0= "very unrelated" and 9= "very related". Study 3 employed the exact same stories to manipulate mating context as were previously used in Study 2 (Appendices G & H). Since it was not possible to stop or divide the Pathfinder task into blocks interspersed with story questions as in the previous study, the mating context manipulation was presented only once at the beginning of the experiment. As in Study 2, participants were informed that the purpose of the Pathfinder task was to examine memory for a relationship story, and that they would be asked a number of questions about the story at the end of the judgment task. The rationale behind this slight deception (there were no questions presented at the conclusion of this task) was to focus participants' attention on the mating context manipulation stories.

Participants were tested in same sex groups in the laboratory. Participants were seated at a computer terminal and were asked to give informed consent (Appendix I) before completing the task. The experimenter read the experiment instructions aloud, answered any questions raised, and then waited in the adjoining office for the duration of the study. Participants read an introductory message on the computer screen stating that the purpose of the experiment was to study memory for a relationship story while completing a word judgment task. Directions also included the following statement: "Judging words may help or hinder memory, so you will read a story about a relationship before the experiment starts, and then you will asked questions about that story at the end of the experiment ". Participants were then instructed to rate the similarity of each pair of words using the Likert-type scale that would remain on the screen during each trial. Participants read the mating context manipulation story and completed the Pathfinder judgment task. Students were then informed that they would not be required to answer questions about the relationship story as they had been told previously. Participants were debriefed and then given an extra-credit voucher prior to dismissal.

Prior to analysis, the data were initially submitted to a Pathfinder routine that created a graphical network layout for each individual. Following Geer's (1996) protocol, the networks were generated using computation parameters of r = infinity and q = n – 1. The value r = infinity conservatively assumes that the rating data is ordinal, and the value q = 17 instructs Pathfinder to generate the least dense network. Least density in a network is desirable because it reflects the program's ability to condense a complex set of similarities data into a meaningful graphical layout. Additionally, it is important to note that the rating data was truncated to include only values

ranging from 3 to 9 prior to the generation of networks. Limiting the data range in this way is preferable because it reduces the complexity and increases the interpretability of networks (personal communication between Drs. Geer and Schvaneveldt).

Results

The data analysis proceeded in steps. First, average networks for women and men were calculated, followed by average networks by gender in the two mating contexts. Graphs of these networks were then assembled as visual examples of the relationships among network words. Network similarity scores were then analyzed to measure the commonality of links across nodes in the network. A series of 2 x 2 designs were analyzed using general linear model MANOVA procedures with alpha levels adjusted to p= .001 to control for Type I errors. Between-subjects independent variables included gender and mating context (short versus long term). Dependent variables were the number of links within clusters, between clusters, and among words. Word ratings of social acceptableness and emotionality were used as statistical controls, since results of Pilot B (see Appendix C) revealed significant effects of both gender and mating context on target word ratings. Initially, the overall number of links per network were compared by gender and context. Second, within-cluster links were analyzed to measure the centrality of each cluster of words in the mate selection domain. Third, between-cluster links and link weights were examined to assess the strength of relationship among word clusters. Finally, the number of links on individual words within networks was analyzed. The analysis of links on individual words was done first using gender as the independent variable, and then a separate analysis was conducted using mating context as the independent variable.

Average Networks by Gender

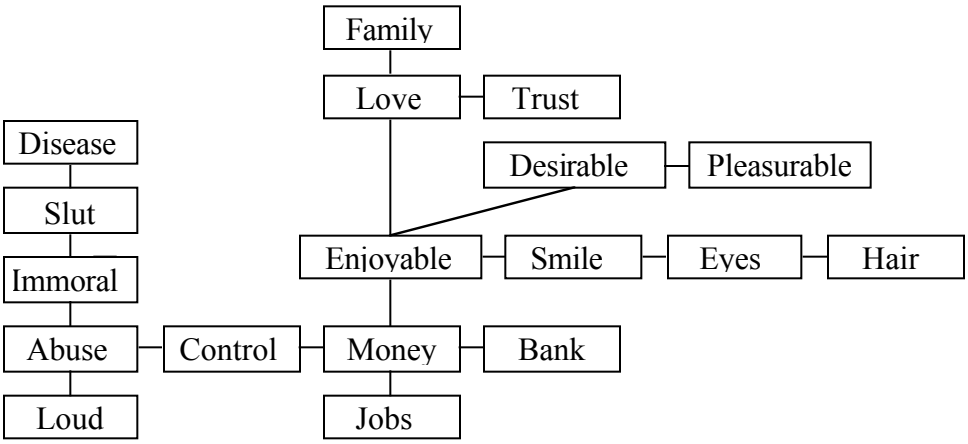
To begin the analysis, individual networks were averaged by gender in both the casual sex / 1-night stand and long-term dating / marriage contexts. Graphical representations of these are networks are presented in Figures 8, 9, and 10. It is important to note that these graphs do not lend themselves to objective interpretation because: a) links are non-directional, b) link length does not imply strength of association between nodes, and c) the position of each word was chosen by the author to loosely reflect clusters. One reason for presenting these graphs is simply to provide sensible illustrations of links between words in networks. For example, in all figures the words "control," "bank," and "jobs" are linked to the word "money," but their relative positions in each figure were chosen arbitrarily by the author.

Similarity of Networks

Network similarity scores were computed by the Pathfinder program and then submitted to statistical analysis. The similarity score value between two networks is a ratio that reflects the number of links in common over the number of unique links. First, the similarity score between the average networks for women and men was found to be .27 suggesting that more than 25% of the links were common to both networks. Next, similarity scores were obtained for each participant's network compared to all other networks and then examined by gender and mating context. These results are presented in Table 23.

Considering gender alone, the mean network similarity score between women was .287, between men it was .255, and between women and men it was .239. These similarity scores were submitted to a series of Kruskal-Wallis nonparametric tests that first revealed a significant

Average Network for Women



Average Network for Males

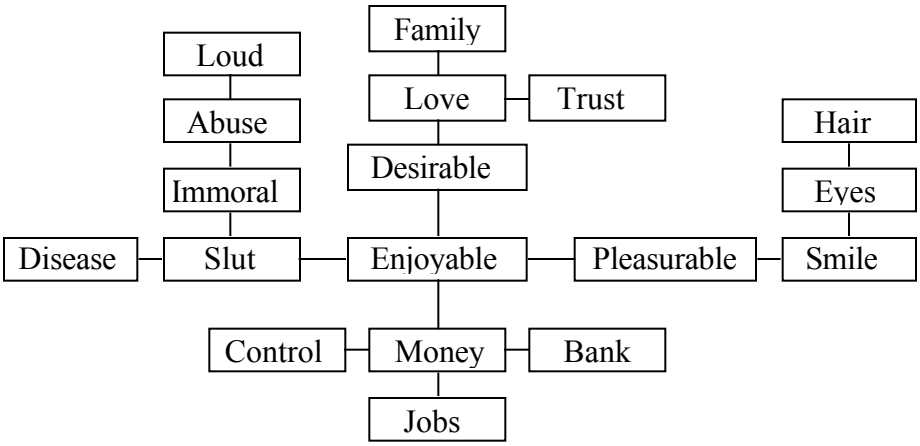
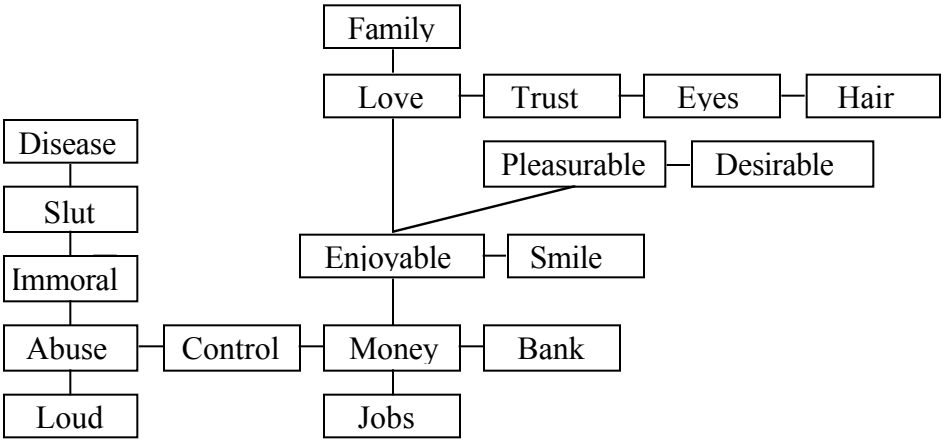


Figure 8. Average Networks by Gender

Average Network for Women



Average Network for Men

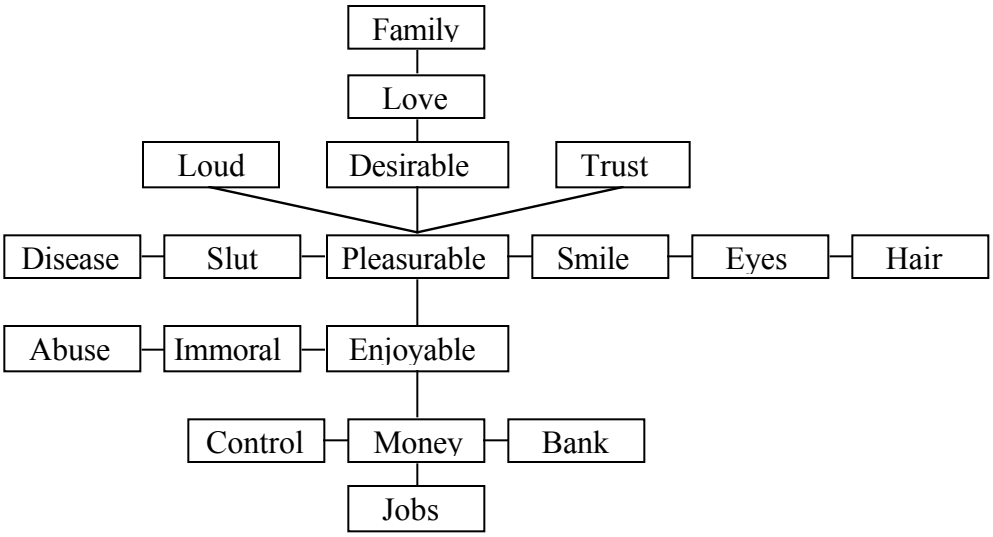
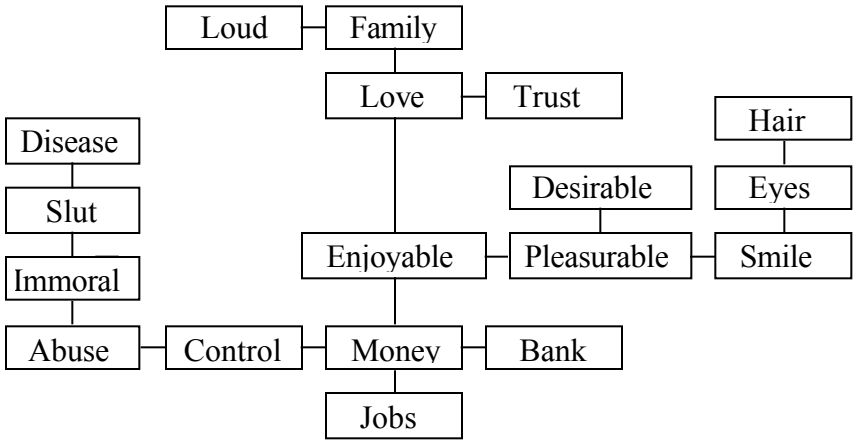


Figure 9. Average Networks in the Casual Sex / 1-Night Stand Context

Average Network for Women



Average Network for Men

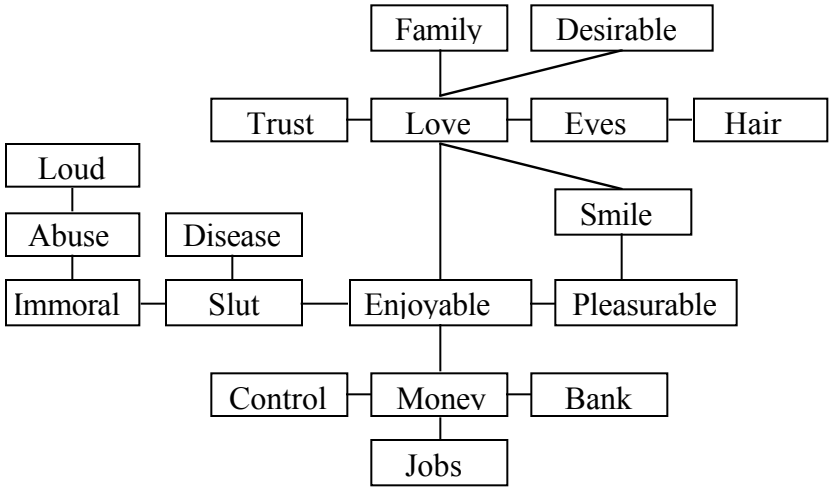


Figure 10. Average Networks in the Long Term Dating / Marriage Context

Table 23
Gender Differences in Network Similarity Scores

	Mean Similarity Score				
	Women - Women	Men - Men	Women - Men	X^2	p <
OVERALL	.287	.255	.239	141.52	.001
CS / 1-NS	.272	.245	.226	81.51	.001
LTD / M	.302	.269	.272	63.81	.001

CS / 1-NS=Casual Sex / 1-night Stand
LTD / M=Long Term Dating / Marriage

difference in mean ranks between scores in the three groups, X^2 (2) = 141.52, p < .001. Further analyses revealed that network similarity scores for women were significantly more similar to each other than they were to men, X^2 (1) = 60.57, p < .001, and also that networks for men were significantly more like each other than they were to women, X^2 (1) = 15.70, p < .01. Similarity scores were significantly higher overall for women than for men, X^2 (1) = 136.05, p < .001.

