VISUAL ATTENTION TO REPRODUCTIVELY RELEVANT STIMULI: THE ROLE OF SEX-LINKED BIOLOGICAL AND SOCIAL FACTORS

A Dissertation

by

NORA ELIZABETH CHARLES

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2011

Major Subject: Psychology

VISUAL ATTENTION TO REPRODUCTIVELY RELEVANT STIMULI: THE ROLE OF SEX-LINKED BIOLOGICAL AND SOCIAL FACTORS

A Dissertation

by

NORA ELIZABETH CHARLES

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Approved by:

Chair of Committee,	Gerianne Alexander
Committee Members	Eddie Harmon-Jones
	Leslie Morey
	Jeffrey Winking
Head of Department	Ludy Benjamin

December 2011

Major: Psychology

ABSTRACT

Visual Attention to Reproductively Relevant Stimuli: The Role of Sex-Linked Biological and Social Factors.

(December 2011)

Nora Elizabeth Charles, B.A., Northwestern University; M.S., Texas A&M University

Chair of Advisory Committee: Dr. Gerianne M. Alexander

Research examining interest in stimuli associated with evolved reproductive motivations has demonstrated sex differences in preferences for potential mates and infants, as well as traits and states associated with increased attention to same-sex rivals. Manipulations of reproductive motivations (e.g., mate searching) have also been shown to affect visual attention to these types of stimuli. Most of this work has focused on physical attractiveness in adult targets, which evolutionary theories of mate preferences suggest is less important than social status for women's mate selection, and no research to date has measured patterns of visual attention to infants. Additionally, the stimuli used in past research tend to have low ecological validity and it is not known whether the preferences displayed generalize to the perception of more realistic stimuli. Finally, the potential effects of circulating testosterone on attention to reproductively relevant stimuli have been studied only in very limited ways in men. In the current project, participants self-reported personality traits and characteristics associated with relationships and sexuality, provided samples for analysis of circulating testosterone, were selected to

undergo either a jealousy-inducing or anxiety-inducing priming task, and were shown low and high ecological validity stimuli displaying reproductively relevant figures. Major findings include more similarity between the sexes than is usually assumed and weaker preferences for potential mates with high mate value in high ecological validity scenes than low ecological validity scenes. Suggestions for future research include applying the theory of strategic pluralism to within-person variability in attention to reproductively relevant stimuli.

ACKNOWLEDGMENTS

I would like to thank a number of people who provided the professional and personal support that helped me complete this dissertation. It has been a pleasure to work with my advisor, Gerianne Alexander, whose guidance has shaped me as a researcher, writer, and professional. I would not have been able to complete this project if she had not allowed me the freedom to pursue my interests and invested so much of her time and so many resources in the process. I would also like to thank the faculty of Texas A&M University, particularly my committee members, from whom I learned a great deal both inside and outside the classroom. Les Morey has been a valuable resource and informal mentor to me during these last few years; this project benefitted from his insight as well as that of Eddie Harmon-Jones and Jeff Winking. On a personal level, I wish to acknowledge my parents, Trish and Doug Charles, and the rest of my family. They instilled in me the value of education but, perhaps more importantly, would have supported me no matter what career path I chose. I am also fortunate to have a great group of friends who helped make my time in graduate school personally enriching as well as professionally fruitful. Finally, I wish to thank my fiancé, Jonathan Lindner, who helped me stay focused on my goals and whose flexibility and understanding made my success possible.

TABLE OF CONTENTS

CHAPTER Page

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Next to basic survival, reproduction is the most central motivation for any organism. Modern species have been shaped by natural selection and possess adaptations that promote survival, such as the "fight or flight" response (Cannon, 1915), as well as those that enhance reproductive success, such as the ability to attract and retain a good mate and to raise healthy children. Early evolutionary theorists focused mostly on the adaptations that positively or negatively affected an organism's survival, as evidenced in Charles Darwin's *The Origin of Species* (1859). Although Darwin was able to explain a large proportion of the attributes he observed in many species with his concept of natural selection, he was perplexed by the existence of some features that seemed to either be irrelevant or actually detrimental to survival but yet continued to be inherited through generations. For example, the male peacock's bright tail is beautiful but also energetically costly and has the potential to attract predators. An attribute that seems likely to weaken the chances of an organism's survival should be reduced in subsequent generations by natural selection, yet the peacock's plumage has been retained. Darwin was later able to explain attributes like the peacock's plumage when he recognized the important influence of sexual selection, which acts on adaptations that improve mating success rather than survival, on the evolution of a population (Darwin, 1871). Since Darwin's era, much of the research on sexual selection and the evolution of

---

This dissertation follows the style of *Archives of Sexual Behavior*.

reproduction-related adaptations has focused on mate selection and, to a lesser extent, mate retention.

Sexual selection operates via two main processes: intrasexual competition, in which members of one sex compete for sexual access to members of the other sex; and intersexual selection, in which members of each sex choose their opposite-sex partners on the basis of certain preferences (Darwin, 1871). These patterns of competition and mate selection lead to differential reproductive success among the members of each sex and although both patterns are typically relatively stable in a population, they can change reciprocally over time. For example, soccer skills are rarely, if ever, going to confer a survival advantage. However, if the women in a society share a preference for mating with good soccer players, it will benefit men to compete with one another to display their soccer skills. Women will mate preferentially with the best players and less frequently with the unskilled players, resulting in the unskilled players having fewer of their genes passed on to future generations. Over time, the offspring born into this society will acquire the traits of both sexes: they will be better at soccer and they will care more about soccer skills than their distant ancestors.

Mate selection

The sexual selection for certain traits, such as soccer prowess or the peacock's tail, has an effect on shaping the members of a population. Although sexual selection is ubiquitous in human societies, the specific traits that are desired vary depending on culture and the characteristics of the individuals involved. One of the biggest factors influencing the patterns of sexual selection and competition is the reproductive biology

of each sex. According to Trivers (1972), the discrepancy between the minimum parental investment biologically required from each sex has a significant impact on the structure of a population's mating system. In mammalian species with internal fertilization and gestation, such as humans, the females must bear the total burden of the gestation and lactation periods, and they may have to provide all care required to raise the offspring to reproductive age. Males, on the other hand, are able to create offspring through one act of copulation. They cannot directly involve themselves in prenatal development, though they may provide resources that improve the health of the mother and fetus, and their participation in rearing offspring may not be necessary for the offspring to reach reproductive maturity. Because it is adaptive for the more investing sex to be discriminating about their sexual partners, they typically have stricter mate preferences and the less investing, and less selective, sex competes for the opportunity to mate.

This pattern of selectivity and competition can be seen in humans, where differences in reproductive biology make reproduction more "expensive" for women, thus making it adaptive for women to be more cautious about choosing a partner than men are. Although women are typically more selective than men, men are also somewhat selective about choosing their mates. The considerable amount of investment and long-term biparental care that is often required to raise human offspring has led to men being more selective than the males of other species with similar reproductive biology, though still less selective than women (Buss, 1989). The types of mate preferences that individuals exhibit are hypothesized to have developed from a number

of sources. Notable individual differences exist for mate preferences but there are often similarities among people within the same sex, within the same culture, and even across cultures. Some of these preferences are the result of formative experiences, cultural influences, or personal attributes that do not bear directly on reproductive fitness, such as a desire for good soccer skills, and other preferences are more closely related to the types of attributes that would have promoted successful reproduction for ancient humans.

Based on what is known about evolutionary history, humans evolved in societies in which men competed for sexual access to young, fertile (i.e., physically attractive) women. The most reproductively successful men were those who mated with women who produced many children that survived to reproductive maturity, the most reproductively successful women were those who selected mates who were able and willing to invest resources in them and their offspring (i.e., financially successful). This pattern of mate preferences can still be seen in modern humans. Men usually prefer mates possessing cues associated with health and fertility, such as youth, low waist-to-hip ratio, and physical attractiveness (Buss & Barnes, 1986; Kenrick, Sadalla, Groth, & Trost, 1990; Townsend & Levy, 1990) and women are typically more interested in indicators of current or potential resource acquisition, such as financial success and social dominance than physical appearance (Buss & Schmitt, 1993; Kenrick et al., 1990; Li, Bailey, Kenrick, & Linsenmeier, 2002; Sadalla, Kenrick, & Vershure, 1987; Townsend & Levy, 1990; Wiederman & Allgeier, 1992). The sex difference in preference for these two traits is moderate in size (e.g., $d > .08$ in Bailey, Gaulin, Agyei,

& Gladue, 1994), and has been found cross-culturally (Buss, 1989; Buss, Abbott, Angleitner, & Asherian, 1990). Both sexes prefer attractive partners to unattractive partners but women will choose an unattractive but socially dominant man over an attractive, non-dominant man (Townsend & Levy, 1990), whereas men do not appear interested in social dominance and instead place a premium on physical attractiveness when choosing a partner (Sadalla et al., 1987).

The data supporting these evolved sex differences in mate preferences has not come from self-reported measures alone. Women mentioning youth and attractiveness in their personal advertisements receive significantly more responses from men than do women who are older or who do not mention their physical appearance. Similarly, men who report abundant financial resources receive more responses from women than men who do not discuss their financial success (Baize & Schroeder, 1995; Goode, 1996). At speed-dating events, men appear to choose women on the basis of their physical attractiveness, regardless of their previously stated preferences for various personal attributes, but women seem to perform a more calculated assessment, choosing men whose overall mate value is equivalent to their own level of physical attractiveness. This difference in selection criteria may hint at different levels of interest in short-term vs. long-term relationships in each sex. Men may care less about a woman's personal characteristics because they do not intend to be in a relationship with her for very long, and women may be making more of an effort to find a partner who has an array of good qualities but does not surpass them in overall mate value because such a man may move on to a higher-quality woman rather than investing in his original mate and her offspring

throughout a long-term relationship (Todd, Penke, Fasolo, & Lenton, 2007). Reviews of marriage records also show husbands are typically older than wives, by an average of three years across a variety of world cultures (Buss, 1989), and that men choose increasingly younger women as they grow older, with an average of five years younger at the second marriage and eight years younger at the third marriage (Kenrick & Keefe, 1992).

Research has documented the existence of these fairly stable sex differences in mate preferences, but it is important to note that mate preferences have been found to vary depending on factors such as relationship context. For example, men prefer chastity in long-term mates but promiscuity in short-term mates, and they place more importance on sexiness and sexual ability in potential short-term mating partners than in potential long-term partners. Men also report significantly lower standards for short-term partners than long-term partners (Kenrick, Groth, Trost, & Sadalla, 1993; Li & Kenrick, 2006). In contrast, women tend to have higher standards for their short-term mates, at least in some areas. Women place more emphasis on immediate resources than long-term financial prospects when considering short-term mates and they elevate the importance of men's physical attractiveness when they are considering only short-term mating scenarios (Buss & Schmitt, 1993). These findings suggest that mate preferences are somewhat flexible and that the type of relationship expected has considerable influence on the qualities desired.

The traits of the individual choosing a mate also affect their mate selection. Studies in the United States and cross-culturally have shown that more traditional gender

beliefs are related to stronger sex-typical mate preferences in both men and women (Eastwick et al., 2006; Johannesen-Schmidt & Eagly, 2002). In addition, men who report more sensation-seeking prefer women with more feminine faces, who are likely to have the best reproductive fitness (Jones et al., 2007). Jones and colleagues suggest that this finding reflects the fact that men who take risks are likely to be preferred by women, and thus have better mating success, than men who are more risk-averse. Men who are lower on sensation-seeking may prefer less feminine faces because these faces represent more realistic mates for them. In addition, women who report desiring a higher number of children show a preference for more feminine male face shapes (Moore, Smith, Cassidy, & Perrett, 2009), suggesting that these women are sensitive to the costs of raising multiple children and the utility of a partner who will be a good father and provider rather than the most masculine man available. It should also be noted that there is some evidence that individuals of both sexes desire partners whose social status and attractiveness is roughly equal to their own, rather than the idealized version of their mate preferences that is suggested by some evolutionary theorists (Buston & Emlen, 2003).

There are clear biologically based reasons for the development of sex differences in mating preferences and behaviors over the course of evolutionary history, but there are also important social and environmental influences that cannot be discounted. The Social Role Theory of sex differences suggests men and women are different in a number of ways because their psychology adapts to the roles in which they find themselves in current society, not the roles that they have occupied throughout

evolutionary history (Eagly & Wood, 1999). For example, all known societies past and present function in a patriarchal system (Goldberg, 1973) and most societies allow polygyny in some legal form (Murdock, 1981). Women and men have also typically occupied different roles in both the family and the society, with men's positions potentially leading to status and wealth and women's positions mostly involving work like childcare, which is unlikely to lead to power and status (Eagly & Wood, 1999). Accordingly, women's preference for successful and powerful men can be understood as a way for women to gain status in a society that institutionalizes gender discrimination.

Although there are surely societal influences on some aspects of mating psychology, significant challenges to the Social Role Theory of sex differences in human behavior include findings about women's mate preferences that do not have the potential to elevate their status in society. Women's desire for men who are older than themselves has been explained by Social Role Theory as a desire for power and resources, but research has shown that even elderly women prefer men who are older than themselves (Buss, 1994). If women of all ages were simply seeking the men with the highest status or best financial resources in a society, then they would choose men in their prime earning years, not men well into retirement (Okami & Shackelford, 2001). In addition, even very successful and powerful women, who should not feel a motivation to overcome institutionalized powerlessness, prefer men who are older than them and even more powerful (Kenrick & Keefe, 1992; Townsend, 1989; Wiederman & Allgeier, 1992).

Men's preference for young, physically attractive women is regarded by social role theorists as the result of men seeking to hold the power in their romantic relationships, yet attractive young women arguably wield much power. If men simply wanted to be more powerful than their mates they would choose less attractive young women, who do not have the status that is granted to attractive young women in modern society and are probably not old enough to have much material wealth of their own. Instead, research has consistently found that the preference for attractive women aged roughly 18-24 years old is prevalent in men of all ages (Okami & Shackelford, 2001). Women of that age are in their peak years of fertility so they are attractive to all men, whether those men are adolescents slightly younger than that range or men much older, for both fantasies (Buunk, Dijkstra, Kenrick, & Warntjes, 2001) and actual partners (Kenrick & Keefe, 1992; Kenrick, Keefe, Gabrielidis, & Cornelius, 1996; Symons, 1979). These sex-typical preferences do not vary across cultures, even in relatively egalitarian societies like those in northern Europe, suggesting that the current power dynamics between men and women in a given society are not the true engine behind sexually dimorphic mate preferences (Buss, 1994).

Mate retention

In addition to influencing the reproductive success of individuals in a population, the sex difference in mate preferences also impacts intrasexual competition. Men typically belittle their rivals by deriding their ambition or work ethic, whereas women more often criticize a rival's physical appearance (Buss, 1989). Because women's strongest preference is for resource acquisition and men's strongest preference is for

physical attractiveness, it is reasonable to assume that such competitive tactics might be effective in convincing a potential mate that a rival does not meet their standards. This type of intrasexual competition does not end once a relationship has been formed because a partnered individual must still strive to retain a high-quality mate. Men and women display sex-typical behaviors when trying to keep their mate's affections that are similar to those used when they are pursuing a mate. In order to keep their mates, men are more likely to display their resources or make threats against potential rivals and women are more likely to enhance their physical appearance or try to provoke their partner's jealousy by displaying their attractiveness to other men (Buss & Shackelford, 1997).

Men and women also seem to be aware of the mate value of same-sex individuals who may capture their mate's attention, and they differ on the characteristics of sexual rivals that produce the most jealousy. In a cross-cultural study of intrasexual competition, men reported being more distressed by a rival who possessed better financial resources and physical strength than they did, and women were more upset when their rival was more beautiful than they were (Buss, Shackelford, Choe, Buunk, & Dijkstra, 2000). Although it is sometimes problematic, this jealousy may be justified. Research has shown that men exposed to attractive women and women exposed to dominant men subsequently rate their romantic relationships less favorably than do people who viewed opposite-sex individuals who were average on those traits (Kenrick, Neuberg, Zierk, & Krones, 1994). However, it should be noted that recent research has shown that men in relationships devalue their ratings of attractiveness for women in the

fertile phase of their menstrual cycle, who are judged to be at their most attractive by single men. This finding is described by the authors as providing evidence of men's attempts to maintain their satisfaction with their current relationship (Miller & Maner, 2010).

Although there is no sex difference in feelings of jealousy when faced with a partner's infidelity, men and women do not react the same way to all aspects of the infidelity. Men report being more disturbed by the sexual nature of their partner's extra-pair relationship and women report more distress as a result of the emotional aspects of the affair (Buss & Greiling, 1999). This sex difference may have an evolutionary basis because men's reproductive fitness throughout evolutionary history could be most threatened by a mate's sexual infidelity and their own subsequent investment in unrelated children. Women's reactions to their partner's emotional infidelity may be stronger because that behavior could signal men's willingness to divest resources from current partners and their offspring in order to invest them in a new love interest (Bailey et al., 1994; Buss, Larsen, Westen, & Semmelroth, 1992; Buss et al., 1999). Thus, each sex's particular brand of jealousy may actually be an adaptation designed to protect one's reproductive fitness.

Interest in infants

The preponderance of research has focused on sex differences in seeking and maintaining sexual relationships, but parenting is another aspect of reproduction that involves sex-typical adaptations. In humans and other primates, females tend to be both more involved in infant care and more interested in infants in general than are males

(Best & Williams, 2001; Maestripieri, 1999). Several explanations for this sex difference have been proposed. From the socialization perspective, women are generally expected to be more caring and nurturing than men (Bem, 1974; Skitka & Maslach, 1996) and they are more likely to experience pressure from society to act maternally (Eagly, 1987). More biologically based primate studies suggest that early interest in infants among females is positively related to parenting skills later in life (Fairbanks, 1990), so higher levels of interest in infants in nulliparous women may be advantageous to their subsequent reproduction. In humans, the sex difference in interest in infants typically emerges in early childhood (Berman, 1980; Berman, Smith, & Goodman, 1983; Blakemore, 1981), but the findings concerning adolescents and adults have been more mixed (Feldman & Nash, 1978, 1979a, 1979b; Maestripieri & Pelka, 2002).

The sex difference in interest in infants may have evolved because men and women have a limited amount of energy that can be devoted to reproduction and each sex can maximize their success by dividing that energy into different aspects of the process. As a result, there is a sex difference in the allocation of reproductive effort. Reproductive effort can be divided into mating efforts and parenting efforts (Simpson & Gangestad, 2001). Mating efforts can include satisfying one's current mate as well as seeking a new mate, parenting efforts are any sort of parental behavior that improves the fitness of a single offspring and limits the potential effort a parent can expend on other offspring or on mating effort (Trivers, 1972). Because offspring can be created relatively cheaply for males, and because of the substantial risk posed by investing resources in offspring to whom they are not genetically related, men maximize their reproductive

fitness by devoting more energy to mating than to investing in infants whom they may or may not have sired (Daly & Wilson, 1987). Men's optimal mating strategy is to procreate with many females while investing little in the process and assuming that a number of the offspring will reach sexual maturity and procreate. Of course, this strategy is only effective when men are able to secure a number of mates who are willing to accept little investment and when many offspring are healthy enough to survive to reproductive age. Men who have higher mate value will likely have better genes to pass on to their offspring and they will also be able to attract partners with high mate value, so although they are not investing resources in their offspring, the offspring of men with higher mate value may have a greater likelihood of survival than the offspring of men with low mate value even if neither receives material investment from their fathers. Accordingly, the relative effort put into mating and parenting activities appears to depend somewhat on men's self-perceived mate value (Apicella & Marlowe, 2007). Women, who cannot afford to divert their energy from parenting because they are limited to roughly one child per year no matter how many men they copulate with, have been selected to devote more effort to parenting than to mating activities (Bjorklund & Shackelford, 1999).

Sexual strategy

The allocation of reproductive effort can be thought of as an indication of one's sexual strategy, which is usually described as either short-term or long-term. A short-term orientation indicates a desire for uncommitted sexual relationships and a long-term orientation is associated with requiring a commitment in order to engage in sexual

activity. Like mate preferences, an individual's strategy choice appears to be related to both biological and environmental factors. A person may be predisposed to generally prefer short-term or long-term sexual relationships, but sexual strategy is a fluid trait and specific reproductive choices will depend on the circumstances in which the decision is being made and possible impediments to the successful pursuit of the each strategy. Pursuit of a short-term orientation requires the desire to mate with many partners, the ability to identify willing partners, the capability to discriminate between fertile and infertile partners, and the capacity to avoid commitment and invest few resources. Pursuit of a long-term orientation also requires the identification of a fertile partner, but the goal is to find a partner who will be able to reproduce for some time and who seems to possess characteristics suggesting they will be a good partner and parent. A long-term orientation also generates distinct problems for each sex: for men, the ability to ensure the paternity of any offspring; for women, the likelihood of the man gaining and sharing important resources and possibly providing physical protection for the women and their children (Buss, 1998).

In humans, research has shown that men are more likely than women to pursue a short-term strategy (Simpson & Gangestad, 1991) and the sex difference in interest in casual sex is large (d=1 in Buss & Schmitt, 1993; d=.81 in Oliver & Hyde, 1993). Men typically desire more lifetime sexual partners than women and they are more willing to engage in a sexual relationship with someone whom they do not know very well (Buss & Schmitt, 1993), or even a stranger who has propositioned them in a public place (Clark & Hatfield, 1989; Hald & Hogh-Olesen, 2010). There is also a sex difference in desire

for sexual variety that is moderate to large, with effect sizes ranging from d=.49 to d=.87 (Buss & Schmitt, 1993). These traits are conceptually related to having a short-term mating strategy and are probably at least partially influenced by biological sex differences and differing selective processes throughout evolutionary history. Because men can increase their fitness by procreating with many women and investing little in each child but women gain no particular reproductive advantage by increasing their number of sexual partners, interest in short-term sexual relationships has been selected in men but not in women. Traits like a desire for many different partners, not needing to know a woman for very long (or at all) before engaging in sex, desiring promiscuity in short-term mates, avoiding mating with partners who want a significant commitment, and having lower standards for sexual partners are more common in men. The sex difference in these traits likely stems from their ability to help men engage in uncommitted sexual relationships throughout history, thus enhancing their reproductive fitness (Buss, 2006; Buss & Schmitt, 1993).

