January 2019

# Proximity, Touching, And Testosterone: An Observational Study Of Mate Retention Tactics In Humans

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# PROXIMITY, TOUCHING, AND TESTOSTERONE: AN OBSERVATIONAL STUDY OF MATE RETENTION TACTICS IN HUMANS

by

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**DISSERTATION**

Submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

**DOCTOR OF PHILOSOPHY**

2019

MAJOR: PSYCHOLOGY (Cognitive,

Developmental, and Social Psychology)

Approved By:

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Advisor Date

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## ACKNOWLEDGEMENTS

I would like to thank my advisor, Glenn Weisfeld for taking me on as a student and being a fantastic mentor. I would like to thank Carol Weisfeld for the many years of assistance that she has given, both in and out of school. I would like to thank Richard Slatcher for the guidance he has given over the last seven years, as well as for the invaluable use of his lab space. I would like to thank Samuele Zilioli for being willing to step in at the last minute, and his assistance with this dissertation. I would like to again thank all four for their patience with this dissertation; as it has taken longer than expected. I would like to thank the International Society for Human Ethology for their financial contribution, without which the current study would not have been possible. I would like to thank the Department of Psychology and the Graduate School at Wayne State University for their financial contributions, which helped finish the research. I would like to thank Jennifer Vegh for her assistance in editing, and so much more. Finally, I would like to thank Kathy Shattuck for putting up with me for so many years, helping when needed, and being a wonderful mother.

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# CHAPTER 1: INTRODUCTION

## Evolutionary Theory

> And this leads me to say a few words on what I call Sexual Selection. This depends, not on a struggle for existence, but on a struggle between the males for possession of the females; the result is not death to the unsuccessful competitor, but few or no offspring. (Darwin, 1859, p. 88)

The theory of evolution by natural selection, as it was first proposed by Darwin, has three main components: variability, heredity, and selection (Darwin, 1859). Variability refers to the concept that there are individual differences between members of the same species, for example, slight variations in fur color in a species of vole. Heredity refers to the concept that some of the variability that individuals have can be passed on to their offspring. For instance, if the variations in fur color in the voles is due to genetics, the color can then be passed on to their offspring. Selection refers to the concept that some of the individual differences result in an increased or a decreased chance of surviving to maturity and reproducing. Using the vole example, if the terrain that they live in is black rocks, those with darker fur would be less likely to be seen and killed by predators than those with lighter fur. All of this taken together results in a change in frequency of specific variants in a population, due to heredity and selection pressures, or evolution by natural selection.

One thing that gave Darwin considerable trouble for many years was variants that reduced survivability but were still apparently selected for. In a letter to Asa Gray, Darwin wrote: “The sight of a feather in a peacock's tail, whenever I gaze at it, makes me sick!” (personal communication, April 3, 1860). The peacock’s tail is extremely large and colorful. It makes the bird susceptible to parasites and increased predation (Wedekind, 1992). While it took many years,

Darwin finally solved the mystery through the theory of sexual selection, something he had come up with earlier, but formally composed years later (Darwin, 1871). Darwin divided sexual selection into two categories, male-male competition, and female choice. Male-male competition is the competition for females between males of the same species, such as when two male sheep ram heads together to show dominance and health. Female choice is the process of a female choosing a male with which to mate, such as with the tail of a peacock showing females that they can survive even with a bright, large tail.

Both categories of sexual selection are dependent on the variants in males which are designed to indicate to females that they are a worthy mate, or more specifically, a mate that will produce offspring that will be able to survive and reproduce themselves. Thus, a large and bright peacock's tail indicates to a peahen that his genes are good enough that he was able to survive to adulthood despite having a tail that makes him susceptible to parasites and increased predation. While a peacock with genes that are not as strong would want to "cheat" and grow a long tail as well, if he does he would likely die due to predation or parasites. This concept is known as the handicap principle, where something like the peacock's tail is an honest signal of good genes because it cannot be faked easily (Zahavi, 1975). While it is now accepted that competition is not just between males, but also between females, and that choice is not only the purview of females (Rosenqvist, 1990), both natural and sexual selection are of use to the current study, on mate retention tactics in humans.

**Mate Retention**

Mate guarding behaviors and mate retention tactics are efforts employed by a sexually reproducing organism to maximize reproductive success by minimizing potential infidelity, mate abandonment, mate poaching, and cuckoldry (Buss, 1988). There are many different mate

guarding behaviors that have been identified, and most of them can be attributed to one of two categories of behaviors: concealing mates from competitors, and physical prevention of the mate copulating with competitors (Thornhill & Alcock, 1983). Behaviors in the category of concealing mates from competitors include not letting one's mate around potential rivals, removing one's partner from situations where potential rivals appear, and manipulation of emotions to make the partner stay away from potential rivals (Thornhill & Alcock, 1983; Buss, 1988). The physical prevention category includes behaviors such as physically attacking rivals, maintaining close proximity to one's mate, and maintaining physical contact with one's mate (Thornhill & Alcock, 1983; Alcock. 1994; Buss, 1988).

The term mate retention may be interchangeable with mate guarding or mate guarding behaviors in some contexts, but the meanings have diverged. Mate retention tactics encompass the categories of mate guarding, but also includes two additional categories, making oneself a better or more attractive mate to and derogation of potential rivals (Miguel & Buss, 2011). Tactics included in making oneself a more attractive mate include providing resources, acts of kindness, and bettering one's appearance (Buss, 1988). Derogation of rivals is used by making the rival look less appealing as a potential alternative. Thus, mate guarding is referring to behaviors that are more related to direct copulation, whereas mate retention includes behaviors that would also be categorized as mate attraction and has generally only been used in human mate guarding research.

Within the domain of mate retention tactics, one final question must be considered. That question is, do individuals within the species mate with the same individual over the course of just one or multiple reproductive cycles? In a species that does not typically mate together over multiple cycles, all that is of concern is mate retention tactics while the female is fertile or immediately prior to fertility (Pinxten & Eens, 1997). For instance, in stream-dwelling isopods,

mate guarding behavior only occurs prior to mating (Sparkes, Keogh, & Pary, 1996). In this case, the mate retention tactics that are used are to prevent mate poaching and mate abandonment during the fertile period. Also, of note for species that do not mate together over multiple cycles, is that mate guarding is almost exclusively performed by males (Smith, 1980), though there are some instances where females would have to perform mate guarding, such as when a female has already chosen a male and must prevent other females from luring him away (Eens & Pinxten, 1995).

In the case of species with repeated mating beyond one reproductive cycle, the act of mate retention goes beyond the act of copulation, lasting for an extended period (Haselton & Gangestad, 2006). For instance, human mating typically occurs in the context of an extended relationship, with the couple mating over many reproductive cycles (Low, 2003). In this case, mate retention tactics are used not only to prevent mate poaching and mate abandonment during the fertile period but also to prevent those things from occurring across reproductive cycles, even when the female is not fertile (Haselton & Gangestad, 2006). Additionally, mate retention tactics in long-term couples are also used to prevent infidelity and cuckoldry (Buss, 2006). This lasting mate retention is especially important when paternal investment is involved (Campbell & Ellis, 2005). Unlike in species without paternal investment, in species in which parental investment is involved, mate retention tactics extend much more equally to both sexes, with females performing a considerable amount of mate guarding (Buss & Shackelford, 1997).

**Mate poaching.** The first reason for performing mate retention tactics is to reduce potential mate poaching. Mate poaching occurs when an individual steals a mate away from another individual. In species with single cycle mating, mate poaching can occur even before a single mating opportunity (Grafen & Ridley, 1983). Even after mating has occurred, many females will remain fertile and receptive to other males, as is the case with snow crabs (Rondeau & Sainte-

Marie, 2001). In this case, the male must perform mate retention tactics to prevent other males from stealing the female for the entire time that she is fertile. Females who have already chosen a mate must also guard against other fertile females poaching the male that they have chosen.

In species that mate over multiple cycles, mate poaching can be a much larger problem, as it can occur at any time. Schmitt and Buss (2001) found that mate poaching was common in humans across the fertility cycle, with up to 70% of couples suffering mate poaching attempts. Schmitt (2004) went on to show that mate poaching, at differing levels, occurred in all 53 nations studied, making it a human universal. He also showed that while men are more likely to both attempt mate poaching and be mate poached, women do attempt mate poaching and are mate poached at high rates.

**Mate abandonment.** The second reason for performing mate retention tactics is to reduce mate abandonment. Mate abandonment is when a mate leaves before mating can occur or before a fertile period is over (Morton, 1987). Mate abandonment is similar to mate poaching but extends to times when there is no potential rival performing poaching. Mate abandonment typically occurs when there is either a better alternative mate, resulting in mate poaching, or when the mate becomes deficient in some way, such as due to illness, infidelity, infertility, or becoming overly aggressive. For example, Millar and Baker (2017) found that perceived mate value decline, as a result of infidelity, was associated with an increase in mate abandonment.

**Pair-bonds and alpha males.** The next two reasons for performing mate retention tactics are exclusive to species which mate together over multiple reproductive cycles. Typically, species that mate over multiple reproductive cycles form pair-bonds or have one alpha male who controls many females (Wittenberger & Tilson, 1980). Pair-bonds are individuals who usually mate exclusively with one other individual (Reynolds, 1996). The term pair-bonds is preferable over

monogamy, having only one mate at a time, because monogamy is more limited and implies that infidelity does not occur. Pair-bonding is better used to describe a species level trait, whereas monogamy is better used to describe an individual level trait. Pair-bonded males must perform many forms of mate retention to prevent the loss of their partner as well as cuckoldry. Moller and Birkhead (1993) found that in many species of social living birds, males faced a repeated threat of cuckoldry. Conversely, pair-bonded females must perform many forms of mate retention to prevent the loss of their partner or the loss of resources (Buss, 1988).

Species with alpha males have a smaller proportion of males who mate with multiple females (Cox & Le Boeuf, 1977). Gorillas are the prototypical example of alpha males with one silverback controlling many females (Smuts & Gubernick, 1992). In some human cultures, specifically cultures where polygamy is allowed, a form of alpha male behavior is practiced, with some males having multiple wives (Low, 1988). Alpha males must perform mate retention tactics at an increased rate due to having to guard multiple females at once, as Flinn (1988) found in a Caribbean tribal village. Within the village, polygamous males engaged in more mate guarding behaviors than did monogamous males.

**Cuckoldry.** The next reason for performing mate retention tactics, which is exclusive to pair-bonds and alpha males, is to avoid cuckoldry. Cuckoldry occurs when a male raises an offspring that is not his own, typically believing that the child is his biological offspring (Platek & Shackelford, 2006). Cuckoldry is a problem exclusive to males as a result of paternity uncertainty. While a female will always know that a child is her biological offspring, males can never be completely certain due to concealed ovulation (Benshoof & Thornhill, 1979). Many behaviors have evolved to reduce potential uncertainty in species with paternal investment (Geary, 2006). One of these evolved behaviors is mate retention tactics.