The same analyses were then repeated within each mating context. The findings above were essentially duplicated in the casual sex / 1-night stand context. The mean similarity score between women was .272, between men the score was .245, and between the genders it was .226. A nonparametric procedure was again used to reveal a significant effect of group on mean similarity ranks, X^2 (2) = 81.50, p < .001. Additional tests revealed that network similarity scores

for women were significantly more like each other than they were to men, X^2 (1) = 22.32, p < .001. Finally, similarity scores for men in the casual sex / 1-night stand context were significantly more like each other than they were to women, X^2 (1) = 19.25, p < .001. Analyses of data from the long-term dating / marriage context revealed a slightly different pattern. As before, the mean similarity score ranks were significantly different for the groups of women compared to women, men compared to men, and women compared to men, X^2 (2) = 63.81, p < .001. Also as before, women's networks were significantly more similar to each other than they were to men's networks, X^2 (1) = 39, p < .001. However, in the long-term dating / marriage context, similarity scores for men were not more like each other than they were to women, X^2 (1) = 1.42, ns.

Overall Number of Network Links

The number of links across all network words was examined next. The Pathfinder program calculated the number of links across all words in each individual network, and then this total number of links was averaged across participants. No significant differences were found between the total mean number of links for females and males in either the casual sex / 1-night stand context (*M*= 34.46 versus 30.31) or in the long term dating / marriage context (*M*=33.94 versus 35.26). The total mean number of links across words was not significantly different between the casual sex / 1-night stand context (*M*= 32.39, *SD*= 9.53) and the long term dating / marriage context (*M*= 34.60, *SD*= 13.09). Means and SD are presented in Table 24.

Cluster Link Analyses

Individual networks were examined next to study more specifically where gender and mating context differences occurred. Three separate measures were used here: a) the number of

Table 24
Total Number of Links on All Words by Context and Gender

Relationship Context	Gender	N	Mean[a]	Std. Dev.
Casual Sex / 1-Night Stand				
	Female	35	34.46	10.65
	Male	35	30.31	8.41
	Total	70	32.39	9.53
Long Term Dating / Marriage				
	Female	35	33.94	13.21
	Male	35	35.26	13.12
	Total	70	34.60	13.09
	Overall	140	33.49	11.55

[a] Mean differences not statistically significant

links within each word cluster, b) the number of links between word clusters, and c) the number of links on individual words. Within-cluster means and standard deviations are presented in Table 25.

These within-cluster data were submitted to a general linear model analysis of variance to examine the effects of sex and mating context on mean number of links within clusters while controlling for the social acceptability and emotionality of the words. The results revealed significant multivariate effects of sex, F (6, 129)= 9.89, $p < .01$ and mating context F (6, 129)= 11.20, $p < .01$, as well as a significant interaction between the two, F (6, 129)= 6.82, $p < .01$. Considering gender, tests using an adjusted p value= .001 revealed that women had significantly more links than did men within both the financial resource cluster, F (1,138)= 20.12, $p < .01$ and within the long term dating / marriage cluster, F (1, 138)= 45.55, $p < .01$. Collapsing across

Table 25
Mean Number of Within-Cluster Links

Context	Node Cluster	Female			Male			Total	
		M	SD		M	SD		M	SD
Casual Sex / 1-Night Stand									
	Physical Attraction	1.23	.84	<	1.91	.78	*	1.57	.88
	Financial Resources	1.94	.64	>	1.09	.85	*	1.51	.86
	Dominant Behavior	1.11	.96		.86	.81		.99	.89
	Casual Sex / 1-NS	1.71	.67		1.37	.81		1.54	.76
	Long Term Dating /M	2.51	.78	>	1.11	.91	*	1.76	1.13
	Positive	2.23	.91		2.26	.74		2.24	.82
	Total	1.79	.80		1.43	.82		1.60	.89
Long Term Dating / Marriage									
	Physical Attraction	1.11	.87		.94	.80		1.03	.83
	Financial Resources	2.06	.64		1.71	.89		1.89	.79
	Dominant Behavior	.86	.81		.74	.70		.81	.77
	Casual Sex / 1-NS	1.31	.76		1.34	1.08		1.33	.93
	Long Term Dating /M	2.60	.60		2.43	.78		2.51	.70
	Positive	2.26	.95		2.14	.85		2.22	.86
	Total	1.70	.77		1.55	.85		1.63	.81

* Significant gender difference; $p < .05$

gender, all participants in the casual sex / 1-night stand context had significantly more links within the physical attraction cluster, F (1,138)= 12.53, $p < .01$, than they did within this cluster in the long-term dating / marriage condition. Participants in the long term dating / marriage context had significantly more links within the financial resource cluster, F (1,138)= 6.08, $p < .05$, than they did within this cluster in the casual sex / 1-night stand context. Finally, participants in the long

term dating / marriage context had significantly more links within the long term dating / marriage cluster, F (1,138)= 37.23, $p < .05$, than they did within this cluster in the casual sex condition.

Three gender by mating context interactions were revealed for the within-cluster analysis. The first revealed that men had significantly more links within the physical attraction cluster than did women, F (1,138)= 9.16, $p < .01$, but only in the casual sex / 1-night stand condition. A graph of this interaction is presented in Figure 11. The second and third interactions revealed that women had significantly more links than did men within both the financial resources cluster,

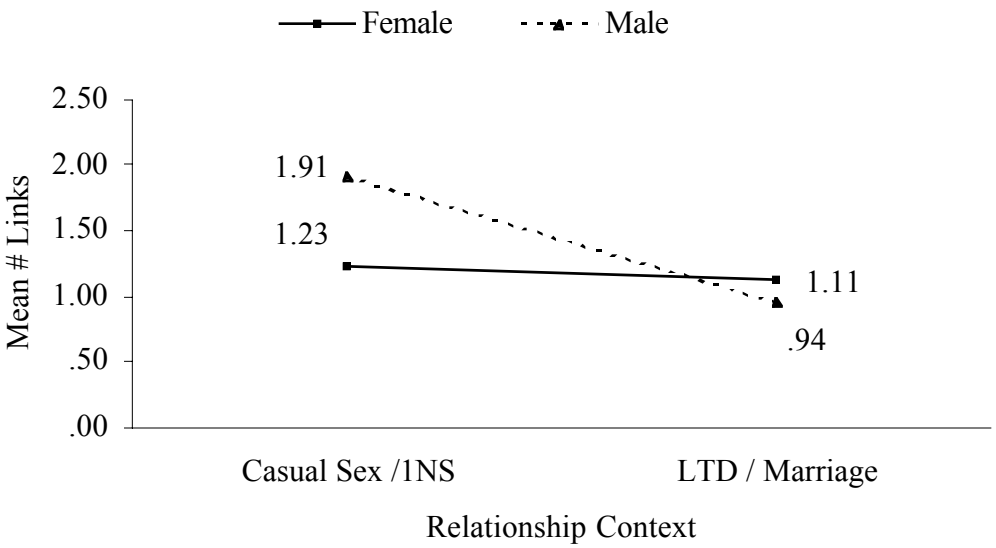


Figure 11. Links Within the Physical Attraction Cluster

F (1,138)= 3.97, $p < .05$, and within the long term dating / marriage cluster, F (1,138)= 27.51, $p < .01$, but again, only in the casual sex / 1-night stand context. A graph of each of these interactions is presented in Figures 12 and 13. Within-cluster analyses are presented in Table 26.

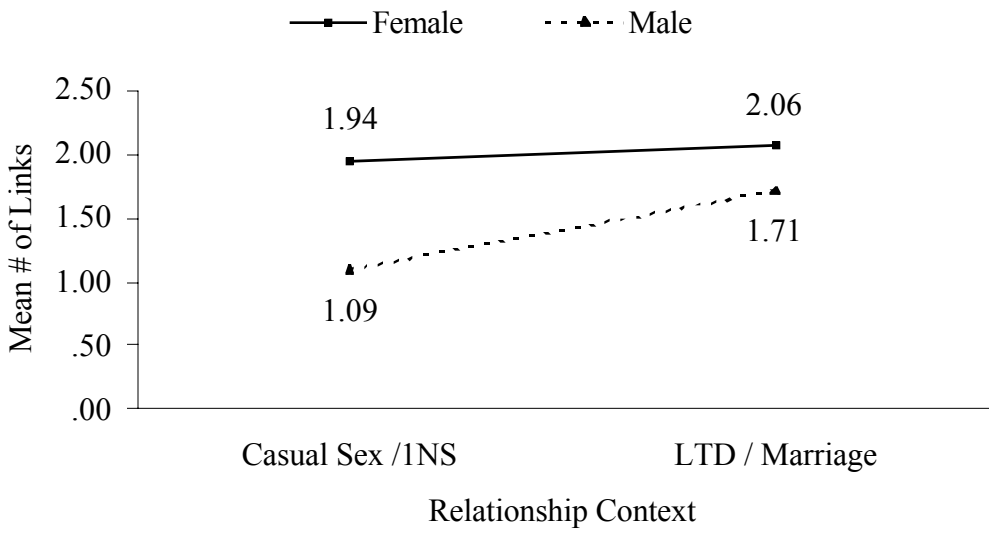


Figure 12. Links Within the Financial Resources Cluster

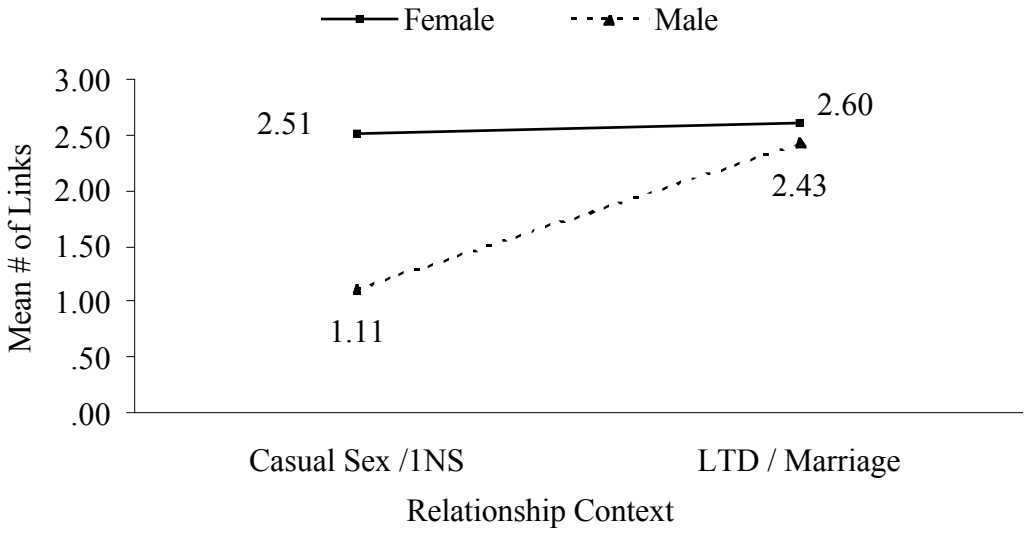


Figure 13. Links Within the Long Term Dating / Marriage Cluster

Table 26

Effects of Gender and Context on Links Within Clusters[a]