In addition to possessing traits that are conducive to engaging in casual sex, men appear to have a stronger motivation for sex than women do. In a meta-analysis of abstracts in *The Journal of Sex Research* and *Archives of Sexual Behavior* Baumeister (2000) found that men exhibited differences from women on a variety of measures related to sexual desire. The sex differences reported in this research include frequency of sexual thoughts and fantasies, frequency of masturbation, desired frequency of sex, desired number of sexual partners, propensity to seek or avoid sexual activity, likelihood of initiating versus refusing sexual advances, tendency to enjoy a variety of sexual

behaviors, willingness to sacrifice resources to gain opportunities for sexual activity, having positive attitudes about sex, and self-rating of strength of sex drive. The largest of these sex differences has been reported for frequency of masturbation (d=1.07; Oliver & Hyde, 1993). Other data supporting men's greater motivation to engage in sexual activity includes findings that men are the primary consumers of pornography and that they are almost exclusively the patrons of prostitutes (Symons, 1979). Although there is an accumulation of data supporting a sex difference in sexual motivation, research has also shown that men's sex drive appears relatively constant but women's sex drive seems to fluctuate with their menstrual cycle (Bullivant et al., 2004; Hedricks, 1994). As a result, there may be times during a woman's menstrual cycle when her sex drive equals or exceeds a man's.

Men may be more likely to pursue casual sexual encounters and a short-term sexual strategy in general, but they cannot engage in short-term heterosexual liaisons without the participation of women. Although women have historically maximized their fitness by avoiding short-term sexual relationships and instead finding a long-term partner who will invest heavily in them and their offspring, they may also find short-term mating desirable in certain situations. The main motivations that have been identified for women choosing to engage in uncommitted sexual relationships are obtaining some immediate advantage, such as material resources, receiving high-quality genetic material for offspring, and seeking a new long-term partner. When asked, women typically report either obtaining resources or finding a new long-term partner as their motivations for engaging in short-term sexual relationships (Greiling & Buss,

2000). However, mate preferences and the relative importance given to various traits fluctuate depending on the whether women are considering a short-term or long-term relationship, suggesting that women do not always expect their short-term relationships to evolve into long-term ones (Li & Kenrick, 2006). The finding that women typically consider short-term mates who are in another relationship or who are very promiscuous undesirable has been used to suggest that women are hoping to turn their short-term sexual partner into a steady mate (Gangestad & Simpson, 2000), but such an attitude could also be explained as an unwillingness to mate with a man who has a low probability of investing immediate resources or providing protection.

The desire for better genetic material, or the "good genes" hypothesis, may not be a conscious desire for most women but it has received empirical support (Gangestad & Thornhill, 1997; Gangestad, Thornhill, & Garver-Apgar, 2005), in part because women demonstrate a stronger preference for physical attractiveness when considering a short-term partner (Li & Kenrick, 2006), and because they prefer men who appear to have superior genes, as evidenced by more facial symmetry (Gangestad & Thornhill, 1998; Thornhill & Gangestad, 1999) and more masculine features (Penton-Voak et al., 1999), when they are most likely to conceive than when they are in other phases of their menstrual cycle. In addition, women are more interested in men other than their primary partner around ovulation (Gangestad, Garver-Apgar, Simpson, & Cousins, 2007). Taken together, these results suggest the effect of fertility status on mate preferences may be to sensitize women to indicators of good genetic quality that could be lacking in one's primary partner because of a trade-off between genetic quality and resource investment

in long-term relationships (Gangestad & Simpson, 2000; Scheib, 2001). Supporting the specificity of menstrual cycle effects on women's desire for indicators of good genes is the finding that interest in traits that are generally valued in long-term mates, such as having material resources, do not vary across the menstrual cycle (Gangestad et al., 2007).

Overall, these data suggest that men have developed traits that are conducive to short-term mating as well as a fairly low threshold for agreeing to engage in casual sex. Women, on the other hand, are less likely to engage in uncommitted sexual relationships unless they have a compelling reason, such as an opportunity for good genetic material to contribute to their offspring.

Theories of sexual strategies

Among evolutionary explanations for these sex differences in reproductive preferences and behaviors are Sexual Strategies Theory (SST; Buss & Schmitt, 1993) and the Strategic Pluralism Model (SPM; Gangestad & Simpson, 2000). According to Sexual Strategies Theory, differential parental investment has led to men and women having different preferred mating strategies (Buss & Schmitt, 1993). Men typically prefer short-term mating and women prefer long-term mating because that is what is optimal for their reproductive fitness. Everyone has the potential to participate in both kinds of relationships, but men and women will generally stay with their sex-typical strategy and will only choose to vary from that course when the environmental conditions provide a compelling incentive. For example, women who choose a short-term strategy are often attracted to physical strength, an attribute that is not highly

preferred in long-term mates, possibly because these less-investing mates may still be able to offer some physical protection in a dangerous environment. In contrast, the Strategic Pluralism Model proposes that although men and women have sex-typical strategies, these strategies are fairly fluid and the one chosen in a given situation will depend on not only the mating context but also the characteristics of the individual and their environment, including the individual's previous success at pursuing their preferred strategy (Gangestad & Simpson, 2000).

The research on women's preferences for extra-pair mates clearly differentiates between these two hypotheses. Like the findings for short-term mating, research has shown that women tend to have different preferences for extra-pair mates than they do for long-term mates. This suggests that women do not categorically intend to turn these affairs into steady relationships. Typically, women care little about an extra-pair mates' financial resources (Buss, 1989) and they prefer mates with indicators of high genetic quality over those who have desirable personal qualities (Scheib, 2001). This apparent trade-off in extra-pair contexts supports the "good genes" hypothesis (Cronin, 1991), which is consistent with the Strategic Pluralism Model, over the mate-switching hypothesis that is associated with Sexual Strategies Theory. Women choose extra-pair mates who will provide superior genes to their offspring, regardless of their potential as a long-term mate because they have already obtained the security and resources of their regular mate.

Strategic Pluralism also offers an explanation for why individuals engage in sex-atypical mating strategies. Although men and women have developed sexual strategies

that are based on optimizing their fitness in relation to their biological constraints (or lack thereof), it is unlikely that every person will be able to follow their preferred strategy perfectly. Instead, men and women use specific strategies to enhance their success and the utility of various strategies is usually dependent on both characteristics of the individual and their environment (Gangestad & Simpson, 2000). There are certainly anecdotes about successful musicians and athletes engaging in extreme numbers of short-term sexual relationships, and attributes like experienced success with women (Landolt, Lalumiere, & Quinsey, 1995), self-perceived mating value (Buston & Emlen, 2003; Penke & Asendorpf, 2008a) and self-esteem (Baumeister & Tice, 2001; Clark, 2006) are all associated with the pursuit of a short-term mating strategy among men, but most men choose a long-term mating strategy. Despite the hypothetical reproductive edge given to men who are able to successfully pursue a short-term mating strategy, many men optimize their fitness by entering into a long-term pair bond. Sometimes a long-term strategy is necessary to gain sexual access to women, but at other times it is simply better than having a lower-quality mate or no mate at all (Buss & Schmitt, 1993). Intrasexual competition can leave very high-status men with several mates and many men with no mates, so men who do not possess superior mate value will likely benefit from the pursuit of a long-term strategy.

Women are generally able to secure a mate under most circumstances, but many women will not be able to find a man who has both high genetic quality and material resources that he is willing to invest. Women's physical attractiveness is associated with a preference for long-term mating (Buss & Shackelford, 2008) and for signs of good

genetic quality (Little, Burt, Penton-Voak, & Perrett, 2001), suggesting that women who believe themselves to have a higher mate value will pursue the strategy that is characteristic of their sex, though it should be noted that some researchers have found no correlation between Sociosexual Orientation Inventory (SOI; Simpson & Gangestad, 1991) score and indicators of mate value (e.g., Mikach & Bailey, 1999). Women with exceptionally high mate value may have the privilege of obtaining high-quality long-term partners, but most women have to make a trade-off between high genetic quality and willingness and ability to make long-term investments when they select a long-term mate (Gangestad & Simpson, 2000; Scheib, 2001). Consistent with this theory, women whose partners have low mate value often report a short-term mating strategy (Greiling & Buss, 2000), suggesting that women have evolved to find a stable long-term partner and to seek out extra-pair relationships to gain better genetic contributions to their offspring because this strategy enhances the reproductive fitness of average women.

Traits related to sexual strategy

Although there is a large sex difference in sexual strategy choice, there is intrasexual variation that is related to individual differences in a variety of factors. In a cross-cultural study of Big Five personality traits and mating strategies, extraversion was positively related to short-term mating and agreeableness and conscientiousness were negatively related to short-term mating in both sexes. There was some variability across cultures in the relation between neuroticism and short-term mating, but the general finding was that neuroticism was negatively associated with short-term mating in men and positively associated with short-term mating in women. Openness was positively

correlated with short-term mating in both sexes in most cultures except those in North America, where this association was positive for women but negative for men (Schmitt & Shackelford, 2008). Other research has found that these personality traits are related to other attributes associated with mating psychology. Extraversion has been positively related to sex drive (Eysenck, 1976) and agreeableness and conscientiousness are negatively correlated with infidelity (Schmitt, 2004). People high in trait sensation-seeking tend to report more interest in and engagement with casual sexual relationships (e.g., Zuckerman, Tushup & Finner, 1976) and less satisfaction with their committed relationships (Thornquist, Zuckerman, & Exline, 1991). In addition, men's interpersonal dominance has been positively related to intrasexual competitiveness (Slacher, Mehta, & Josephs, 2011), sensation-seeking has been positively associated with desiring uncommitted sexual relationships (Thornquist, Zuckerman, & Exline, 1991), and borderline personality disorder features have been associated with several variables related to sexuality. Specifically, sexual impulsivity and less stable romantic relationships are included in the DSM-IV-TR diagnostic criteria for Borderline Personality Disorder (BPD; American Psychiatric Association, 2000). The presence of BPD features is also associated with younger age at first sexual activity (Sansone, Barnes, Muennich, & Wiederman, 2008), greater number of sexual partners (Kalichman & Rompa, 2001), and more sexual contact with individuals not known well (Hull, Clarkin, & Yeomans, 1993). A recent meta-analysis found that BPD features are associated with having more partners and engaging in more casual sexual relationships (Sansone & Wiederman, 2009). Although the mechanism by which personality traits

affect sexual preferences and behaviors is not well understood, it is possible that these traits affect the desire for uncommitted sexual relationships and also the propensity to engage in those behaviors given the desire.

Life history theory posits that certain experiences in early life may dictate sexual strategy choice in adulthood beyond the variability in personality traits. According to this theory, there are sensitive periods in a child's development when events have the potential to lead the child toward different types of sexual strategies later in life. For example, parental divorce and the subsequent short-term relationships of parents can decrease children's expectations of lasting, committed relationships. As a result, they may develop short-term orientations (Gangestad & Simpson, 1990) that are more opportunistic rather than aimed at a long-lasting partnership and successful parenting (Bereczkei & Csanaky, 1996; Chisholm, 1999; Hill, Ross, & Low, 1997). Supporting this view is evidence that the timing of puberty, quality of relationships with parents, and experience of parental investment in childhood are all associated with adult sexual behavior (Belsky, Steinberg, & Draper, 1991; Walsh, 1995). However, the strength of this model is debatable, as it fails to account for the sex differences seen in mating strategies and behaviors (Simpson, Wilson, & Winterheld, 2004), and the association between early childhood instability or trauma and having short-term sexual strategy in adulthood has not been supported by some studies (e.g., Mikach & Bailey, 1999).

The hormonal correlates of sexual strategy use and sexual behavior include positive relations between circulating testosterone and the number of concurrent sexual partners, likelihood of an extra-pair relationship, and higher sex drive in men (Alexander

& Sherwin, 1991; Booth & Dabbs, 1993), along with specific items from the SOI that cover recent and expected future numbers of sexual partners, although the correlation observed between total SOI score and circulating testosterone is small and nonsignificant in both sexes (van Anders, Hamilton, & Watson, 2007). Married men tend to have lower levels of testosterone than single men (Booth & Dabbs, 1993; Burnham et al., 2003), but not when they report being interested in extra-marital affairs (McIntyre et al., 2006). Testosterone levels also decrease in men after the birth of a child (Storey, Walsh, Quinton, & Wynne-Edwards, 2000) and are higher in the early stages of a relationship than in established long-term relationships (Gray et al., 2004), suggesting that circulating testosterone levels may be related to the allocation of energy to finding a mate versus retaining a mate or parenting. Prenatal testosterone exposure may also have an effect on mating style in adulthood, as a low 2^{nd} to 4^{th} digit ratio (2D:4D; indicative of more testosterone exposure in utero) has been associated with possessing a short-term mating strategy in women (Clark, 2004) and in men, though the correlation in men was not statistically significant (Putz, Gaulin, Sporter, & McBurney, 2004). Digit ratio has also been associated with other reproductively relevant variables, as men with lower 2D:4D ratios also tend to have more children, to be more competitive, and to be rated more attractive than men with higher 2D:4D ratios (Manning, 2002). Together, this research supports a possible role for testosterone in the development and execution of sexual strategies and other reproductively relevant behaviors.

Sexual strategy use and a preference for uncommitted versus committed sexual relationships is often referred to as one's "sociosexual orientation." The term

"sociosexual" was coined by Alfred Kinsey during his investigation of individual differences in a number of aspects of sexuality (Kinsey, Pomeroy, & Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953). The sociosexual variables that Kinsey investigated included the preferred and actual frequency of sex, preferred and actual number of sexual partners, extra-pair involvement, attitudes toward uncommitted sexual activity and willingness to participate in such activity, among others. Most of these variables were incorporated into Simpson and Gangestad's (1991) Sociosexual Orientation Inventory (SOI), a short questionnaire that assesses relative comfort with engaging in sexual relations outside of a committed relationship. SOI score is unrelated to frequency of sexual intercourse within a committed relationship (Simpson & Gangestad, 1991), but it has been positively correlated with sex drive (Ostovich & Sabini, 2004) and with the frequency of sexual relations regardless of romantic attachment (Yost & Zurbriggen, 2006). There is also an association between sex drive and the number of lifetime sexual partners that is only significant for individuals with unrestricted sociosexual orientations (Ostovich& Sabini, 2004), suggesting that these individuals are more inclined to act on their sexual impulses.

Sociosexual orientation is not necessarily a singular trait. Researchers have divided the Sociosexual Orientation Inventory into two (Webster & Bryan, 2007) and three (Penke & Asendorpf, 2008b) dimensions. Webster and Bryan's two dimensions include attitudes, which consists of questions about one's views on uncommitted sex, and behaviors, which assesses one's actual experience with uncommitted sex. Penke and Asendorpf suggested that the SOI, and the concept of sociosexual orientation, should be

divided into three factors: sociosexual behavior, the allocation of effort to obtaining short-term versus long-term sexual relationships; sociosexual attitude, or feelings about sex outside of a committed relationship; and sociosexual desire, one's sexual interest in and the motivation to engage in sexual relationships with partners with whom one has no committed relationship. Penke and Asendorpf's revised SOI scale, the SOI-R, more clearly reflects the contributions of each of these three factors to an individual's sociosexuality. Although there is a sex difference in SOI scores, with the sociosexual desire subscale showing the largest sex difference (Hyde, 2005), there is also considerable within-sex variability and overlap between the sexes on all aspects of sociosexuality (Gangestad & Simpson, 2000).

The correlation between sociosexual attitudes and sociosexual behaviors is far from perfect (Webster & Bryan, 2007), but one's sexual attitudes and desires do seem to have an impact on their interaction with the world. Women's mate preferences are somewhat influenced by their sociosexual orientation, as less restricted sociosexual orientations are associated with a stronger preference for attractive rather than better character mates (Simpson & Gangestad, 1992). Unrestricted men report more subjective feelings of sexual desire when viewing attractive women and less interest in the personal qualities attached to those women when compared to restricted men. Unrestricted women are more willing to engage in sex with attractive strangers, and they are more interested in the stranger's social dominance and less interested in his willingness to commit than are restricted women (Townsend & Wasserman, 1998).

Perception of reproductively relevant information

The research on reproductive motivations, desires, and behaviors mentioned above has typically looked at either self-reported information or archival data to investigate how evolutionary mechanisms associated with reproduction affect reproductive decisions. This methodology is problematic because it focuses on conscious decisions and overt behaviors when these data are likely confounded by participants' possible lack of awareness of motivations and potential behavioral outcomes or their unwillingness to share socially undesirable responses with a researcher. As a result, some researchers have begun to use measures of visual attention. Research on visual attention has demonstrated that people are able to process some of the basic features of a large number of items very quickly; however, the amount of attention available for allocation is limited and only stimuli that are attended to will be identified and processed in a more detailed manner (Rock & Gutman, 1981). This suggests attention is an early stage of information processing that aids in the filtering of incoming information so that cognitive resources are dedicated only to a certain subset of information. It is understandable, therefore, that quick or automatic allocation of attention to some objects over others may be an adaptive mechanism that provides an advantage in some situations, particularly when the information that is being attended to is somehow relevant to the person who is attending. For example, research has shown that socially phobic participants, who are especially sensitive to negative evaluation in social contexts, quickly recognize angry faces in an array of neutral faces and that participants

with spider or snake phobias more quickly recognize their phobic object in arrays than any other stimuli (for review, see Ohman, Flykt, & Lundqvist, 2000).

The study of visual attention is a logical choice for evolutionary psychologists because the ability to selectively attend to information that is relevant for survival or reproduction should improve fitness by enhancing decision-making and improving responsiveness to such stimuli, thus contributing to both survival and reproduction (Maner, Gailliot, & DeWall, 2007). Because there is an obvious advantage to being able to detect and make decisions about reproductively relevant information in the environment easily, it stands to reason that this information would be salient and that it might be processed somewhat differently than reproductively irrelevant information, much like the processing of spiders in spider-phobic participants is enhanced relative to non-spider stimuli. An individual who more readily identifies reproductively relevant stimuli like an available high-quality mate or rival is likely to have an advantage over individuals that either do not notice these stimuli or do not process them quickly enough to act effectively (Maner et al., 2007a).

CHAPTER II

RATIONALE FOR THE CURRENT STUDY

Research on visual attention has shown that social motives can bias perception in non-clinical samples in a number of ways, including the perception of potential threat and sexual arousal in opposite-sex faces (Maner et al., 2005), attention to attractive alternatives to one's mate (Miller, 1997), and attention to attractive same-sex rivals (Maner, Gailliot, Rouby, & Miller 2007). These findings suggest that a person who has a disposition to consistently seek out new mating opportunities (i.e., an unrestricted sociosexual orientation) would be more likely to attend to signals from the environment that suggest potential mating opportunities. Such a perceptual bias is evident in the visual attention of men, who are typically less sociosexually restricted than women (Simpson & Gangestad, 1991) and who focus more attention on attractive women when shown an array of faces (Maner et al., 2003). This effect is not tempered by men's involvement in a committed romantic relationship (Maner et al., 2003), though their satisfaction with their relationship and feelings of investment in their relationship do appear to be negatively related to attention to alternatives (Miller, 1997). Additionally, some research has shown the effect of SOI score on attention to opposite-sex individuals is stronger among men (Duncan et al., 2007). Evolutionary theories of mate preferences suggest that men have developed an adaptation to prioritize physical attractiveness but that women have not; they instead prefer cues of social dominance or resources (Buss & Schmitt, 1993; Sadalla et al., 1987; Wiederman & Allgeier, 1992). Accordingly, some research has shown that women attend preferentially to socially dominant men during

the initial seconds of processing as well as when given extended viewing time (Maner, DeWall, & Gailliot, 2008).

If the perceptual processes that lead to variability in attention to opposite-sex faces have analogous processes for same-sex faces, we would expect intrasexual competition and mate retention behaviors to be associated with measures of attention to same-sex rivals with sex-specific characteristics that denote high mate value. Animal studies have shown that rhesus macaques will give up food in order to look at attractive females and high-status males, but not attractive males and high-status females (Deaner, Khera, & Platt, 2005). In humans, attractive women appear to be preferentially attended to and processed by both sexes (e.g., Maner et al., 2007a, Becker, Kenrick, Guerin, & Maner, 2005, Maner et al., 2003) and the same is true for socially dominant men (e.g., DeWall & Maner, 2008; Maner et al., 2008). Recent research has shown that priming concerns about infidelity led men to attend more to attractive men (Maner et al., 2009), but men's attention to socially dominant men has not been tested in the context of jealousy or intrasexual competition.

Participants' attention to reproductively relevant individuals also appears to vary based on situational factors that interact with traits, as demonstrated by research using priming tasks to increase attention to certain categories of stimuli. Two studies using a dot-probe task of attentional adhesion, or inability to redirect attention from one stimulus to a new stimulus, to certain categories of singly presented faces used two different priming tasks that were designed to elicit a mate search motivation. It was found that both of these tasks increased attentional adhesion to attractive opposite-sex strangers in

sexually unrestricted, but not restricted, participants. This finding was specific to attractive opposite-sex stimuli, as there was no increase in attentional adhesion to average opposite-sex faces or to average or attractive same-sex faces. Another study utilized a jealousy prime, which increased attentional adhesion specifically to attractive same-sex faces, and this effect was strongest among individuals who reported typically being vigilant to rivals or feeling that their current romantic relationship was unstable (Maner et al., 2007b).

No research to date has assessed visual preferences for infants using non-self-report methods but there is evidence of a preference for infants, compared to adults, that is present in both sexes but more pronounced in girls and women. In one study where participants viewed pairs of pictures of an infant and an adult, both sexes reported preferring the infant more than half of the time, though women and girls preferred more pictures of infants than men and boys did (Maestripieri & Pelka, 2002). Interest in infants does not seem related to social roles, as a comparison between individuals with traditional and feminist views on women's role in society showed an equivalent sex difference within each group on interaction with an actual infant (Blakemore, 1985). Additionally, the sex difference in interest in infants declines somewhat throughout the lifespan, though it remains statistically significant. Although the link between characteristics like parental status or reported interest in infants and actual patterns of visual attention has not been tested in an eye-tracking experiment, research suggests that there is some variability in the preference for looking at infants that may be at least partially explained by these characteristics (Maestripieri & Pelka, 2002).