**Infidelity.** The final reason for performing mate retention tactics, which is exclusive to pair-bonds and alpha males, is to reduce infidelity. Infidelity typically occurs when an individual has sexual relations with someone other than the pair-bonded mate or alpha male (Shackelford & Goetz, 2007). This definition is extended in humans to include not only sexual relations with someone else, but also amorous relations. Infidelity is closely related to the previous reason for performing mate retention tactics, in that infidelity typically leads to mate poaching, mate abandonment, or cuckoldry. Thus, infidelity would not be a category of its own, other than that it is exclusive to pair-bonds and alpha males and merges or ties the other three categories together.

The top reasons for female infidelity are trading up for a better mate and seeking out better genes (Brand, Markey, Mills, & Hodges, 2007; Pryke, Rollins, & Griffith, 2010)). Both reasons are closely related to previous categories for which mate retention tactics are used. Trading up for a better mate is the first step in mate poaching and mate abandonment; seeking out better genes can lead to cuckoldry. Therefore, males must perform mate retention tactics to prevent their mate from committing infidelity because that infidelity may lead to being either mate poached, abandoned, or cuckolded.

The top reasons for male infidelity are trading up for a better mate and increased reproductive chances (Brand, Markey, Mills, & Hodges, 2007). As with females, males desiring to trade up for a better mate can lead to mate poaching and abandonment. Unlike in females, male infidelity is done to increase reproductive successes. According to Parental Investment Theory, females can only reproduce periodically, and as a result, are limited in the number of offspring that they can produce in their lifetime (Trivers, 1972). Males, on the other hand, are only limited by their number of mating opportunities. Males can increase their reproductive success through infidelity. One consequence of this is that if the male is successful in producing offspring outside

of his pair-bonded relationship, he may want to invest some of his resources in the resulting offspring, taking resources away from his pair-bonded mate (Buss et al. 1992). Therefore, females must perform mate retention tactics to prevent their mate from committing infidelity, and through that infidelity either being mate poached, suffering mate abandonment, or having their mate invest resources in another female.

**Evolutionary Basis for Mate Retention**

According to evolutionary theory, anything that is relating to reproduction should be especially susceptible to evolutionary pressures (Williams, 1957). One major component of reproduction is who gets to mate and reproduce. As mentioned previously, mate retention tactics increase one's likelihood of reproduction. Thus, mate retention tactics should be selected for. Mate retention techniques have been shown to be selected for across a large number of species (Buss, 2002) that face pervasive threats of mate poaching (e.g., birds, fish, and non-human primates). These species have evolved counter mate-guarding strategies as a means to reduce the likelihood of being mate poached or cuckolded (Moller, 1985; Lesse, 2012; van Schaik & Kappeler, 2003).

Additionally, species that have long-term pair bonds and species in which a dominant male controls multiple females face extra challenges that must be guarded against, specifically permanent mate poaching and cuckoldry. While those species without long-term mating relationships still need to worry about the potential for mate poaching, they typically only need to worry about it when they are fertile (for females) or when their mate is fertile (for males). Thus, mate retention tactics, while present in many species, should be more prevalent in species that form long-term pair bonds, such as humans.

**Mate retention in humans.** There is a sizable amount of research on human mate retention tactics. Much of the research has been related to jealousy. Daly, Wilson, and Weghorst (1982)

examined male sexual jealousy and male mate retention tactics. While their definitions of jealousy differ slightly from the research of today, they found that cross-culturally male jealousy was a driving factor in male mate retention tactics. Buss, Larsen, and Westen (1992) looked at sex differences in jealousy, finding that women were more jealous of emotional infidelity and men were more jealous of sexual infidelity. This sex difference was as evolutionary theory predicted, because emotional infidelity by men can lead to a diversion of resources from the female, and sexual infidelity by women can lead to cuckoldry.

As previously discussed, mate retention tactics are designed to stop mate poaching, mate abandonment, cuckoldry, and infidelity. Supporting the need for mate retention tactics in humans, Haselton and Gangestad (2006) found that women who were ovulating had an increased interest in engaging in situations in which they would meet men. Additionally, the male partners of women who were ovulating exhibited an increase in mate retention tactics. Gangestad, Thornhill, and Garver (2002) looked at when human males were most attentive to the presence of other males and showed that men were more attentive when their partners were fertile. One anti-cuckoldry technique is to engage in more frequent in-pair copulations, as a form of sperm competition. Shackelford, Goetz, Guta, and Schmitt (2006) found that frequency of in-pair compilations was correlated with mate guarding behaviors, in that those who performed more mate guarding also had more in-pair copulations.

An extensive amount of research on mate retention tactics in humans has been conducted by the Buss lab. Buss (1988) found that men and women engaged in a large number of mate retention tactics. Twenty-three different tactics were found, with sex differences present in all but 11. From this study, the original Mate Retention Inventory, a tool for measuring mate retention tactics, was created. Shackelford, Goetz, and Buss (2005) found this inventory to be valid in

married couples. Later the Mate Retention Inventory-Short Form was created as a quicker form of measuring mate retention tactics (Buss, Shackelford, & McKibbin, 2008). This inventory has been used cross-culturally with success (de Miguel & Buss, 2011; Chang, Wang, Shackelford, & Buss, 2011; Atari, Barbaro, & Shackelford, 2017). While the mechanisms driving mate retention in humans has received little attention, Buss and Shackelford (1997) proposed that one of the reasons for the evolution of human aggression is the prevention of mate poaching through mate retention tactics.

While the number of studies on mate retention tactics in humans is growing, relatively little research has been observational, with most measures of mate retention tactics being self-report. One notable exception is Flinn (1988). Flinn observed mate retention tactics in a rural Trinidadian village, where he showed that males were more aggressive when their mates were fertile and that females also engaged in mate retention tactics.

**Proximity.** Of the three primary categories of mate retention tactics, concealing mates from competitors, physical prevention of the mate copulating with competitors, and making oneself a more attractive mate, physical prevention of the mate copulating with competitors is of interest in the current study. Proximity to and touching of a mate, when in the presence of a potential competitor, are both forms of physical prevention, as they act to prevent a competitor from gaining access to their mate through physical means, specifically their presence.

Numerous animal studies have looked at proximity as a mate retention tactic. For instance, Chuang-Dobbs, Webster, and Holmes (2000) showed that black-throated blue warblers maintain close proximity to their mates when their mates are fertile. Additionally, Roberts (1988) showed that when a rabbit was closer to its mate, it engaged in less mate guarding behaviors of other types, presumably because they were not needed due to the proximity.

In the domain of human research, little has been done to assess proximity directly. Buss (1988) reported that some of the questionnaire responses that he received related to human proximity as a mate retention tactic, specifically relating to individuals not letting their mate out of their sight at a party, or individuals showing up where their mate was, to check up on them. Buss and Shackelford (1997b) also had similar responses relating to proximity; one of them, "staying close by his side when they were at a party," shows proximity directly.

**Touching.** The domain of touching as a mate retention tactic is related to the domain of proximity, as touching is the closest form of proximity. In non-humans, some insects have been shown to use touching as a mate retention tactic. For example, certain male beetles and grasshoppers maintain contact with their prospective mate to prevent other males from getting close enough to mate (Thornhill & Alcock, 1983). These researchers also showed that male veliid water-striders ride on the backs of their mate for extended periods of time to prevent other males from mate poaching. In primates, grooming is known to be pleasant and calming (Carter & Porges, 2011) and may be a mate retention tactic because it promotes closeness.

We propose that the use of touch as a mate retention tactic is also used by humans. The act of touching could convey many messages, both positive and selfish. Positive messages of touching include affection, commitment, or support. Selfish messages of touching include claims of ownership, more specifically as a signal to potential competitors that the individual being touched is taken, or as a sign of vigilance, specifically a signal to the partner of being watched. The only known study relating to touch as a mate retention tactic in humans is Shattuck et al. (2012). In this study, they showed that the desire to touch was related to worry about infidelity, such that those who worried more about their spouse being unfaithful had a greater desire to touch their spouse. It is these results that lead to the current proposed study.

**Testosterone**

Also of interest in the current study, is the relationship between testosterone (T) and mate retention tactics. It is known that the presence of an attractive opposite gender individual raises T levels in both men (Roney, Lukaszewski, & Simmons, 2007; Roney, Mahler, & Maestripieri, 2003) and women (Lopez, Hay, & Conklin, 2009). While this explains a change in T in the presence of an individual of the opposite gender, and may be of use when examining potential infidelity interest, of more interest to the current research is the effect of T when in the presence of a potential same-sex rival.

Testosterone has been repeatedly shown to be related to aggression in many species, including humans (Nelson & Trainor, 2007). Baseline T has been shown to be predictive of aggression in specific circumstances. For instance, Denson, Mehta, and Tan (2013) found that basal T predicted reactive aggression in women, but only in individuals who also had high basal cortisol. However, baseline T levels have been found to be less predictive of aggression in humans (Archer, Graham-Kevan, & Davies, 2005). Conversely, Goetz et al. (2014) showed that increases in levels of T were related to changes in the parts of the brain responsible for aggressive behavior, specifically the amygdala, hypothalamus, and periaqueductal gray, showing that change in T is more important than baseline T regarding aggression. It is also known that T rises during competition, increasing performance and aggressiveness (Archer, 2004; Carré, Campbell, Lozoya, Goetz, & Welker, 2013; Zilioli & Bird, 2017). Additionally, Carré, Putnam, and McCormick (2009) showed that changes in T levels directly influenced aggressive behavior in men. More relevant to the current research, Slatcher, Mehta, and Josephs (2011) linked T to dominance behaviors during a laboratory-based mate competition.

If T levels rise during competition, and if individuals view a same-gender individual as competition while in the presence of their partner, then the resulting change in T should map onto dominance behaviors, and through that dominance, mate retention tactics used. Cousins, Fugere, and Franklin (2009) found that 2D:4D ratio, an indirect measure of testosterone, was related to the mate retention behaviors of threats and physical aggression. A recent study directly linked T to self-reported mate retention behaviors, specifically that those with higher basal T concentrations reported performing more mate retention tactics, though this relationship was mediated by intrasexual competitiveness (Arnocky, Albert, Carré, & Ortiz, 2018).