Multivariate *F*	SS	df	Error. Df	*F*	*p value*	Sig.
Social Acceptability Control	.07	6	129	1.73	.118	ns
Emotionality Control	.07	6	129	1.54	.170	ns
Gender	.32	6	129	9.89	.001	*
Relationship Context	.34	6	129	11.20	.001	*
Gender x Context	.24	6	129	6.82	.001	*

Effects Summary	SS	df	MS	F	*p value*	Sig.
Gender						
Financial Res. Cluster (Female > Male)	11.93	1	11.93	20.12	.001	**
LTD / Marriage Cluster (Female > Male)	26.62	1	26.62	45.55	.001	**
Context						
Physical Attraction Cluster (CS > LTD)	8.60	1	8.60	12.53	.001	**
Financial Res. Cluster (LTD > CS)	3.61	1	3.61	6.087	.015	*
LTD / Marriage Cluster (LTD > CS)	21.76	1	21.76	37.23	.001	**
Gender x Context						
Physical Attraction Cluster (Male > Female; CS)	6.29	1	6.29	9.16	.003	**
Financial Res. Cluster (Female > Male; CS)	2.36	1	2.35742	3.97	.048	*
LTD / Marriage Cluster (Female > Male; CS)	16.07	1	16.0739	27.51	.001	**

[a] Significance level set to $p = .001$ to control for Type I errors

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

Between-Cluster Analyses

The next phase of the data analysis examined the number of links between the six word clusters under investigation. The number of links between each cluster pair was computed for individual networks and then averaged over participants. Visual examination of the cluster pair means revealed the highest number of links between the long-term dating / marriage and positive evaluation clusters (M= 4.65) and the lowest overall number of links between the physical attractiveness and casual sex / 1-night stand clusters (M= .521). The former cluster pair again had the highest mean number of links for women and men in both the casual sex context (M= 4.28 and 3.28, respectively) and in the long-term dating / marriage context (M= 5.45 and 5.05). Similarly, the latter cluster pair also had the lowest mean number of links for women and men in both the casual sex context (M= .314 and .386, respectively) and in the long-term dating / marriage context (M= .400 and .371, respectively).

The between-cluster data was submitted to a general linear model analysis of variance with repeated measures to examine the effects of sex and mating context on the number of links between clusters. Ratings of social acceptability ratings and emotionality were again included as controls. The results a revealed significant multivariate effect of clusters, F (14, 123)= 47.65, $p < .001$, as well as significant interactions between clusters x gender, F (14, 123)= 2.92, $p < .01$, and clusters x mating context, F (14, 123)= 4.04, $p < .001$. Univariate tests using an adjusted p value= .001 revealed that men had significantly more links between the physical attractiveness and dominant behavior clusters, F (1,136)= 6.38, $p < .05$, and also between the casual sex / 1-night stand and positive evaluation clusters, F (1, 136)= 15.03, $p < .001$. Significant mating context differences in

links between clusters were found between the physical attractiveness and long-term dating / marriage cluster, between the financial resources and long-term dating / marriage cluster, between the casual sex / 1-night stand and positive evaluation cluster, and finally between the long-term dating / marriage and positive evaluation cluster. Findings are presented in Table 27.

Table 27
Between-Cluster Gender and Mating Context Differences

	Mean Number of Links				
Gender Differences Between Clusters	Women		Men	$F(1,136)$	p <
Physical Attractiveness-Dominant Behavior	0.47	<	0.83	6.38	.013
Casual Sex / 1-Night Stand-Positive Evaluation	1.00	<	2.01	15.03	.001

	Mean Number of Links			
Context Differences Between Clusters	CS / 1-NS	LTD / Mar.	$F(1,136)$	p <
Physical Attractiveness-Long Term Dating / Marriage	1.74	2.64	11.36	.001
Financial Resources-Long Term Dating / Marriage	1.17	2.01	7.37	.007
Casual Sex / 1-Night Stand-Positive Evaluation	2.00	1.01	14.19	.001
Long-Term Dating / Marriage-Positive Evaluation	4.04	5.26	9.84	.002

CS/1-NS=Casual sex / 1-night stand
LTD/Mar.=Long-term dating / marriage

Link Weight Analysis

The final word cluster analysis examined mean link weights to assess the relative importance of whole clusters within individual networks. Visual examination of cluster means suggested that link weights were generally similar for females and males in both mating contexts. In the casual sex / 1-night stand context, for example, women and men had similar mean link weights for the physical attraction cluster (*M*= 4.02 versus 4.15), financial resource cluster (*M*= 3.57 versus 3.79), dominant behavior cluster (*M*= 4.22 versus 4.61), casual sex / 1-night stand cluster (*M*= 3.87 versus 4.15), long-term dating / marriage cluster (*M*= 3.24 versus 3.19), and positive cluster (*M*= 3.17 versus 3.14). These data for mean link weights for clusters were submitted to a general linear model analysis of variance to test the effect of sex and mating context while again controlling for social acceptability and emotionality ratings. The results revealed no significant effects of either sex, F (6,129)= 1.03, p= .41, or mating context, F (6,129)= .32, p= .92 on mean link weights for clusters.

Analysis of Links on Individual Words

Finally, gender and context differences on individual words were analyzed. The mean number of links on individual words was computed first. Visual examination of the overall means showed that positive evaluation cluster words—"pleasurable," "enjoyable," and "desirable"—had the highest number of links on them, while the words "loud," disease," and "hair" had the least number. Women had the highest number of links on the word "love" (*M*= 5.87) and the lowest number on the word "loud" (*M*= 1.71). Men had the highest number of links on the word "pleasurable" (*M*= 6.19) and the lowest number on the word "disease" (*M*= 4.65). In the casual

sex / 1-night stand context, the word "pleasurable" had the most links, while the word "loud" had the least. In the long-term dating / marriage context, the word "love" had the highest mean number of links, while the word "disease" had the lowest.

The data for mean differences on individual words was submitted to a general linear model analysis of variance with repeated measures to examine the effects of gender and mating context. Again we controlled for ratings of social acceptability and emotionality. These results revealed a significant multivariate effect of words, F (17, 120)= 43.87, $p < .001$, as well as significant interactions between words x gender, F (17, 120)= 3.58, $p < .001$, and words x mating context, F (17, 120)= 4.61, $p < .001$. Univariate tests using an adjusted p value= .001 revealed that women had significantly more links than did men on the words "abuse" (M= 3.00 versus 2.37), "love" (M= 5.87 versus 4.73), "family" (M= 5.26 versus 3.94). Only for the word "slut" did men have a significantly higher number of links than did women (M= 3.39 versus 2.67). Gender differences are presented in Table 28. Considering mating context, the long-term dating / marriage context was associated with a significantly higher number of links than was casual sex context for the words "bank" (M= 2.71 versus 1.99), "love" (M= 6.23 versus 4.37), "family" (M= 5.19 versus 4.01), and "trust" (M= 5.30 versus 3.99). No individual word had significantly more links in the casual sex / 1-night stand context than in the long-term dating / marriage context. Mating context differences are presented in Table 29.

Discussion

How knowledge is represented in memory is a major focus of cognitive psychology. In this study the Pathfinder program used similarity judgments among words to create a network

Table 28
Links on Individual Words with Significant Gender Differences

Word	Mean Number of Links: All Participants	Mean Number of Links: Women	Mean Number of Links: Men	$F(1,136)$	$p <$
Eyes	3.32	3.06	3.59		
Hair	1.97	1.81	2.13		
Smile	4.47	4.49	4.46		
Jobs	3.03	3.26	2.80		
Money	4.64	5.03	4.24		
Bank	2.35	2.41	2.29		
Abuse	2.69	3.00	2.37	5.08	.026
Control	3.06	3.09	3.04		
Loud	1.94	1.73	2.14		
Immoral	2.95	2.91	2.99		
Disease	1.91	1.90	1.91		
Slut	3.03	2.67	3.39	4.29	.040
Love	5.30	5.87	4.73	10.90	.001
Family	4.60	5.26	3.94	10.24	.002
Trust	4.64	5.01	4.27	3.80	.053
Pleasurable	5.94	5.69	6.19		
Enjoyable	5.84	5.81	5.87		
Desirable	5.45	5.37	5.53		

CS / 1-NS=Casual Sex / 1-night Stand
LTD / Mar.=Long Term Dating / Marriage

of links between words in the domain of human mate selection. Network models from cognitive psychology propose that links between network nodes represent links between words (concepts). Thus, the current study sought to analyze network links between concepts related to mate selection. The results revealed notable gender and mating context differences in how mate selection knowledge is represented. Several of these findings are consistent with Geer's (1996)

Table 29
Links on Individual Words with Significant Mating Context Differences

Word	Mean Number of Links: Overall	CS / 1-NS	LTD / Marriage	$F(1,136)$	p <
Eyes	3.32	3.56	3.09		
Hair	1.97	2.14	1.80		
Smile	4.47	4.34	4.60		
Jobs	3.03	3.03	3.03		
Money	4.64	4.23	5.04		
Bank	2.35	1.99	2.71	6.22	.014
Abuse	2.69	2.90	2.47		
Control	3.06	2.90	3.23		
Loud	1.94	1.86	2.01		
Immoral	2.95	3.20	2.70		
Disease	1.91	2.06	1.76		
Slut	3.03	3.14	2.91		
Love	5.30	4.37	6.23	28.78	.001
Family	4.60	4.01	5.19	8.13	.005
Trust	4.64	3.99	5.30	11.91	.001
Pleasurable	5.94	5.89	5.99		
Enjoyable	5.84	5.66	6.03		
Desirable	5.45	5.46	5.44		

CS/1-NS=Casual Sex / 1-night Stand
LTD/Mar.=Long Term Dating / Marriage

results that demonstrated gender differences in the representation of sexual information. The current findings partially support evolutionary theories of mate selection.

The initial hypotheses were related to network similarity scores. Hypothesis # 1 predicted that women's similarity scores would be more like each other than to those of men, while Hypothesis # 2 stated that men's network similarity scores would be more consistent with each

other than to those of women. The data supported both of these hypotheses and provided evidence that the genders differ in the meaning assigned to words related to mate selection. It is important to note that while significant, these differences are small. Nevertheless, the gender difference finding here essentially replicates Geer's (1996) results and extends them into the domain of mate selection. The similarity scores provided by Pathfinder showed that concepts relevant to choosing a mate had more of the same meaning within genders than between them.

Interestingly, mating context also influenced network similarity scores. While both Hypotheses # 1 and # 2 were supported when the mating context was casual sex / 1-night stand, data failed to support the latter hypothesis in the long-term mating / marriage context. Thus, network similarity scores for men were not significantly more like each other than they were to women when the mating context was long-term dating / marriage. Further, similarity scores for women and men were least alike in the casual sex / 1-night stand context and most alike in the long-term dating/ marriage context. These results fit within the evolutionary view because women and men who pursue a long-term mating strategy presumably share similar preferences—for example, both genders want partners who are capable parents. Thus, the meaning of concepts in this context should also be similar for the genders. An important implication of these findings is that they provide evidence that mating context itself can influence the meaning of words related to mate choice. These results indirectly support the evolutionary view by suggesting that the meaning of concepts is most different between genders in the casual sex condition, where each is pursuing a different mating strategy, and most similar in the long-term dating / marriage context, where the genders presumably follows a similar mating strategy.

We next examined gender differences in the average number of network links within clusters. Women had significantly more links than did men within both the financial resources cluster and the long-term dating / marriage cluster. The latter result is a replication of the previous finding by Geer (1996) that women had more complex "meaning structures" for interpersonal relationship words than did men, and it also supports the finding by Geer & McGlone (1990) that women recognized relationship-oriented sentences faster than did men. The current finding also provides evidence in support of the evolutionary view that both economic resources and the long-term investment of those resources are generally more important to women than to men in selecting a partner.

Considering both gender and context, Hypotheses # 3 stated that women in the casual sex / 1-night stand context would have more links within the financial resource cluster than would men. The data supported this hypothesis. This finding, in line with the evolutionary approach, suggests that women had more complicated and interconnected networks for the meaning of financial resource words than did men in this context. Furthermore, again in the casual sex / 1-night stand context, women were had significantly more links than did men within the long-term dating / marriage cluster. This finding suggests that women had more complicated connections between long-term relationship concepts—even when primed with the casual sex / 1-night stand manipulation story. Interestingly, however, when the mating context itself was long-term dating / marriage, no significant within-cluster gender differences were found for either the financial resources or long-term dating clusters. This finding can also be explained from the evolutionary view, since it suggests that the meaning of both financial resource concepts and long-term dating /

marriage concepts becomes more similar between the genders when each pursues a long-term mating strategy.