Despite some advances in research on visual attention and visual preferences in a reproductive context in recent years, most of this work has focused on attention to physical attractiveness (e.g., Becker et al, 2005; Maner et al., 2003). Physical attractiveness is an important consideration when studying mate preferences, but it does not appear to have the same effect on mate choice in women and men. In fact, research using eye-tracking technology has challenged the assumption that women's preference for attractive opposite-sex faces mirrors men's. A study comparing attention to simultaneously presented attractive male and female faces found that although the majority of men displayed a visual preference for the female face, fewer than half of women attended to the man more than the woman (Alexander & Charles, 2009). This result is consistent with research on visual interest in opposite-sex and same-sex individuals engaged in erotic and non-erotic activities, which has shown that men look at opposite-sex figures significantly longer than women do and women look at both individuals equally (Lykins, Meana, & Strauss, 2008). It seems that men's physical appearance does not capture women's attention in the same way that women's physical appearance captures men's attention, a finding that makes it difficult to interpret results regarding women's preferences or to compare them directly to men's. In addition, the types of stimuli that are typically used in the relatively few studies that investigate this phenomenon have not included competing reproductively relevant stimuli. As a result, findings can only conclude, for example, that men prefer attractive women to less attractive women. It is not known whether attractive women remain highly salient if there is a same-sex rival or another reproductively relevant stimulus visible.

In addition to the concerns about the stimuli used in some studies, the potential influence of circulating testosterone on visual attention to reproductively relevant stimuli has been researched only in very limited ways in men and not at all in women. Circulating testosterone has been positively associated with sexual desire and the allocation of mating effort in men (e.g., Booth & Dabbs, 1993), suggesting that it could be related to attention to potential mates, but it is unknown whether these effects can be found in women and whether circulating testosterone has an impact on attention to same-sex rivals or to infants. Further, no studies to date have considered the possible effects of testosterone on reactivity to jealousy-provoking information such as a jealousy-inducing priming task.

Given the available data and the aforementioned gaps in the literature, there were three primary aims to this research. One aim was to explore whether the patterns of visual attention to reproductively relevant information that have been reported in prior research can be replicated when stimuli includes other reproductively relevant stimuli (i.e., desirable individuals of both sexes and an infant) as potential targets of visual attention. A second aim was to expand on the existing knowledge about the contributions of various individual differences in personality, feelings and behaviors in romantic relationships, and hormonal factors to patterns of visual attention to reproductively relevant stimuli. The third aim of this research was to investigate the potential effects of circulating testosterone on patterns of attention to reproductively relevant stimuli.

The specific hypotheses of this research were as follows:

1. The first hypothesis blends the first and second aims by examining between–sex differences in attention to both the low and high ecological validity stimuli. It was expected that a higher percentage of women's fixations would fall on high status men than on other individuals and that a higher percentage of men's fixations would fall on high attractive women than on other individuals. This visual preference was expected to be more prominent for the low ecological validity arrays than for the high ecological validity scenes. In addition, women, particularly women reporting concerns about infidelity, were expected to fixate more on high value same-sex individuals than men did; women were also expected to fixate on infants more than men did.

2. The second hypothesis is associated with the second aim. It was expected that within-sex differences would affect patterns of attention in the following ways: involvement in a satisfactory committed romantic relationship would decrease attention to high value opposite-sex stimuli; dissatisfaction with a current romantic relationship would increase attention to attractive opposite-sex stimuli relative to individuals satisfied with their relationship; self-reported interest in infants would positively relate to amount of time looking at infants; sociosexuality, self-perceived mate value, and extraversion would be positively correlated with number of fixations on high-status opposite-sex stimuli in both sexes. The relative contributions of other traits are unknown and are also explored in this research.

3. The third hypothesis combines the first and second aims. The jealousy-inducing prime was expected to increase the number of fixations on high-status same-

sex individuals more for participants who are high in trait intrasexual vigilance than for participants who are lower on this trait. Although no research has directly investigated men's attention to socially dominant men in relation to intrasexual vigilance, research on women's mate preferences suggests that socially dominant men should provoke jealousy in men, so this research explored whether both sexes attend to high-status same-sex individuals and whether this relates to trait intrasexual vigilance.

4. The fourth hypothesis relates to the third aim. Research using other methodologies (e.g. self-report of sexual attraction) has demonstrated mixed support for the role of hormonal measures like digit ratio and circulating sex hormones in the development and enactment of reproductive preferences and behaviors, as well as other sex-linked behaviors and traits. Because an association between circulating sex hormone levels and sex-typical traits has been found in other research, it was predicted that circulating testosterone would be positively related to the number of fixations on high-status same-sex rivals among individuals who are primed with the jealousy-inducing task. It was also predicted that testosterone would be related to the number of fixations on preferred short-term mates, which for men would be all women and for women would be physically attractive men. Because men's testosterone levels appear to vary depending on their romantic relationship status and their commitment to their relationship, these variables will be considered in the analyses.

CHAPTER III

RESEARCH METHODS

Participants

One hundred and twenty eight participants (66 men, 62 women) were recruited through the Psychology Subject Pool at Texas A&M University and via advertisements in local newspapers. Participants were all over 18 years of age and they were compensated with either two credits toward their Introductory Psychology course requirements or $5 for their participation.

Materials

Demographics. A brief questionnaire assessed participant age, handedness, relationship status, and menstrual cycle characteristics in women.

Hormonal measures. Saliva samples (<15 ml), were collected by passive drool. Samples were stored at −80 °C , a temperature that compared to −20 °C increases the validity of assay results (Granger et al., 2004). All samples were assayed for salivary testosterone in duplicate using a highly-sensitive enzyme immunoassay. The test uses 25 µl of saliva per determination and has a lower limit of sensitivity of 1.0 pg/mL. The length of the ring and index fingers on both hands from the basal crease to the tip of the finger was measured in millimeters using a digital caliper to determine the 2D:4D ratio.

Mood. Mood states were assessed using seven visual analogue scales measuring 100 mm long on a single sheet of paper. The anchors, or descriptive phrases attached to each scale were sad-happy, anxious-calm, tired-energetic, confused-oriented, jealous-trusting, angry-content, and bored-excited.

Relationships and sexuality. Five scales measured individual differences in personality variables related to relationship behaviors and sexuality. One questionnaire containing items used previously to assess the desirability of potential romantic partners (Buss, 2006; Buss & Barnes, 1986) and to assess one's own reproductive value (Buston & Emlen, 2003) is a self-report measure of 27 traits. Most traits (e.g., loyal, intelligent) apply to partners of both sexes but a few are generally considered more positive for men (e.g., desires financial success) or women (e.g., physically attractive). Respondents rated each item according how well it described them on a scale from 1 (not at all) to 7 (very much). Higher scores on this measure are consistent with higher mate value.

The Self-Perceived Mating Success Scale (Landolt et al., 1995) assessed self-perceptions of attractiveness to the opposite sex. This measure consists of 8 items containing statements about one's prior mating-related interactions with the opposite sex (e.g., I receive sexual invitations from members of the opposite sex) that are rated on a scale from 1 (disagree) to 7 (agree). This measure's internal consistency is high ($\alpha = .83$) and scores are positively correlated with self reports of sexual invitations received during the past year ($r = .49$, $p < .001$) and during the past three years ($r = .48$, $p < .001$). Scores for men and women do not differ significantly.

Current involvement in a romantic relationship was assessed by four scales measuring participants' levels of satisfaction, commitment, and security in their relationship, if applicable, as well as their interest in alternatives to their current partner with scores on each scale ranging from 1 (not at all) to 7 (very).

A 24-item Multidimensional Jealousy Scale (Pfeiffer & Wong, 1989) assessed individual differences in the tendency to exhibit signs of intrasexual vigilance in the context of a current or past romantic relationship across three subscales: cognitive (α = .92), emotional (α = .85), and behavioral (α = .89). This measure has demonstrated stability over a one to two month period, with significant correlations between the scores on each subscale at each time point (cognitive: r = .75, p <.001; emotional: r = .82, p <.001; behavioral: r = .34, p <.05), and it correlates significantly with other measures of jealousy. Items assessed the frequency of worry-related thoughts (e.g., "I suspect that X may be attracted to someone else) and behavioral acts of mate guarding (e.g., "I join in whenever I see X talking to a member of the opposite sex") on a scale from 1 (never) to 7 (all the time). Levels of emotional reactivity in jealousy-evoking situations (e.g., "X is flirting with someone of the opposite sex") were assessed on a scale from 1 (very pleased) to 7 (very upset).

Sociosexual orientation was assessed using a revised version of the Sociosexuality Orientation Inventory (SOI; Simpson & Gangestad, 1991) developed by Penke and Asendorpf (SOI-R; 2008b). This measure consists of three questions about an individual's sexual history (e.g., number of one-night-stands) that offers nine ranges of partners from 0 to 20 or more, three questions about sexual attitudes (e.g., "Sex without love is ok") that provide a Likert scale from 1 "strongly disagree to 7 "strongly agree" for responses, and three items covering sexual fantasies and arousal with partners outside of a committed relationship (e.g., "how often do you have fantasies about having sex with someone with whom you do not have a committed romantic relationship?") that are

rated on a scale from 1 (never) to 9 (at least once a day). These items can be grouped into Behavior (α = .85), Attitude (α = .87) and Desire (α = .86) subscales as well as a total score of global sociosexual orientation (α = .83).

Interest in infants. Interest in infants was assessed with a questionnaire based on previous methods (Maestripieri & Pelka, 2002). The questionnaire first asks "If you were at a party and there was a baby in the room that you did not know, what would you most likely do?" Ten different types of interactions are then listed (e.g., ask to hold the baby, ignore the baby) and participants are asked to mark each item as true or false. This questionnaire contains two additional items: "Would you rather spend 15 minutes with an adult that you found attractive or with a baby that you found adorable?" with participants circling "adult" or "baby"; and "Which of these items best describes you?" with participants circling (1) I don't like babies; (2) I only like certain babies; (3) I like all babies. Higher scores on this questionnaire indicate greater interest in infants. Scores on the measure on which these questions were based were positively associated with a stated preference for pictures of babies over pictures of adults. Women generally express more interest in and liking of babies on this measure than do men.

Personality. Previous research has documented an association between extraversion and both sexual strategy (Schmitt & Shackelford, 2008) and sex drive (Eysenck, 1976), a measure of extraversion was included in this research to determine how individual variability in this trait contributes to patterns of visual attention to reproductively relevant literature. Extraversion was assessed using the 20-item NEO-extraversion scale from the International Personality Item Pool (IPIP;

http://ipip.ori.org/). This scale has high internal consistency (α = .91). Additionally, findings related to associations between interpersonal dominance (Slatcher, Mehta, & Josephs, 2011), sensation-seeking (Thornquist, Zuckerman, & Exline, 1991), and Borderline Personality Disorder features (e.g., Sansone & Wiederman, 2009) to reproductive behaviors led to the inclusion of scales measuring these traits from the Personality Assessment Inventory (PAI; Morey, 1991). All scales of the PAI have internal consistency and test-retest correlations over a two to four week period that exceed .80.

Visual attention. Visual interest was measured using an infrared eye tracker with remote optics (Model 504, Applied Science Laboratory). The remote optics system uses corneal and retinal reflections of infrared light to measure gaze position with an accuracy of approximately 0.5° of visual angle, a margin of error consistent with the natural function of the human eye. The camera was situated directly below the computer monitor and participants were seated so that the camera to eye distance was approximately 22 in. A magnetic head tracker (Flock of Birds®, Ascension Technology Corporation) was worn by participants to limit any disruption in eye tracking as a function of head movement. To obtain valid and reliable eye movement data, 9 gaze positions covering over 80% of the viewing area were collected from each participant (i.e., a 9-point calibration) before testing was initiated. Stimulus presentation and data collection (i.e., eye position) was achieved using GazeTracker™ software (Lankford, 2000). Fixations are defined as a period of at least 100 msec during which point of

regard did not change by more than 1° visual angle (i.e., a distance on the display of less than 0.5 in.).

Visual stimuli. The visual stimuli consist of two arrays with low ecological validity, adapted from previous research (Maner et al., 2008), which contained eight same-sex individuals who varied in both physical attractiveness (high vs. low) and social status (high vs. low) in a circular pattern against a white background. In addition, 12 novel scenes with high ecological validity depicted reproductively relevant human stimuli against a background containing additional visual information (i.e., targets stood on a pier and water, a light, etc. were visible in the background). The clothing choices for the high- and low-social status individuals (i.e., suit, cook's apron) were based on previous research methods (e.g., Maner et al., 2008). The high and low physical attractiveness was based on features that are preferred by the opposite sex (i.e., high/low WHR for women, endo/mesomorph for men; Dixson, Grimshaw, Linklater, & Dixson, 2010), and are associated with health and fertility in both sexes (Haffner, Karhapää, Mykkänen, & Laakso, 1994; Kaye, Folsom, Prineas, Potter, & Gapstur, 1990).

In the first set of four high ecological validity scenes (Set 1 below), participants viewed four targets adults with social status held constant (i.e., wearing a t-shirt and jeans). One target within each sex had attractive body shape (i.e., low WHR for women, mesomorph shape for men) and the other had an unattractive body shape (i.e., high WHR for women, endomorph body type for men). Two sets of targets were created that were identical except for the color of their clothing and each set was shown twice. This was done to control for any unintentional effects related to the colors associated with the

targets. The placement of the targets varied across the four scenes to control for any tendencies for participants to look preferentially at certain areas of the screen. The targets present in each scene are displayed in Figure 1.

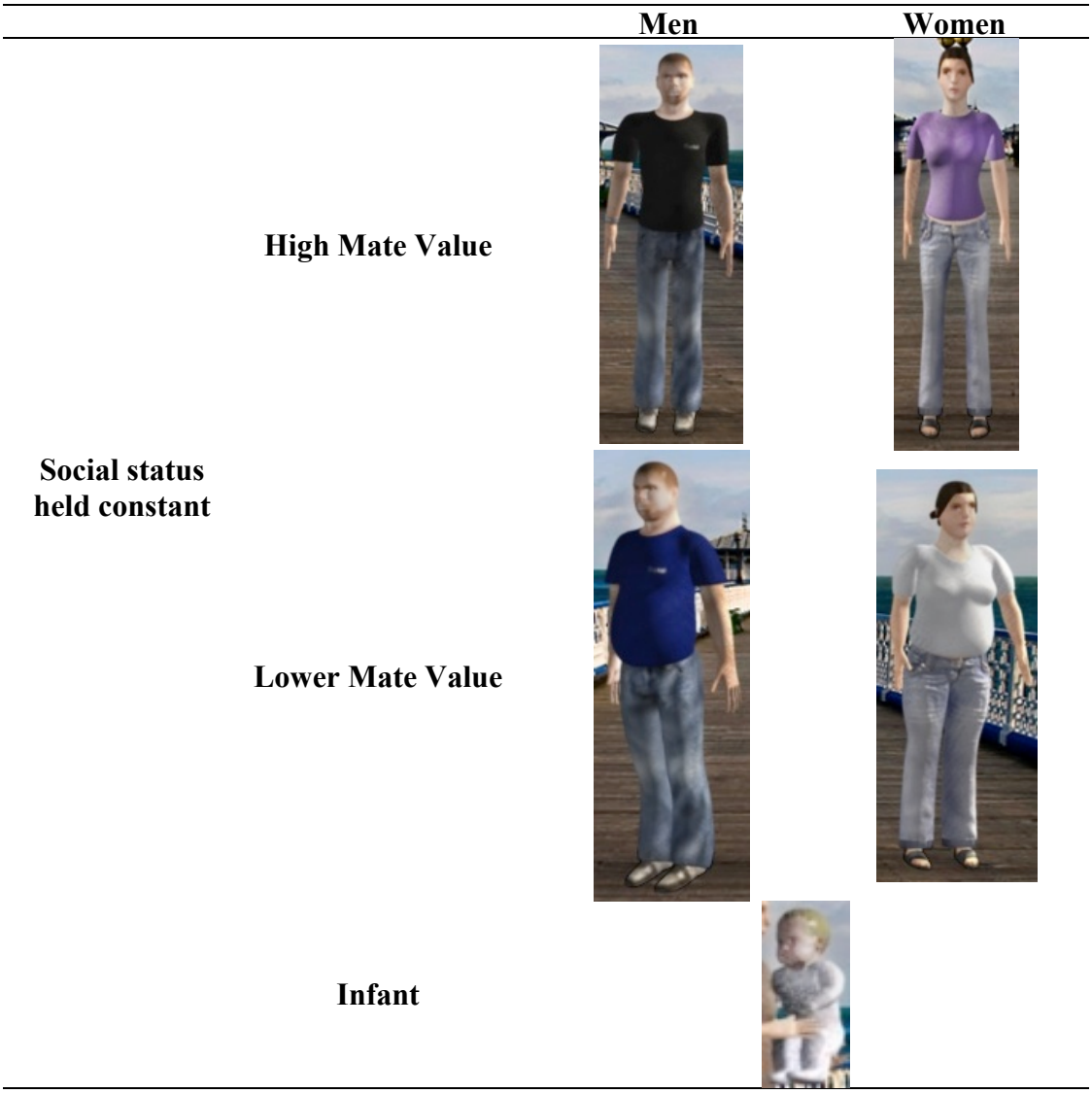

Figure 1. Stimuli for Set 1

The second four scenes (Set 2 below) included targets with body shape held constant (i.e., an average between the high and low attractive body types). One target within each sex had high social status (i.e., wearing a suit) and the other had low social status (i.e., wearing a uniform indicative of a low-status job). Similar to the first set, the four slides in this set were identical except that two highly similar sets of targets were used two times each and the placement of the targets within the scene varied. The targets present in each scene are displayed in Figure 2.

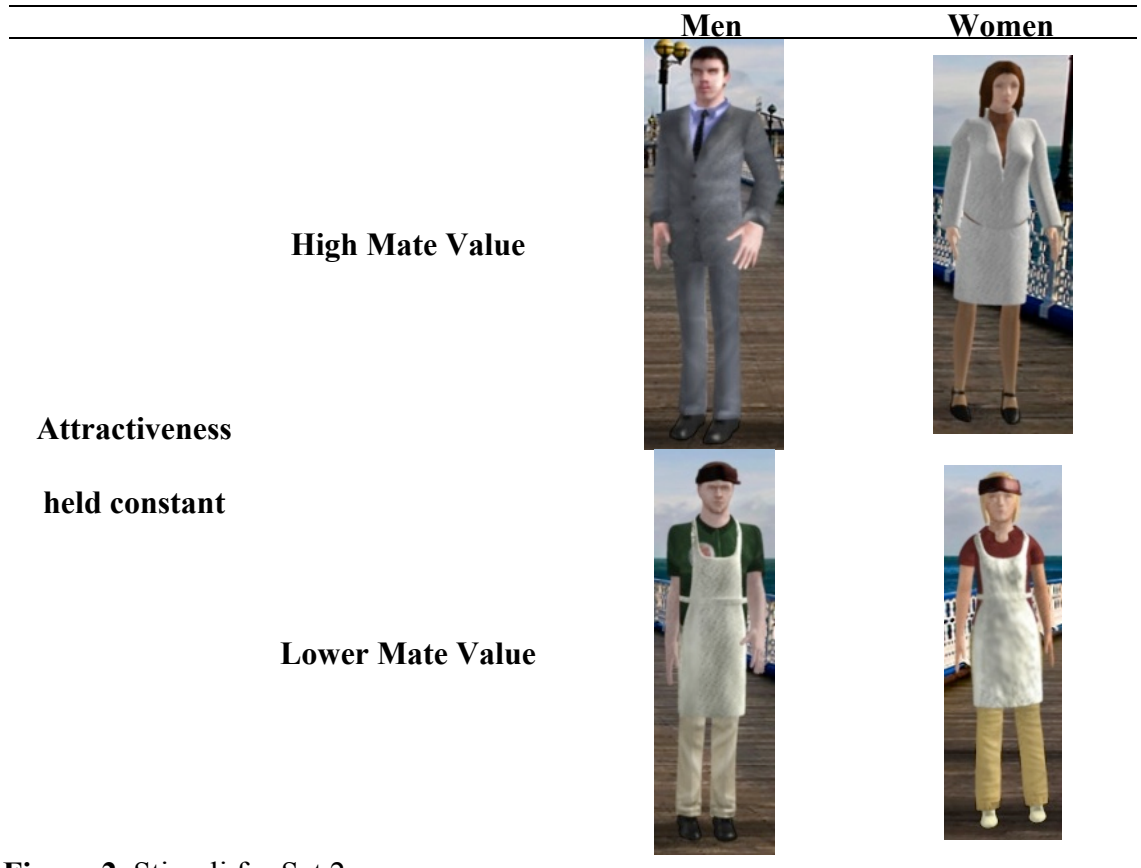

Figure 2. Stimuli for Set 2

Infant

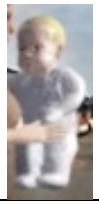

Figure 2 Continued.

In the final set of four high ecological validity scenes (Set 3), participants viewed eight adult targets and one infant target. The overall design of these slides is 2 (target sex) x 2 (target body) x 2 (target clothes). Thus, there was one adult of each sex in each scene that demonstrated a particular combination of traits (i.e. one woman who is wearing a suit & has a high attractive body, one man who is wearing a suit & has an low attractive body, etc.). The four slides were identical except, again, there were two highly similar sets of targets and the placement of the targets within the scene varied. The targets present in each scene are displayed in Figure 3.