**Rusbult's Model**

Rusbult's Investment Model of Commitment has been influential in the domain of close relationships (Rusbult, 1980). The model proposes that relationship commitment is based on satisfaction with the relationship, quality of alternatives, and investment in the relationship. In the model, commitment is the desire to stay in or maintain a relationship through feelings of attachment. Satisfaction with the relationship relates to how happy one is with the relationship through a comparison of positive and negative feelings about and experiences from the relationship. Quality of alternatives is an assessment of both potential relationship alternatives for oneself and one's partner. Relationship alternatives for one's partner is an indication of potential rivals, thus being both an indicator of how much effort should be put towards mate retention tactics, as well as an indirect indicator of potential partner commitment. It is indirect because it is based on the Investment Model of Commitment; if someone has a low quality of alternatives, then he is more likely to be committed. Relationship alternatives for oneself are an indicator of the potential to get into another relationship if the current relationship ended. The quality of the alternatives is important, because even if there are alternatives present, if they are of worse quality than the

current relationship, then they are less useful as a relationship alternative. Finally, investment in the relationship is how much has been put into the relationship. This investment can be time, money, children, shared housing, and other related things. If ending a relationship devalues something, or if that thing makes ending the relationship difficult, then it is considered an investment in the relationship.

The model posits that as the quality of alternatives goes up, and satisfaction and investment go down, then commitment will go down, resulting in termination of the relationship if commitment gets low enough. Terminating a relationship is rarely a result of any one of these components but is instead a combination of two or more at the same time. The benefits of this model are that it allows researchers to assess different factors within a relationship, allowing for a measure of how strong a relationship is. This model ties commitment, and the factors that go into commitment, to mate retention behaviors, with the assumption being that those who are more committed will perform more mate retention behaviors.

**Loyalty**

Loyalty is a domain-specific trait that indicates the degree to which an individual will give support, integrity, and allegiance to another individual or entity (Shattuck, 2011). Loyalty is domain-specific in that an individual will give differing levels of support, integrity, and allegiance to different individuals or entities. For example, individuals may be extremely loyal to their romantic partners, giving them large amounts of support, not lying to them, and remaining faithful, but those same individuals may have low amounts of loyalty to their families, giving them little support and trust.

Loyalty relates to mate retention tactics indirectly. People can detect their partner's loyalty, at least in part (Nettle & Clegg, 2008). While having loyalty to one's partner may lower mate

retention tactics through trust, what is more likely to be the case is that an individual's partner's loyalty should relate to mate retention behaviors performed, such that those who have partners with higher loyalty should display fewer mate retention tactics, while those who have partners with lower loyalty should display more mate retention tactics.

**MARQ**

*The Marriage Questionnaire* (MARQ; Russell & Wells, 1993) was designed to give a comprehensive assessment of a relationship from each individual's perspective. Twelve scales have been derived from the MARQ; the Roles, Values, Family Ties, Partnership, Love, Attractiveness, Jealousy, Conciliation, Personal Problems, Financial Problems, Partner Problems, and Relationship Problems scales. The Love Scale, a scale that asks questions pertaining to the love, romance, respect, pride, joy, and happiness in the relationship, has also been validated as a measure of relationship satisfaction and is used as such. Unlike other measures of marital satisfaction, the Love Scale has demonstrated invariance cross-culturally and between wives and husbands (Lucas et al., 2008).

Originally the MARQ was designed for married couples in the United Kingdom and contained 230 items. It has since grown to 270 items and has been administered in six cultures, UK, USA, Turkey, China, Russia, and Brazil, and includes a same-sex US couples' sample. This questionnaire has been used widely, including by Shattuck et al. (2012) when it was used to relate worry about infidelity to certain behaviors, including the self-reported desire to touch one's partner. One goal of the current study was to replicate these results. Additionally, these self-report items can be compared to actual mate retention behaviors. The MARQ, being a comprehensive relationship questionnaire, also allows for multiple other relationships between various relationship topics and mate retention tactics to be assessed.

**Fertility**

Female fertility has received considerable attention in evolutionary research. In the domain of mate guarding, fertility has been looked at extensively in non-human animal research (Moller, 1991; Hasselquist & Bensch, 1991; Birkhead, 1979). Species that utilize mate retention tactics typically only use these tactics around the period of female fertility (Harts, Booksmythe, & Jennions, 2016). Even in species that utilize mate retention tactics when the female is not fertile tend to increase these tactics when the female is fertile (Haselton & Gangestad, 2006; Krems, Neel, Neuberg, Puts, & Kenrick, 2016). Jones et al. (2005) found that commitment to the relationship increased when the female was at peak fertility. Fertilization of a female's egg(s) can only occur when she is fertile. Thus, it makes logical sense that a male would increase mate retention strategies while his mate is fertile, to prevent cuckoldry or a missed mating opportunity; a female would increase mate retention strategies to prevent missing a mating opportunity or losing a high value mate.

In humans, female fertility has been examined extensively, but less so in the context of mate retention tactics. Humans have concealed ovulation, making fertility hard to detect (Benshoof & Thornhill, 1979). Despite this difficulty, human males are relatively accurate at detecting female ovulation, though usually subconsciously. There are multiple subjective cues that a male can pick up on, such as a more flushed face, changes in body scents, change in normal dress and preening, and even a change in voice pitch (Haselton & Gildersleeve, 2011; Grammer, Fink, & Neave, 2005; Gangestad & Thornhill, 2008). There are also objective factors relating to female fertility in humans that males sometimes have access to. For example, birth control reduces a female's ability to get pregnant in most cases, even if a female is still ovulating normally. Hormonal birth control stops ovulation entirely, reducing even the subjective cues (Miller, Tybur, & Jordan, 2007). In

relation to mate retention, a male whose mate is on hormonal birth control should be less likely to perform mate retention tactics. Conversely, Marcinkowska, Hahn, Little, DeBruine, and Jones (2019) found that women taking oral contraceptives did not have differing preferences for facial masculinity in men. While this study focused on female preferences, in could follow that male preferences, and through that use of mate retention tactics, is also unchanged due to hormonal birth control usage.

Another objective cue to fertility is a female's menstrual cycle. Ovulation typically occurs 12-14 days after the start of the menstrual period, but probability of pregnancy occurring increases up to five days before ovulation (Barrett & Marshall, 1969). Therefore, a male should increase mate retention tactics in the days following menstruation, continuing for seven to ten days, then decrease tactics after that.

**The Current Research**

The current study utilized observational research into two potential aspects of human mate retention tactics: 1) proximity to the mate and 2) touching of the mate. We did this by exposing couples to attractive confederates whom the couples believed to be single. We also tested for changes in testosterone (T) to examine the extent to which rapid changes in T during the social interaction were correlated with the aforementioned mate retention tactics. Additionally, couples completed a series of surveys designed to measure self-reported mate retention tactics, relationship commitment, satisfaction, and investment, attentiveness to alternatives, loyalty, fertility, and a comprehensive measure of the relationship.

We hypothesize that when couples are exposed to an attractive female, the female in the dyad will demonstrate an increase in the two mate retention tactics of proximity (hypothesis 1) and touching (hypothesis 2); when couples are exposed to a dominant male, the male in the dyad will

demonstrate an increase in the two mate retention tactics of proximity (hypothesis 1) and touching (hypothesis 2). It is also hypothesized that when the couples are exposed to an attractive female or a dominant male their change in testosterone concentrations will be positively correlated with the amount of mate retention tactics displayed (hypothesis 3). Additional hypotheses were formed relating to the survey responses. We hypothesize that self-reported mate retention tactics will be positively correlated to actual proximity and touching mate retention behaviors (hypothesis 4); those with higher relationship loyalty to their partner will utilize more mate retention tactics (hypothesis 5); those with higher relationship commitment, couple satisfaction, and investment in their partner, as well as a lower attentiveness to alternatives, will utilize more mate retention tactics (hypothesis 6); those with higher relationship satisfaction will utilize more mate retention tactics (hypothesis 7); those with more worry about partner infidelity will utilize more mate retention tactics (hypothesis 8); if a member of the couple had committed a past infidelity, more mate retention tactics would be utilized by the couple (hypothesis 9); those who report a greater desire to touch their partner will utilize more touching mate retention tactics (hypothesis 10); when the female in a couple is more fertile, more mate retention tactics will be utilized (hypothesis 11).

**Hypothesis 1: Proximity to an individual's romantic partner will increase in the presence of a potential romantic rival in humans.** To test this hypothesis, couples were video recorded while interacting with an attractive female or dominant male confederate. The videos were then independently coded for proximity behaviors.

**Hypothesis 2:** T**ouching of one's romantic partner will increase in the presence of a potential romantic rival in humans.** To test this hypothesis, the videos were also independently coded for touching behaviors.

**Hypothesis 3: Change in testosterone concentrations will positively correlate with an individual's proximity to and touching of their partner when in the presence of a potential romantic rival.** To test this hypothesis, T was measured, via saliva, both before and 30 minutes after the interaction with the confederate. The change in T levels between these two times were used as the measure of change in T. The change in T was then compared to mate retention tactics from hypotheses 1 and 2.

**Hypothesis 4: Self-reported mate retention tactics will positively relate to actual mate retention tactics used.** To test for this, two different self-report measures of mate retention tactics, the Mate Retention Inventory: Short Form, and items relating to mate retention from the MARQ were obtained and compared to mate retention tactics from hypotheses 1 and 2.

**Hypothesis 5: Individuals with higher relationship loyalty will utilize more mate retention tactics.** To test this hypothesis, participants completed a romantic partner loyalty scale, which was compared with mate retention tactics from hypotheses 1 and 2.

**Hypothesis 6: Individuals with higher couple satisfaction, investment, and commitment, and lower attentiveness to alternatives will utilize more mate retention tactics.** To test this hypothesis, participants completed a series of scales, specifically the Couples Satisfaction Index, Investment Model Scale, Commitment Scale, and the Attentiveness to Alternatives Scale. The results from these scales were compared with mate retention tactics from hypotheses 1 and 2.

**Hypothesis 7: Individuals with higher relationship satisfaction will utilize more mate retention tactics.** To test this hypothesis, participants completed the MARQ Love Scale, a measure of relationship satisfaction. The results from this scale were compared with mate retention tactics from hypotheses 1 and 2.

**Hypothesis 8: Individuals with more worry about infidelity will utilize more mate retention tactics.** To test this hypothesis, self-report measures of worry about romantic partner infidelity were obtained and compared with mate retention tactics from hypotheses 1 and 2.

**Hypothesis 9: Determine if past infidelity resulted in more mate retention tactics.** To test this hypothesis, self-report past infidelity was obtained and compared with mate retention tactics from hypotheses 1 and 2.

**Hypothesis 10: Individuals who have a greater self-report desire to touch their partner will utilize more mate retention tactics relating to touching and proximity.** To test this hypothesis, participants answered questions relating to desire to touch their partner in general, in public, and in private. The results of these questions were compared with mate retention tactics from hypotheses 1 and 2.