Hypothesis # 4 predicted that women in the casual sex / 1-night stand context would have more links within the dominant behavior word cluster than would men. The data failed to support this hypothesis. While women did have more links within the dominant behavior cluster than did men, this difference was small and not statistically meaningful. One explanation for this finding, as previously raised in the discussion section of Study 1, is that the words themselves in the dominant behavior cluster—abuse, control, and loud—reflect interpersonal rather than the kind of social dominance which might be more important in human mating. Since women had slightly more links within this cluster, these words may be salient to women as cues to danger or risk associated with some types of casual sex relationships, e.g., in which little information about the partner is known.

Turning to men, Hypothesis # 5 stated that men in both the casual sex / 1-night stand and long-term dating / marriage contexts would have more links within the physical attractiveness word cluster than would women. This hypothesis was partially supported by the data. Only in the casual sex / 1-night stand context did men have more links than did women within the physical attractiveness cluster. This finding, supportive of the evolutionary view, suggests that men in this context have more complex meaning structures for physical attractiveness words than do women. Note too, that both women and men had more links within the physical attractiveness cluster in the casual sex context than in the long-term dating / marriage context, a finding also congruent with evolutionary predictions. However, these data failed to provide evidence that men had more links

than did women within the physical attractiveness cluster when the mating context was long-term dating / marriage. Since men were found to value physical attractiveness significantly more than women in deciding on a mate in this context in Study 1, the reason for the current finding is unclear. Nevertheless, these data suggest that women and men had similar meaning structures for physical attractiveness words in the long-term dating / marriage context, a finding that is at odds with the evolutionary view.

The remaining predictions examined between-cluster relationships. Hypothesis # 6 predicted that men in the casual sex / 1-night stand context would have more links between the casual sex and positive evaluation clusters. This hypothesis was supported by the data. This result was similar to Geer's (1996) finding that men had significantly more links between explicitly sexual and positive evaluation clusters. The current finding is interesting because the casual sex / 1-night stand words themselves—immoral, disease, and slut—are not sexually explicit as in the Geer study, and only the latter word is unambiguously related to sexuality. Thus, the casual sex / 1-night stand mating context itself appears to be an important cue for these words to be evaluated more positively by men than by women.

Hypothesis # 7 predicted that women in the long-term dating / marriage context would have more links than would men between the long-term dating and positive evaluation clusters. The data failed to support this hypothesis. This finding suggests that women and men view long-term dating / marriage words equally positively within the context of a committed relationship. The result is not wholly incompatible with the evolutionary approach however, given that long-term mating is presumed to correlate with high parental investment from both genders. And since most

people in the Western world get married at some point in their lives, it makes sense that men as well as women would evaluate long-term dating / marriage words as positive in that context.

Two unexpected findings related to physical attractiveness were revealed in the between-cluster analyses. First, men had significantly more links than did women between the physical attractiveness and the dominant behavior clusters (although the average number of links were low). Evolutionary theory predicts the opposite—that women more than men would associate physical attractiveness with dominance. Again, one reason for this finding might be that the words themselves in the dominant behavior cluster probably reflect interpersonal rather than social dominance. However, if one accepts this explanation, the interesting question arises as to why men associate the words "abuse," "control," and "loud" with physical attractiveness. Secondly, both genders had significantly more links between the physical attractiveness and long-term dating cluster in the long-term dating / marriage context than in the casual sex context. This finding is puzzling from the evolutionary view, which holds that women place less value than do men on physical attractiveness in long-term committed relationships. More research is needed before these data can be adequately interpreted.

Finally, links on individual words were examined for gender and mating context differences. Words with greater numbers of links are said to be central to networks in a given domain because many other concepts are linked to them. Analysis of links on individual words revealed gender differences that partially support evolutionary findings. Women had significantly more links than men on the individual words "love," "family," and "trust," indicating that these concepts are central relative to others for women in the domain of mate selection. Also, while the differences

were not statistically significant, the finding that women had higher numbers of links than did men on the words "jobs," "money," and "bank," provided weak yet supportive evidence that these concepts are particularly relevant to women. Men were found to have significantly more links than women on only the word "slut," indicating that this concept is more central relative to others for men in this domain. Again, while the differences were not statistically meaningful, men had more links than did women on the words "eyes" and "hair," and the genders had a virtually identical number of links on the word "smile". These findings suggest that there is less variance between genders in the centrality of words associated with physical attractiveness in the domain of mate selection.

Links on certain individual words also varied with mating context. Predictably, the words "love," "family," "trust," and "bank" had significantly more links on them in the long-term dating / marriage context than in the casual sex / 1-night stand context. These findings, in line with the evolutionary view, suggests that these concepts are more central to both women and men when the context shifts from short-term to long-term mating.

Overall, what are the practical implications of these findings? Recall that network similarity scores—and hence associative patterns—were more alike within each gender than between genders. Women's knowledge of concepts related to mate selection was more like that of other women than it was to men. Thus, women share the meaning of words related to mate selection more with other women than with men. Conversely, men's knowledge of concepts in this domain was more similar to that other men than it was to women. These findings imply that

effective communication about mate selection be facilitated within gender, while the chance of miscommunication is greater between the genders.

There are limitations to this study. As in the previous studies, it is unknown whether these results will generalize beyond this sample of undergraduates. Additionally, the dominant behavior words used here probably do not adequately reflect dominance in human mating and thus add little to our understanding of how dominance fits into knowledge networks in this domain. Lastly, while many of these results support the evolutionary approach, this does not preclude explanation from competing viewpoints. For example, it could be argued that gender and mating context differences in network structures found here reflect a lifetime of social learning.

SUMMARY AND CONCLUSIONS

The general goal of this work was to begin to investigate how people think about mating partners and situations. Towards this end attempts were made to further examine well-known evolutionary findings about human mate preferences using the information processing approach (IPA) common to cognitive psychology. While research in evolutionary psychology has provided several important findings regarding mate selection preferences over the past decade, few studies have attempted to examine the cognitive processes underlying them. Buss (1998) has proposed that such an endeavor would be a worthwhile step in advancing research in this area.

Study 1 employed the method of paired comparisons to empirically scale a group of mate selection preference items drawn from previous research. This study was the first known to this author to apply this scaling method in the domain of human mate selection. The scaling method is an improvement over other measurement approaches used in this area, such as Likert-type item ratings and percentage estimates of item value, because the forced-choice procedure requires participants to directly weigh the importance of each criteria item against all other items. Further, the resulting scales theoretically reflect an underlying psychological continuum of the items under investigation. Overall, the data from this study showed that the scales themselves were reliable and the criteria value rankings replicated and expanded findings from previous research.

Initial reliability estimates for the scales developed here are very promising. The alpha coefficient of .97 for scales across participants indicates that individuals were very consistent in deciding upon which items were more important in choosing a mate. The striking similarity of each scale to every other strengthens arguments favoring mate selection preferences that are

universal and not idiosyncratic. The equally high reliability estimates for women's scales (.98) and for men's scales (.96) also support this claim. Future reliability measures using test-retest methods would be helpful to further establish the reliability of these scales.

Importantly, the results from Study 1 replicated many past findings and thus indirectly supported the validity of using the paired comparison method to study mate preference. Gender and mating context were found to have considerable influence on the value placed on selection criteria. Supportive of the evolutionary view for example, women valued items related to financial resources more than did men in the casual sex / 1-night stand mating context. The data also showed that while women value good parenting skills more than do men when considering a casual sex partner, this quality is less important overall than, for example, how long a woman has known her potential mate. Furthermore, the data showed that physical attractiveness was more important to men than to women regardless of mating context, yet women were indeed influenced by context and valued physical attractiveness significantly less when considering a long-term dating / marriage partner. Scale item preferences for women when the relationship context was undefined were significantly more related to those in the long-term dating / marriage context. Finally, both genders were more discriminating among items in the long-term dating / marriage context.

Study 1 also provided provocative data linking decision reaction time (ms) with scaled value judgments for mate preference criteria. Decisions between criteria items with proximate scale values were associated with longer durations, while discriminations between items of distant values were made more quickly. This finding is important for two reasons. It first offers evidence of a link between value judgments for criteria items and the cognitive processes that underlie them.

Such empirical data has not been demonstrated previously to this author's knowledge. Second, this finding strongly argues in favor of an underlying psychological continuum of mate selection whose items are semantically organized in a way explainable by cognitive models of knowledge representation, such as Anderson's (1993) ACT-R network model. Furthermore, the decision task itself imposed a slight time pressure that might have increased the use of mate selection heuristics, but this idea remains speculative and awaits further research.

While we have noted alternative explanations for findings in the paired comparison task, e.g., social learning and historical gender inequality, the data firmly supported many predictions from evolutionary psychology. Having made that statement, two exceptions must be noted. The first is that the data did not show that women valued the dominant behavior item more than did men. As previously discussed, this result may be attributable to the fact that no distinction was made here between interpersonal and social dominance. The second is that the data did not show that men valued sexual faithfulness in a partner more than did women; in fact this item was the most valued item by both genders in the long-term dating / marriage context. Finally, a surprising result showed that neither women nor men placed much value on whether a potential mate was already committed to another partner in either of the two relationship contexts. The reasons for these latter findings remain unclear.

Pilot studies A and B were conducted to develop normative stimulus data for use in this project and in future research. Pilot A utilized a free association task to generate stimulus words related to several mate selection domains. While there was wide variation in the percentages of words commonly generated in each category (20-85%), women and men generated similar items

within each domain category. Higher consensus was reached for words generated in the domain of long-term dating / marriage than in the casual sex / 1-night stand domain. A second participant sample in Pilot B provided normative data ratings for the these stimulus words along the dimensions of familiarity, social acceptability, and emotionality. Women and men were very accurate in confirming category membership in the sorting task for words in the domains of physical attractiveness, financial resources, and dominant behavior (92-98%). Women were significantly more accurate than were men in sorting words in the long-term dating / marriage domain. As for the ratings themselves, neither gender nor context influenced ratings of familiarity. Physical attraction and financial resource words were more socially acceptable than dominant behavior words. Women rated words as more emotional than did men, although this effect was small.

Overall, the pilot studies succeeded reasonably well in providing words in categories related to mate selection. Physical attractiveness and financial resource words will be particularly useful in future cognitive research, since both genders reliably placed them within the correct categories. However, while there was general consensus between genders on words related to dominant behavior, the face validity of these words likely reflects interpersonal dominance and thus may prove less useful in future mate selection research. Results of the pilot ratings tasks have provided normative control data for future use by researchers. This is particularly important since both social acceptability and emotionality of words were revealed as stimulus confounds in this study.

Study 2 asked whether the genders would show attentional differences to word stimuli relevant to mate selection. Attention was measured using a dot-probe paradigm that recorded the

speed (ms) with which participants responded to visual probes that followed either target or neutral stimuli. The predictions were not supported. Neither gender nor mating context nor target word type had an effect on median reaction time to detecting the probe. Analyses of screen position variables suggested that participants understood the task. One conclusion to be drawn here is that the stimulus words themselves might be insufficient substitutes for actual mating stimuli. For example, visual displays of wealth and status may draw one's attention, while words describing financial resources may not. Asking whether attentional biases exist between genders in the domain of mate selection remains a reasonable question. Future studies to examine such biases should consider employing non-lexical visual stimuli.

Study 3 utilized the Pathfinder algorithm to study cognitive networks related to mate selection. This study was the first known to the authors that examined the organization of concepts related to this domain using network models from cognitive psychology . The results revealed a number of relevant findings. First, women's semantic networks for mate selection were more similar to those of other women than to men. Second, men's networks were generally more similar to each other than to women's networks. These findings suggest that concepts related to choosing a mate have more similar meanings within genders rather than between them. Also, while these absolute differences were quite small, these results replicate similar findings by Geer (1996) in the domain of sexuality.

Many of the findings from the Pathfinder study also supported evolutionary predictions. For example, network similarity scores between genders were significantly more alike when participants were primed with a long-term dating / marriage story than when presented with a

story about casual sex / 1-night stand. Thus as predicted, the meaning of mate selection concepts diverged for women and men when mating context was varied. Importantly, women had more associative links within clusters of financial resource and long-term dating words than did men, indicating that words in these clusters have a more central meaning to women in the domain of mate selection. Men had significantly more links than did women within the cluster of physical attractiveness words in the casual sex / 1-night condition, showing that words in this cluster have more centrality of meaning for men in this context. Finally, women had significantly more links than did men on individual words related to long-term dating / marriage: love, family, and trust. This finding shows that, regardless of relationship context, these words are more meaningful to women in the domain of mate selection.