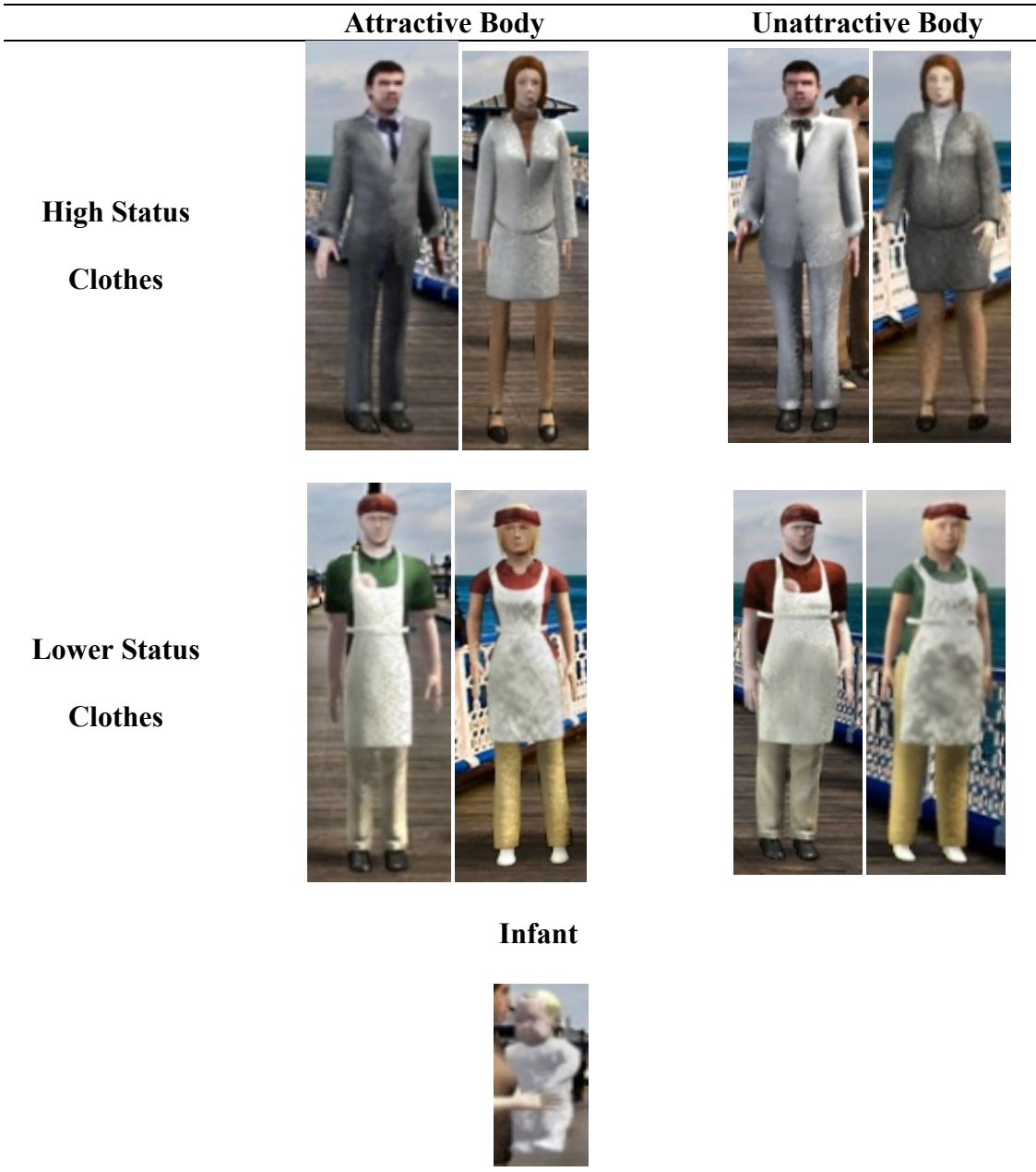

Figure 3. Stimuli for Set 3

Priming tasks. Negative emotional states can be evoked for participants by having them engage in activities that affect their mood and, in previous research, this has been shown to affect visual attention to potential mates and rivals (Maner et al., 2007b). A jealousy prime is designed to increase state jealousy and attention to same-sex rivals, particularly those displaying characteristics typically desired by the opposite sex. An anxiety prime is used with the intention of evoking feelings of anxiety, a control state that is also negative but does not relate directly to thoughts and feelings about personal relationships. For the jealousy prime, participants are asked to think of their current romantic partner or, for single participants, someone they were dating casually or in whom they are romantically interested. They are led through a guided imagery task in which they imagine that person flirting with and being intimate with (kissing) another person at a party. At several points during this visualization, participants are asked to write a brief description of how they believed they would feel if the imagined scenario was actually happening. For the anxiety prime, participants perform a similar guided imagery task, except they envision a situation in which they failed an important academic exam.

Procedure

Participants were randomly assigned to one of the two priming conditions (i.e., jealousy, anxiety). They first completed the demographic questionnaire, produced their first saliva sample and then completed the measure of pre-priming task mood state. The eye-tracking equipment was then calibrated to ensure proper functioning and calibration was verified using a sample slide containing a group of people that was similar in layout

to the experimental slides. Following successful calibration of the eye-tracker, participants completed the priming task and began the slideshow. All participants viewed the same 14 slides but the order in which they were presented was randomized. The two low ecological validity arrays were shown for 40 seconds each, consistent with previous research (Maner et al., 2008). In order to keep the overall length of visual stimuli presentation as short as possible to ensure consistent effects of priming condition on attention, and given previously reported strong effects for attention measures as early as the first four seconds of presentation in for the low ecological validity arrays, the twelve novel high ecological validity scenes were displayed for 15 seconds each. To ensure participants' attention was focused on the center of the screen when the stimuli appeared, a fixation cross appeared in the center of the computer screen before each slide. Analyses were conducted using data from the first four seconds only and the entire presentation for all slides. Participants were instructed simply to look at the images presented to them. After viewing the stimuli, participants answered the questionnaires, provided a second saliva sample by passive drool, and the experimenter probed for any suspicions about the purpose of the study.

CHAPTER IV

ANALYSIS AND RESULTS

128 participants (66 men, 62 women) enrolled in the study. Equipment failure resulted in a loss of six participants' data. In addition, two men did not complete the mate value questionnaire, two participants of each sex did not complete the mating success scale, and one participant of each sex did not complete the jealousy questionnaire so only the remaining participants are included in analyses involving those measures. Descriptive data for the sample is displayed in Table 1.

Table 1. Description of participants

	Men (n=64)	Women (n=58)	Sex difference[a]	Effect Size[b]
Age, in years M (SD)	19.8 (1.68)	20.0 (5.46)	$t(119) = 1.97$*	d=-0.08
Ethnicity				
Hispanic/Latino	20.3	27.6	$\chi^2(3) = 1.45$	V=.11
White/Caucasian	76.6	70.7		
Black/African-American	1.6	0		
Asian	1.6	1.7		
Relationship Status				
Single	67.2	55.2	$\chi^2(3) = 2.08$	V=.13
In a Relationship	32.8	44.8		
Handedness				
Left	17.2	6.9	$\chi^2(3) = 2.87$	V=.15
Right	82.8	93.1		

Table 1 Continued.

	Men (n=64)	Women (n=58)	Sex difference[a]	Effect Size[b]
Hormones				
Right 2D:4D			$t(119) = -.82$, *ns*	
Testosterone, pretest	.976 (.034)	.981 (.037)	$F(1,120) = 111.58$, $p < .001$	d=-0.26
	163.97 (56.54)	73.59 (33.99)		d=4.62
Testosterone change	18.59 (35.81)	5.89 (15.34)	$F(1,120) = 6.25$, $p < .05$	d=1.34

Note. [a]The comparisons for age and the hormone variables are expressed as a *t*-value obtained from an independent-samples *t*-test. All other sex differences are expressed as a $\div^2$ value. [b]Effect size was calculated as Cohen's d for age and the hormone variables, the effect sizes for other variables was calculated as Cramer's V. * $p = .05$, *** $p < .001$

Manipulation check. Participants' scores on the mood measure before and after the priming task were compared to evaluate the effectiveness of the priming condition manipulation. To control for individual differences in baseline jealousy and anxiety, gain scores were calculated for these variables (gain score = postprime state jealousy rating in mm–preprime state jealousy rating in mm). Gain scores were analyzed using a one-way ANOVA with condition (jealousy, anxiety) as the factor and gain scores for anxiety and jealousy as the dependent variables. There was a main effect of condition such that participants in the jealousy condition (n=65) exhibited larger gain scores overall ($M_{gain\ score}$ = 41.74, *SD* = 37.10) than did participants in the anxiety condition (n=57; $M_{gain\ score}$ = 17.86, *SD* = 36.21), $F(1,119) = 12.78$, $p = .001$. There was also a main effect of

emotion (jealousy, anxiety) as gain scores for jealousy were larger ($M_{gain\ score}$ = 18.78, *SD* = 24.51) than were gain scores for anxiety ($M_{gain\ score}$ = 11.71, *SD* = 24.39), *F*(1,119) = 6.24, *p* < .05. Finally, there was a two-way interaction between condition and emotion, *F*(1,119) = 17.31, *p* < .001. An analysis of the simple main effect of condition within levels of emotion showed a main effect of condition on change in state jealousy such that participants in the jealousy condition reported a larger increase in state jealousy after the manipulation than did participants in the anxiety condition ($M_{gain\ score}$ = 29.46, *SD* = 24.89) vs. $M_{gain\ score}$ = 6.78, *SD* = 17.70, *F*(1,119) = 32.63, *p* < .001, d = 2.31. There was no main effect of condition on change in state anxiety (*p* > .05). Thus, the jealousy priming condition effectively increased jealousy but the anxiety priming condition did not increase anxiety beyond the increase that was observed for participants in the jealousy condition. The effect size for the increase in self-reported state jealousy associated with the jealousy prime in this study is large (d =2.28) and larger than has been reported previously (e.g., d=1.78 in Maner et al, 2007 and d=1.90 in Maner et al., 2009); data for the effectiveness of the anxiety condition has not been reported previously as it has been considered a control condition.

Hormonal measures. Descriptive statistics for the hormonal variables are contained in Table 1. A MANOVA with participant sex and condition (jealousy, anxiety) as the factors and initial testosterone level as the dependent variable showed a main effect of sex such that men had significantly higher levels of testosterone at the beginning of the experimental session than did women. There was no main effect of condition and no interaction between sex and condition (all *p*s > .05). As a result of the

sex difference, testosterone gain scores (posttest salivary T-pretest salivary T) were calculated and analyzed in a MANOVA with participant sex (male, female) and condition (anxiety, jealousy) as the factors and testosterone gain score as the dependent variable. There was a main effect of participant sex such that men had larger increases in testosterone than did women ($p = .01$). There was again no main effect of condition and no interaction between participant sex and condition (all ps > .05).

Compared to women, men had smaller digit ratios; however, a repeated-measures ANOVA showed this sex difference was not statistically significant, $F(1,117) = 1.18$, *ns*, for left or right hand 2D:4D ratios. Right and left hand digit ratios were not significantly different from each other and the interaction between sex and hand was not significant (ps > .05). Because right and left 2D:4Ds were not significantly different and because previous reports suggest that right hand 2D:4D ratio may be a more sensitive measure of prenatal androgens (Manning, 2002), only the results for the right 2D:4D are used in the following analyses.

Personality and relationship variables. Questionnaire results for men and women were compared using separate MANOVAs with participant sex as the factor and clusters of related questionnaires as the dependent variables. The results are displayed in Table 2. Briefly, men scored significantly higher than women on worrying about a partner's fidelity, having less restricted sociosexuality and specifically less restricted attitudes about casual sex and more desire to engage in this behavior, preferring to spend time with an adult rather than an infant, and sensation-seeking. Men scored significantly lower than women on predicted number of interactions with an unknown infant and men

in a relationship scored significantly lower on relationship satisfaction than did women in a relationship.

Bivariate correlations were used to test the hypothesis that higher circulating testosterone and lower 2D:4D ratios (i.e., more male-typical characteristics) would be associated with higher (i.e., more male-typical) scores on the measures of SOI, interpersonal dominance, sensation-seeking, and trait jealousy, and with lower scores on measures of interest in infants. Tests of these ten a priori hypotheses were conducted using Bonferroni adjusted alpha levels of .005 per test (.05/10). None of these correlations were significant in either sex or within each condition.

Table 2. Questionnaire results

Measures	Men (n=64)	Women (n=58)	Sex difference	Effect Size
Ability to obtain mates				
Mate value	151.39 (17.23)	152.32 (12.85)	$F(1,118) = .11$, *ns*	d= -0.13
Mating success	33.94 (8.65)	36.50 (11.39)	$F(1,116) = 1.92$, *ns*	d= -0.44
Relationship ratings[a]				
Satisfaction	5.43 (1.33)	6.08 (0.85)	$F(1,45) = 4.15$*	d= -1.34
Commitment	5.95 (1.75)	6.27 (0.92)	$F(1,45) = .64$, *ns*	d= -0.59
Security	5.38 (1.77)	5.92 (1.16)	$F(1,45) = 1.59$, *ns*	d= -0.82
Interest in others	2.67 (1.96)	1.81 (1.10)	$F(1,45) = 3.61$, *ns*	d= 1.34

Table 2 Continued.

Measures	Men (n=64)	Women (n=58)	Sex difference	Effect Size
Trait Jealousy				
MJS Total	79.84 (16.09)	77.38 (15.48)	$F(1,118) = .73$, *ns*	d= 0.30
Cognitive	24.98 (9.54)	21.07 (7.78)	$F(1,118) = 5.99$*	d= 0.92
Emotional	37.37 (5.85)	38.34 (4.36)	$F(1,118) = 1.06$, *ns*	d= -0.40
Behavioral	17.49 (6.20)	17.96 (7.52)	$F(1,118) = .14$, *ns*	d= -0.12
Sociosexual Orientation				
SOI Total	33.91 (13.78)	20.79 (11.41)	$F(1,120) = 32.39$***	d= 2.11
Attitudes	12.83 (7.36)	7.16 (5.63)	$F(1,120) = 22.52$***	d= 1.82
Behaviors	6.75 (3.89)	5.88 (3.68)	$F(1,120) = 1.60$, *ns*	d= 0.44
Desire	14.33 (6.76)	7.76 (4.60)	$F(1,120) = 38.56$***	d= 2.54
Interest in Infants				
Interactions	34.55 (9.80)	40.08 (8.38)	$F(1,119) = 11.02$**	d= -1.22
Preference	5.88 (1.20)	4.42 (1.73)	$F(1,119) = 29.30$***	d= 1.65
Liking	2.48 (0.64)	2.58 (0.53)	$F(1,119) = .77$, *ns*	d= -0.35
Personality				
DOM	54.78 (9.24)	52.95 (10.38)	$F(1,119) = 1.06$, *ns*	d= 0.34
BOR	60.28 (11.88)	58.65 (11.43)	$F(1,119) = .59$, *ns*	d= 0.27
ANT-S	63.53 (12.60)	56.35 (12.60)	$F(1,119) = 10.09$**	d= 1.07
Extraversion	14.33 (4.71)	14.78 (4.65)	$F(1,119) = .12$, *ns*	d= -0.18

Note. Mate value = rating of self on traits related to desirability as a mate, ranges from 27-189; Mating Success = rating of self on attractiveness to the opposite sex, ranges from 8-56; Jealousy scores = agreement with statements about worry related to infidelity, emotional reactivity to jealousy provoking events, mate guarding behaviors, and the sum of all three subscales, scores range from 8-56 on subscales and 24-168 for total score; SOI scores= ratings of self on unrestricted sexual attitudes, history of uncommitted sexual behaviors, interest in uncommitted sex and the total of these subscales, scores range from 3-21 on subscales and 9-63 for total score; Interactions = predicted interactions with an unknown infant, ranges from 7-49; Preference = strength of preference for spending time with an adult rather than a baby, ranges from 1-7, Liking = strength of liking babies, ranges from 1-3, DOM = T score on the PAI interpersonal dominance scale, BOR = T score on the PAI borderline personality features scale, ANT-S = T score on the PAI sensation-seeking scale, scores on the PAI scales have a mean of 50 and SD of 10; Extraversion = self-rated NEO extraversion, scores range from 0-20. [a]Relationship ratings were provided by the 21 men and 26 women who were in a relationship, scores range from 1-7.

Aim 1: Analyses of visual attention to low and high ecological validity stimuli

For all analyses, a full factorial model was conducted but only planned comparisons that are theoretically interesting will be reported. It should be noted that all of the analyses below were also conducted with trait jealousy and, separately, SOI as covariates. This did not change the results reported below and showed no additional significant effects (all *p*s > .05). All analyses were also conducted using only the 20 men and 26 women who reported being involved in a romantic relationship at the time of testing. None of these results were statistically significant (all *p*s > .05).

Low ecological validity: All male array (Adapted from Maner et al., 2008). A repeated-measures GLM using percentages of fixations on figures in the male array during the first four seconds of viewing as the dependent variables, stimulus attractiveness (high, low) and stimulus status (high, low) as within-subjects variables, and participant sex (male, female) and priming condition (jealousy, anxiety) as between-subjects factors was calculated using the 118 participants for whom data for the first four seconds of the male array slide was available. There was no main effect of participant sex, $F(1, 114) = .00$, *ns*, no interactions with sex (*p*s > .05), and no main effect of priming condition, $F(1, 114) = 1.18$, *ns.* There was a main effect of status such that high status men captured a higher percentage of fixations ($M = 43.13$, $SD = 24.66$) than did low status men ($M = 33.54$, $SD = 22.69$), $F(1,114) = 6.04$, $p < .05$. There was no main effect of attractiveness, $F(1,114) = 1.38$, *ns*. However, there was a two-way interaction between attractiveness and status, $F(1,114) = 11.16$, $p = .001$. An analysis of the simple main effect of status within levels of attractiveness showed that for high attractive men, a

higher percentage of fixations fell on high status compared to low status individuals (*M* = 23.60, *SD* = 19.29 vs. *M* = 13.49, *SD* = 13.29, $F(1,114) = 17.22$, $p < .001$). In contrast, for low attractive men, there was not a significant difference in the percentage of fixations on high and low status individuals, $F(1,114) = .02$, *ns.* These results are displayed in Figure 4a.

The GLM analysis described above was performed on the percentage of fixations across the entire 40 seconds of presentation. As in the 4-second analyses reported above, there was no main effect of participant sex, $F(1, 118) = .56$, *ns,* no interactions with sex (*p*s > .05), and no main effect of priming condition, $F(1, 118) = .21$, *ns*. Unlike the results of the analysis for the first four seconds, there was no significant main effect of status, $F(1,118) = 1.66$, *ns*. There was again no main effect of attractiveness, $F(1,118) = .16$, *ns*, but the two-way interaction between attractiveness and status was replicated, $F(1,116) = 11.27$, $p = .001$.

Low ecological validity: All female array (Adapted from Maner et al, 2008). The analyses reported above for the male array were conducted on the female array using the 118 participants for whom data for the first 4 seconds of that slide was available. Similar to the findings for the male array, there was no main effect of participant sex, $F(1, 114) = .18$, *ns*, no interactions involving sex (*p*s > .05), and no main effect of priming condition, $F(1, 114) = 0.29$, *ns.* Unlike the findings for the male array, there was no main effect of status, $F(1, 114) = .92$, *ns*. However, there was a main effect of attractiveness, such that the percentage of fixations on low attractive women was greater than on high attractive women (*M* = 38.59, *SD* = 25.14 vs. *M* = 31.70, *SD* = 21.35, $F(1, 114) = 4.06$, *p*

< .05). There was a two-way interaction between status and attractiveness, $F(1,114) = 13.43$, $p < .001$. An analysis of the simple main effect of status within levels of attractiveness showed that for high attractive women, fixations on high and low status individuals did not differ, $F(1,118) = 2.48$, *ns*, but for low attractive women, a higher percentage of fixations fell on low compared to high status individuals, $F(1,117) = 7.55$, $p > .01$. These data are presented in Figure 4b.

The analyses described above were performed on the percentage of fixations across the entire 40 seconds of presentation. There was again no main effect of participant sex observed, $F(1,118) = .22$, *ns*, no interactions with sex (all *p*s > .05), and the main effect of priming condition was not statistically significant, $F(1,118) = 3.25$, $p = .07$. Similar to the results for the first four seconds of presentation, there was no main effect of status, $F(1,118) = 2.25$, *ns,* and there was a main effect of attractiveness; however, the main effect of attractiveness differed from the one observed during the first four seconds of presentation, with high attractive women receiving a higher percentage of fixations ($M = 42.80$, $SD = 15.27$) than low attractive women ($M = 37.56$, $SD = 13.57$), $F(1,118) = 5.59$, $p < .05$. The two-way interaction between stimulus status and stimulus attractiveness was replicated, $F(1,118) = 6.65$, $p < .05$.

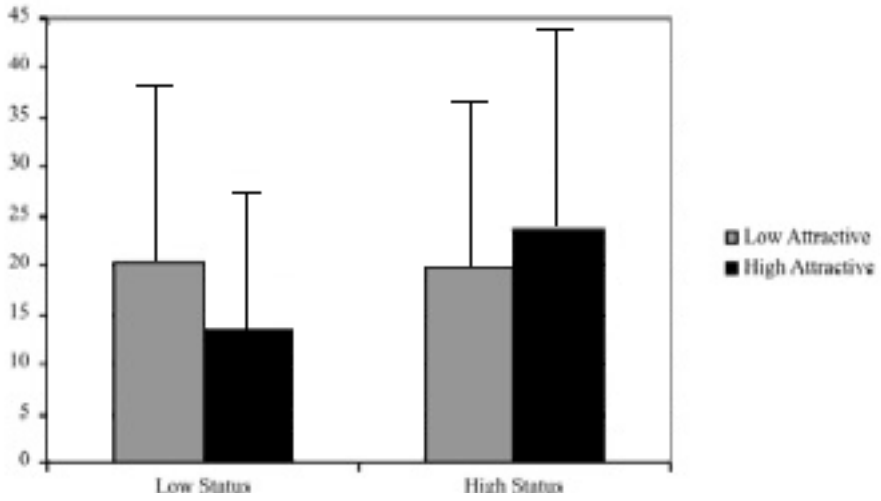

Figure 4a. Percentage of fixations on figures in the male array

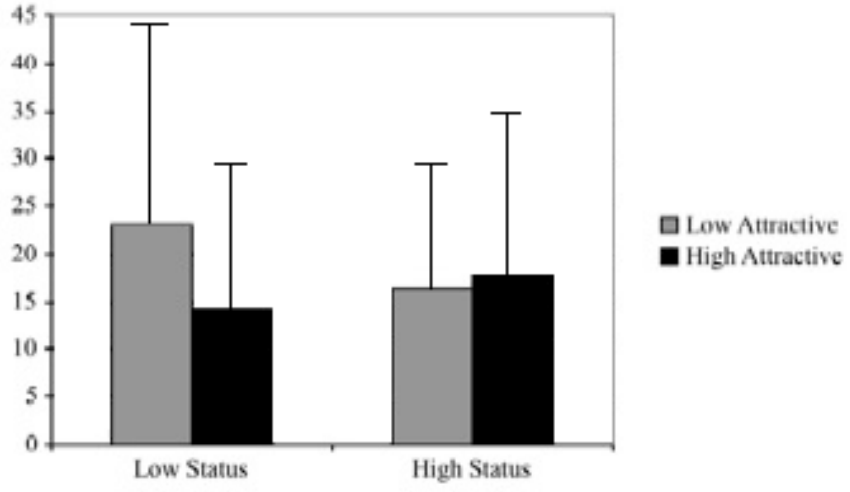

Figure 4b. Percentage of fixations on figures in the female array

High ecological validity: Set 1. A repeated-measures GLM was performed using the average percentages of fixations during the first four seconds of viewing the four scenes in which status was held constant and attractiveness was manipulated as the dependent variables, stimulus attractiveness (high, low) and stimulus sex (male, female) as within-subjects variables, and participant sex (male, female) and priming condition (jealousy, anxiety) as between-subjects factors. No main effect of sex was observed, $F(1, 118) = .26$, *ns*, there were no interactions involving sex (all *p*s > .05), and there was no main effect of priming condition, $F(1,118) = .14$, *ns*. There was also no main effect of stimulus attractiveness, $F(1, 118) = .04$, *ns*. There was a main effect of stimulus sex such that a higher percentage of fixations fell on female figures ($M = 44.41$, $SD = 11.86$) than male figures ($M = 28.11$, $SD = 10.91$), $F(1, 118) = 95.05$, $p < .001$. There was a two-way interaction between stimulus attractiveness and stimulus sex, $F(1, 118) = 19.65$, $p < .001$. An analysis of the simple main effect of stimulus attractiveness within levels of stimulus sex showed a main effect of stimulus attractiveness for male stimuli such that a higher percentage of fixations fell on low attractive men ($M = 15.92$, $SD = 8.35$) than high attractive men ($M = 12.19$, $SD = 7.86$), $F(1, 118) = 13.38$, $p < .001$. The main effect for female stimuli was in the opposite direction as a higher percentage of fixations fell on high attractive women ($M = 24.23$, $SD = 9.66$) than low attractive women ($M = 20.18$, $SD = 8.73$), $F(1, 118) = 8.23$, $p < .01$. These data are presented in Figure 5.