**Hypothesis 11: Increased female fertility will result in a greater usage of mate retention tactics.** To test this hypothesis, female participants answered questions relating to birth control and where they were in their menstrual cycle. The results of these questions were compared with mate retention tactics from hypotheses 1 and 2.

# CHAPTER 2: METHODS

## Sample

Participants were recruited through multiple methods, including the Wayne State psychology department's research pool (SONA), advertisements posted on the campus of Wayne State University, a booth at the Wayne State Student Center, and word of mouth. Prospective participants were prescreened to determine if they qualified. To be eligible for participation, prospective participants had to be childless, be in a heterosexual relationship, have been in a relationship together for at least one year, and be between twenty and thirty-two years old. The requirement for having no children was included due to the effects that having children has on testosterone (Gray, Kahlenberg, Barrett, Lipson, & Ellison, 2002). The requirement that couples had to be in a heterosexual relationship was included because getting enough same-sex couples for statistical analysis would have been impractical. The requirement to have to have been in a relationship for at least one year was included to avoid the confounding effect of new relationships on touching (Schneiderman, Zagoory-Sharon, Leckman, & Feldman, 2012). The requirement that the couple be between twenty and thirty-two years old was included do to the lowering of testosterone as an individual ages (Travison, Araujo, Kupelian, O'donnell, & McKinlay, 2006). The study criteria were posted on SONA and in the advertisements, but after one incident where a same-sex couple arrived at the lab, confirmation of eligibility was obtained before the participants came into the lab.

If the prospective participants signed up through the SONA system, responded to an advertisement, or were recruited by word of mouth, they were sent an email to determine if they met the study criteria. If the prospective participants were recruited in the student center, they were prescreened on the spot. Those who qualified were scheduled a laboratory time slot. Time slots

were scheduled through SONA for those signing up in the SONA system, through email for those responding to advertisements or word of mouth, and on the spot for those recruited at the Student Center.

Two-hundred and two participants, one-hundred and one couples, were recruited in total. Eight participants, four couples, refused to allow their videos and saliva samples to be used in the study and were removed from all analyses. Another three couples did not give saliva samples, but were recorded and filled out surveys, so were only removed from the testosterone analyses. In total, 94 couples were included in the full analyses, with ninety-seven couples included in most analyses.

**Confederate**

For this study, participants had an interaction with a confederate. Due to the nature of mate retention, and the necessity to induce a feeling of threat of mate poaching from the confederate, female confederates were required to be attractive, and male confederates were required to be dominant. For potential female confederates, pictures were taken and an independent board of five men and four women rated their attractiveness on a scale of 1-10 with higher values being greater attractiveness. Four female confederates were recruited in total. The female confederates received average attractiveness scores of 8.55, 8.78, 9.00, and 9.67 ($\bar{x}$ = 9.00, σ = 0.89, ICC = .88). For the female confederates, two participated for 10 couples, and two for 11 couples.

For potential male confederates, they each had an interaction with two men and three women, who then rated their level of dominance on a scale of 1-7 with higher values being greater dominance. Three male confederates were recruited in total. The male confederates received average dominance scores of 5.8, 6.2, and 6.6 ($\bar{x}$ = 6.19, σ = 0.74, ICC = .80). For the male confederates, one participated for 21 couples, one for 11 couples, and one for eight couples.

**Procedure**

Each couple required one research assistant and two confederates. The first confederate had no direct interaction with the couple and was typically a research assistant who was not currently running participants. The second confederate was the previously listed confederate who had the strict requirements of attractiveness or dominance. This confederate interacted with the couple for five minutes. Since interaction with individuals of the opposite sex can influence testosterone levels, all research assistants were female to control for these changes in testosterone across couples.

Upon arrival at the lab, participants were led into a small room where they signed an informed consent waiver, and then gave a saliva sample. Next, they were instructed to wait in adjacent chairs in a room that appeared to be a waiting room. In truth, the "waiting room" was a lab with cameras and microphones. The room consisted of four chairs and a coffee table. Two chairs each were arranged touching each other on opposite sides of the table. Two cameras were pointing at the chairs in which the couple was instructed to sit, and one camera was pointed at the other two chairs where the confederates sat. When the participants were first brought into the room, one of the chairs was occupied by the first confederate, who was taken out of the room by the researcher after she finished giving instructions to the participants. The purpose of this confederate was to get participants to sit next to each other, across from where the confederate was sitting. The participants were told "Please have a seat. We need to get resting hormonal levels, so you need to sit in this room for about 10 minutes. Please do not use your cellphones during this time, so that we can get your resting hormonal level. Just to let you know, we are also running a singles study and some of the participants for that study may use the waiting room as well." This served two purposes: first, it furthered the deception that they were sitting in a waiting room and were not

being observed, and second, when the second confederate entered the room, the participants believed that the confederate was a participant and was also single.

After two and a half minutes, the second confederate was brought into the room by the research assistant. The confederate sat across from the opposite-gendered participant. The confederate was randomly either a dominant male (for 40 couples) or an attractive female (for 42 couples). Additionally, 15 couples served as the control condition and did not have a second confederate enter the room. After approximately 30 seconds, if the confederate had not been addressed by the participants, the confederate attempted to start a conversation with the participants, following a loose script of conversation starting prompts (See appendix F). If the confederate was addressed prior to starting the conversation themselves, he or she was instructed to reply positively. After the confederate had been in the room for five minutes, the research assistant entered the room and led the confederate out, telling the couple that it would only be a little bit longer. Two-and-a-half minutes later, the research assistant entered the room again and led the participants out.

After that, the participants were separated, and each sat at a computer. The participants then filled out a series of questionnaires. To assess relationship satisfaction, as well as many other factors relating to relationships, the MARQ (see appendix B) was used. As with the same-sex sample, the wording on many items in the MARQ was changed to reflect those in a relationship and not just those who are married. Two items relating to touching were added to the MARQ for this study. While the MARQ already contains an item on desire to touch one's partner, it is general in nature. The added items are more specific as to when touching is desired, more specifically in public and in private. To assess the degree to which participants self-report mate retention tactics, the Mate Retention Inventory Short Form (see appendix C) was used. To assess partner loyalty,

the Romantic Partner Loyalty Survey (see appendix D) was used. To assess the degree to which participants are committed to their partner, are invested in their partner, are satisfied with their partner, and may be interested in an attractive member of the opposite gender who is not their partner, a series of scales relating to the Investment Model of Commitment were used (see appendix E), specifically the Attentiveness to Alternatives Scale (Miller, 1997), Rusbult and Buunk's Commitment Scale (1993), Rusbult, Martz, and Agnew's Investment Model Scale (2005), and the Couple Satisfaction Index (Funk and Rogge, 2007). Half way through the study, two questions were added to the end of the survey for female participants only, relating to female fertility, specifically asking if she was on any form of hormonal birth control and days since the start of her last menstrual cycle. Completion of the surveys took approximately 45 minutes.

After 15 minutes from the time the second confederate entered the waiting room with the participants, and then again 15 minutes after that, the participants were asked to give additional saliva samples, even if they had not finished the series of questionnaires. The samples were obtained at this time to ensure that enough time had passed for testosterone reactivity to be assessed (Roney, Lukaszewski, & Simmons, 2007).

Finally, after both participants had completed the surveys and saliva samples, they were debriefed about the deception, the presence of the recording equipment, and the participation of the confederates. The participants were then asked to sign a second informed consent, allowing for use of the video recordings of their interaction with the second confederate. The total time that the participants were in the lab was approximately one hour.

**Analysis**

**Coding.** Videos were split into twenty 30-second segments (Irwin & Bushnell, 1980). The twenty segments consisted of the first five 30-second intervals after the participants entered the

room and sat down, the first ten 30-second intervals starting 5-10 seconds after the second confederate entered the room, and the first five 30-second intervals starting 5-10 seconds after the second confederate left the room. The 5-10 second window after the second confederate entered and left the room was excluded so that coders could not identify the gender or presence of the confederate. The sound was also removed from the video before coding, to prevent any potential bias. If a full 30 second clip could not be obtained using the above criteria, the resulting clips were limited to 1 second and coders were instructed to ignore them. Twenty-five couples had a full 20 segments, twenty-five had 19 segments, thirty-two had 18 segments, and fifteen had 17 segments. The order of the segments was randomized before coding.

Eight coders, who were blind to the hypotheses and conditions, were recruited. The coders were trained to code for three measures of proximity and two measures of touching. The three measures of proximity were the closest distance between shoulders at any point in the clip, the farthest distance between shoulders at any point in the clip, and the closest distance between any part of the couple at any point in the clip. All three measures were included in the study to analyze different components of proximity. The two measures of shoulders, closest and farthest point, incorporate body movement, both how close and how far the couple's shoulders are to each other, while the measure of the closest point is an absolute measure of how close two individuals are. Measures of proximity were obtained using digital calipers to measure actual distance apart. The two measures of touching were frequency, a count of the number of independent times the couple touched during the clip, and duration of touching, counted in total seconds the couple spent touching during the clip.

Initially, each coder was assigned three training couples. Initial interrater reliability was tested on the coding of the training couples. When more than two raters are present, interrater

reliability is measured using Interclass Correlations, also referred to as Cronbach's Alpha. For the training videos ICC was .99 for closest shoulders proximity, .98 for farthest shoulders proximity, .98 for closest proximity, .81 for times touching, and .89 for touching duration. Even though values over .7 are considered acceptable (Heale & Twycross, 2015), each coder was retrained on coding touching times and touching duration, with specific instructions given to err on the side of touching if there was uncertainty. Each coder recoded the training videos for touching times and touching duration. Subsequent ICC was .92 for touching times and .95 for touching duration.

Each coder was then assigned 26 couples. Each couple had two coders with a fully crossed design, meaning that each pair of coders had a similar amount of overlap with other coders. One coder failed to complete the coding and one coder's coding was suspicious due to their numbers being too invariable. Those two coders were removed, and their videos were recoded by the other 6 coders.

**Testosterone.** Baseline testosterone (T) levels are of little use in the current study due to individual differences in baseline T (Archer, Graham-Kevan, & Davies, 2001) as well as the diurnal effects on T (Brambilla, Matsumoto, Araujo, & McKinlay, 2009). Of interest in the current study was change in T, or T reactivity, which shows an effect of the environment on T (Carré, McCormick, & Hariri, 2011). To measure T reactivity, T levels from the first saliva sample were subtracted from T levels from the third saliva sample.

Saliva samples were collected through unstimulated passive drool, approximately 4ml, in polystyrene tubes. Samples were refrigerated for between one to three days, to let sediment settle to the bottom, then 1.8ml was aliquoted in duplicate into two smaller sealed tubes for storage and transport. Aliquoting before initial freezing allows for samples to be split and transported without needing an additional freeze/thaw cycle, and immediate freezing of samples has been shown to not

by required (Durdiakova, Fabyova, Koborova, Ostatnikova, & Celec, 2013). Samples were then frozen at -20 degrees Celsius until analysis was conducted at the end of the study.