In summary, the general goal of this project was to apply research methods from cognitive psychology to the domain of mate selection in an attempt to link past findings in this area with the cognitive processes underlying them. Studies 1 and 3 have succeeded reasonably well in this endeavor and have provided further empirical support for many hypotheses from evolutionary psychology. Additionally, the final lists of domain-relevant stimuli with associated normative ratings will hopefully be useful to other researchers interested in this field. While more work is needed to establish whether these data generalize beyond undergraduate samples, the outlook for cognitive methodologies applied in the domain of mate selection research seems very promising.

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APPENDIX A

INFORMED CONSENT FOR STUDY 1

1. Study Title: Deciding on a Mate
2. Performance Sites: Louisiana State University
3. Contacts: Michael J. Stasio, M.A., 388-4027, James H. Geer, Ph.D., 388-4095.
4. Purpose of the Study: To investigate what qualities people prefer in a mate.
5. Participants Included: Male and female undergraduate psychology students age 18 and older.
6. Exclusion Criteria: Undergraduates under 18 years of age will be excluded.
7. Number of Participants: 120 participants.
8. Study Description: Participants will sit at a computer terminal and make decisions about qualities preferred in a mate. Two alternatives will appear on the computer screen and participants will press a keyboard key to choose the more important item.
9. Benefits: Psychology extra credit is awarded for participation. The data collected in this research aims to replicate and extend findings in the area of mate selection.
10. Risks/Discomforts: There is minimal risk/discomfort for those who participate in this study. Some participants may experience mild discomfort if they should read words related to sexuality.
11. Right to Refuse: Participation is voluntary, and participants may withdraw from the study at any time.
12. Privacy: All computer data will be coded by assigned number. All consent forms will be stored in a room separate from the computer lab. Participants' names will not be associated with their responses.
13. Questions: Please E-mail Mike Stasio: mstasio@lsu.edu.

The study has been discussed with me and all my questions have been answered. I understand that I may direct additional questions regarding study specifics to the investigators listed above. If I have questions about subjects' rights or other concerns, I can contact the Vice Chancellor of the LSU Office of Research at 388-5833. I agree with the terms above and acknowledge that I have been given the opportunity to have and keep a copy of the consent form.

Participant Name (print)_____ Date of Birth_____

Participant Signature_____ Today's Date_____

APPENDIX B

PILOT STUDY A

Introduction

Two pilot studies were conducted to develop word associations and ratings from stimuli from domains hypothesized to come from mate selection (e.g., physical attractiveness). While there has been considerable research in identifying trait preferences in mate selection, lists of words and associates suitable for cognitive research in this area (e.g., words rated on level of familiarity or social acceptableness) are not available. The collective aim of the pilot studies was to provide an empirical foundation from which to select stimuli for use in later experiments.

Ratings of word familiarity, social acceptableness, and emotionality are important here as potentially confounding variables. For example, word frequency (how often a word appears in language or print) has been identified as a variable that influences performance in recall and recognition tasks. Familiarity ratings substitute for word frequency in this study because Gernsbacher (1984) has argued that ratings of word familiarity more accurately reflect contemporary word frequency more than the older published data. Furthermore, the variables social acceptableness and emotionality may influence the way women and men respond sexual cues. For example, women have been found to rate sexual words as more socially unacceptable than do men, while men rate ambiguous words as more sexual than do women (Plaud, et al., 1998). Furthermore, data previously collected in Dr. Geer's lab indicates that sexual words are associated with higher levels of emotionality than are neutral words, such as those describing common kitchen

items. Therefore, it is important to account for the influence of these variables in research in this area.

Pilot A: Free Association Word Task

The free association word task was chosen because it had been used successfully to program expert systems in the past. The author assembled domains relevant to mate selection from previous research findings in this area.

Participants

In Pilot A the participant sample consisted of 40 students (20 female, 20 male). The mean age for females (M= 20.01, SD= 1.65) was not significantly different than the mean age for males (M=21.23, SD=2.20). Students in this study were at least 18 years of age and received extra psychology credit for their participation.

Procedure

In Pilot A, domain specific preferences in mate selection were initially selected according to findings from past research (Buss et al., 1993; Simpson et al, 1992; Regan, 1998). The domain list is presented in Table B1. Domain items were then shown to one group of participants who were instructed to write down as many free associates as they could generate to each domain in a time-limited format. Participants were tested in groups while seated in a classroom. The experimenter read aloud the consent form, answered any questions, and then asked participants to sign the consent form (Appendix D). The consent forms were collected prior to the start of the session. Participants then received packets of materials consisting of five sheets of paper, each formatted with three columns, and each column titled with a unique mate selection domain. The

Table B1
Mate Selection Domains Used
in the Word Association Task

Domains
1. physical attractiveness
2. sexual availability
3. high social status
4. financial resources
5. relationship commitment
6. good parenting skills
7. sex appeal
8. stable personality
9. good health
10. kindness
11. faithfulness
12. dominant behavior
13. casual sex / 1-night stand
14. long term dating / marriage

order of mate selection domains was randomized, and each packet was stapled in identical sequence to minimize confusion during the task. Participants were instructed to think of as many words as they could associate with each domain category in a 3-minute time period. The experimenter used a stopwatch to monitor elapsed time. At the conclusion of the data collection, the materials were collected and participants were read a short summary of the experiment as a debriefing. Students received psychology extra credit slips on the way out of the room. The duration of the experiment was approximately 1 hour.

Results

The frequency in which individual word associates were generated in each of the 14 domains was computed. The results showed that 5 of the 14 original preference domains contained at least 9-10 unique word associates generated by participants at least 20% of the time. This inclusion criterion was selected to provide a reasonable number of word associates in each domain for use in the later studies. The 5 domains that satisfied this criterion were 1. Physical attraction, 2. Financial resources, 3. Dominant behavior, 4. Casual sex / 1 night stand, and 5. Long term dating / marriage. Results of the free association task are summarized in Table B2.

The percentages of words satisfying the inclusion criterion in each of the 5 domains were further analyzed using a series of nonparametric tests. Mean percentages of words meeting the criterion in each category were as follows: physical attraction (43%), financial resources (43%), dominant behavior (23%), casual sex / 1-night stand (28%), and long-term dating / marriage (49%). No significant gender differences were revealed among the mean ranks for percentages of words meeting the inclusion criterion in each domain. The domains themselves, however, were found to significantly differ in the mean ranks for percentages of words included, X^2 (4)= 38.10, $p < .001$. The genders reached significantly less consensus on dominant behavior and casual sex words than on words in the remaining 3 domains. Additionally, words meeting the inclusion criterion in the casual sex / 1-night stand domain were generated at a significantly higher frequency than those in dominant behavior category, X^2 (1)= 6.05, $p < .05$. Finally, word associates in each of these five domains under investigation were then selected as target word stimuli to be used later in Pilot Study B.

Table B2

Generation Frequency of Words by Domain in Pilot A

WOMEN n=20

Word (% of Participants Generating Item)									
PA	%	FR	%	DB	%	CS	%	LTD	%
beauty	25	bank	65	anger	20	disease	25	children	50
hair	50	credit	30	control	35	slut	25	commitment	65
legs	45	jobs	60	mean	25	drunk	25	family	60
muscle	40	loans	25	aggression	20	bars	20	love	80
tall	30	money	70	loud	20	immoral	30	parents	30
smile	55	savings	30	selfish	20	guilty	35	trust	40
eyes	75	stocks	40	force	20	wrong	25	honesty	45
buttocks	40	invest	45	abuse	35	danger	25	happy	35
sexy	20	wealth	20	demand	20	fun	40	friend	35
healthy	25	work	25	power	20				

MEN n=20

Word (% of Participants Generating Item)									
PA	%	FR	%	DB	%	CS	%	LTD	%
beauty	25	bank	55	anger	20	disease	25	children	45
hair	60	credit	25	control	20	slut	20	commitment	60
legs	55	jobs	70	mean	20	drunk	25	family	55
muscle	35	loans	30	aggression	25	bars	20	love	85
tall	40	money	60	loud	20	immoral	30	parents	25
smile	55	savings	30	selfish	20	guilty	20	trust	50
eyes	60	stocks	55	force	20	wrong	20	honesty	45
buttocks	45	invest	45	abuse	25	danger	25	happy	20
sexy	20	wealth	20	demand	20	fun	45	friend	35
healthy	25	work	30	power	20				

PA=Physical Attractiveness, FR=Financial Resources, DB=Dominant Behavior, CS=Casual Sex / 1-Night Stand, LTD=Long Term Dating / Marriage

Discussion

The results of Pilot A provided lists of words associated with each of the five domains under investigation here as important to mate selection. Although there was substantial variation in the percentages with which words were associated with categories (20-85%), the genders did not significantly differ on this measure. This finding is important because it lessens this potentially confounding sex difference in later studies. However, differences found in the mean percentages of words meeting the inclusion criteria across domains do represent potential confounds. Specifically, participants agreed less overall as to words associated with the dominant behavior and casual sex / 1-night stand categories. This potential problem will be addressed in Pilot B when another independent sample of participants will be asked to sort these words into one of the 5 domains to verify the reliability of category membership for each word.

Another important issue involves whether the 5 domain categories are themselves valid members of the larger mate selection domain. In particular, the face validity of words in the dominant behavior domain appears suspect. Recall from the previous discussion the argument that the word dominance may have dual meanings—interpersonal and societal, with the latter possibly more relevant as a mate preference cue for women. Yet upon visual examination, dominant behavior words generated here (e.g., anger, control, mean, force) suggest that they could easily belong to the category of interpersonal dominance and thus might be less valid in the mate selection domain. Indeed, the phrase used in the free association task was simply "dominant behavior" and did not specify dominant behavior *in deciding on a mate*. Therefore, this finding should be considered in interpreting the results in future studies.

APPENDIX C

PILOT STUDY B

Pilot B: Word Rating and Sorting Tasks

Choosing appropriate words is a critical task in any study involving the semantic lexicon. This involves knowledge of properties associated with words, e.g., English word frequency (familiarity). The purpose of Pilot B was to compile normative data for ratings of familiarity, social acceptability, emotionality, and category membership.

Participants

The participant sample in Pilot B consisted of 112 students (56 females, 56 males). The mean age for females (M= 20.20, SD= 2.60) was not significantly different than the mean age for males (M= 20.84, SD= 3.68). Students in both studies were at least 18 years of age and received extra psychology credit for their participation. Those who participated in Pilot A were excluded.

Procedure

Participants in Pilot B provided subjective word ratings for familiarity, social acceptableness, and emotionality for the word associates previously generated in Pilot A. Participants then sorted these word associates into one of the five domains: 1. physical attractiveness, 2. financial resources, 3. dominant behavior, 4. casual sex / 1-night stand, and 5. long term dating / marriage. Recall that these domains were selected for inclusion based on the results of the free association task in Pilot A where each word was generated at least 20% of the time for that domain. Four randomly ordered lists of these associate words were then created and used to assemble the rating and sorting tasks.

Participants were tested in groups in a classroom. The experimenter read aloud the consent form, answered any questions, and then asked participants to sign the consent form (Appendix D). The consent forms were collected prior to the start of the session. Each participant received a packet consisting of four tasks stapled in random order. Students were asked to make subjective ratings of associate words previously generated in Pilot A for familiarity, social acceptableness, and emotionality and then sorted each word into one of the 5 mate preference domain categories. All ratings were done using a 5-point Likert scale.

The familiarity scale was anchored by "highly unfamiliar" and "highly familiar" at either end and "moderately" in the middle. The social acceptableness scale was anchored by "highly unacceptable" and "highly acceptable" at either end and "moderately" in the middle. The emotionality scale was anchored by "highly negative" and "highly positive" at either end "neutral" in the middle. Definitions for each scale are presented in Appendix C. The purpose of the sorting task was to ensure that the Pilot A word associates generated for each domain indeed belonged in that category as judged by the second independent sample.

Results

All Data. The full sets of word associates in each domain were analyzed initially to provide control data for the later dot-probe attention task. First, the mean percentage of each word associate correctly sorted into its original domain category was computed. Results revealed that the majority of participants accurately sorted most word associates into their correct domain category. For example, the mean accuracy rate for sorting word associates in the physical attraction, financial resources, and dominant behavior domains ranged from 92% to 98%. The

mean accuracy rate was slightly lower in the long term dating / marriage domain (89%) and lowest in the casual sex / 1-night stand condition (70%). The effect of gender on word sorting accuracy was also examined. It was revealed that physical attraction domain words were sorted at an accuracy rate of 94% for both females and males. Financial resource words were sorted most accurately overall—97% for females and 98% for males. Dominant behavior associates were correctly placed into this category at an accuracy rate of 93% for females and 92% for males. Females correctly sorted long term dating / marriage words into the proper domain at an accuracy rate of 92%, which was significantly higher than the accuracy rate of 86% for males in this domain. Finally, the lowest accuracy rates were found in the casual sex / 1-night stand domain for both females (73%) and males (66%). Means and SD are presented in Table C1.