To analyze attention to the infant that was present in each of the scenes in which only attractiveness was manipulated, a variable was again created that divided participants into two groups depending on whether they looked at the infant less than all

other stimuli (adult oriented) (n=75; 39 men, 36 women) or they looked at some adult stimuli less than the infant stimuli (infant oriented) (n=47; 25 men, 22 women). Pearson chi-square tests demonstrated that orientation (adult, infant) did not differ by sex, $\chi^2(1, n = 122) = .02$, $p = .90$. Separate one-way MANOVAs with orientation as the independent variable and clusters of related questionnaires and hormonal variables as the dependent variables were conducted. There was a significant difference in the number of interactions participants expected to have with an unknown infant they encountered; infant oriented participants reported a higher number of expected interactions ($M = 39.51$, $SD = 10.18$) than did adult oriented participants ($M = 35.66$, $SD = 7.96$), $F(1,119) = 4.84$, $p < .05$.

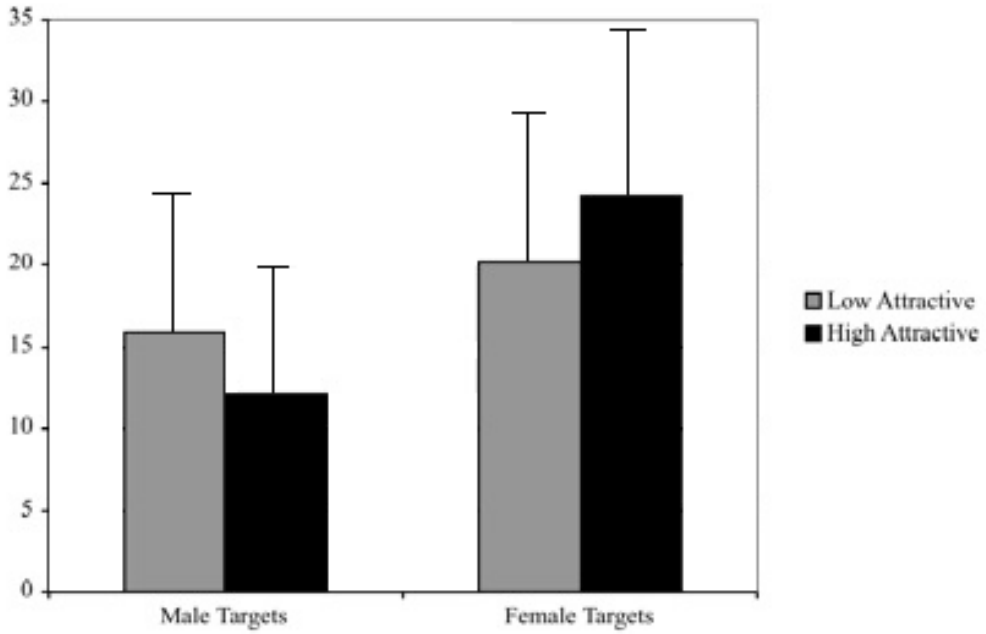

Figure 5. Percentage of fixations on figures in Set 1

The analyses described above were performed on the percentage of fixations across the entire 15 seconds of presentation. The nonsignificant main effects for participant sex and priming condition were replicated. In addition, there was a main effect of stimulus attractiveness such that a higher percentage of fixations fell on high attractive individuals (M = 37.69, SD = 8.47) than low attractive individuals (M = 30.98, SD = 7.46), $F(1,118) = 30.47$, $p < .001$.The main effect of stimulus sex was replicated, $F(1,118) = 62.04$, $p < .001$. There was again a two-way interaction between stimulus attractiveness and stimulus sex, $F(1,118) = 14.55$, $p < .001$. An analysis of the simple main effect of stimulus attractiveness within levels of stimulus sex showed a different pattern of results for these data than for the data from the first four seconds of presentation; a higher percentage of fixations again fell on high attractive women (M = 22.08, SD = 6.40) than on low attractive women (M = 16.70, SD = 5.14), but similar percentages of fixations fell on high attractive men and low attractive men, $F(1,118)$ = 2.12, ns, $F(1,118) = 42.03$, $p < .001$.

For the infant stimuli, a variable was again created that divided participants into two groups depending on orientation (adult, infant). Once again, a greater proportion of participants were adult-oriented (n=95; 47 men, 48 women) than infant oriented (n=27; 17 men, 10 women). Pearson chi-square tests demonstrated that orientation did not differ by sex, $\chi^2(1, n = 122) = 1.53$, $p = .22$. Separate one-way MANOVAs with orientation as the independent variable and clusters of related questionnaires and hormonal variables as the dependent variables were conducted. Similar to the results for the first four seconds of presentation, infant oriented participants predicted a higher number of interactions

with an unfamiliar infant than did adult oriented participants (M = 40.63, SD = 7.22 vs. M = 36.16, SD = 9.91), $F(1,119) = 4.76$, $p < .05$. In addition, the group difference for 2D:4D ratio approached significance, with infant oriented participants having larger (i.e., more female typical) digit ratios than adult oriented participants (M = .990, SD = .036 vs. M = .975, SD = .035), $F(1,119) = 3.91$, $p = .05$.

High ecological validity: Set 2. A repeated-measures GLM was performed using the average percentages of fixations during the first four seconds of viewing the figures in the scenes in which attractiveness was held constant and status was manipulated as the dependent variables, stimulus status (high, low) and stimulus sex (male, female) as within-subjects variables, and participant sex (male, female) and priming condition (jealousy, anxiety) as between-subjects factors. There was no main effect of participant sex, $F(1, 118) = .62$, *ns* and no interactions involving participant sex (all ps > .05); there was similarly no main effect of priming condition, $F(1,118) = 0.34$, *ns*. There was a main effect of stimulus status such that a higher percentage of fixations fell on high status figures (M = 38.85, SD = 11.82) than low status figures (M = 29.82, SD = 9.49), $F(1, 118) = 35.25$, $p < .001$. There was a main effect of stimulus sex such that a higher percentage of fixations fell on females (M = 37.10, SD = 11.30) than on males (M = 31.56, SD = 10.55), $F(1, 120) = 13.10$, $p < .001$. There was also a two-way interaction between status and stimulus sex, $F(1, 118) = 57.00$, $p < .001$. An analysis of the main effect of stimulus status within each stimulus sex found that a higher percentage of fixations fell on high status men than low status men, $F(1, 118) = 101.91$, $p < .001$, but

there was no difference in the percentage of fixations that fell on high status women and low status women, $F(1, 118) = .14$, *ns.* These data are presented in Figure 6.

A variable was again created to divide participants into two groups depending on whether they looked at the infant less than all other stimuli (adult oriented) (n=61; 32 men, 29 women) or they looked at some adult stimuli less than the infant stimuli (infant oriented) (n=61; 32 men, 29 women) during the first four seconds of presentation. Pearson chi-square tests demonstrated that orientation (adult, infant) did not differ by sex, $\chi^2(1, n = 122) = .00$, $p = 1.00$. Separate one-way MANOVAs with orientation as the independent variable and clusters of related questionnaires and hormonal variables as the dependent variables were conducted. There were no significant differences between the groups (all *p*s > .05).

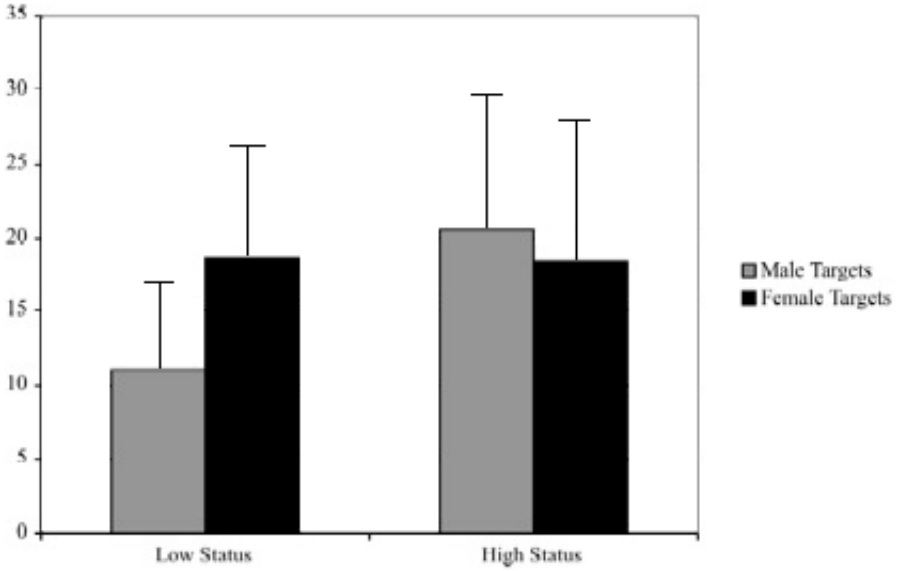

Figure 6. Percentage of fixations on figures in Set 2

The analyses described above were performed on the eye tracking results across the entire 15 seconds of presentation. The results for the adult stimuli were consistent with those found for the first four seconds of presentation. A variable was again created that divided participants into two groups depending on whether they looked at the infant less than all other stimuli (adult oriented) (n=88; 46 men, 42 women) or they looked at some adult stimuli less than the infant stimuli (infant oriented) (n=34, 18 men, 16 women). Pearson chi-square tests demonstrated that orientation (adult, infant) did not differ by sex, $\chi^2(1, n = 122) = .00$, $p = .95$. Separate one-way MANOVAs with orientation as the independent variable and clusters of related questionnaires and hormonal variables as the dependent variables were conducted. In contrast to the results for the first four seconds, results for the entire slide showed that adult oriented participants reported more mating success than infant oriented participants ($M = 36.41$, $SD = 9.62$ vs. $M = 31.91$, $SD = 10.65$, $F(1,116) = 4.90$, $p < .05$). Infant oriented participants predicted that they would have more interactions with an unknown infant than did adult oriented participants ($M = 40.36$, $SD = 7.21$ vs. $M = 35.95$, $SD = 10.05$, $F(1,119) = 5.32$, $p < .05$), and they had larger right 2D:4D ratios than adult oriented participants ($M = .989$, $SD = .034$ vs. $M = .974$, $SD = .035$, $F(1,119) = 4.98$, $p < .05$.

High ecological validity: Set 3. A repeated-measures GLM was performed using the average percentages of fixations on the adult figures in the scenes featuring women and men differing in levels of attractiveness and levels of status as the dependent variables. Stimulus attractiveness (high, low), stimulus status (high, low) and stimulus sex (male, female) were within-subjects variables and participant sex (male, female) and

priming condition (jealousy, anxiety) were between-subjects factors. No main effect of participant sex was observed, $F(1,118) = .13$, *ns*, there were no interactions involving participant sex (*p*s > .05), and there was no main effect of priming condition, $F(1,118) = .09$, *ns*. There was also no main effect of status, $F(1,118) = .59$, *ns*. However, there was a main effect of attractiveness such that a higher percentage of fixations fell on high attractive individuals compared to low attractive individuals ($M = 45.23$, $SD = 12.66$ vs. $M = 38.04$, $SD = 10.74$, $F(1,118) = 16.76$, $p < .001$). There was also a main effect of stimulus sex, such that a higher percentage of fixations fell on male figures compared to female figures ($M = 46.78$, $SD = 12.24$ vs. $M = 36.49$, $SD = 11.92$, $F(1,118) = 29.40$, $p < .001$). There was an interaction between stimulus status and stimulus sex, $F(1, 118) = 99.61$, $p < .001$. An analysis of the effects of status within levels of stimulus sex showed that for male targets a higher percentage of fixations fell on low status compared to high status individuals ($M = 27.82$, $SD = 9.83$ vs. $M = 18.96$, $SD = 8.85$, $F(1,121) = 47.89$, $p < .001$). However, for female targets a higher percentage of fixations fell on high status compared to low status individuals ($M = 21.96$, $SD = 9.71$ vs. $M = 14.53$, $SD = 8.84$, $F(1,121) = 33.19$, $p < .001$). The interaction between stimulus sex and stimulus attractiveness was not significant, $F(1,118) = .00$, *ns*.

A variable was created that divided participants into two groups depending on whether they looked at the infant less than all other stimuli (adult oriented) (n=40; 24 men, 16 women) or whether they looked at some adult stimuli less than the infant stimuli (infant oriented) (n=82; 40 men, 42 women). Pearson chi-square tests demonstrated that orientation (adult, infant) did not differ by sex, $\chi^2(1, n = 122) = 1.36$, $p = .24$. Separate

one-way MANOVAs with orientation as the independent variable and clusters of related questionnaires and hormonal variables as the dependent variables were conducted. The only significant difference between the groups was for 2D:4D ratio, with adult oriented participants having smaller (i.e. more male-typical) digit ratios (M = .967, SD = .033) than infant oriented participants (M = .983, SD = .035), $F(1,119) = 5.92$, $p < .05$.

The analyses described above were performed on the percentage of fixations across the entire 15 seconds of presentation. The results for the adult stimuli were consistent with those found for the first 4 seconds. A variable was again created that divided participants into two groups depending on orientation (adult, infant). More participants fell into the adult-oriented group (n=66; 32 men, 34 women) than in the infant-oriented group (n=56; 32 men, 24 women). Pearson chi-square tests demonstrated that orientation did not differ by sex, $\chi^2(1, n = 122) = .09$. Separate one-way MANOVAs with orientation as the independent variable and clusters of related questionnaires and hormonal variables as the dependent variables were conducted. Unlike the results for the first four seconds of presentation, 2D:4D ratio was not significantly different between the two groups, $F(1, 118) = .38$, *ns*. However, there was a significant difference for self-reported prior mating success, with adult oriented participants reporting greater success (M = 36.98, SD = 9.74) than did infant oriented participants (M = 33.13, SD = 10.15), $F(1,116) = 4.44$, $p < .05$.

Comparing low and high ecological validity stimuli. To examine whether patterns of attention varied between the low ecological validity arrays and the high ecological validity scenes (i.e., Set 3) for the full presentation, paired t-tests were

conducted comparing the average percentage of fixations on each of the two figures with each combination of traits (status high/low, attractiveness high/low) in the low ecological validity arrays with the average percentage of fixations on matched targets across the four slides in Set 3. Compared to the high ecological validity scene in Set 3, participants viewing the low ecological validity arrays had a higher percentage of fixations on the high attractive high status men, $t(121) = 3.81$, $p < .001$, high attractive low status women, $t(121) = 4.91$, $p < .001$, and low attractive low status women, $t(121) = 4.85$, $p < .001$, but a lower percentage of fixations on the high attractive low status men, $t(121) = -8.76$, $p < .001$, and high attractive high status women, $t(121) = -4.77$, $p < .001$. There were no significant differences in the percentage of fixations on low attractive high status men, low attractive low status men, and low attractive high status women (all ps $> .05$).

In summary, this study replicated previously reported findings regarding increased attention to high attractive women and high social status men using low ecological validity stimuli. These results were extended to the more complex high ecological validity stimuli in this research; however, the predicted pattern of selective attention to targets with traits denoting high sex-specific mate value was not found. Although results showed high mate value targets were generally preferred over lower mate value targets in Set 1 and Set 2, high value targets did not dominate participants' allocation of attention. Additionally, a preference for high mate value targets was not found at all in the most complex stimuli (i.e. Set 3), where target attractiveness, regardless of sex, was the sole trait linked to patterns of attention. Finallly, expected sex

differences in patterns of attention were not found for any of the stimuli, suggesting similarity among the sexes when processing complex visual stimuli displaying competing reproductively relevant information.

Aim 2: Individual differences contributing to patterns of visual attention

Bivariate correlations between questionnaire data, 2D:4D ratio, and percentages of fixations for the full presentation the slides were performed. The results are presented in the appendix.

Aim 3: Influence of circulating testosterone

Relations between circulating testosterone, jealousy, and visual attention for participants in the jealousy condition were tested using bivariate correlations. Neither initial testosterone level nor the change in testosterone from pre-test to post-test was significantly related to self-reported trait jealousy in men or women (*p*s > .05). Similarly, initial testosterone and the change in testosterone were not related to the magnitude of the increase in self-reported state jealousy in response to the jealousy prime (*p*s > .05). Planned comparisons within each sex of initial testosterone, the change in testosterone, and attention to high value same-sex targets were also tested using bivariate correlations. The only significant result was a negative relation between men's initial testosterone level and percentage of fixations on the low attractive high status men in the low ecological validity array $r(29) = -.47$, $p <. 01$.

The association between initial circulating testosterone and patterns of visual attention to high value opposite-sex stimuli (high attractive women and high status men) was examined using bivariate correlations across the entire sample. None of the

predicted relations were statistically significant (all *p*s > .05). Initial circulating testosterone was also compared to the percentage of fixations on the infants in Set 1, Set 2, and Set 3. The results were not significant among women; for men, the results for Set 1 and Set 3 were not significant but men's percentage of fixations on infants in Set 2 was negatively associated with initial testosterone level, $r(62) = -.36$, $p < .01$.

Aims 2 & 3: Regressions predicting eye tracking results

Linear regressions were performed within each sex to test the ability of clusters of traits to predict the percentage of fixations on high mate value opposite-sex individuals. Biological factors (2D:4D ratio, initial testosterone, change in testosterone) were entered in the first block because these features are thought to reflect the early sexual differentiation of the brain. SOI score, self-perceived mate value and previous mating success were entered in the second block because these variables are influenced by postnatal environmental factors that presumably interact with underlying biology. This model did not account for a significant proportion of the variance in percentage of women's or men's fixations on opposite-sex targets for either the low ecological validity or high ecological validity stimuli (all *p*s > .05).

Linear regressions were also performed within each sex to test the ability of clusters of traits to predict the percentage of fixations on high mate value same-sex individuals (i.e., rivals). As in the model predicting attention to opposite-sex targets, the biological factors (2D:4D ratio, initial testosterone, change in testosterone) were entered in the first block, followed by the more socially-dependent trait jealousy in block two and the situationally determined priming condition in block 3. This equation did not

account for a significant proportion of the variation in the percentage of women's or men's fixations on same-sex targets for either the low ecological validity or high ecological validity stimuli (all *p*s > .05).

Finally, linear regressions were performed within each sex to predict attention to infants. As in the previous models, the biological factors (2D:4D ratio, initial testosterone, change in testosterone) were entered in the first block. Predicted number of interactions with an unfamiliar baby at a social event, an environmentally-influenced factor, was entered in the second block. This model did not account for a significant proportion of the variance in percentage of fixations on infants in Set 3 among either men (R^2= .22, F(4,63) = .73, *ns*) or women (R^2= .24, F(4,55) = .77, *ns*). However, the model was significant for Set 1 among men (R^2= .45, F(4,63) = 3.67, p = .01) but not women (R^2= .31, F(4,55) = 1.35, *ns*) and it was significant for Set 2 among women (R^2= .45, F(4,55) = 3.17, p = .02) but not men (R^2= .24, F(4,63) = .89, *ns*).

Logistic models using the same variables as the linear regressions were fitted to the data within each sex to test the hypotheses about the influence of hormonal, personality, and relationships variables on the likelihood of the first fixation falling on high mate value opposite-sex individuals. Right 2D:4D ratio, initial testosterone, and change in testosterone were entered in step one and total SOI score, self-perceived mate value, and reported mating success were entered in step two. According to the model, the log of the odds of women's first fixation falling on the high attractive high status men in the male array was related to initial testosterone level (p < .05) but the log of the odds of women's first fixation falling on the low attractive high status men was not significantly

related to any of the predictors (all *p*s > .05). The log of the odds of men's first fixation falling on the high attractive low status women or high attractive high status women in the female array was not significantly related to any of the predictors (all *p*s > .05), nor were the log of the odds of men's first fixation falling on the high attractive low status women or high attractive high status women in Set 3 (all *p*s > .05). The log of the odds of women's first fixation falling on high attractive high status men in Set 3 was significantly related to previous mating success ($p < .05$). The log of the odds of men's first fixation falling on the high attractive women in Set 1 was positively related to perceived mate value ($p < .05$) and negatively related to previous mating success ($p < .05$), whereas the log of the odds of women's first fixation falling on high status men in Set 2 was unrelated to the predictor variables (all *p*s > .05).

Logistic models were also fitted within each sex to predict the odds of the first fixation falling on high value same-sex individuals using the variables from the linear regressions. 2D:4D ratio, initial testosterone, and change in testosterone were entered in step one, followed by trait jealousy in step two and priming condition in step three. According to the model, the log of the odds of men's first fixation falling on the high attractive high status men in the male array was marginally related to initial testosterone ($p = .06$). The log odds of men's first fixation falling on the low attractive high status men was not significantly related to any of the predictors (*p*s > .05). The log of the odds of women's first fixation falling on the high attractive low status women or high attractive high status women in the female array was not significantly related to any of the predictors (*p*s > .05). The log of the odds of men's first fixation falling on the high

attractive high status men or the low attractive high status men in Set 3 was not significantly related to any of the predictors (*p*s > .05). The log of the odds of women's first fixation falling on both the high attractive high status women and high attractive low status women were significantly related to initial testosterone ($p < .05$). The log of the odds of women's first fixation falling on both the high attractive women in Set 1 was not related to any of the predictors ($p > .05$). The log of the odds of men's first fixation falling on the high status men in Set 2 was significantly related to 2D:4D ($p < .05$).