Testosterone was measured using DRG-International Salivary Testosterone ELISA Assay kits. Each kit contained everything needed to run the assay, including a plate for the saliva samples, the enzyme conjugate, wash, substrate solution, and stop solution. Each plate contained 96 wells, of which 16 were reserved for measurement standards. The remaining 80 wells were used to measure the before and after samples from the couples. Samples were measured in duplicate, 100 microliter subsamples of the 1.8ml sample, to test for reliability and to account for any errors in running the assay. Each kit could then test the T for 20 individuals or 10 couples.

After four plates were completed and analyzed, abnormally low levels of testosterone were found across all participants, with 55 out of 80 participants showing undetectable levels of T. While it is not abnormal for females to show undetectable levels of T, it is unusual for males, especially as many as the plates indicated (Landman et al., 1976). DRG-International has sent out an announcement stating that the assay kits, for all lot numbers used in this study, are under investigation for "a decrease in activity of the standards producing low patient values" (Ina Hairston, personal communication, April 24, 2019). The levels of the enzyme conjugate to sample was decreased on plates five and six. This adjustment resulted in only four samples with undetectable levels of T out of 40 participants. After that, the new enzyme conjugate ratios were used on all plates, with only 6 of 60 participants having undetectable levels of T. The first four plates were then re-run with the new enzyme conjugate ratios resulting in only 14 of 80 participants having undetectable levels of T, down from 55.

**Statistical analyses.** All statistical analyses were conducted using the SPSS statistical package.

***Proximity.*** Interclass Correlations were calculated on each of the proximity measures to ensure that interrater reliability remained strong throughout the study. ICC was .90 for proximity shoulders closest, .88 for proximity shoulders farthest, and .93 for proximity closest. While these numbers are lower than they were for the training videos, they are still well above acceptable levels of interrater reliability and were all significant ($p < .001$).

To analyze proximity behaviors, each proximity measure, the closest distance between shoulders, the farthest distance between shoulders, and the closest distance between the couple, for each 30 second segment, was averaged across each relevant time, before the confederate entered the room (the first five 30 second segments), while the confederate was in the room (the middle ten 30 second segments), and after the confederate left the room (the final five 30 second segments). Additionally, an average was taken across all segments where the confederate was not in the room (the first five and final five 30 second segments). Of interest is the difference in behaviors between when the confederate is in the room and when the confederate is not in the room. A difference score was obtained for each measure by subtracting the average proximity when the confederate was in the room from when the confederate was not in the room. A positive difference indicates that the couples were closer when the confederate was in the room.

***Touching.*** Interclass Correlations were also calculated on each of the touching measures to ensure that interrater reliability remained strong throughout the study. ICC was .93 for number of times touching and .95 for touching duration. These values are still well above acceptable levels of interrater reliability and were both significant ($p < .001$).

To analyze touching behaviors, each touching measure, number of times touching and total time touching, for each 30 second segment, was averaged across each relevant time, before the confederate entered the room (the first five 30 second segments), while the confederate was in the

room (the middle ten 30 second segments), and after the confederate left the room (the final five 30 second segments). Additionally, an average was taken across all segments where the confederate was not in the room (the first five and final five 30 second segments). A difference score was obtained for each measure by subtracting the average touching when the confederate was not in the room from when the confederate was in the room (note that this is the opposite as the difference for proximity behaviors). A positive difference indicates that the couples touched more when the confederate was in the room.

***Testosterone.*** Across all participants testosterone CVs averaged 14.72%. Broken down by gender CVs averaged 7.58% for male participants and 22.58% for female participants. Inter-assay CVs averaged 3.20%, with low being 11.83% and high being 3.77%. Consistent with past research, due to the skewed nature of hormonal data, all raw testosterone values were log-transformed (Dabbs et al., 1995). Due to undetectable levels of testosterone, two male and 10 female participants were excluded from all analyses relating to testosterone.

***MRI:SF.*** The Mate Retention Inventory Short Form is divided into two separate scales (MRI1 and MRI2). For each scale, average scores were obtained for every participant to be used as the unit of measure in analyses. Inter-scale correlations were obtained, then each scale was analyzed independently in relation to proximity and touching behaviors.

***Loyalty.*** The romantic partner loyalty scale is divided into two subscales (PL1 and PL2). PL1 relates to positive aspects of loyalty, such as being there when needed. PL2 relates to the negative infidelity aspects of loyalty. For each scale, average scores were obtained for every participant to be used as the unit of measure in analyses.

***Rusbult scales.*** Rusbult's model is broken down into four scales, Couple Satisfaction Index, Commitment Scale, Investment Scale, and Attentiveness to Alternatives Index. For each

scale, average scores were obtained for every participant to be used as the unit of measure in analyses.

***MARQ.*** The MARQ Love Scale was used as a supplemental measure of relationship satisfaction. Average scores were obtained for every participant to be used as the unit of measure in analyses. Individual items from the MARQ were also used, including items about worry about infidelity, actual infidelity, and desire to touch one's partner. For these items, no adjustments were need for analyses.

***Fertility.*** Two items were used to assess fertility: use of hormonal birth control and days since the start of a female's last menstrual cycle. Only female participants answered these questions. Days since the start of a female's last menstrual cycle is a useful variable, but more important to fertility is ovulation, including the few days before ovulation. Thus, this variable was recoded into three categories: luteal, follicular, and fertile.

# CHAPTER 3: RESULTS

## Demographics

The final number of participants was 194 (97 couples). There was a wide range of racial backgrounds reported (Caucasian = 85, Arab American = 35, African American = 33, Asian American = 31, Hispanic = 7, Native American = 5, other = 13, multi-racial = 14; see table 1). The average age of participant was 23.26, standard deviation = 3.48, range = 20-32 (male: $\bar{x}$ = 23.70, σ = 3.72, female: $\bar{x}$ = 22.81, σ = 3.12). The average duration of relationship was 18 months, standard deviation = 14 months, range = 12-146 months.

## Proximity

To determine if proximity was used as a mate retention tactic, paired-samples *t*-tests were conducted, examining the difference between proximity while the confederate was in the room and not in the room with the couple. All three measures of proximity between the couple, the closest distance between shoulders, the farthest distance between shoulders, and the closest distance anywhere on the body, were analyzed. Due to the measure being on the couple level, as the proximity was between the members of the couple and not gender specific, there are no gender differences in this statistic. However, there are three levels of confederate: male, female, and control, so each proximity measure was looked at overall, and at each confederate level. See table 2 for descriptive statistics of proximity for each measure and each confederate level.

The difference in closest distance, in millimeters, between shoulders, irrespective of confederate gender and presence, was significant ($\bar{d}$ = 2.78, σ = 6.25; $t(96) = 4.38$, $p < .001$; see table 3), indicating that the distance between the couple's shoulders' closest point was significantly less during the middle 5 minutes that the couple was in the waiting room. The difference in closest distance between shoulders, when the confederate was male, was significant ($\bar{d}$ = 3.61, σ = 3.72;

$t(39) = 6.14$, $p < .001$), indicating that the distance between the couple's shoulders closest point was significantly less while a male confederate was in the room. The difference in closest distance between shoulders, when the confederate was female, was significant ($\bar{d} = 4.05$, $\sigma = 5.82$; $t(41) = 4.51$, $p < .001$), indicating that the distance between the couple's shoulders closest point was significantly less while a female confederate was in the room. The difference in closest distance between shoulders, when there was no confederate, was not significant ($\bar{d} = -3.00$, $\sigma = 9.35$; $t(14) = -1.24$, $p = .23$), indicating that there was insufficient evidence to conclude that the distance between the couple's shoulders closest point was different during the middle 5 minutes that the couple was in the waiting room.

The difference in farthest distance between shoulders, irrespective of confederate gender and presence, was significant ($\bar{d} = 4.84$, $\sigma = 8.76$; $t(96) = 5.44$, $p < .001$), indicating that the distance between the couple's shoulders farthest point was significantly less during the middle 5 minutes that the couple was in the waiting room. The difference in farthest distance between shoulders, when the confederate was male, was significant ($\bar{d} = 6.04$, $\sigma = 6.22$; $t(39) = 6.15$, $p < .001$), indicating that the distance between the couple's shoulders farthest point was significantly less while a male confederate was in the room. The difference in farthest distance between shoulders, when the confederate was female, was significant ($\bar{d} = 6.28$, $\sigma = 8.41$; $t(41) = 4.84$, $p < .001$), indicating that the distance between the couple's shoulders farthest point was significantly less while a female confederate was in the room. The difference in farthest distance between shoulders, when there was no confederate, was not significant ($\bar{d} = -2.40$, $\sigma = 12.05$; $t(14) = -0.77$, $p = .45$), indicating that there was insufficient evidence to conclude that the distance between the couple's shoulders farthest point was different during the middle 5 minutes that the couple was in the waiting room.

The difference in closest distance between the couple, irrespective of confederate gender and presence, was significant ($\bar{d}$ = 1.49, σ = 4.37; *t*(96) = 3.34, p = .001), indicating that the distance between the couple's closest point was significantly less during the middle 5 minutes that the couple was in the waiting room. The difference in closest distance between the couple, when the confederate was male, was significant ($\bar{d}$ = 0.88, σ = 2.16; *t*(39) = 2.58, p = .014), indicating that the distance between the couple's closest point was significantly less while a male confederate was in the room. The difference in closest distance between the couple, when the confederate was female, was significant ($\bar{d}$ = 1.94, σ = 5.02; *t*(41) = 2.50, p = .017), indicating that the distance between the couple's closest point was significantly less while a female confederate was in the room. The difference in closest distance between the couple, when there was no confederate, was not significant ($\bar{d}$ = 1.80, σ = 6.51; *t*(14) = 1.07, p = .30), indicating that there was insufficient evidence to conclude that the distance between the couple's closest point was different during the middle 5 minutes that the couple was in the waiting room.

To confirm that the presence of a confederate had an effect, and test if confederate gender matters, a one-way ANOVA and Tukey's HSD post hoc was conducted. The effect of confederate presence on change in proximity for the measure of shoulders closest was significant (*F*(2,94) = 8.91, *p* < .001). Post hoc analysis showed that change in proximity due to the presence of a male confederate ($\bar{x}$ = 3.61, σ = 3.72) was significantly greater than when there was no confederate ($\bar{x}$ = -3.00, σ = 9.35; $\bar{d}$ = 6.61, σ$\bar{x}$ = 1.75; *p* = .001), change in proximity due to the presence of a female confederate ($\bar{x}$ = 4.05, σ = 5.82) was also significantly greater than when there was no confederate ($\bar{d}$ = 7.06, σ$\bar{x}$ = 1.74; *p* < .001), and the change in proximity do to the presence of a male or female confederate was not significant ($\bar{d}$ = 0.44, σ$\bar{x}$ = 1.28; *p* = .94). Confederate presence affected change in proximity shoulders closest, such that couples sat closer together during the

middle five minutes than they did during the first and last two and a half minutes when both male and female confederates were present; a change in proximity shoulders closest was not observed when no confederate was present.