Table C1

Means and SD for the Full Item Set Correctly Sorted[a]

Word Category	# Items	Mean % Correctly Sorted					
		Female		Male		Total	
		M	SD	M	SD	M	SD
1. Physical Attraction	10	.94	.07	.94	.07	.94	.07
2. Financial Resources	10	.97	.07	.98	.06	.98	.10
3. Dominant Behavior	10	.93	.10	.92	.12	.93	.11
4. Casual Sex / 1-NS	9	.73	.18	.66	.21	.70	.20
5. Long Term Dating / Marriage	9	.92	.10 >	.82	.18*	.87	.15
		n=56		n=56		N=112	

[a] Categories 1, 2, and 3 for future use in study of attention

*$p < .01$; sign indications direction of relationship

The full data set for the sorting analysis was submitted to a general linear model analysis of variance to test the effects of gender and domain category on sorting accuracy. A significant gender effect on sorting accuracy was found, Multivariate F (5,106)=2.99, $p < .05$. Univariate tests using an adjusted p value= .001 to control for Type 1 errors revealed that females were significantly more accurate than were males in sorting words in the long term dating / marriage domain, F (1,110)=12.23, $p < .01$. Interestingly, females were also slightly more accurate in correctly sorting words in the casual sex / 1-night stand domain, although this difference only approached significance, F (1,110)=3.17, $p = .08$, ns. This analysis is presented in Table C2.

Table C2

Effect of Gender on Percent of Full Item Set Correctly Sorted[a]

Multivariate *F* Test	Value	df	*F*	*p value*
Gender (N=112)	.12	5	2.99	.01*
Univariate Tests				
Category	SS	df	*F*	*p value*
1. Physical Attraction	.00	1	.02	.89
2. Financial Resources	.00	1	.35	.56
3. Dominant Behavior	.01	1	.58	.45
4. Casual Sex / 1-NS	.13	1	3.17	.08
5. Long Term Dating / Marriage	.25	1	12.26	.01*

[a]Only categories 1, 2, and 3 for use in future study of attention

*$p < .01$

Descriptive tables summarizing mean percentages of individual words accurately sorted in each domain category were also prepared. In the physical attractiveness domain, females sorted 5 words with 100% accuracy: "beauty," "hair," "legs," "muscle," and "tall". Sorting accuracy ranged from 87.5% to 98.2% for words including "smile," "eyes," "buttocks," and "sexy". For females the word "healthy" was least accurately sorted (66.1%), with this word alternatively placed in the financial resources domain 26.8% of the time. Similar results were found for males, who sorted 4 words with 100% accuracy: "hair," "legs," "tall," and "eyes". Sorting accuracy ranged from 91.1% to 98.2% for most other words including "beauty," "muscle," "smile," "buttocks," and "sexy." Similar to females, males sorted the word "healthy" correctly at a rate of 62.5%, placing it into the financial resource domain 28.6% of the time. Sorting results for physical attractiveness words are presented in Table C3.

In the financial resources domain, both females and males sorted the most words with 100% accuracy compared to the other domains. Females sorted 7 words 100% accuracy: "bank," "credit," "jobs," "loans," "money," "savings," and "stocks". The remaining 3 words—"invest," "wealth," and "work"—were sorted with 98.2 accuracy. Males also demonstrated a similarly high level of sorting accuracy in this category. Eight words were sorted at a rate of 100% accuracy: "bank," "credit," "loans," "money," "savings," "stocks," "wealth," and "work". The words "jobs" and "invest" were both sorted correctly 98.2% of the time. Sorting results for financial resource words are presented in Table C4.

For words in the dominant behavior domain, females sorted 3 words with 100% accuracy: "anger," "control," and "mean." The words "force," "loud," "selfish," and "aggression" were

Table C3

Percentage of Physical Attractiveness Words Sorted Correctly

Gender	Word	% Sorted Correctly	% Sorted into Other Categories[a]			
FEMALE		Physical Attractiveness	FR	DB	LTD	CS
n=56	beauty	100.0				
	hair	100.0				
	legs	100.0				
	muscle	100.0				
	tall	100.0				
	smile	98.2			1.8	
	eyes	96.4	1.8		1.8	
	buttocks	91.1				8.5
	sexy	87.5	1.8		1.8	8.9
	healthy	66.1	26.8	5.4	1.8	
MALE						
n=56	beauty	98.2			1.8	
	hair	100.0				
	legs	100.0				
	muscle	92.9	1.8	5.4		
	tall	100.0				
	smile	98.2			1.8	
	eyes	100.0				
	buttocks	92.9				7.1
	sexy	91.1				8.9
	healthy	62.5	28.6	3.6	3.6	1.8

[a] FR=Financial Resources, DB=Dominant Behavior, LTD=Long Term Dating / Marriage, CS=Casual Sex / 1-Night Stand

correctly sorted at accuracy rates ranging from 91.1% to 98.2%, while the accuracy range for the words “power,” “demand,” and “abuse” was 80.4% to 89%. Females alternatively placed the word “power” into the financial resources domain at a rate of 12.5% and the word “force” into

Table C4

Percentage of Financial Resources Words Sorted Correctly

Gender	Word	% Sorted Correctly	% Sorted into Other Categories[a]			
FEMALE		Financial Resources	PA	DB	LTD	CS
n=56	bank	100.0				
	credit	100.0				
	jobs	100.0				
	loans	100.0				
	money	100.0				
	savings	100.0				
	stocks	100.0				
	invest	98.2			1.8	
	wealth	98.2		1.8		
	work	98.2		1.8		
MALE						
n=56	bank	100.0				
	credit	100.0				
	jobs	98.2	1.8			
	loans	100.0				
	money	100.0				
	savings	100.0				
	stocks	100.0				
	invest	98.2			1.8	
	wealth	100.0				
	work	100.0				

[a] PA=Physical Attraction, DB=Dominant Behavior, LTD=Long Term Dating / Marriage, CS=Casual Sex / 1-Night Stand

the casual sex / 1-night stand domain 8.9% of the time. Males were slightly less accurate in this domain, sorting only the word "anger" accurately 100% of the time. Most other words, including "demand," "abuse," "force," "selfish," "loud," "aggression," and "mean," were accurately sorted

at a rate ranging from 91.1% to 98.2%. Males correctly placed the word "control" 85.7% of the time, alternatively sorting it into the financial resources domain at a rate of 8.9%. Males least accurately sorted the word "power" (73.21%) and incorrectly placed it into the financial resources domain 23.2% of the time. Dominant behavior word sorting results are presented in Table C5.

None of the 10 words in the casual sex / 1-night domain were sorted accurately 100% of the time by either females or males. In fact, when participants incorrectly sorted one of these words, it was most likely to be placed into the dominant behavior domain. The highest accurately rates in this domain for females were found for the words "disease" (98%) and "slut" (94.6%). Sorting accuracy for the words "wrong," "guilty," "immoral," "bars," and "drunk," ranged from 67.9% to 87.5%. Females accurately sorted the word "danger" only 42.9% of time, alternatively placing in the dominant behavior domain at a rate of 57.1%. Females least accurately sorted the word "fun" (33.9%) and more often placed in the long term dating / marriage domain (35.7%). Similar to females, males most accurately sorted the words disease (91.1%) and slut (91.1%). Sorting accuracy for the words "wrong," "guilty," "immoral," "bars," and "drunk" ranged from 53.6% to 76.8%. Males least accurately sorted the words "danger" (46.6%) and "fun" (46.6%). Sorting results for casual sex / 1-night stand words are presented in Table C6.

In the long term dating / marriage domain, female participants sorted 5 words with 100% accuracy: "children," "commitment," "family," "love," and "parents". The words "happy," "trust," and "honesty" were sorted at an accuracy rate ranging from 82.1% to 94.6%. Females sorted the word "friend" accurately 78.5% of the time and placed in into the casual sex / 1-night

Table C5

Percentage of Dominant Behavior Words Sorted Correctly

Gender	Word	% Sorted Correctly	% Sorted into Other Categories[a]			
FEMALE		Dominant Behavior	PA	FR	LTD	CS
n=56	anger	100.0				
	control	100.0				
	mean	100.0				
	aggression	98.2				1.8
	loud	92.9	3.6		1.8	1.8
	selfish	92.9		1.8		5.4
	force	91.1				8.9
	abuse	89.3			3.6	7.1
	demand	89.3			5.4	5.4
	power	80.4	5.4	12.5	1.8	
MALE						
n=56	anger	100.0				
	control	85.7		8.9	3.6	1.8
	mean	98.2		1.8		
	aggression	98.2		1.8		
	loud	94.6	3.6			1.8
	selfish	91.1	1.8	1.8		5.4
	force	94.6		1.8		3.6
	abuse	92.9			1.8	5.4
	demand	92.9			7.1	
	power	73.2	1.8	23.2		1.8

[a] PA=Physical Attraction, FR=Financial Resources, LTD=Long Term Dating / Marriage, CS=Casual Sex / 1-Night Stand

stand domain 10.7% of the time. Males sorted only the word "love" at an accuracy rate of 100%. The words "parents," "family," and "trust" were sorted at an accuracy rate ranging from 92.9% to

Table C6

Percentage of Casual Sex / 1-Night Stand Words Sorted Correctly

Gender	Word	% Sorted Correctly	% Sorted into Other Categories[a]			
FEMALE		Casual Sex / 1-Night Stand	PA	FR	DB	LTD
n=56	disease	98.2		1.8		
	slut	94.6	1.8		3.6	
	drunk	87.5	1.8		8.9	1.8
	bars	82.1	1.8		10.7	5.4
	immoral	78.6			21.5	
	guilty	73.2			24.1	1.8
	wrong	67.9			32.1	
	danger	42.9			57.1	
	fun	33.9	8.9		21.4	35.7
MALE						
n=56	disease	91.1			5.4	3.6
	slut	91.1	3.6		5.4	
	drunk	76.8	3.6		19.6	
	bars	69.6	1.8		16.1	12.5
	immoral	74.3	1.8		23.9	
	guilty	57.1			42.9	
	wrong	53.6			46.4	
	danger	46.4		5.4	46.6	1.8
	fun	46.4	16.1	1.8	12.5	23.2

[a] PA=Physical Attraction, FR=Financial Resources, DB=Dominant Behavior, LTD=Long Term Dating / Marriage

98.2%. Males sorted both the words “children” and “commitment” at an accuracy rate of 85.7%; interestingly, males placed the words in the dominant behavior category 10.7% to 12.5% of the

Table C7

Percentage of Long Term Dating / Marriage Words Sorted Correctly

Gender	Word	% Sorted Correctly	% Sorted into Other Categories[a]			
FEMALE		Long Term Dating / Marriage	PA	FR	DB	CS
n=56	children	100.0				
	commitment	100.0				
	family	100.0				
	love	100.0				
	parents	100.0				
	trust	94.6		5.4		
	honesty	91.1	3.6		5.4	
	happy	82.1	7.1	5.4	1.8	3.6
	friend	78.57	7.1		3.6	10.7
MALE						
n=56	children	85.7			10.7	3.6
	commitment	85.7			12.5	1.8
	family	96.4		3.6		
	love	100.0				
	parents	92.9			5.4	1.8
	trust	98.2		1.8		
	honesty	73.2	8.9		16.1	1.8
	happy	69.6	14.3	3.6	7.1	5.4
	friend	64.28	14.3		16.1	5.4

[a] PA=Physical Attraction, FR=Financial Resources, DB=Dominant Behavior, CS=Casual Sex / 1-Night Stand

time while females never placed them in that category. Sorting results for long term dating / marriage words are presented in Table C7.

The next set of analyses examined familiarity ratings for words in each of the domains under investigation. Mean familiarity ratings (0=lowest, 4=highest) for the full set of words in each domain were computed. The results yielded highly similar familiarity ratings for both females and males in each domain ranging from 3.89 to 4.00. For example, the mean familiarity rating for physical attraction words was 3.94 (SD=. 02) for females and 3.97 (SD=. 02) for males. The mean familiarity rating for long term dating / marriage words was 4.00 (SD=. 02) for both females and males. Means and standard deviations for this analysis are presented in Table C8.