Similar to the linear regression models, logistic models were fitted within each sex to predict the odds of the first fixation falling on infants with participant sex in block one and reported interest in infants in block two. The log of the odds of participants' first fixation falling on the infants was not significantly related to any of the predictor variables in Set 1, Set 2, or Set 3 (all *p*s > .05).

CHAPTER V

SUMMARY AND CONCLUSIONS

This research used eye tracking technology to measure the early allocation of visual attention to stimuli containing human figures varying in characteristics presumed relevant for competing reproductive motivations. The primarily young adult women and men who participated in the research also provided samples for analysis of testosterone levels and completed self-report measures of reproductively relevant traits (personality traits and behavior in romantic/sexual relationships) that have been proposed to influence the allocation of attention to these types of visual stimuli. Results from stimuli with low ecological validity replicated previously reported patterns of increased attention to attractive women and high social status men among members of both sexes (e.g., Maner et al., 2007a; Maner et al., 2008). However, results from the novel arrays depicting more complex high ecological validity stimuli suggest results obtained using simple stimuli overestimate the strength of visual preferences for high mate value targets. A summary of major findings is presented in Tables 3a and 3b.

Table 3a. Summary of group differences

	Significant sex difference?	Significant effect of priming task?	As predicted?
Change in state jealousy[a]	N/A	Yes **	Yes
Change in circulating T	Yes*	No, $p > .05$	Partially, condition was predicted to affect change in T
Patterns of attention to low ecological validity arrays	No, all *p*s >.05	No, all *p*s >.05	No
Patterns of attention to high ecological validity scenes	No, all *p*s >.05	No, all *p*s >.05	No

Note. [a]*The sex difference for change in state jealousy was not calculated as gain scores, which account for individual variability, were used. *p < .05, **p < .01*

Table 3b. Summary of interest in high mate value adults

	Preference for high status males	Preference for high attractive females	As predicted?
Low ecological validity arrays	Yes*[a]	Yes*[b]	Partially, results were expected to be consistent across time periods
Scenes with body manipulated	N/A	Yes**	Yes
Scenes with status manipulated	Yes***	N/A	Yes
Scenes with all combinations of traits	No	No	No

*Note. [a]Result found only during first four seconds of presentation. [b]Result found only for full presentation. *p < .05, **p < .01, *** p < .001.*

Eye tracking results (Aim 1)

Low ecological validity. One set of stimuli was constructed based on previous research showing visual preferences for high attractive women and high social status men in single sex arrays (e.g., Maner et al., 2008). Similar to the previous studies, women and men in this research viewed an array of eight human figures that varied in social status (i.e., suit vs. fast food uniform) and attractiveness (i.e., desirable vs. not desirable body shape). As in the previous research, one array included all males and the other included all females; however, the stimuli in the current research included full bodies rather than faces and partial torsos. Also consistent with previous methodology (Maner et al., 2007b), a jealousy-inducing manipulation was used. This manipulation was effective in increasing feelings of jealousy in the participants but the effects of priming condition on patterns of visual attention and the interactions between trait jealousy and priming condition reported previously (e.g., Maner et al., 2007a; Maner et al., 2007b) were not replicated. As a result, analyses include all participants in a single group except where otherwise indicated.

For both sexes, analyses of the very early allocation of attention showed that high status men were viewed more than low status men, a result that replicates previous findings of increased attention to socially dominant men in the early stages of perception (e.g., DeWall & Maner, 2008; Maner et al., 2008). The salience of high status men for both sexes is also consistent with theories of mate preferences suggesting high status men are more interesting to women as potential partners (e.g., Buss & Schmitt, 1993; Kenrick et al., 1990; Li et al., 2002; Sadalla et al., 1987; Townsend & Levy, 1990;

Wiederman & Allgeier, 1992) and, as a result, more threatening to other men as rivals (e.g., Buss et al., 2000). However, unlike the results of the earlier research (Maner et al., 2008), the early visual preference for high status men over low status men was not maintained across the longer viewing interval in this study.

A preference for high status men in the early seconds of visual attention likely exists because of the adaptive value of experiencing high status men as immediately salient. The fact that this result did not extend through the longer interval may be due to the operationalization of status in this experiment. Whereas physical attractiveness is easily operationalized and expected to be fairly universally recognized, the detection of social status is less dependent on visual information; as a result, the cues to status used in this project may not have had as strong an effect on perception as the cues to attractiveness. Additionally, other findings based on the analyses of the low ecologically valid arrays suggest the salience of high status men is dependent on stimulus attractiveness. For the longer viewing interval, participants fixated more on high status men among high attractive men but did not show this preference among low attractive men. The lack of a preference for high status men among low attractive men is contrary to earlier evidence suggesting that, unlike men, women value social status over attractiveness (Townsend & Levy, 1990). However, it is theoretically consistent with research showing the strongest preferences for sex-linked mate characteristics in situations in which participants' mate selection is constrained (Li et al., 2002), as participants in this research were shown an array of options and given a relatively long time to process them. One novel interpretation of this pattern of results is that male

targets with the highest overall mate value are preferred by all participants when ample time is provided for surveying the available options, but status becomes singularly important when limited time is available to process stimuli.

Overall, high attractive women were viewed more than low attractive women among participants of both sexes, a finding that is consistent with both theories of mate preferences (e.g., Buss & Schmitt, 1993) and previous research showing a tendency for high attractive women to capture more visual attention among both men and women (e.g., Maner et al., 2008, Maner et al., 2007b, Becker et al., 2005, Maner et al., 2003). However, unlike the earlier research, the preference for highly attractive women was not apparent in the very early allocation of visual attention. One possible explanation for this finding is that some individuals may have been avoiding viewing attractive women during the first few seconds of presentation, consistent with research documenting a tendency to avoid anxiety-provoking stimuli (Rinck & Becker, 2006). As such, a measure of anxiety about sex or body esteem issues might be useful in future research to further investigate this possibility. Additionally, it has been suggested that viewing attractive women activates reward systems in the brain, at least for men (Levy, Ariely, Mazar, Chi, Lukas et al., 2008), suggesting that although participants may not look at attractive women immediately, when they do so they are likely to experience this as rewarding and to continue viewing these targets.

Participants preferred to look at high attractive women in general, at least for the longer interval, but the effect of target status for female stimuli was dependent on stimulus attractiveness. There was no effect of status on attention to high attractive

targets, but participants looked at low status women more than high status women among low attractive targets. This pattern is consistent with research showing that the most salient cue for the allocation of attention to female targets is physical attractiveness (e.g., Sadalla et al., 1987), and with results indicating men prefer low status women to high status women (Greitemeyer, 2007). This suggests that men may use a more complicated mate search strategy than is often suggested, as both sexes appear to consider different traits in a hierarchical fashion (i.e., considering physical attractiveness first and then other attributes, such as social status) when presented with a range of options.

High ecological validity. A novel aspect of this research was the inclusion of scenes that depicted adult targets of both sexes and an infant against a realistic background. These high ecological validity scenes included one set of stimuli which held status constant and manipulated attractiveness to measure the simple effect of physical attractiveness on patterns of visual attention, a second set which held attractiveness constant and manipulated social status to measure the simple effect of status, and a third set in which all possible combinations of attractiveness and status were available among members of each sex to measure the interaction between attractiveness and status when targets of both sexes are present. These novel high ecological validity scenes are arguably superior to the low ecological validity scenes for several reasons. First, all of the high ecological validity scenes included individuals of both sexes, whereas the low ecological validity arrays contained only one sex. In addition, the figures were set in a complex environment that offered additional visual interest and realism. Finally, each

high ecological validity scene included an infant in order to examine the influence of another type of reproductively relevant motive (i.e., parenting motivation) in addition to mate searching and mate guarding. Therefore, the use of the novel stimuli permitted the first examination of the generalization of previous findings based on simple stimuli to an experimental context with greater external validity.

Similar to findings from earlier research (e.g., Maner et al., 2008, Maner et al., 2007b, Becker et al., 2005, Maner et al., 2003) and the present results from the analyses of the more simplified arrays, attractive women received the highest percentage of fixations for both the short and longer interval of the scenes in which only attractiveness was manipulated among men and women in this research. In contrast, low attractive men were viewed more than high attractive men during the short interval and attractiveness had no effect on attention to men during the longer interval. This is consistent with theories of mate preferences suggesting that attractiveness is not an important factor in the judgment of men (e.g., Buss & Schmitt, 1993), and with previous research indicating that women consider attractive men less likely to be faithful (Waynforth, 2001), thus less desirable for long-term relationships.

When both social status and attractiveness were manipulated (i.e., Set 3), high attractive individuals were viewed more than low attractive individuals regardless of target sex. The visual preference for attractive targets of both sexes is consistent with the previously reported general preference for attractive partners (Buss & Schmitt, 1993) and contrasts with the notion that women will not place great importance on men's physical attractiveness, especially when there is variability in social status (Sadalla et al.,

1987). The fact that this was the only significant effect for these most complex scenes suggests that physical attractiveness captures attention and may provide a way to filter a large amount of information being received at once. The lack of an effect of stimulus status contrasts both with the results from the low ecological validity arrays and with theories about the importance of status cues for judgments of men and women (e.g., Buss & Schmitt, 1993; Greitemeyer, 2007; Sadalla et al., 1987; Wiederman & Allgeier, 1992); it may result from the operationalization of status and attractiveness in this research, as noted previously.

High status men received the highest percentage of fixations in the scenes in which only social status was manipulated. This is consistent with previous research on the relative salience of status for male targets in the assessment of mate value (Buss & Schmitt, 1993; Kenrick et al., 1990; Li et al., 2002; Sadalla et al., 1987; Townsend & Levy, 1990; Wiederman & Allgeier, 1992), as well as with the results from analyses of the simplified arrays in this research. Because male, but not female, targets' social status is an important factor both for women conducting a mate search and for men assessing their competition, high status men represent the target displaying the most informative cues for the viewer in the scenes in which only status was manipulated. High status women were also viewed more than low status women, but this difference was smaller than that found for men. This is consistent with the suggestion that social status is not important for women's mate value (Sadalla et al., 1987), and with recent research using eye tracking that showed a general visual preference for high status individuals (Foulsham, Cheng, Tracy, Henrich, & Kingstone, 2010; Maner et al., 2008). This pattern

of results suggests that high status figures capture attention more generally, possibly because it is useful to be sensitive to status for reasons other than mate selection, such as understanding the social hierarchy of one's group (e.g., Henrich & Gil-White, 2001). However, this result does not persist when attractiveness is also manipulated, as demonstrated by a higher percentage of fixations on low status men than high status men in the scenes with all possible combinations of attractiveness and status.

The high ecological validity scenes also included infants, who were generally viewed less than the adults in those scenes by all participants. There were no simple effects of sex on attention to infants but there were relationships between sex-linked traits, such as digit ratio and the allocation of mating effort, and attention to infants. The low level of visual interest in infants in this sample may be understood as a function of the relatively higher amount of effort allocated to mating in our sample, possibly due in part to their age.

When compared directly, participants displayed stronger preferences for high mate value targets of each sex, namely high attractive high status men and high attractive low status women, in the low ecological validity arrays than in the high ecological validity scenes. It appears, therefore, that the relative salience of these targets lessens with the inclusion of competing reproductively relevant targets in a more realistic setting. These results suggest previous findings using less ecologically valid stimuli may overestimate the visual preference for these categories of targets and underestimate a general visual preference for attractiveness in both sexes.

Predicting visual attention (Aims 2 & 3)

Women and men in this research showed the expected sex differences in hormonal, social, and personality measures. These variables were used to build regression equations predicting attention to the different categories of stimuli. Although individual differences in these traits have been proposed to account for variability in reproductive behavior (Apicella & Marlowe, 2007; Ostovich & Sabini, 2004) and patterns of visual attention to reproductively relevant stimuli (Maner et al., 2007b), they explained only a small amount of variance in attention to targets across most scenes in this research. However, there were some notable exceptions. For the logistic regression equations predicting first fixation on opposite-sex stimuli, results showed the odds of women's first fixation falling on the high attractive high status men, the highest value mate available, were related to initial testosterone. This is consistent with research demonstrating a correlation between testosterone, higher sex drive, and sociosexuality in men (e.g., Alexander & Sherwin, 1991; Booth & Dabbs, 1993; Manning, 2002; van Anders et al., 2007), and suggests that women's circulating testosterone levels may lead them to be more competitive when choosing a mate. The odds of women's first fixation falling on these targets was also related to previous mating success, which is consistent with the idea that very high mate value women do not have to make a tradeoff between status and attractiveness when selecting a mate (Gangestad & Simpson, 2000; Scheib, 2001). As a result, women who believe they can secure a mate easily appear most interested in the highest quality mates. The odds of men's first fixation falling on high attractive women were related to their perceptions of their mate value and previous

mating success, though not in the same direction. Men who believed they had high mate value fixated on high attractive women more but men who reported more success with women in the past looked at these women less. The finding that men's higher mate value related to their interest in higher mate value women is consistent with the data showing that most individuals prefer mates who are similar to them in overall mate value (Buston & Emlen, 2003). The result related to previous mating success may indicate that the men who reported experiencing more past success may have been targeting less attractive women in order to achieve that success.

Logistic regressions predicting attention to same-sex stimuli showed the odds of men's first fixation falling on low attractive high status men, who can be considered potential rivals for long-term relationships with women (e.g., Buss & Schmitt, 1993; Sadalla et al., 1987; Townsend & Levy, 1990; Waynforth, 2001), were related to initial testosterone. This result is novel and indicates a possible association between men's circulating testosterone levels and intrasexual vigilance. The odds of women's first fixation falling on high attractive women, also salient rivals, were also significantly related to initial testosterone, suggesting testosterone may have a role in women's intrasexual vigilance as well. Finally, the odds of men's first fixation falling on the high status men were related to 2D:4D, indicating that prenatal testosterone may also contribute to intrasexual vigilance, at least in men.

Summary

This study included a sample that was similar in size and makeup to previous research (Maner et al., 2008), good quality eye tracking was achieved across all slides,

and expected sex differences were found for a number of traits. There were no broad sex differences in patterns of visual attention nor were there interactions with sex and other predictor variables, suggesting that men's and women's patterns of visual attention are highly similar, though presumably as a result of different underlying motivations. In addition, participants in the jealousy priming condition showed a significant increase in state jealousy, indicating that the manipulation was successful in altering their emotional state despite minimal effects on visual attention.

Although effects of the jealousy-inducing prime on patterns of visual attention reported previously (Maner et al., 2007a; Maner et al., 2007b) were not replicated, it may be that the previously reported effects relate to high negative affect rather than jealousy per se, as affective changes in the anxiety condition were not reported in that research. In addition, the stimuli used in this research included well-controlled full body figures and more complex visual information than what has been used previously. The effect of the jealousy prime on attention may be specific to simplified stimuli and not generalize to real-world perception.

A novel aspect of this research was the use of high ecological validity stimuli. Previous research has indicated a visual preference for high social status men and physically attractive women in arrays with low ecological validity. This result was found for the low ecological validity arrays in this research, although not consistently throughout the length of presentation, and was replicated for the high ecological validity arrays to a lesser extent, suggesting previously reported visual preferences may have overestimated preferences for targets with high sex-specific mate value.

Another novel part of this project was the inclusion of circulating testosterone in the investigation of visual attention to reproductively relevant stimuli. Higher testosterone levels were associated with more attention to high value same sex targets among both sexes, indicating an association between testosterone and intrasexual vigilance. Additionally, women's testosterone was associated with attention to the highest value opposite sex figures (high attractive high status men), suggesting increased confidence or competitiveness for women with higher testosterone.

One limitation of this research is the use of a young adult sample. Although these individuals are likely actively engaged in dating relationships on a regular basis, they may not be seeking long-term mates and are less likely to be interested in parenting than an older sample. Another limitation, mentioned previously, is the use of business suits to indicate social status, as this may be a less salient cue than physical attractiveness.

Future directions

This research investigated individual differences in the allocation of visual attention and the contribution of factors like personality and sexual strategy to patterns of attention at a single point in time. The Strategic Pluralism Model of sexual strategies proposes that men and women have sex-typical strategies but that these strategies are fluid. The relative allocation of effort in a given situation will depend not only on the mating context (short-term, long-term) but also on the characteristics of the individual and their larger environment (Gangestad & Simpson, 2000). Future research in this area could apply the theory of strategic pluralism to within-person variability in the allocation of reproductive effort. Building on the results of this project, a specific aim of future

research could be to measure differences in patterns of visual attention to reproductively relevant information as they relate to differences in relationship status, parental status, etc. in a longitudinal study.

REFERENCES

Alexander, G. M., & Sherwin, B. B. (1991). The association between testosterone, sexual arousal, and selective attention for erotic stimuli in men. *Hormones and Behavior, 25*(3), 367-381. doi:10.1016/0018-506X(91)90008-6

Alexander, G. M. & Charles, N. (2009). Sex differences in adults' relative visual interest in female and male faces, toys, and play styles. *Archives of Sexual Behavior, 38(3)*, 434-441. doi: 10.1007/s10508-008-9429-7

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (Revised 4th ed.). Washington, DC: Author.

Apicella, C. L., & Marlowe, F. W. (2007). Men's reproductive investment decisions. *Human Nature, 18*(1), 22-34. doi: 10.1007/BF02820844

Bailey, M. J., Gaulin, S., Agyei, Y., & Gladue, B. A. (1994). Effects of gender and sexual orientation on evolutionarily relevant aspects of human mating psychology. *Journal of Personality and Social Psychology, 66*(6), 1081-1093. doi:10.1037//0022-3514.66.6.1081

Baize, H. R., & Schroeder, J. E. (1995). Personality and mate selection in personal ads: Evolutionary preferences in a public mate selection process. *Journal of Social Behavior & Personality, 10*(3), 517-536. Retrieved February, 2011 from http://www.sbp-journal.com/

Baumeister, R. F. (2000). Gender differences in erotic plasticity: The female sex drive as socially flexible and responsive. *Psychological Bulletin, 126*(3), 347-374. doi: 10.1037//0033-2909.126.3.347

Baumeister, R. F., & Tice, D. M. (2001). *The social dimension of sex*. Needham Heights, MA: Allyn and Bacon.

Becker, V. D., Kenrick, D. T., Guerin, S., & Maner, J. K. (2005). Concentrating on beauty: Sexual selection and sociospatial memory. *Personality and Social Psychology Bulletin, 31*(12), 1643-1652. doi: 10.1177/0146167205279583

Belsky, J., Steinberg, L., & Draper, P. (1991). Childhood experience, interpersonal development, and reproductive strategy: An evolutionary theory of socialization. *Child Development, 62*(4), 647-670. doi: 10.1111/j.1467-8624.1991.tb01558.x

Bem, S. L. (1974). The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology, 42*(2), 155-162. doi:10.1037/h0036215

Bereczkei, T., & Csanaky, A. (1996). Mate choice, marital success, and reproduction in a modern society. *Ethology & Sociobiology*(17), 23-45. doi:10.1126/science.222.4626.921

Berman, P. W. (1980). Are women more responsive than men to the young? A review of developmental and situational variables. *Psychological Bulletin, 88*(3), 668-695. doi:10.1037//0033-2909.88.3.668

Berman, P. W., Smith, V. L., & Goodman, V. (1983). Development of sex differences in response to an infant and to the caretaker role. *Journal of Genetic Psychology, 143*(2), 283-284. Retrieved March, 2011 from http://www.tandf.co.uk/journals/titles/00221325.asp

Best, D. L., & Williams, J. E. (2001). Gender and culture. In D. R. Matsumoto (Ed.), *The handbook of culture & psychology* (pp. 195-219). New York: Oxford University Press.

Bjorklund, D. F., & Shackelford, T. K. (1999). Differences in parental investment contribute to important differences between men and women. *Current Directions in Psychological Science, 8*(3), 86-89. doi:10.1111/1467-8721.00020

Blakemore, J. E. (1981). Age and sex differences in interaction with a human infant. *Child Development, 52*(1), 386-388. doi:10.2307/1129259

Blakemore, J. E. (1985). Interaction with a baby by young adults: A comparison of traditional and femininst men and women. *Sex Roles, 13*(7-8), 405-411. doi:10.1007/BF00287951

Booth, A. G., & Dabbs, J. M. (1993). Testosterone and men's marriages. *Social Forces, 72*, 463–477. doi:10.2307/2579857

Bullivant, S. B., Sellergren, S. A., Stern, K., Spencer, N. A., Jacob, S., Mennella, J. A., et al. (2004). Women's sexual experience during the menstrual cycle: Identification of the sexual phase by noninvasive measurement of luteinizing hormone. *The Journal of Sex Research, 41*(1). doi:10.1080/00224490409552216

Burnham, T. C., Chapman, J. F., Gray, P. B., McIntyre, M. H., Lipson, S. F., & Ellison, P. T. (2003). Men in committed, romantic relationships have lower testosterone. *Hormones and Behavior, 44*(2), 119-122. doi:10.1016/S0018-506X(03)00125-9

Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and* Brain *Sciences, 12*(1), 1-49. doi:10.1017/S0140525X00023992

Buss, D. M. (1994). *The Evolution of desire: Strategies of human mating*. New York: Basic Books.