The effect of confederate presence on change in proximity for the measure of shoulders farthest was significant ($F(2,94) = 6.80$, $p = .002$). Post hoc analysis showed that change in proximity due to the presence of a male confederate ($\bar{x} = 6.04$, $\sigma = 6.22$) was significantly greater than when there was no confederate ($\bar{x} = -2.40$, $\sigma = 12.05$; $\bar{d} = 8.44$, $\sigma\bar{x} = 2.51$; $p = .003$), change in proximity due to the presence of a female confederate ($\bar{x} = 6.28$, $\sigma = 8.41$) was also significantly greater than when there was no confederate ($\bar{d} = 8.68$, $\sigma\bar{x} = 2.49$; $p = .002$), and the change in proximity due to the presence of a male or female confederate was not significant ($\bar{d} = 0.24$, $\sigma\bar{x} = 1.83$; $p = .99$). Confederate presence affected change in proximity shoulders farthest such that couples sat closer together during the middle five minutes than the first and last two and a half minutes when the confederate was a male or female; a change in proximity shoulders farthest was not observed when no confederate was present.

The effect of confederate presence on change in proximity for the measure of proximity closest was not significant ($F(2,94) = 0.64$, $p = .53$).

**Touching**

To determine if touching was used as a mate retention tactic, paired-samples *t*-tests were conducted, examining the difference between touching while the confederate was in the room and not in the room with the couple. Both measures of touching by the couple, number of times touching and total time touching were analyzed. Do to the measure being on the couple level, as the touching was between the members of the couple and not gender specific, there are no gender differences in this statistic. Both touching measures were looked at overall, and at each confederate

level. See table 4 for descriptive statistics of touching for both measures and each confederate level.

The difference in number of times touching, irrespective of confederate gender and presence, was not significant ($\bar{d}$ = 0.02, σ = 0.83; $t$(96) = 0.25, p = .81; see table 5), indicating that there was insufficient evidence to conclude that the number of times touching was different during the middle 5 minutes that the couple was in the waiting room. The difference in number of times touching, when the confederate was male, was not significant ($\bar{d}$ = 0.15, σ = 0.82; $t$(39) = 1.14, p = .26), indicating that there was insufficient evidence to conclude that the number of times touching was different while a male confederate was in the room. The difference in number of times touching when the confederate was female was not significant ($\bar{d}$ = 0.09, σ = 0.82; $t$(41) = 0.70, p = .49), indicating that there was insufficient evidence to conclude that the number of times touching was different while a female confederate was in the room. The difference in number of times touching when there was no confederate was not significant ($\bar{d}$ = 0.01, σ = 0.90; $t$(14) = 0.04, p = .97), indicating that there was insufficient evidence to conclude that the number of times touching was different during the middle 5 minutes that the couple was in the waiting room.

The difference in total time touching, irrespective of confederate gender and presence, was significant ($\bar{d}$ = 3.04, σ = 5.39; $t$(96) = 5.56, p < .001), indicating that the total time touching was an average of 30.4 seconds longer during the middle 5 minutes that the couple was in the waiting room than the first and last two and a half minutes. The difference in total time touching when the confederate was male was significant ($\bar{d}$ = 2.26, σ = 3.82; $t$(39) = 3.75, p = .001), indicating that the total time touching was an average of 22.6 seconds longer during the five minutes a male confederate was in the room than the five minutes he was not in the room. The difference in total time touching when the confederate was female was significant ($\bar{d}$ = 4.54, σ = 6.17; $t$(41) = 4.84,

p < .001), indicating that the total time touching was an average of 45.4 seconds longer during the five minutes a female confederate was in the room than the five minutes she was not in the room. The difference in total time touching, when there was no confederate, was not significant ($\bar{d}$ = 0.93, σ = 5.80; *t*(14) = 0.62, p = .55), indicating that there was insufficient evidence to conclude that the total time touching was different during the middle 5 minutes that the couple was in the waiting room.

To confirm that the presence of a confederate had an effect, and if confederate gender matters, a one-way ANOVA and Tukey's HSD post hoc was conducted. The effect of confederate presence on change in the number of times touching was not significant (*F*(2,94) = 0.83, *p* = .44), indicating that there is insufficient evidence to say that presence or gender of a confederate affects touching times.

The effect of confederate presence on change in the amount of time touching was significant (*F*(2,94) = 3.35, *p* < .039). Post hoc analysis showed that change in time touching due to the presence of a male confederate ($\bar{x}$ = 2.26, σ = 3.82), compared to when there was no confederate ($\bar{x}$ = 0.93, σ = 5.80), was not significant ($\bar{d}$ = 1.34, $\sigma_{\bar{x}}$ = 1.59; *p* = .68); change in time touching due to the presence of a female confederate ($\bar{x}$ = 4.54, σ = 6.17) was significantly greater than when there was no confederate ($\bar{d}$ = 3.61, $\sigma_{\bar{x}}$ = 1.58; *p* =.025); and the change in time touching due to the presence of a male or female confederate was not significant ($\bar{d}$ = 2.27, $\sigma_{\bar{x}}$ = 1.16; *p* = .129). Confederate presence affected touching duration, but only when the confederate was female as opposed to when no confederate was present, with the couple touching for an average of 36.1 seconds longer during the middle five minutes, as opposed to the first and last two and a half minutes.

**Testosterone**

When comparing change in testosterone (ΔT) to difference in proximity and touching, simple correlations were obtained (see table 6). No significant correlations between change in testosterone and change in proximity or touching behaviors were found when analyzing the entire dataset (ΔT and proximity shoulders closest, r(174) = .08, $p$ = .28; ΔT and proximity shoulders farthest, r(174) = .08, $p$ = .28; ΔT and proximity closest, r(174) = -.05, $p$ = .52; ΔT and times touching, r(174) = .02, $p$ = .75; ΔT and touching duration, r(174) = .05, $p$ = .52).

Due to the nature of testosterone, gender must be considered when conducting analyses on testosterone. When participant genders were analyzed separately, two significant simple correlations were found for male participants (ΔT and proximity shoulders closest, r(90) = .23, $p$ = .026; ΔT and proximity shoulders farthest, r(90) = .25, $p$ = .015), For male participants, change in testosterone was significantly related to change in proximity for both the closest and farthest shoulders measures. All other correlations for male participants were not significant (ΔT and proximity closest, r(90) = -.05, $p$ = .62; ΔT and times touching, r(90) = .05, $p$ = .63; ΔT and touching duration, r(90) = .05, $p$ = .63). For female participants, all simple correlations were not significant (ΔT and proximity shoulders closest, r(82) = -.01, $p$ = .92; ΔT and proximity shoulders farthest, r(82) = -.04, $p$ = .74; ΔT and proximity closest, r(82) = -.05, $p$ = .64; ΔT and times touching, r(82) = .00, $p$ = .99; ΔT and touching duration, r(82) = .12, $p$ = .29).

Of interest to the current study is the gender and presence of the confederate. When confederate presence was also taken into consideration, more significant simple correlations were found. When the participant was male, and the confederate was also male, one significant correlation was found (ΔT and proximity shoulders closest, r(37) = .32, $p$ = .048), indicating that change in testosterone was significantly related to change in shoulders proximity in male participants when the confederate was male. All other correlations for male participants when the

confederate was male were not significant (ΔT and proximity shoulders farthest, r(37) = .24, *p* = .14; ΔT and proximity closest, r(37) = .03, *p* = .88; ΔT and times touching, r(37) = .09, *p* = .59; ΔT and touching duration, r(37) = .02, *p* = .90). When the participant was male, and the confederate was female, all correlations were not significant (ΔT and proximity shoulders closest, r(36) = .07, *p* = .67; ΔT and proximity shoulders farthest, r(36) = .09, *p* = .59; ΔT and proximity closest, r(36) = -.08, *p* = .63; ΔT and times touching, r(36) = .03, *p* = .85; ΔT and touching duration, r(36) = .06, *p* = .75). When the participant was male, and there was no confederate, three correlations were significant (ΔT and proximity shoulders closest, r(13) = .64, *p* = .011; ΔT and proximity shoulders farthest, r(13) = .73, *p* = .002; ΔT and touching duration, r(13) = .64, *p* = .010), indicating that change in testosterone was significantly related to change in closest and farthest shoulders proximity and touching duration in male participants when there was no confederate. Two correlations when the participant was male and there was no confederate were not significant (ΔT and proximity closest, r(13) = .19, *p* = .50; ΔT and times touching, r(13) = .16, *p* = .57). When the participant was female, and the confederate was male, no significant correlations were found (ΔT and proximity shoulders closest, r(37) = .04, *p* = .82; ΔT and proximity shoulders farthest, r(37) = .02, *p* = .89; ΔT and proximity closest, r(37) = -.12, *p* = .49; ΔT and times touching, r(37) = .18, *p* = .28; ΔT and touching duration, r(37) = .09, *p* = .57). When the participant was female, and the confederate was female, no significant correlations were found (ΔT and proximity shoulders closest, r(30) = .02, *p* = .92; ΔT and proximity shoulders farthest, r(30) = .12, *p* = .51; ΔT and proximity closest, r(30) = -.15, *p* = .43; ΔT and times touching, r(30) = .08, *p* = .66; ΔT and touching duration, r(30) = .10, *p* = .60). When the participant was female, and there was no confederate, no significant correlations were found (ΔT and proximity shoulders closest, r(11) = -.17, *p* = .59; ΔT and proximity shoulders farthest, r(11) = -.25, *p* = .42; ΔT and proximity closest,

r(11) = .07, $p$ = .82; ΔT and times touching, r(11) = .28, $p$ = .36; ΔT and touching duration, r(11) = .40, $p$ = .18).