Table C8

Familiarity Ratings by Sex and Domain Type for the Full Item Set[a]

Domain Type	Num. Words	Mean Familiarity Rating (0-4)					
		Female		Male		Total	
		M	SD	M	SD	M	SD
Physical Attraction	10	3.94	.02	3.97	.02	3.95	.14
Financial Resources	10	3.89	.02	3.94	.02	3.92	.23
Dominant Behavior	10	3.92	.02	3.93	.02	3.93	.23
Casual Sex / 1-NS	9	3.94	.02	3.97	.02	3.95	.18
Long Term Dating / Marriage	9	4.00	.02	4.00	.02	4.00	.02
Total	48	3.94 n=56	.23	3.96 n=56	.11	3.95 N=112	.18

[a] Categories 1, 2, and 3 for future use in study of attention
Mean differences not statistically significant

These data were submitted to a general linear model analysis of variance to test the effects of gender and domain category on mean familiarity ratings. It was revealed that gender did not significantly influenced mean familiarity ratings, F (1,110)=2.16, p = .14, ns. Context did not significantly effect word familiarity ratings across participants, F (2,109)=1.05, p = .35, ns.

Mean ratings of social acceptableness (0=lowest, 4=highest) were similarly analyzed. The results showed that mean ratings of social acceptableness across participants were relatively high and ranged from 3.05 to 3.94. The highest mean ratings were found in the long term dating / marriage domain for both females (3.94) and males (3.91). The lowest ratings of social acceptableness were revealed in the casual sex / 1-night stand domain, again for both females (3.05) and males (3.08). Social acceptableness ratings for the domains of physical attraction, financial resources and dominant behavior ranged from 3.43 to 3.84. Means and standard deviations for these ratings are presented in Table C9.

Next, these data were submitted to a general linear model analysis of variance to test the effects of gender and domain category on social acceptability ratings. It was revealed that gender did not significantly influenced social acceptability ratings, F (1,110)= .11, p = .73, ns. However, word domain was found to significantly influence social acceptability ratings across participants, F (2,109)= 4.40, $p < .01$. Post hoc analyses using the Bonferroni correction revealed that words in the domains of both physical attraction and financial resources were rated significantly higher in social acceptableness than dominant behavior words (Mdiff= .23 and .39 respectively, $p < .05$). Financial resource words were judged to be more socially acceptable than physical attraction words, although this finding only approached significance. This analysis is presented in Table C10.

Table C9

Social Acceptability Ratings by Sex and Domain Type for the Full Item Set[a]

Domain Type	Num. Words	Mean Social Acceptability Rating (0-4)					
		Female		Male		Total	
		M	SD	M	SD	M	SD
Physical Attraction	10	3.68	.33	3.64	.35	3.66	.34
Financial Resources	10	3.84	.32	3.82	.41	3.83	.37
Dominant Behavior	10	3.43	.74	3.43	.76	3.43	.75*
Casual Sex / 1-NS	9	3.05	.73	3.08	.76	3.07	.74*
Long Term Dating / Marriage	9	3.94	.14	3.91	.22	3.93	.19
Total	48	3.59	.60	3.58	.62	3.58	.61
		n=56		n=56		N=112	

[a] Only categories 1, 2, and 3 for future use in study of attention

* $p < .01$

The final analysis using the full data set examined emotionality ratings. Mean ratings of emotionality (0=lowest, 4=highest) were computed. Unlike the two previous ratings, these results yielded more variable data across participants and ranged from .86 to 2.99. Words in the financial resource domain were found to have the lowest mean emotionality rating for both females (1.01) and males (.86). The highest emotionality ratings were given to words in the long term dating / marriage domain, again by both females (2.99) and males (2.64). Female ratings of emotionality

Table C10

Effects of Sex and Domain Type on Social Acceptability Ratings for the Full Item Set

Between Subjects Effects	SS	df	MS	*F*	*p value* Sig.
Gender	.03	1	.03	.11	.737 ns
Domain Type	8.79	2	4.40	16.24	.001 **
Gender x Domain Type	.01	2	.01	.03	.974 ns

Post Hoc Comparisons[a]

Domain Type			Mean Difference	Std. Error	*p value* Sig.
1. Physical Attraction	vs.		-.17	.07	.065 ns
2. Financial Resources					
1. Physical Attraction	vs.		.23	.07	.003 *
3. Dominant Behavior					
2. Financial Resources	vs.		.39	.07	.001 **
3. Dominant Behavior					

[a] Bonferroni correction used to control for Type I errors

*$p < .01$; **$p < .001$

for dominant behavior words (2.72) and casual sex / 1-night stand words (2.71) were slightly higher than males ratings in those domains (2.36 and 2.31 respectively). Means and standard deviations for these data are presented in Table C11.

Lastly, these emotionality ratings were submitted to a general linear model analysis of variance to examine the effects of gender and domain category on these data. It was revealed that both gender, $F(1,110) = 3.09$, $p < .05$, and particularly context, $F(2,109) = 117.38$, $p < .01$

Table C11

Emotionality Ratings by Sex and Domain Type for the Full Item Set

Domain Type	Num. Words	Mean Emotionality Rating (0-4)					
		Female		Male		Total	
		M	SD	M	SD	M	SD
Physical Attraction	10	1.68	.78	1.62	.92	1.65	.85
Financial Resources	10	1.01	.87	.86	.77	.93	.82
Dominant Behavior	10	2.72	.65	2.36	.69	2.54	.69
Casual Sex / 1-NS	9	2.71	.70	2.31	.73	2.51	.74
Long Term Dating / Marriage	9	2.99	.62	2.64	.82	2.82	.75
Total	48	2.22	1.05	1.96	1.02	2.09	1.04
		n=56		n=56		N=112	

[a] Categories 1, 2, and 3 for future use in study of attention

significantly influenced emotionality ratings across participants. Post hoc analyses revealed that words in the dominant behavior domain were rated as significantly more emotional than words in either the physical attraction (*M*diff= .89, $p < .01$) or financial resources domains (*M*diff= 1.61, $p < .01$); the latter difference was found to be particularly salient. Further, physical attraction words were rated as significantly more emotional than those in the financial resources domain (*M*diff= .72, $p < .01$). This analysis is presented in Table C12**.**

Table C12

GLM Test for Effects of Sex and Domain Type on Emotionality Ratings for the Full Item Set

Between Subjects Effects	SS	df	MS	*F*	*p value*	Sig.
Gender	3.09	1	3.09	5.00	.026	*
Domain Type	144.86	2	72.43	117.38	.001	**
Gender x Domain Type	1.41	2	.70	1.14	.321	ns

Post Hoc Comparisons[a]

Domain Type			Mean Diff.	Std. Err.	*p value*	Sig.
1. Physical Attraction 2. Financial Resources	vs.		.72	.10	.001	**
1. Physical Attraction 3. Dominant Behavior	vs.		-.89	.10	.001	**
2. Financial Resources 3. Dominant Behavior	vs.		-1.61	.10	.001	**

[a] Bonferroni correction used to control for Type I errors

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

3-Word Subsets. The analyses described in the above sections were repeated using a 3-word subset of data from each domain. These 3-word subsets were selected from the original pilot data based on a sorting accuracy rate of 100% for females and males. The purpose of these analyses was to provide control data for use in the later organization of knowledge study. Word subsets were assembled for each domain to include physical attraction (eyes, hair, smile), financial

resources (jobs, money, bank), dominant behavior (abuse, control, loud), casual sex / 1-night stand (slut, disease, immoral), and long term dating / marriage (love, family, trust).

Initially, the mean percentage of sorting accuracy for these 3-word subsets was computed. It was revealed that females and males were in general highly accurate in sorting these words into their proper domain category. The mean percentages of sorting accuracy across participants ranged from 91% to 99%. One exception was that males accurately sorted 83% of casual sex / 1-night stand words compared with a 90% sorting accuracy rate for females. Means and standard deviations are presented in Table C13. These data were submitted to GLM analysis of variance to

Table C13
Means and SD for 3-Item Subsets Correctly Sorted

Domain [Words]	# Items	Mean % Correctly Sorted					
		Female		Male		Total	
		M	SD	M	SD	M	SD
Physical Attraction [eyes, hair, smile]	3	.98	.08	.99	.04	.99	.05
Financial Resources [jobs, money, bank]	3	.98	.11	.98	.09	.98	.10
Dominant Behavior [abuse, control, loud]	3	.94	.14	.91	.21	.93	.18
Casual Sex / 1-NS [slut, disease, immoral]	3	.90	.18	.83	.26	.87	.23
Long Term Dating / Marriage [love, family, trust]	3	.98	.11	.98	.09	.98	.10
		n=56		n=56		N=112	

[a] 3-word subsets for future use in study of knowledge organization

test the effects of on mean percentage of sorting accuracy. It was revealed that gender had no significant effect on sorting accuracy in any of the five domains, Multivariate F (5,106)= .93, p= .47, ns. As mentioned above, males demonstrated less sorting accuracy in the casual sex / 1-night stand domain, although this difference only approached statistical significance, F (1,110)= 3.26, p= .09, ns.

Mean ratings of word familiarity, social acceptableness, and emotionality for the 3-word subsets were examined next. A series of general linear model analyses of variance were conducted using an adjusted p value= .001 to test the effects of gender and context domain on each of these ratings. First, it was revealed that neither sex, F (1,110)= .78, p= .37, nor domain type, F (4,107)=2.01, p = .09, significantly influenced mean familiarity ratings. Domain type in particular, however, was found to significantly influence mean ratings of social acceptableness, F (4,107)= 51.11, $p < .01$. In fact, post hoc comparisons revealed several significant differences in social acceptableness ratings between domains. Words in the casual sex / 1-night stand domain were rated significantly less socially acceptable than words in either the physical attraction domain (Mdiff= -1.50, $p < .01$), or the financial resources domain (Mdiff= - 1.42, $p < .01$), or the long term dating / marriage domain (Mdiff= - 1.48, $p < .01$). This analysis is presented in Table C14.

Finally, both significant gender and domain type differences were revealed for mean ratings of emotionality for the 3-word subsets. The effect of sex on emotionality ratings was more modest, F (1,110)= 11.60, $p < .01$, while the effect of domain type was considerable, F (4,107)= 98.69, $p < .01$. Across domains, females rated words as significantly more emotional than did males, (Mdiff= .26, $p < .01$). Again, post hoc analyses revealed numerous significantly

Table C14

Effects of Sex and Domain Type on Social Acceptability Ratings for 3-Item Subsets[a]

Between Subjects Effects	SS	df	MS	*F*	*p value*
Gender	.12	1	.12	.41	.522
Domain Type	182.09	4	45.52	151.11	.001
Gender x Domain Type	.05	4	.01	.04	.997

Significant Post Hoc Comparisons[b]		Mean Diff.	Std. Err.	*p value*
1. Physical Attraction	vs.	.51	.07	.001
3. Dominant Behavior				
1. Physical Attraction	vs.	1.50	.07	.001
4. Casual Sex / 1NS				
2. Financial Resources	vs.	.43	.07	.001
3. Dominant Behavior				
2. Financial Resources	vs.	1.42	.07	.001
4. Casual Sex / 1NS				
3. Dominant Behavior	vs.	.99	.07	.001
4. Casual Sex / 1NS				
3. Dominant Behavior	vs.	-.50	.07	.001
5. Long Term Dating /Mar.				
4. Casual Sex / 1NS	vs.	-1.48	.07	.001
5. Long Term Dating /Mar.				

[a] 3-word subsets intended for use in subsequent study of knowledge organization

[b] Bonferroni correction used to control for Type I errors.

differences in emotionality ratings between domains. Notable differences included significantly higher ratings between words from the long term dating / marriage domain and financial resources words (*M*diff= 2.30, $p < .01$), physical attraction words (*M*diff= -1.50, $p < .01$), and dominant behavior words (*M*diff= 1.10, $p < .01$). Only words in the casual sex / 1-night stand domain were rated higher in emotionality than long term dating / marriage words (*M*diff= 1.33, $p < .01$). These analyses are summarized in Table C15.

Discussion

The data collected in Pilot B provided control data for the target words in each mate selection domain generated previously in Pilot A. One series of analyses was conducted using the full word sets from each domain to provide control data for target words in the dot-probe attention task planned as Study 2. A second series of analyses was then conducted using a 3-word subset from each domain to provide control data for the words in the knowledge organization (Pathfinder) task planned as Study 3.