Buss, D. M. (1998). Sexual strategies theory: Historical origins and current status. *The Journal of Sex Research, 35*(1), 19-31. doi:10.1080/00224499809551914

Buss, D. M. (2006). Strategies of human mating. *Psihologijske Teme, 15*(2), 239-260. Retrieved February, 2011 from http://hrcak.srce.hr/psihologijske-teme

Buss, D. M., Abbott, M., Angleitner, A., & Asherian, A. (1990). International preferences in selecting mates: A study of 37 cultures. *Journal of Cross-Cultural Psychology, 21*(1), 5-47. doi:10.1177/0022022190211001

Buss, D. M., & Barnes, M. (1986). Preferences in human mate selection. *Journal of Personality and Social Psychology, 50*(3), 559-570. doi:10.1037//0022-3514.50.3.559

Buss, D. M., & Greiling, H. (1999). Adaptive individual differences. *Journal of Personality, 67*, 209-243. doi: 10.1111/1467-6494.00053

Buss, D. M., Larsen, R. J., Westen, D., & Semmelroth, J. (1992). Sex differences in jealousy: Evolution, physiology, and psychology. *Psychological Science, 3*(4), 251-255. doi:10.1111/j.1467-9280.1992.tb00038.x

Buss, D. M., & Schmitt, D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review, 100*(2), 204- 232. doi:10.1037//0033-295X.100.2.204

Buss, D. M., & Shackelford, T. K. (1997). From vigilance to violence: Mate retention tactics in married couples. *Journal of Personality and Social Psychology, 72*, 346-361. doi:10.1037//0022-3514.72.2.346

Buss, D. M., & Shackelford, T. K. (2008). Attractive women want it all: Good genes, economic investment, parenting proclivities, and emotional commitment. *Evolutionary Psychology, 6*(1), 134-146. Retrieved March, 2011 from http://www.epjournal.net

Buss, D. M., Shackelford, T. K., Choe, J., Buunk, B. P., & Dijkstra, P. (2000). Distress about mating rivals. *Personal Relationships, 7*(3), 235-243. doi:10.1111/j.1475-6811.2000.tb00014.x

Buss, D. M., Shackelford, T. K., Kirkpatrick, L. A., Choe, J., Lira, H. K., Hasegawa, M., et al. (1999). Jealousy and the nature' of beliefs about infidelity: Tests of competing hypotheses about sex differences in the United States, Korea, and

Japan. *Personal Relationships, 6*, 125-150. doi:10.1111/j.1475-6811.1999.tb00215.x

Buston, P. M., & Emlen, S. T. (2003). Cognitive processes underlying human mate choice: The relationship between self-perception and mate preference in Western society. *Proceedings of the National Academy of Sciences, 100*(15), 8805-8810. doi:10.1073/pnas.1533220100

Buunk, B. P., Dijkstra, P., Kenrick, D. T., & Warntjes, A. (2001). Age preferences for mates as related to gender, own age, and involvement level. *Evolution and Human Behavior, 22*(4), 241-250. doi:10.1016/S1090-5138(01)00065-4

Cannon, W. B. (1915). *Bodily changes in pain, hunger, fear and rage: An account of recent researches into the function of emotional excitement*. New York: Appleton.

Chisholm, J. S. (1999). Attachment and time preference: Relations between early stress and sexual behavior in a sample of American university women. *Human Nature, 10*(1), 51-83. doi:10.1007/s12110-999-1001-1

Clark, A. P. (2004). Self-perceived attractiveness and masculinization predict women's sociosexuality. *Evolution and Human Behavior, 25*(2), 113-124. doi:10.1016/S1090-5138(03)00085-0

Clark, A. P. (2006). Are the correlates of sociosexuality different for men and women? . *Personality and Individual Differences, 41*, 1321-1327. doi:10.1016/j.paid.2006.05.006

Clark, R. D., & Hatfield, E. (1989). Gender differences in receptivity to sexual offers. *Journal of Psychology and Human Sexuality, 2*, 39-54. doi:10.1300/J056v02n01_04

Cronin, H. (1991). *The ant and the peacock*. Cambridge, UK: Cambridge University Press.

Daly, M., & Wilson, M. (1987). The Darwinian psychology of discriminative parental solicitude. *Nebraska Symposium on Motivation, 35*, 91-144.

Darwin, C. (1859). *On the origin of species*. London: John Murray.

Darwin, C. (1871). *The descent of man*. London: John Murray.

Deaner, R. O., Khera, A. V., & Platt, M. L. (2005). Monkeys pay per view: Adaptive valuation of social images by rhesus macaques. *Current Biology, 15*, 543– 548. doi:10.1016/j.cub.2005.01.044

DeWall, C. N. & Maner, J. K. (2008). High status men (but not women) capture the eye of the beholder. *Evolutionary Psychology, 6(*2), 328-341. Retrieved February, 2011 from http://www.epjournal.net

Dixson, B. J., Grimshaw, G. M., Linklater, W. L., Dixson, A. F. (2010). Watching the hourglass eye tracking reveals men's appreciation of the female form. *Human Nature: An Interdisciplinary Biosocial Perspective, 21*(4) 355-370. doi:10.1007/s12110-010-9100-6

Duncan, L. A., Park, J. H., Faulkner, J., Schaller, M., Neuberg, S. L., & Kenrick, D. T. (2007). Adaptive allocation of attention: effects of sex and sociosexuality on visual attention to attractive opposite-sex faces. *Evolution and Human Behavior, 28*, 359-364. doi:10.1016/j.evolhumbehav.2007.05.001

Eagly, A. H. (1987). Sex differences in social behavior: A social-role interpretation. In *John M. MacEachran memorial lecture series; 1985* (Vol. xii, pp. 178 pp). Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.

Eagly, A. H., & Wood, W. (1999). The origins of sex differences in human behavior: Evolved dispostions versus social roles. *American Psychologist, 54*(6), 408-423. doi:10.1017/S0140525X99331812

Eastwick, P. W., Eagly, A. H., Glick, P., Johannesen-Schmidt, M. C., Fiske, S. T., Blum, A. M. B., et al. (2006). Is traditional gender ideology associated with sex-typed mate preferences? A test in nine nations. *Sex Roles, 54*(9-10), 603-614. doi:10.1007/s11199-006-9027-x

Eysenck, H. J. (1976). *Sex and personality*. London: Open Books.

Fairbanks, L. A. (1990). Reciprocal benefits of allomothering for female vervet monkeys. *Animal Behaviour, 40*(3), 553-562. doi:10.1016/S0003-3472(05)80536-6

Feldman, S. S., & Nash, S. C. (1978). Interest in babies during young adulthood. *Child Development, 49*(3), 617-622. doi:10.2307/1128228

Feldman, S. S., & Nash, S. C. (1979a). Changes in responsiveness to babies during adolescence. *Child Development, 50*(4), 942-949. doi:10.2307/1129318

Feldman, S. S., & Nash, S. C. (1979b). Sex differences in responsiveness to babies among mature adults. *Developmental Psychology, 15*(4), 430-436. doi:10.1037//0012-1649.15.4.430

Foulsham, T., Cheng, J. T., Tracy, J. L., Henrich, J., & Kingston, A. (2010) Gaze allocation in a dynamic situation: Effects of social status and speaking. *Cognition, 117*, 319-331. doi:10.1016/j.cognition.2010.09.003

Gangestad, S. W., Garver-Apgar, C. E., Simpson, J. A., & Cousins, A. J. (2007). Changes in women's mate preferences across the ovulatory cycle. *Journal of Personality and Social Psychology, 92*(1), 151-163. doi:10.1037/0022-3514.92.1.151

Gangestad, S. W., & Simpson, J. A. (1990). Toward an evolutionary history of female sociosexual variation. *Journal of Personality, 58*(1), 70-96. doi:10.1111/j.1467-6494.1990.tb00908.x

Gangestad, S. W., & Simpson, J. A. (2000). The evolution of human mating: Trade-offs and strategic pluralism. *Behavioral and Brain Sciences, 23*(4), 573-644. doi:10.1017/S0140525X0000337X

Gangestad, S. W., & Thornhill, R. (1997). The evolutionary psychology of extrapair sex: The role of fluctuating asymmetry. *Evolution and Human Behavior, 18*(2), 69-88. doi:10.1016/S1090-5138(97)00003-2

Gangestad, S. W., & Thornhill, R. (1998). The analysis of fluctuating asymmetry redux: The robustness of parametric statistics. *Animal Behaviour, 55*(2), 497-501. doi:10.1006/anbe.1997.0610

Gangestad, S. W., Thornhill, R., & Garver-Apgar, C. E. (2005). Adaptations to ovulation: Implications for sexual and social behavior. *Current Directions in Psychological Science, 14*(6), 312-316. doi:10.1111/j.0963-7214.2005.00388.x

Goldberg, S. (1973). *The inevitability of patriarchy*. New York: William Morrow and Company.

Goode, E. (1996). Gender and courtship entitlement: Responses to personal ads. *Sex Roles, 34*(3-4), 141-169. doi:10.1007/BF01544293

Gray, P. B., Chapman, J. F., Burnham, T. C., McIntyre, M. H., Lipson, S. F., & Ellison, P. T. (2004). Human male pair bonding and testosterone. *Human Nature, 15*(2), 119-131. doi:10.1007/s12110-004-1016-6

Greiling, H., & Buss, D. M. (2000). Women's sexual strategies: The hidden dimension of extra-pair mating. *Personality and Individual Differences, 28*(5), 929-963. doi:10.1016/S0191-8869(99)00151-8

Greitemeyer, T. (2007). What do men and women want in a partner? Are educated partners always more desirable? *Journal of Experimental Social Psychology, 43*, 180-194. doi:10.1016/j.jesp.2006.02.006

Haffner, S. M., Karhapää, P., Mykkänen, L., & Laakso, M. (1994). Insulin resistance, body fat distribution, and sex hormones in men. *Diabetes, 43*(2) 212-9. doi:10.2337/diabetes.43.2.212

Hald, G. M. & Hogh-Olesend, H. (2010). Receptivity to sexual invitations from strangers of the opposite gender. *Evolution & Human Behavior, 31,* 453-458. doi:10.1016/j.evolhumbehav.2010.07.004

Hedricks, C. A. (1994). Sexual behavior across the menstrual cycle: A biopsychological approach. *Annual Review of Sex Research, 5*, 122-172.

Henrich, J. & Gil-White, F. J. (2001) The evolution of prestige: Freely conferred deference as a mechanism for enhancing the benefits of cultural transmission. *Evolution and Human Behavior, 22*, 165-196. doi:10.1016/S1090-5138(00)00071-4

Hill, E. M., Ross, L. T., & Low, B. S. (1997). The role of future unpredictability in human risk-taking. *Human Nature, 8*, 287-325. doi:10.1007/BF02913037

Hull, J. W., Clarkin, J. F., Yeomans, F. (1993). Borderline personality disorder and impulsive sexual behavior. *Hospital and Community Psychiatry, 44(l0),* l000-l002.

Hyde, J. S. (2005). The gender similarities hypothesis. *American Psychologist, 60*(6), 581-592. doi:10.1037/0003-066X.60.6.581

International Personality Item Pool (no date): A scientific collaboratory for the development of advanced measures of personality traits and other individual differences. Retrieved April, 2009 from http://ipip.ori.org/.

Johannesen-Schmidt, M. C., & Eagly, A. H. (2002). Another look at sex differences in preferred mate characteristics: The effects of endorsing the traditional female gender role. *Psychology of Women Quarterly, 26*, 322-328. doi:10.1111/1471-6402.t01-2-00071

Jones, B. C., DeBruine, L. M., Little, A. C., Conway, C. A., Welling, L. L. M., & Smith, F. (2007). Sensation seeking and men's face preferences. *Evolution and Human Behavior, 28*(6), 439-446. doi:10.1016/j.evolhumbehav.2007.07.006

Kalichman, S. C. & Rompa, D. (2001) The sexual compulsivity scale: Further development and use with HIV positive persons. *Journal of Personality Assessment, 76(3)*, 379-395. doi:10.1207/S15327752JPA7603_02

Kaye, S.A., Folsom, A. R., Prineas, R. J., Potter, J. D., & Gapstur, S. M. (1990). The association of body fat distribution with lifestyle and reproductive factors in a population study of postmenopausal women. *International Journal of Obesity, 14*(7), 583-591. doi:10.1016/0378-5122(91)90321-G

Kenrick, D. T., Groth, G. E., Trost, M. R., & Sadalla, E. K. (1993). Integrating evolutionary and social exchange perspectives on relationships: Effects of gender, self-appraisal, and involvement level on mate selection criteria. *Journal of Personality and Social Psychology, 64*(6), 951-969. doi:10.1037//0022-3514.64.6.951

Kenrick, D. T., & Keefe, R. C. (1992). Age preferences in mates reflect sex differences in human reproductive strategies. *Behavioral and Brain Sciences, 15*, 75-133. Retrieved March, 2011 from http://journals.cambridge.org/action/displayJournal?jid=BBS

Kenrick, D. T., Keefe, R. C., Gabrielidis, C., & Cornelius, J. S. (1996). Adolescents' age preferences for dating partners: Support for an evolutionary model of life-history strategies. *Child Development, 67*, 1499-1511. doi:10.1111/j.1467-8624.1996.tb01810.x

Kenrick, D. T., Neuberg, S. L., Zierk, K. L., & Krones, J. M. (1994). Evolution and social cognition: Contrast effects as a function of sex, dominance, and physical attractiveness. *Personality and Social Psychology Bulletin, 20*(2), 210-217. doi:10.1177/0146167294202008

Kenrick, D. T., Sadalla, E. K., Groth, G., & Trost, M. (1990). Evolution, traits, and the stages of human courtship: Qualifying the parental investment model. *Journal of Personality, 58*(1), 97-116. doi:10.1111/j.1467-6494.1990.tb00909.x

Kinsey, A. C., Pomeroy, W. B., & Martin, C. E. (1948). *Sexual behavior in the human male*. Philadelphia: W. B. Saunders.

Kinsey, A. C., Pomeroy, W. B., Martin, C. E., & Gebhard, P. H. (1953). *Sexual behavior in the human female*. Philadelphia: W. B. Saunders.

Landolt, M. A., Lalumiere, M. L., & Quinsey, V. L. (1995). Sex differences in intra-sex variations in human mating tactics: An evolutionary approach. *Ethology & Sociobiology, 16*, 3-23. doi:10.1016/0162-3095(94)00012-V

Lankford, C. (2000). Gazetracker: Software designed to facilitate eye movement analysis. In *Proceedings of the 2000 Symposium on Eye Tracking Research & Applications* (pp. 51-55). New York: ACM Press.

Levy, B., Ariely, A., Mazar, N., Chi, W., Lukas, S. et al. (2008) Gender differences in the motivational processing of facial beauty. *Learning and Motivation, 39*, 136-145. doi:10.1016/j.lmot.2007.09.002

Li, N. P., Bailey, J. M., Kenrick, D. T., & Linsenmeier, J. A. W. (2002). The necessities and luxuries of mate preferences: Testing the tradeoffs. *Journal of Personality and Social Psychology, 82*(6), 947-955. doi: 10.1037//0022-3514.82.6.947

Li, N. P., & Kenrick, D. T. (2006). Sex similarities and differences in preferences for short-term mates: What, whether, and why. *Journal of Personality and Social Psychology, 90*(3), 468-489. doi:10.1037/0022-3514.90.3.468

Little, A. C., Burt, D. M., Penton-Voak, I. S., & Perrett, D. I. (2001). Self-perceived attractiveness influences human female preferences for sexual dimorphism and symmetry in male faces. *Proceedings of the Royal Society B: Biological Sciences, 268*(1462), 39-44. doi:10.1098/rspb.2000.1327

Lykins, A., Meana, M., & Strauss, G. (2008). Sex differences in visual attention to erotic and non-erotic images. *Archives of Sexual Behavior, 37*, 219-228. doi:10.1007/s10508-007-9208-x

Maestripieri, D. (1999). The biology of human parenting: Insights from nonhuman primates. *Neuroscience and Biobehavioral Reviews, 23*, 411-422. doi:10.1016/S0149-7634(98)00042-6

Maestripieri, D., & Pelka, S. (2002). Sex differences in interest in infants across the lifespan: A biological adaptation for parenting? *Human Nature, 13*(3), 327-344. doi: 10.1007/s12110-002-1018-1

Maner, J. K., DeWall, C. N., & Gailliot, M. T. (2008). Selective attention to signs of success: Social dominance and early stage interpersonal perception. *Personality and Social Psychology Bulletin, 34*(4), 488-501. doi:10.1177/0146167207311910

Maner, J. K., Gailliot, M. T., & DeWall, C. N. (2007a). Adaptive attentional attunement: evidence for mating-related perceptual bias. *Evolution and Human Behavior, 28*, 28-36. doi:10.1016/j.evolhumbehav.2006.05.006

Maner, J. K., Gailliot, M. T., Rouby, A., & Miller, S. L. (2007b). Can't take my eyes off you: Attentional adhesion to mates and rivals. *Journal of Personality and Social Psychology, 93*(3), 389-401. doi:10.1037/0022-3514.93.3.389

Maner, J. K., Kenrick, D. T., Becker, D. V., Delton, A. W., Hofer, B., Wilbur, C. J., et al. (2003). Sexually selective cognition: Beauty captures the mind of the beholder. *Journal of Personality and Social Psychology, 85*(6), 1107-1120. doi:10.1037/0022-3514.85.6.1107

Maner, J. K., Kenrick, D. T., Becker, D. V., Robertson, T. E., Hofer, B., Neuberg, S. L., et al. (2005). Functional projection: How fundamental social motives can bias interpersonal perception. *Journal of Personality and Social Psychology, 88*(1), 63-78. doi:10.1037/0022-3514.88.1.63

Manning, J. T. (2002). *Digit ratio: A pointer to fertility, behavior and health*. London, UK: Rutgers University Press.

McIntyre, M. H., Gangestad, S. W., Gray, P. B., Chapman, J. F., Burnham, T. C., O'Rourke, M. T., et al. (2006). Romantic involvement often reduces men's testosterone levels—But not always: the moderating role of extrapair sexual interest. *Journal of Personality and Social Psychology, 91*(4), 642-651. doi:10.1037/0022-3514.91.4.642

Mikach, S. M., & Bailey, J. M. (1999). What distinguishes women with unusually high numbers of sex partners? *Evolution and Human Behavior, 20*, 141-150. doi:10.1016/S1090-5138(98)00045-2

Miller, R. S. (1997). Inattentive and contented: Relationship commitment and attention to alternatives. *Journal of Personality and Social Psychology, 73*(4), 758-766. doi:10.1037/0022-3514.73.4.758

Miller, S.L., & Maner, J.K. (2010). Evolution and relationship maintenance: Fertility cues lead committed men to devalue relationship alternatives. *Journal of Experimental Social Psychology, 46*, 1081-1084. doi:10.1016/j.jesp.2010.07.004

Moore, F., Smith, M. L., Cassidy, C., Perrett, D. (2009). Female reproductive strategy predicts preferences for sexually dimorphic male facial characteristics. *Journal of Evolutionary Psychology, 7(3)*, 211-224. doi: 10.1556/JEP.7.2009.3.2

Morey, L. C. (1991). *Personality Assessment Inventory professional manual*. Odessa, FL: Psychological Assessment Resources.

Murdock, G. P. (1981). *Atlas of world cultures*. Pittsburgh, PA: The University of Pittsburgh Press.

Ohman, A. Flykt, A., & Lundqvist, D. (2000). Unconscious emotion: Evolutionary perspectives, psychophysiological data and neuropsychological mechanisms. In R. D. Lane & L. Nadel (Eds.) *Cognitive neuroscience of emotion: Series in affective science* (pp. 296 -327). New York: Oxford University Press.

Okami, P., & Shackelford, T. K. (2001). Human sex differences in sexual psychology and behavior. *Annual Review of Sex Research, 12*, 186-241.

Oliver, M. B., & Hyde, J. S. (1993). Gender differences in sexuality: A meta-analysis. *Psychological Bulletin, 114*(1), 29-51. doi:10.1037//0033-2909.114.1.29

Ostovich, J. M., & Sabini, J. (2004). How are sociosexuality, sex drive and lifetime number of sexual partners related? *Personality and Social Psychology Bulletin, 30*(10), 1255-1266. doi:10.1177/0146167204264754

Penke, L., & Asendorpf, J. (2008a). Evidence for conditional sex differences in emotional but not in sexual jealousy at the automatic level of cognitive processing. *European Journal of Personality, 22*, 3–30. doi:10.1002/per.654

Penke, L., & Asendorpf, J. B. (2008b). Beyond global sociosexual orientations: A more differentiated look at sociosexuality and its effects on courtship and romantic relationships. *Journal of Personality and Social Psychology, 95*(5), 1113-1135. doi:10.1037/0022-3514.95.5.1113

Penton-Voak, I. S., Perrett, D. I., Castles, D., Burt, M., Kobayashi, T., & Murray, L. K. (1999). Female preference for male faces changes cyclically. *Nature, 399*, 741-742. doi:10.1038/21557

Pfeiffer, S. M., & Wong, P. T. P. (1989). Multidimensional jealousy. *Journal of Social and Personal Relationships, 6*(2), 181-196. doi:10.1177/026540758900600203

Putz, D. A., Gaulin, S. J. C., Sporter, R. J., & McBurney, D. H. (2004). Sex hormones and finger length: What does 2D:4D indicate? *Evolution and Human Behavior, 25*, 182-199. doi:10.1016/j.evolhumbehav.2004.03.005

Rinck, M. & Becker, E. S. (2006). Spider fearful individuals attend to threat, then quickly avoid it: Evidence from eye movements. *Journal of Abnormal Psychology, 115*(2), 231-238. doi: 10.1037/0021-843X.115.2.231

Rock, I. & Gutman, D. (1981). The effect of inattention on form perception. *Journal of Experimental Psychology: Human Perception and Performance, 7*(2), 275-285. doi:10.1037//0096-1523.7.2.275

Sadalla, E. K., Kenrick, D. T., & Vershure, B. (1987). Dominance and heterosexual attraction. *Journal of Personality and Social Psychology, 52*(4), 730-738. doi:10.1037//0022-3514.52.4.730

Sansone, R. A., Barnes, J., Muennich, E., & Wiederman, M. (2008). Borderline personality symptomatology and sexual impulsivity. *International Journal of Psychiatry in Medicine, 38*, 53-60. Retrieved March, 2011 from http://www.baywood.com/journals/previewjournals.asp?id=0091-2174

Sansone, R. A. & Wiederman, M. W. (2009). Borderline personality symptomology, casual sex, relationships, and promiscuity. *Psychiatry, 6*(3), 36-40. Retrieved February, 2011 from http://www.ncbi.nlm.nih.gov/pmc/journals/901/#psych

Scheib, J. E. (2001). Context-specific mate choice criteria: Women's trade-offs in the contexts of long-term and extra-pair mateships. *Personal Relationships, 8*, 371-389. doi:10.1111/j.1475-6811.2001.tb00046.x

Schmitt, D. P. (2004). The big five related to risky sexual behaviour across 10 world regions: Differential personality associations of sexual promiscuity and relationship infidelity. *European Journal of Personality, 18*, 301-319. doi:10.1002/per.520

Schmitt, D. P., & Shackelford, T. K. (2008). Big five traits related to short-term mating: From personality to promiscuity across 46 nations. *Evolutionary Psychology, 6*(2). Retrieved March, 2011 from http://www.epjournal.net

Simpson, J. A., & Gangestad, S. W. (1991). Individual differences in sociosexuality: Evidence for convergent and discriminant validity. *Journal of Personality and Social Psychology, 60*(6), 870-883. doi:10.1037//0022-3514.60.6.870

Simpson, J. A., & Gangestad, S. W. (1992). Sociosexuality and romantic partner choice. *Journal of Personality, 60*(1), 31-51. doi:10.1111/j.1467-6494.1992.tb00264.x

Simpson, J. A., & Gangestad, S. W. (2001). Evolution and relationships: A call for integration. *Personal Relationships, 8*, 341-355. doi:10.1111/j.1475-6811.2001.tb00044.x

Simpson, J. A., Wilson, C. L., & Winterheld, H. A. (2004). *Sociosexuality and romantic relationships* In J.H. Harvey, A. Wenzel, & S. Sprecher (Eds.), *Handbook of sexuality in close relationships* (pp. 87–112). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

Skitka, L. J., & Maslach, C. (1996). Gender as schematic category: A role construct approach. *Social Behavior and Personality, 24*(1), 53-74. doi:10.2224/sbp.1996.24.1.53

Slatcher, R. B., Mehta, P. H., & Joseph, R. A. (2011). Testosterone and self-reported dominance interact to influence human mating behavior. *Social Psychological and Personality Science,* doi: 10.1177/1948550611400099

Storey, A. E., Walsh, C. J., Quinton, R. L., & Wynne-Edwards, K. E. (2000). Hormonal correlates of paternal responsiveness in new and expectant fathers. *Evolution and Human Behavior, 21*, 79-95. doi:10.1016/S1090-5138(99)00042-2

Symons, D. (1979). *Evolution of human sexuality*. New York: Oxford University Press.