**Mate Retention Inventory**

The Mate Retention Inventory Short Form is divided into two separate scales (MRI1 and MRI2). The overall correlation between the two scales was significant at all levels (overall, r(191) = .78, $p$ < .001; male participant, r(94) = .79, $p$ < .001; female participant, r(95) = .79, $p$ < .001; male participant and male confederate, r(37) = .75, $p$ < .001; male participant and female confederate, r(40) = .85, $p$ < .001; male participant and no confederate, r(13) = .71, $p$ = .003; female participant and male confederate, r(38) = .77, $p$ < .001; female participant and female confederate, r(40) = .81, $p$ < .001; female participant and no confederate, r(13) = .81, $p$ < .001; see table 6). No differences were found in significance when analyzing the relationship between proximity and touching behaviors, and MRI1 compared to MRI2. Due to all inter-scale correlations being significant, and no differences in significance being found in the relationships between proximity and touching and the two scales, only MRI1 is reported here. See table 7 for descriptives for MRI1. Exact correlations and $p$-values for the relationships between proximity and touching and MRI2 are available upon request.

Overall, no significant relationships were found between MRI1 and difference in proximity or touching behaviors (proximity shoulders closest, r(191) = .01, $p$ = .89; proximity shoulders farthest, r(191) = -.01, $p$ = .87; proximity closest, r(191) = .02, $p$ =.78; times touching, r(191) = .07, $p$ =.36; touching duration, r(191) = -.01, $p$ = .87; see table 8). The relationships were then analyzed by gender. For male participants, no significant relationships were found (proximity shoulders closest, r(94) = .09, $p$ = .39; proximity shoulders farthest, r(94) = .06, $p$ = .56; proximity closest, r(94) = .10, $p$ = .35; times touching, r(94) = .13, $p$ = .20; touching duration, r(94) = .11, $p$

= .30). For female participants, no significant relationships were found (proximity shoulders closest, r(95) = .10, $p$ = .37; proximity shoulders farthest, r(95) = .03, $p$ = .79; proximity closest, r(95) = .12, $p$ = .25; times touching, r(95) = .01, $p$ = .91; touching duration, r(95) = -.11, $p$ = .27).

Confederate gender was taken into consideration and each level of gender, and confederate gender was analyzed separately. For male participant and male confederate, no significant correlations were found (proximity shoulders closest, r(37) = .02, $p$ = .89; proximity shoulders farthest, r(37) = .03, $p$ = .87; proximity closest, r(37) = .15, $p$ = .37; times touching, r(37) = .03, $p$ = .84; touching duration, r(37) = -.03, $p$ = .85). For male participant and female confederate, no significant correlations were found, though touching duration was under $p$ = .10 (proximity shoulders closest, r(40) = .20, $p$ = .20; proximity shoulders farthest, r(40) = .13, $p$ = .41; proximity closest, r(40) = .14, $p$ = .38; times touching, r(40) = .20, $p$ = .21; touching duration, r(40) = .27, $p$ = .090). For male participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = -.20, $p$ = .48; proximity shoulders farthest, r(13) = -.12, $p$ = .66; proximity closest, r(13) = -.25, $p$ = .37; times touching, r(13) = .20, $p$ = .47; touching duration, r(13) = -.04, $p$ = .88). For female participant and male confederate, no significant correlations were found, though proximity shoulders closest was under $p$ = .10 (proximity shoulders closest, r(38) = .28, $p$ = .077; proximity shoulders farthest, r(38) = .08, $p$ = .61; proximity closest, r(38) = -.01, $p$ = .93; times touching, r(38) = .03, $p$ = .88; touching duration, r(38) = .13, $p$ = .42). For female participant and female confederate, no significant correlations were found (proximity shoulders closest, r(40) = .10, $p$ = .52; proximity shoulders farthest, r(40) = -.01, $p$ = .93; proximity closest, r(40) = .05, $p$ = .77; times touching, r(40) = .17, $p$ = .28; touching duration, r(40) = .16, $p$ = .33). For female participant and no confederate, no significant correlations were found, though proximity closest and times touching were under $p$ = .10 (proximity shoulders closest, r(13) = -.35, $p$ = .20; proximity

shoulders farthest, r(13) = -.21, $p$ = .46; proximity closest, r(13) = .50, $p$ = .058; times touching, r(13) = -.49, $p$ = .065; touching duration, r(13) = -.31, $p$ = .27).

The Mate Retention Inventory is a general measure of mate retention tactics. Individual items within the MRI deal directly with touching and proximity. These items were analyzed to determine if they related to the touching and proximity behaviors. The proximity item used was "Spent all my free time with my partner so that he/she could not meet anyone else". Overall and when participant gender was analyzed, there was no relationship found between this item and the proximity measures. When confederate gender was taken into consideration, a few significant results were found. When the participant was male and the confederate was male, proximity closest (r(37) = .40, $p$ = .011) and proximity shoulders closest (r(37) = .44, $p$ = .005) were significant. Proximity shoulders farthest was not significant (r(37) = .13, $p$ = .42). When the participant was male, and the confederate was female or there was no confederate, no significant relationships were found. When the participant was female, and the confederate was female proximity shoulders closest (r(40) = .32, $p$ = .039) and proximity closest were significant (r(40) = .37, $p$ = .016) were significant. proximity shoulders farthest was not significant (r(40) = .14, $p$ = .38). When the participant was female, and the confederate was male or there was no confederate, no significant relationships were found.

The touching item used was "Held my partner's hand while other men/women were around". Overall and when participant gender was analyzed, there was no relationship found between this item and the proximity measures. When confederate gender was taken into consideration, a few significant results were found. When the participant was male and the confederate was male, touching times (r(37) = .42, $p$ = .008) and touching duration (r(37) = .54, $p$ < .001) were significant. When the participant was male, and the confederate was female or there

was no confederate, no significant relationships were found. When the participant was female, and the confederate was female touching times (r(39) = .38, $p$ = .014) and touching duration (r(39) = .34, $p$ = .031) were significant. When the participant was female, and the confederate was male or there was no confederate, no significant relationships were found.

**Loyalty**

The romantic partner loyalty scale is divided into two subscales (PL1 and PL2). PL1 relates to positive aspects of loyalty, such as being there when needed. PL2 relates to the negative infidelity aspects of loyalty. See table 7 for descriptives for each scale. Inter-scale correlations were significant overall (r(190) = -.33, $p$ < .001), for male participants overall (r(93) = -.43, $p$ < .001), female participants overall (r(95) = -.25, $p$ = .015), male participants when the confederate was male (r(37) = -.64, $p$ < .001), male participants when the confederate was female (r(40) = -.33, $p$ = .035), female participants when the confederate was male (r(38) = -.52, $p$ = .001), and female participants when there was no confederate (r(13) = -.53, $p$ = .041). Two correlations were not significant: male participants when there was no confederate (r(13) = -.39, $p$ = .16), and female participants when the confederate was female (r(40) = -.24, $p$ = .12). Due to not all inter-scale correlations being significant, and differences in the relationship between these scales and the proximity and touching measures, each of these scales was included in the analyses.

**PL1.** Overall, no significant relationships were found between PL1 and difference in proximity or touching behaviors (proximity shoulders closest, r(190) = -.06, $p$ = .39; proximity shoulders farthest, r(190) = .01, $p$ = .88; proximity closest, r(190) = -.06, $p$ =.42; times touching, r(190) = .10, $p$ =.16; touching duration, r(190) = .06, $p$ = .40; see table 9). The relationships were then analyzed by gender. For male participants, no significant relationships were found, though times touching was under $p$ = .10 (proximity shoulders closest, r(93) = -.15, $p$ = .13; proximity

shoulders farthest, r(93) = -.10, *p* = .33; proximity closest, r(93) = -.05, *p* = .64; times touching, r(93) = .20, *p* = .054; touching duration, r(93) = .00, *p* = .99). For female participants, no significant relationships were found r(95) = .01, *p* = .94; proximity shoulders farthest, r(95) = .10, *p* = .33; proximity closest, r(95) = -.05, *p* = .50; times touching, r(95) = .02, *p* = .86; touching duration, r(95) = .11, *p* = .27).

Confederate gender was taken into consideration and each level of gender and confederate gender was analyzed separately. For male participant and male confederate, no significant correlations were found (proximity shoulders closest, r(37) = -.21, *p* = .19; proximity shoulders farthest, r(37) = -.21, *p* = .19; proximity closest, r(37) = -.05, *p* = .78; times touching, r(37) = .10, *p* = .56; touching duration, r(37) = .17, *p* = .30). For male participant and female confederate, PL1 was significantly correlated with times touching (r(39) = .41, *p* =.008), indicating that male participants who had higher partner loyalty resulted in couples touching each other more times while a female confederate was in the room as opposed to when she was not in the room, as compared to male participants who had lower partner loyalty. No other significant correlations were found (proximity shoulders closest, r(39) = -.19, *p* = .24; proximity shoulders farthest, r(39) = -.12, *p* = .47; proximity closest, r(39) = .06, *p* = .70; touching duration, r(39) = .21, *p* = .19). For male participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = -.01, *p* = .98; proximity shoulders farthest, r(13) = -.19, *p* = .49; proximity closest, r(13) = -.10, *p* = .71; times touching, r(13) = .39, *p* = .15; touching duration, r(13) = .06, *p* = .85). For female participant and male confederate, no significant correlations were found (proximity shoulders closest, r(38) = .10, *p* = .51; proximity shoulders farthest, r(38) = .11, *p* = .48; proximity closest, r(38) = -.03, *p* = .84; times touching, r(38) = .02, *p* = .92; touching duration, r(38) = .23, *p* = .14). For female participant and female confederate, no significant correlations were found

(proximity shoulders closest, r(40) = -.02, *p* = .90; proximity shoulders farthest, r(40) = .14, *p* = .40; proximity closest, r(40) = -.11, *p* = .51; times touching, r(40) = .03, *p* = .87; touching duration, r(40) = .00, *p* = .99). For female participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = -.20, *p* = .47; proximity shoulders farthest, r(13) = -.09, *p* = .76; proximity closest, r(13) = .08, *p* = .79; times touching, r(13) = .23, *p* = .41; touching duration, r(13) = .11, *p* = .70).

**PL2.** Overall, no significant relationships were found between PL2 and difference in proximity or touching behaviors, though proximity closest was less than *p* = .10 (proximity shoulders closest, r(190) = .06, *p* = .41; proximity shoulders farthest, r(190) = .04, *p* = .55; proximity closest, r(190) = .12, *p* = .093; times touching, r(190) = -.05, *p* = .49; touching duration, r(190) = .05, *p* = .54; see table 10). The relationships were then analyzed by gender. For male participants, no significant relationships were found (proximity shoulders closest, r(93) = .01, *p* = .96; proximity shoulders farthest, r(93) = .08, *p* = .43; proximity closest, r(93) = .13, *p* = .20; times touching, r(93) = -.11, *p* = .29; touching duration, r(93) = -.02, *p* = .85). For female participants, no significant relationships were found (proximity shoulders closest, r(95) = -.14, *p* = .18; proximity shoulders farthest, r(95) = .00, *p* = .99; proximity closest, r(95) = -.11, *p* = .28; times touching, r(95) = -.02, *p* = .83; touching duration, r(95) = -.12, *p* = .23).