The first series of analyses showed that the full sets of target words in the domains of physical attraction, financial resources, and dominant behavior were sorted into the correct categories with high accuracy that ranged from 93-98%. No gender differences were found for sorting accuracy among these mate selection domains. High sorting accuracy supported the claim that these target words were reliably associated with their respective domain categories and thus appropriate for inclusion in the dot-probe attention task. While it was also found that women sorted the full set of long-term dating / marriage words significantly more accurately than did men, target words from this domain were not slated for inclusion in the dot-probe attention task.

Table C15

Effects of Sex and Domain Type on Emotionality Ratings for 3-Item Subsets[a]

Between Subjects Effects	SS	df	MS	*F*	*p value*
Sex	9.25	1	9.25	11.60	.001
Domain Type	314.93	4	78.73	98.69	.001
Sex x Domain Type	3.44	4	.86	1.08	.366

Significant Post Hoc Comparisons[b]			Mean Diff.	Std. Err.	*p value*
Female	vs.	Male	.26	.08	.001
1. Physical Attraction	vs.	2. Financial Resources	.97	.12	.001
1. Physical Attraction	vs.	4. Casual Sex / 1NS	-.56	.12	.001
1. Physical Attraction	vs.	5. Long Term Dating /Mar.	-1.33	.12	.001
2. Financial Resources	vs.	3. Dominant Behavior	-1.20	.12	.001
2. Financial Resources	vs.	4. Casual Sex / 1NS	-1.53	.12	.001
2. Financial Resources	vs.	5. Long Term Dating /Mar.	-2.30	.12	.001
3. Dominant Behavior	vs.	4. Casual Sex / 1NS	-.33	.12	.006
3. Dominant Behavior	vs.	5. Long Term Dating /Mar.	-1.10	.12	.001
4. Casual Sex / 1NS	vs.	5. Long Term Dating /Mar.	1.33	.12	.001

[a] 3-word subsets intended for use in subsequent study of knowledge organization

[b] Bonferroni correction used to control for Type I errors

Finally, the full set of casual sex / 1-night stand words were sorted least accurately by both genders (70%), but again targets from this domain were not scheduled for inclusion in the dot-probe task.

Ratings of familiarity, social acceptability, and emotionality for the full set of target words in each domain yielded interesting results. First, familiarity ratings for words were generally high as expected, and neither gender nor mating context had an effect on these ratings. This finding ruled out familiarity as a potential confound in the dot-probe attention task. Next, although there was no gender effect on word ratings of social acceptableness, mating context was found to have a significant effect on these ratings. Therefore, this finding indicated that it would be necessary to statistically control for ratings of social acceptableness in the dot-probe task. Finally, significant effects of both gender and mating context were found for ratings of target word emotionality. This result indicated that it would also be necessary to statistically control for emotionality in the dot-probe attention task.

The second series of analyses showed that the 3-word target subsets from the 5 mate selection domains were sorted with an accuracy rate that ranged from 87-99%. Neither gender nor domain type significantly influenced participant sorting accuracy, although the latter came close. The 3 words in the casual sex / 1-night stand domain were sorted least accurately by both genders. Most of this variance was accounted for by the word "immoral," which was alternatively sorted into the dominant behavior domain at a rate of 22% for women and 24% for men. Ratings of word familiarity were again high, and neither gender nor domain type significantly effected them. Next, although gender did not have an effect on social acceptableness ratings, domain type was found to

significantly influence these ratings. Therefore, it would be necessary to statistically control for ratings of social acceptableness in the knowledge organization task. Lastly, both gender and domain type has a significant effect on participant ratings of emotionality, with women rating words across domains as more emotional than did men. It would thus be necessary to also control for emotionality ratings in the knowledge organization experiment.

To summarize, the purpose of Pilots A and B was to assemble research materials suitable for future use in cognitive research in this area. Target words in each domain were generated and correctly sorted into their respective domains reliably enough to warrant inclusion in Studies 2 and 3. Further analyses indicated that statistical control for word ratings of both social acceptableness and emotionality would be necessary in both Study 2 and 3.

APPENDIX D

INFORMED CONSENT FOR PILOTS A AND B

1. Study Title: Romance & Sex: Word Associations and Ratings
2. Performance Sites: Louisiana State University
3. Contacts: Michael J. Stasio; 388-4027, James H. Geer, Ph.D.; 388-4095
4. Purpose of the Study: Pilot A: Generate word associations to a number of categories related to human relationships. Pilot B: Complete 4 tasks for words related to selecting a mate. The data collected in this study will be used in future research.
5. Subjects Included: Male and female undergraduate psychology students aged 18 and older.
6. Exclusion Criteria: Males and female under the age of 18 will be excluded from this study. Participants in Part A will be excluded from completing Part B of the study.
7. Number of Subjects: 40 undergraduates will participate in each study.
8. Study Description: Pilot A: Participants will write down as many word associates within each category that he or she can generate in 3 minutes. Pilot B: Participants will make judgments about word familiarity, social acceptance, emotionality, and category matching.
9. Benefits: Participant will receive psychology extra credit points for their participation. The normative data collected will benefit future research in the area of sex and human mate selection.
10. Risks/Discomforts: Participants may experience minimal discomfort in generating or making judgments about words related to sexuality.
11. Right to Refuse: Subjects have the right at any time to stop participating in this study. There is NO PENALTY for stopping at any time: full extra credit points will be awarded.
12. Privacy: All data will be coded by assigned number, and participants' names will be separated from their responses. Upon study completion, the list of participants will be destroyed so that answers cannot be identified with individuals.
13. Questions: If you have further questions, please contact Mike Stasio at 388-4027 or Email mstasio@lsu.edu.

The study has been discussed with me and all my questions have been answered. I understand that I may direct additional questions regarding study specifics to the investigators listed above. If I have questions about participants' rights or other concerns, I can contact the Vice Chancellor of the LSU Office of Research at 388-5833. I agree with the terms above and acknowledge that I have been given the opportunity to have and keep a copy of the consent form.

Participant Name (print)_____ Date of Birth_____

Participant Signature_____ Today's Date_____

APPENDIX E

DEFINITIONS FOR RATING TASKS

1. Level of Familiarity

Level of Familiarity is defined as the degree to which you know a word or are familiar with that word (NOT how often you may say the word). Please rate the following words on level of familiarity using a 5-point scale anchored by "highly unfamiliar" and "highly familiar" at either end and "moderately" in the middle.

2. Level of Social Acceptableness

Level of Social Acceptableness is defined as the degree to which the use of a word is limited to only certain situations because it is socially unacceptable; for example, could you say this word to your grandparents? Please rate the level of social Acceptableness for the following words using a 5-point scale anchored by "highly unacceptable" and "highly acceptable" at either end and "moderately" in the middle.

3. Level of Emotionality

Level of emotionality is defined as the degree to which that word evokes an emotional response for the reader. Please rate the level of emotionality for the following words using a 5-point scale anchored by "highly emotional" and "highly unemotional" at either end and "moderately" in the middle.

APPENDIX F

INFORMED CONSENT FOR STUDY 2

1. Study Title: Factual Memory for a Vivid Story
2. Performance Sites: Louisiana State University
3. Contacts: Michael J. Stasio, M.A., 388-4027, James H. Geer, Ph.D., 388-4095.
4. Purpose of the Study: To investigate whether memory for a story is influenced by completing a visual task.
5. Participants Included: Male and female undergraduate psychology students age 18 and older.
6. Exclusion Criteria: Undergraduates under 18 years of age; those who completed the related study, Thematic Memory for a Vivid Story, will be excluded.
7. Number of Participants: 160 participants
8. Study Description: Participants will complete a computer task to study whether memory for a story is influenced by a visual task. First, participants will read and remember the presented story. Next, participants will complete a series of visual tasks while questions about the story appear at times to test one's memory.
9. Benefits: Psychology extra credit is awarded for participation.
10. Risks/Discomforts: There is minimal risk/discomfort for those who participate in this study. Some participants may experience mild discomfort if they should read words related to sexuality.
11. Right to Refuse: Participation is voluntary, and participants may withdraw from the study at any time.
12. Privacy: All computer data will be coded by assigned number. All consent forms will be stored in a room separate from the computer lab. Participants' names will not be associated with their responses.
13. Questions: Please E-mail Mike Stasio: mstasio@lsu.edu.

The study has been discussed with me and all my questions have been answered. I understand that I may direct additional questions regarding study specifics to the investigators listed above. If I have questions about subjects' rights or other concerns, I can contact the Vice Chancellor of the LSU Office of Research at 388-5833. I agree with the terms above and acknowledge that I have been given the opportunity to have and keep a copy of the consent form.

Participant Name (print)_____ Date of Birth_____

Participant Signature_____ Today's Date_____

APPENDIX G

CASUAL SEX / 1-NIGHT STAND MANIPULATION

'The Couple'

The music was loud making conversation difficult at the party. They both felt an immediate attraction the minute they saw each other from across the room. Neither of them was looking for a long-term relationship, but each desired the other. Back at the apartment, they put on some music and dimmed the lights. Each felt a thrill as they started kissing and taking each other's clothes off. They weren't thinking about the future, just enjoying the moment.

Questions presented at intervals throughout the dot-probe task:

1. The couple met at a party [T]
2. Neither was looking for a serious relationship [T]
3. They felt an immediate attraction to one another [T]
4. They went to a hotel to have sex [F]
5. They took each other's clothes off [T]

APPENDIX H

LONG TERM DATING / MARRIAGE MANIPULATION

'The Couple'

They had been dating exclusively for two years when they decided to get married. Planning a wedding and honeymoon was more work than they expected. The list of people to call grew longer each day. There was the caterer, the florist, the baker, the travel agent, and more. But they did their best to have fun planning together with each person taking some of the responsibility. They were building the foundation for a long, happy life together.

Questions to be presented at intervals throughout the dot-probe task:

1. The couple had been dating two years when they decided to get married [T]
2. The couple planned to elope [F]
3. The couple cooperated to plan the wedding [T]
4. The couple wanted a small wedding [F]
5. A travel agent helped the couple plan a honeymoon [T]

APPENDIX I

INFORMED CONSENT FOR STUDY 3

1. Study Title: Thematic Memory for a Vivid Story
2. Performance Sites: Louisiana State University
3. Contacts: Michael J. Stasio, M.A., 388-4027, James H. Geer, Ph.D., 388-4095.
4. Purpose of the Study: To investigate whether memory for a vivid story is influenced by completing a word judgment task.
5. Participants Included: Male and female undergraduate psychology students age 18 and older.
6. Exclusion Criteria: Undergraduates under 18 years of age; those who completed the related study, Factual Memory for a Vivid Story, will be excluded from participating.
7. Number of Participants: 120 participants
8. Study Description: First, participants will read and remember the presented story. Next, participants will judge the relatedness of two words in a series of trials. Questions about the story will appear after the judgment task to test memory for the story.
9. Benefits: Psychology extra credit is awarded for participation.
10. Risks/Discomforts: There is minimal risk / discomfort for those who participate in this study. Some participants may experience mild discomfort if they should read words related to sexuality.
11. Right to Refuse: Participation is voluntary, and participants may withdraw from the study at any time.
12. Privacy: All computer data will be coded by assigned number. All consent forms will be stored in a room separate from the computer lab. Participants' names will not be associated with their responses in any way.
13. Questions: Please E-mail Mike Stasio: mstasio@lsu.edu.

The study has been discussed with me and all my questions have been answered. I understand that I may direct additional questions regarding study specifics to the investigators listed above. If I have questions about subjects' rights or other concerns, I can contact the Vice Chancellor of the LSU Office of Research at 388-5833. I agree with the terms above and acknowledge that I have been given the opportunity to have and keep a copy of the consent form.

Participant Name (print)_____ Date of Birth_____

Participant Signature_____ Today's Date_____

VITA

Mike Stasio grew up in Revere, Massachusetts, a city just north of Boston. He attended public elementary and high schools prior to majoring in psychology at Clark University in Worcester, Massachusetts. After receiving a master's degree in education from Teachers College in New York City, he moved to New Orleans to work for Tulane University in student services. While at Tulane, Mike met his wife Kathryn Duncan, then a graduate student in the English Department. They were married in 1996 at a mansion on Prytania St. in New Orleans. He had the pleasure of working for Janet Hansche at Tulane, a skilled psychologist and graduate of Louisiana State University. It was through conversations with her that Mike decided to pursue clinical psychology as a career. He entered the master's program at Southeastern Louisiana University, where he had the privilege of working with Earl Capron, an excellent researcher and clinician. Mike was fortunate to meet James Geer shortly after entering the doctoral program at LSU. Professor Geer has been an influential teacher and mentor ever since. Mike hopes to conduct research in the area of cognition and sexuality throughout his career.