Thornhill, R., & Gangestad, S. W. (1999). Facial attractiveness. *Trends in Cognitive Sciences, 3*(12), 452-459. doi:10.1016/S1364-6613(99)01403-5

Thornquist, M. H., Zuckerman, M., & Exline, R. V. (1991). Love, liking, looking and sensation seeking in unmarried college couples. *Personality and Individual Differences, 12*(1283-1292). doi:10.1016/0191-8869(91)90202-M

Todd, P. M., Penke, L., Fasolo, B., & Lenton, A. P. (2007). Different cognitive processes underlie human mate choices and mate preferences. *Proceedings of the National Academy of Sciences, 104*(38), 15011-15016. doi:10.1073/pnas.0705290104

Townsend, J., & Levy, G. (1990). Effects of potential partners' physical attractiveness and socioeconomic status on sexuality and partner selection. *Archives of Sexual Behavior, 19*(2), 149-164. doi:10.1007/BF01542229

Townsend, J. M. (1989). Mate selection criteria: A pilot study. *Ethology & Sociobiology, 10*, 241-253. doi:10.1016/0162-3095(89)90002-2

Townsend, J. M., & Wasserman, T. (1998). Sexual attractiveness: Sex differences in assessment and criteria. *Evolution and Human Behavior, 19*, 171-191. doi:10.1016/S1090-5138(98)00008-7

Trivers, R. L. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man, 1871-1971* (pp. 136-179). Chicago, IL: Aldine.

van Anders, S. M., Hamilton, L. D., & Watson, N. V. (2007). Multiple partners are associated with higher testosterone in North American men and women. *Hormones and Behavior, 51*(3), 454-459. doi:10.1016/j.yhbeh.2007.01.002

Walsh, A. (1995). Parental attachment, drug use, and facultative sexual strategies. *Social Biology, 42*, 95–107. doi:10.1080/19485565.1995.9988890

Waynforth, D. (2001). Mate choice trade-offs and women's preference for physically attractive men. *Human Nature, 12*(3), 207-219. doi: 10.1007/s12110-001-1007-9

Webster, G. D., & Bryan, A. (2007). Sociosexual attitudes and behaviors: Why two factors are better than one. *Journal of Research in Personality, 41*, 917-922. doi:10.1080/19485565.1995.9988890

Wiederman, M. W., & Allgeier, E. R. (1992). Gender differences in mate selection criteria: sociobiological or socioeconomic explanation? *Ethology & Sociobiology, 13*, 115-124. doi:10.1080/19485565.1995.9988890

Yost, M. R., & Zurbriggen, E. L. (2006). Gender differences in the enactment of sociosexuality: An examination of implicit social motives, sexual fantasies, coercive sexual attitudes, and aggressive sexual behavior. *The Journal of Sex Research, 43*(2), 163-173. doi:10.1080/19485565.1995.9988890

Zuckerman, M., Tushup, R., & Finner, S. (1976). Sexual attitudes and experience: Attitude and personality correlates and changes produced by a course in sexuality. *Journal of Consulting and Clinical Psychology, 44(1),* 7-19. doi:10.1080/19485565.1995.9988890

APPENDIX

Correlations among male participants for single sex arrays.

Measures	Same sex targets				Opposite sex targets			
	High attractive		Low attractive		High attractive		Low attractive	
	High status	Low status	High status	Low status	High status	Low status	High status	Low status
Self-assessment								
Mate value					-.03	-.12	.07	-.07
Mating success					-.26*	.18	.02	.00
Trait Jealousy								
MJS Total	.21	.12	-.02	.10				
Cognitive	.10	.11	.08	.14				
Emotional	.23	.09	-.17	-.04				
Behavioral	.17	.05	-.00	.08				
Sociosexual Orientation								
SOI Total					-.05	.16	-.03	-.10
Attitudes					-.09	.21	-.05	.01
Behaviors					-.10	-.15	.06	-.05
Desire					.04	.20	-.05	.00
Interest in Infants								
Interactions								
Preference					.07	.03	-.06	.15
Liking					-.07	.05	-.25	-.29*
					.21	-.13	.16	.25*
Personality								
DOM	.04	-.01	-.09	-.11	-.05	-.01	-.09	-.12
BOR	-.04	.05	.09	.17	-.05	.05	.12	.23
ANT-S	-.15	.04	.15	.14	-.13	.19	.00	.02
Extraversion	.12	.01	-.25*	-.06	-.02	-.07	-.08	-.07

Note. Mate value = rating of self on traits related to desirability as a mate, ranges from 27-189; Mating Success = rating of self on attractiveness to the opposite sex, ranges from 8-56; Jealousy scores = agreement with statements about worry related to infidelity, emotional reactivity to jealousy provoking events, mate guarding behaviors, and the sum of all three subscales, scores range from 8-56 on subscales and 24-168 for total score; SOI scores= ratings of self on unrestricted sexual attitudes, history of uncommitted sexual behaviors, interest in uncommitted sex and the total of these subscales, scores range from 3-21 on subscales and 9-63 for total score; Interactions = predicted interactions with an unknown infant, ranges from 7-49; Preference = strength of preference for spending time with an adult rather than a baby, ranges from 1-7, Liking = strength of liking babies, ranges from 1-3, DOM = T score on the PAI interpersonal dominance scale, BOR = T score on the PAI borderline personality features scale, ANT-S = T score on the PAI sensation-seeking scale, scores on the PAI scales have a mean of 50 and SD of 10; Extraversion = self-rated NEO extraversion, scores range from 0-20.

Correlations among female participants for the single sex arrays.

Measures	Same sex targets				Opposite sex targets			
	High attractive		Low attractive		High attractive		Low attractive	
	High status	Low status	High status	Low status	High status	Low status	High status	Low status
Self-assessment								
Mate value					-.06	-.06	.10	.20
Mating success					.16	-.08	-.09	-.04
Trait Jealousy								
MJS Total	-.08	.15	.01	.16				
Cognitive	-.11	.17	-.08	.00				
Emotional	.03	.18	-.10	.18				
Behavioral	-.07	.03	.16	.23				
Sociosexual Orientation								
SOI Total					.22	-.16	.01	-.40**
Attitudes					.13	.00	-.14	-.46**
Behaviors					.14	-.15	.08	-.33*
Desire					.28*	-.29*	.13	-.15
Interest in Infants								
Interactions								
Preference					-.07	.13	.26*	.41**
Liking					.13	.31*	-.01	-.30*
					-.10	.24	.20	.30
Personality								
DOM	-.15	.08	-.09	.07	-.01	.08	.02	-.02
BOR	.09	.01	-.02	-.23	.10	-.25	-.18	-.30*
ANT-S	-.04	.29*	-.03	-.05	-.21	-.13	-.13	-.21
Extraversion	-.21	.26*	-.23	.04	.04	-.06	-.04	.00

Note. Mate value = rating of self on traits related to desirability as a mate, ranges from 27-189; Mating Success = rating of self on attractiveness to the opposite sex, ranges from 8-56; Jealousy scores = agreement with statements about worry related to infidelity, emotional reactivity to jealousy provoking events, mate guarding behaviors, and the sum of all three subscales, scores range from 8-56 on subscales and 24-168 for total score; SOI scores= ratings of self on unrestricted sexual attitudes, history of uncommitted sexual behaviors, interest in uncommitted sex and the total of these subscales, scores range from 3-21 on subscales and 9-63 for total score; Interactions = predicted interactions with an unknown infant, ranges from 7-49; Preference = strength of preference for spending time with an adult rather than a baby, ranges from 1-7, Liking = strength of liking babies, ranges from 1-3, DOM = T score on the PAI interpersonal dominance scale, BOR = T score on the PAI borderline personality features scale, ANT-S = T score on the PAI sensation-seeking scale, scores on the PAI scales have a mean of 50 and SD of 10; Extraversion = self-rated NEO extraversion, scores range from 0-20.

Correlations among male participants for Set 1.

Measures	Same sex targets		Opposite sex targets		Infant targets
	High attractive	Low attractive	High attractive	Low attractive	
Self-assessment					
Mate value			.01	.00	-.03
Mating success			.03	.24	-.05
Trait Jealousy					
MJS Total	.13	.02			
Cognitive	.13	.09			
Emotional	.06	-.14			
Behavioral	.07	.03			
Sociosexual Orientation					
SOI Total			.17	.05	.00
Attitudes			.22	.09	.03
Behaviors			-.07	-.03	-.04
Desire			.13	.03	.00
Interest in Infants					
Interactions			.03	-.08	.24
Preference			-.07	.03	-.14
Liking			-.05	-.18	.04
Personality					
DOM	-.11	.04	.07	.14	-.01
BOR	-.08	-.04	.10	-.10	.01
ANT-S	-.08	.06	.09	.02	.11
Extraversion	.06	.07	-.01	.02	-.20

Note. Mate value = rating of self on traits related to desirability as a mate, ranges from 27-189; Mating Success = rating of self on attractiveness to the opposite sex, ranges from 8-56; Jealousy scores = agreement with statements about worry related to infidelity, emotional reactivity to jealousy provoking events, mate guarding behaviors, and the sum of all three subscales, scores range from 8-56 on subscales and 24-168 for total score; SOI scores= ratings of self on unrestricted sexual attitudes, history of uncommitted sexual behaviors, interest in uncommitted sex and the total of these subscales, scores range from 3-21 on subscales and 9-63 for total score; Interactions = predicted interactions with an unknown infant, ranges from 7-49; Preference = strength of preference for spending time with an adult rather than a baby, ranges from 1-7, Liking = strength of liking babies, ranges from 1-3, DOM = T score on the PAI interpersonal dominance scale, BOR = T score on the PAI borderline personality features scale, ANT-S = T score on the PAI sensation-seeking scale, scores on the PAI scales have a mean of 50 and SD of 10; Extraversion = self-rated NEO extraversion, scores range from 0-20.

Correlations among female participants for Set 1.

Measures	Same sex targets		Opposite sex targets		Infant targets
	High attractive	Low attractive	High attractive	Low attractive	
Self-assessment					
Mate value			.02	.29*	-.20
Mating success			.23	.09	.03
Trait Jealousy					
MJS Total	-.01	.05			
Cognitive	.10	.04			
Emotional	-.17	-.01			
Behavioral	.08	.07			
Sociosexual Orientation					
SOI Total			.17	-.04	-.21
Attitudes			.09	-.21	-.14
Behaviors			.06	.03	-.16
Desire			.26*	.14	-.22
Interest in Infants					
Interactions			-.12	.06	.16
Preference			.29*	.03	-.51***
Liking			-.06	.24	.24
Personality					
DOM	.05	.01	.13	.06	
BOR	.07	-.20	-.09	-.11	
ANT-S	.01	-.10	.14	-.12	
Extraversion	.13	.01	.05	.20	

Note. Mate value = rating of self on traits related to desirability as a mate, ranges from 27-189; Mating Success = rating of self on attractiveness to the opposite sex, ranges from 8-56; Jealousy scores = agreement with statements about worry related to infidelity, emotional reactivity to jealousy provoking events, mate guarding behaviors, and the sum of all three subscales, scores range from 8-56 on subscales and 24-168 for total score; SOI scores= ratings of self on unrestricted sexual attitudes, history of uncommitted sexual behaviors, interest in uncommitted sex and the total of these subscales, scores range from 3-21 on subscales and 9-63 for total score; Interactions = predicted interactions with an unknown infant, ranges from 7-49; Preference = strength of preference for spending time with an adult rather than a baby, ranges from 1-7, Liking = strength of liking babies, ranges from 1-3, DOM = T score on the PAI interpersonal dominance scale, BOR = T score on the PAI borderline personality features scale, ANT-S = T score on the PAI sensation-seeking scale, scores on the PAI scales have a mean of 50 and SD of 10; Extraversion = self-rated NEO extraversion, scores range from 0-20.

Correlations among male participants for Set 2.

Measures	Same sex targets		Opposite sex targets		Infant targets
	High status	Low status	High status	Low status	
Self-assessment					
Mate value			-.15	-.03	-.13
Mating success			-.08	.12	-.15
Trait Jealousy					
MJS Total	.05	.06			
Cognitive					
Emotional	.06	.19			
Behavioral	.12	-.10			
	-.07	-.03			
Sociosexual Orientation					
SOI Total			.16	.23	.07
Attitudes			.24	.17	.10
Behaviors			-.15	-.04	-.04
Desire			.14	.31*	.06
Interest in Infants					
Interactions			-.09	.07	.15
Preference			.10	-.16	-.20
Liking			-.03	.00	.06
Personality					
DOM	.11	.15	-.03	.08	-.16
BOR	-.03	-.08	.07	.08	.10
ANT-S	.03	.01	-.01	.22	-.02
Extraversion	.07	-.19	-.08	-.16	-.09

Note. Mate value = rating of self on traits related to desirability as a mate, ranges from 27-189; Mating Success = rating of self on attractiveness to the opposite sex, ranges from 8-56; Jealousy scores = agreement with statements about worry related to infidelity, emotional reactivity to jealousy provoking events, mate guarding behaviors, and the sum of all three subscales, scores range from 8-56 on subscales and 24-168 for total score; SOI scores= ratings of self on unrestricted sexual attitudes, history of uncommitted sexual behaviors, interest in uncommitted sex and the total of these subscales, scores range from 3-21 on subscales and 9-63 for total score; Interactions = predicted interactions with an unknown infant, ranges from 7-49; Preference = strength of preference for spending time with an adult rather than a baby, ranges from 1-7, Liking = strength of liking babies, ranges from 1-3, DOM = T score on the PAI interpersonal dominance scale, BOR = T score on the PAI borderline personality features scale, ANT-S = T score on the PAI sensation-seeking scale, scores on the PAI scales have a mean of 50 and SD of 10; Extraversion = self-rated NEO extraversion, scores range from 0-20.

Correlations among female participants for Set 2.

	Same sex targets		Opposite sex targets		Infant targets
Measures	High status	Low status	High status	Low status	
Self-assessment					
Mate value			.11	.12	-.08
Mating success			.15	.13	-.20
Trait Jealousy					
MJS Total	.17	.13			
Cognitive	.09	.06			
Emotional	.08	.09			
Behavioral	.21	.16			
Sociosexual Orientation					
SOI Total			.23	-.06	-.30*
Attitudes			.32*	-.20	-.23*
Behaviors			.08	-.04	-.15
Desire			.11	.12	-.33*
Interest in Infants					
Interactions			-.30*	.07	.32*
Preference			.00	.13	-.49**
Liking			-.21	.15	.22
Personality					
DOM	.11	.12	.12	.05	-.19
BOR	.11	-.19	.05	-.03	-.03
ANT-S	.06	.02	.16	-.08	-.22
Extraversion	-.03	.20	-.05	.04	-.17

Note. Mate value = rating of self on traits related to desirability as a mate, ranges from 27-189; Mating Success = rating of self on attractiveness to the opposite sex, ranges from 8-56; Jealousy scores = agreement with statements about worry related to infidelity, emotional reactivity to jealousy provoking events, mate guarding behaviors, and the sum of all three subscales, scores range from 8-56 on subscales and 24-168 for total score; SOI scores= ratings of self on unrestricted sexual attitudes, history of uncommitted sexual behaviors, interest in uncommitted sex and the total of these subscales, scores range from 3-21 on subscales and 9-63 for total score; Interactions = predicted interactions with an unknown infant, ranges from 7-49; Preference = strength of preference for spending time with an adult rather than a baby, ranges from 1-7, Liking = strength of liking babies, ranges from 1-3, DOM = T score on the PAI interpersonal dominance scale, BOR = T score on the PAI borderline personality features scale, ANT-S = T score on the PAI sensation-seeking scale, scores on the PAI scales have a mean of 50 and SD of 10; Extraversion = self-rated NEO extraversion, scores range from 0-20.

Correlations among male participants for Set 3.

Measures	Same sex targets				Opposite sex targets				Infant targets
	High attractive		Low attractive		High attractive		Low attractive		
	High status	Low status	High status	Low status	High status	Low status	High status	Low status	
Self-assessment									
Mate value					-.10	-.15	.15	-.18	-.16
Mating success					-.31*	.04	.30*	-.10	-.17
Trait Jealousy									
MJS Total	.03	.14	-.13	.08					
Cognitive	-.03	.17	.05	.21					
Emotional	.02	.05	-.30*	-.04					
Behavioral	.09	.05	-.11	-.08					
Sociosexual Orientation									
SOI Total					.08	.00	.12	.02	.00
Attitudes					.02	.07	.02	.20	.13
Behaviors					-.03	-.12	.19	-.20	-.10
Desire					.16	-.00	.11	.14	-.08

Correlations among male participants for Set 3 Continued.

Measures	Same sex targets				Opposite sex targets				Infant targets
	High attractive		Low attractive		High attractive		Low attractive		
	High status	Low status	High status	Low status	High status	Low status	High status	Low status	
Interest in Infants									
Interactions					.05	-.08	.06	-.04	-.06
Preference					-.04	.03	.08	-.15	.05
Liking					.12	-.09	-.01	.10	.00
Personality									
DOM	.13	.19	.12	-.17	-.00	-.17	.36**	-.10	-.17
BOR	-.17	.09	-.07	.00	.08	-.08	-.18	.15	.00
ANT-S	-.04	.35**	.20	.12	-.19	-.09	.09	-.04	.05
Extraversion	.06	.10	.10	-.10	.07	-.08	.23	-.19	-.08

Note. Mate value = rating of self on traits related to desirability as a mate, ranges from 27-189; Mating Success = rating of self on attractiveness to the opposite sex, ranges from 8-56; Jealousy scores = agreement with statements about worry related to infidelity, emotional reactivity to jealousy provoking events, mate guarding behaviors, and the sum of all three subscales, scores range from 8-56 on subscales and 24-168 for total score; SOI scores= ratings of self on unrestricted sexual attitudes, history of uncommitted sexual behaviors, interest in uncommitted sex and the total of these subscales, scores range from 3-21 on subscales and 9-63 for total score; Interactions = predicted interactions with an unknown infant, ranges from 7-49; Preference = strength of preference for spending time with an adult rather than a baby, ranges from 1-7, Liking = strength of liking babies, ranges from 1-3, DOM = T score on the PAI interpersonal dominance scale, BOR = T score on the PAI borderline personality features scale, ANT-S = T score on the PAI sensation-seeking scale, scores on the PAI scales have a mean of 50 and SD of 10; Extraversion = self-rated NEO extraversion, scores range from 0-20.

Correlations among female participants for Set 3.

Measures	Same sex targets				Opposite sex targets				Infant targets
	High attractive		Low Attractive		High attractive		Low attractive		
	High status	Low status	High status	Low status	High status	Low status	High status	Low status	
Self-assessment									
Mate value					.32	-.02	.17	.13	-.08
Mating success					.33	-.07	-.12	-.20	-.22
Trait Jealousy									
MJS Total	.13	.02	.05	.07					
Cognitive	.10	.15	-.04	.05					
Emotional	.02	-.16	.11	.00					
Behavioral	.15	-.03	.09	.11					
Sociosexual Orientation									
SOI Total					.14	.04	-.04	-.11	-.22
Attitudes					.13	.13	-.13	-.07	-.14
Behaviors					.09	-.03	-.09	-.15	-.17
Desire					.12	-.03	.12	-.07	-.24

Correlations among female participants for Set 3 Continued.

Measures	Same sex targets				Opposite sex targets				Infant targets
	High attractive		Low Attractive		High attractive		Low attractive		
	High status	Low status	High status	Low status	High status	Low status	High status	Low status	
Interest in Infants									
Interactions					.12	-.31*	.09	.07	.18
Preference					.04	.38*	-.14	-.19	-.39**
Liking					-.15	-.23	.01	.17	.18
Personality									
DOM					.07	-.07	.13	.16	-.22
BOR					-.15	-.09	-.01	-.27*	-.00
ANT-S					.07	-.05	.01	-.05	-.19
Extraversion					.08	.10	-.04	.08	-.13

Note. Mate value = rating of self on traits related to desirability as a mate, ranges from 27-189; Mating Success = rating of self on attractiveness to the opposite sex, ranges from 8-56; Jealousy scores = agreement with statements about worry related to infidelity, emotional reactivity to jealousy provoking events, mate guarding behaviors, and the sum of all three subscales, scores range from 8-56 on subscales and 24-168 for total score; SOI scores= ratings of self on unrestricted sexual attitudes, history of uncommitted sexual behaviors, interest in uncommitted sex and the total of these subscales, scores range from 3-21 on subscales and 9-63 for total score; Interactions = predicted interactions with an unknown infant, ranges from 7-49; Preference = strength of preference for spending time with an adult rather than a baby, ranges from 1-7, Liking = strength of liking babies, ranges from 1-3, DOM = T score on the PAI interpersonal dominance scale, BOR = T score on the PAI borderline personality features scale, ANT-S = T score on the PAI sensation-seeking scale, scores on the PAI scales have a mean of 50 and SD of 10; Extraversion = self-rated NEO extraversion, scores range from 0-20.

VITA

Name:	Nora Elizabeth Charles
Address:	Psychology Department Texas A&M University MS 4235 College Station, TX 77843
Email Address:	necharles@gmail.com
Education:	B.A., Psychology, Northwestern University, 2005 M.S., Psychology, Texas A&M University, 2008 Ph.D., Psychology, Texas A&M University, 2011