Confederate gender was taken into consideration and each level of gender and confederate gender was analyzed separately. For male participant and male confederate PL2 was significantly correlated with proximity shoulders closest (r(37) = .35, *p* = .029), indicating that when the participant was male and was more willing to be unfaithful, the couple's shoulders were closer together when the confederate was in the room than when he was not, as compared to male participants who are less willing to be unfaithful. No other significant correlations were found

(proximity shoulders farthest, r(37) = .15, *p* = .36; proximity closest, r(37) = .25, *p* = .12; times touching, r(37) = -.01, *p* = .97; touching duration, r(37) = -.15, *p* = .36). For male participant and female confederate no significant correlations were found (proximity shoulders closest, r(39) = .17, *p* = .29; proximity shoulders farthest, r(39) = .17, *p* = .28; proximity closest, r(39) = .07, *p* = .68; times touching, r(39) = -.23, *p* = .15; touching duration, r(39) = -.15, *p* = .34). For male participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = -.13, *p* = .66; proximity shoulders farthest, r(13) = -.08, *p* = .78; proximity closest, r(13) = -.06, *p* = .84; times touching, r(13) = -.09, *p* = .76; touching duration, r(13) = -.11, *p* = .69). For female participant and male confederate, no significant correlations were found (proximity shoulders closest, r(38) = .22, *p* = .17; proximity shoulders farthest, r(38) = .07, *p* = .67; proximity closest, r(38) = .15, *p* = .36; times touching, r(38) = -.00, *p* = .99; touching duration, r(38) = -.16, *p* = .31). For female participant and female confederate, no significant correlations were found (r(40) = .02, *p* = .91; proximity shoulders farthest, r(40) = .11, *p* = .51; proximity closest, r(40) = .05, *p* = .78; times touching, r(40) = .02, *p* = .91; touching duration, r(40) = -.02, *p* = .91). For female participant and no confederate, no significant correlations were found, though proximity shoulders closest was less than *p* = .10 (proximity shoulders closest, r(13) = -.49, *p* = .064; proximity shoulders farthest, r(13) = -.25, *p* =.36; proximity closest, r(13) = -.15, *p* = .60; times touching, r(13) = -.22, *p* = .44; touching duration, r(13) = -.37, *p* = .18).

**Rusbult's Model**

Each of the four scales associated with Rusbult's model, the Couple Satisfaction Index, the Attentiveness to Alternatives Inventory, the Relationship Commitment Inventory, and the Investment Model Scale, were analyzed independently. See table 11 for descriptives for each scale.

**Couple satisfaction.** Overall, the correlation between the Couple Satisfaction Index and times touching was significant (r(190) = .21, *p* = .004; see table 12), indicating that participants who had higher couple satisfaction touched their partner more times during the middle five minutes, as opposed to the first and last two and a half minutes, than participants who had lower couple satisfaction. No other significant relationships were found between the Couple Satisfaction Index and difference in proximity or touching behaviors, though touching duration was less than *p* = .10 (proximity shoulders closest, r(190) = -.04, *p* = .58; proximity shoulders farthest, r(190) = -.06, *p* = .43; proximity closest, r(190) = -.01, *p* = .90; touching duration, r(190) = .14, *p* = .060). The relationships were then analyzed by gender. For male participants, the correlation between the Couple Satisfaction Index and times touching was significant (r(93) = .26, *p* = .011), such that male participants who had higher couple satisfaction resulted in couples who touched each other more during the middle five minutes, as opposed to the first and last two and a half minutes, than male participants who had lower couple satisfaction. No other significant relationships were found (proximity shoulders closest, r(94) = -.03, *p* = .75; proximity shoulders farthest, r(93) = -.07, *p* = .52; proximity closest, r(93) = -.01, *p* = .90; touching duration, r(93) = .15, *p* = .15). For female participants, no significant relationships were found (proximity shoulders closest, r(95) = -.04, *p* = .67; proximity shoulders farthest, r(95) = -.05, *p* = .62; proximity closest, r(95) = -.01, *p* = .95; times touching, r(95) = .17, *p* = .10; touching duration, r(95) = .13, *p* = .22).

Confederate gender was taken into consideration and each level of gender and confederate gender was analyzed separately. For male participant and male confederate, no significant correlations were found (proximity shoulders closest, r(37) = -.04, *p* = .82; proximity shoulders farthest, r(37) = -.04, *p* = .80; proximity closest, r(37) = .00, *p* = .99; times touching, r(37) = .10, *p* = .56; touching duration, r(37) = .08, *p* = .65). For male participant and female confederate, the

Couple Satisfaction Index significantly correlated with times touching (r(39) = .46, *p* = .002) and touching duration (r(39) = .42, *p* = .005), such that male participants who had higher couple satisfaction resulted in couples who touched each other more while the female confederate was in the room as opposed to when she was not, than male participants who had lower couple satisfaction. No other significant correlations were found (proximity shoulders closest, r(39) = -.13, *p* = .42; proximity shoulders farthest, r(39) = -.14, *p* = .39; proximity closest, r(39) = .11, *p* = .48). For male participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = .16, *p* = .57; proximity shoulders farthest, r(13) = -.07, *p* = .80; proximity closest, r(13) = -.19, *p* = .49; times touching, r(13) = .39, *p* = .16; touching duration, r(13) = .06, *p* = .83). For female participant and male confederate, no significant correlations were found (proximity shoulders closest, r(38) = -.12, *p* = .44; proximity shoulders farthest, r(38) = .14, *p* = .37; proximity closest, r(38) = .05, *p* = .77; times touching, r(38) = .11, *p* = .50; touching duration, r(38) = .18, *p* = .25). For female participant and female confederate, no significant correlations were found (proximity shoulders closest, r(40) = .02, *p* = .90; proximity shoulders farthest, r(40) = .14, *p* = .38; proximity closest, r(40) = -.02, *p* = .93; times touching, r(40) = .07, *p* = .66; touching duration, r(40) = .09, *p* = .59). For female participant and no confederate, the Couple Satisfaction Index significantly correlated with times touching (r(13) = .54, *p* = .039), such that female participants who had higher couple satisfaction resulted in couples who touched each other more during the middle five minutes, as opposed to the first and last two and a half minutes, when there was no confederate, than female participants who had lower couple satisfaction.. No other significant correlations were found (proximity shoulders closest, r(13) = -.09, *p* = .76; proximity shoulders farthest, r(13) = -.30, *p* = .28; proximity closest, r(13) = -.13, *p* = .65; touching duration, r(13) = .14, *p* = .61).

**Investment.** Overall, no significant relationships were found between the Investment Scale and difference in proximity or touching behaviors, though touching duration was less than $p = .10$ (proximity shoulders closest, r(190) = -.02, $p = .98$; proximity shoulders farthest, r(190) = -.07, $p = .36$; proximity closest, r(190) = -.04, $p = .56$; times touching, r(190) = .08, $p = .27$; touching duration, r(190) = .12, $p = .093$; see table 13). The relationships were then analyzed by gender. For male participants, the Investment Scale significantly correlated with touching duration (r(93) = .22, $p = .031$), such that male participants who had higher investment in their partner resulted in couples who touched each other longer during the middle five minutes, as opposed to the first and last two and a half minutes, than male participants who had lower investment in their partner. No other significant relationships were found (proximity shoulders closest, r(93) = .07, $p = .53$; proximity shoulders farthest, r(93) = .01, $p = .92$; proximity closest, r(93) = .03, $p = .81$; times touching, r(93) = .11, $p = .30$). For female participants, no significant relationships were found (proximity shoulders closest, r(95) = -.06, $p = .56$; proximity shoulders farthest, r(95) = -.13, $p = .20$; proximity closest, r(95) = -.11, $p = .31$; times touching, r(95) = .06, $p = .58$; touching duration, r(95) = .04, $p = .73$).

Confederate gender was taken into consideration and each level of gender and confederate gender was analyzed separately. For male participant and male confederate, no significant correlations were found, though touching duration was less than $p = .10$ (proximity shoulders closest, r(37) = .09, $p = .59$; proximity shoulders farthest, r(37) = .13, $p = .42$; proximity closest, r(37) = .11, $p = .50$; times touching, r(37) = .04, $p = .83$; touching duration, r(37) = .31, $p = .059$). For male participant and female confederate, no significant correlations were found, though touching times and touching duration were less than $p = .10$ (proximity shoulders closest, r(39) = .09, $p = .59$; proximity shoulders farthest, r(39) = -.02, $p = .93$; proximity closest, r(39) = .06, $p$

=.70; times touching, r(39) = .30, *p* =.060; touching duration, r(39) = .31, *p* = .052). For male participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = -.04, *p* = .90; proximity shoulders farthest, r(13) = -.20, *p* = .48; proximity closest, r(13) = -.15, *p* = .60; times touching, r(13) = .02, *p* = .95; touching duration, r(13) = .07, *p* = .79). For female participant and male confederate, no significant correlations were found (proximity shoulders closest, r(38) = -.01, *p* = .96; proximity shoulders farthest, r(38) = -.14, *p* = .38; proximity closest, r(38) = -.13, *p* = .41; times touching, r(38) = .05, *p* = .76; touching duration, r(38) = .12, *p* = .43). For female participant and female confederate, no significant correlations were found (proximity shoulders closest, r(40) = .01, *p* = .97; proximity shoulders farthest, r(40) = .05, *p* = .78; proximity closest, r(40) = -.06, *p* = .74; times touching, r(40) = .01, *p* = .93; touching duration, r(40) = .02, *p* = .93). For female participant and no confederate, no significant correlations were found, though proximity shoulders farthest and times touching were less than *p* = .10 (proximity shoulders closest, r(13) = -.29, *p* = .30; proximity shoulders farthest, r(13) = -.48, *p* = .069; proximity closest, r(13) = .02, *p* = .94; times touching, r(13) = .50, *p* = .057; touching duration, r(13) = .04, *p* = .88).

**Commitment.** Overall, the Commitment Scale was significantly correlated with times touching (r(190) = .18, *p* = .015; see table 14). No other significant relationships were found between the Commitment Scale and difference in proximity or touching behaviors (proximity shoulders closest, r(190) = .00, *p* = .96; proximity shoulders farthest, r(190) = -.04, *p* = .63; proximity closest, r(190) = -.03, *p* = .70; touching duration, r(190) = .09, *p* = .23). The relationships were then analyzed by gender. For male participants, the Commitment Scale was significantly correlated with times touching (r(93) = .21, *p* = .046), such that male participants who had higher commitment to their partner resulted in couples who touched each other more during the middle

five minutes, as opposed to the first and last two and a half minutes, than male participants who had lower commitment to their partner. No other significant relationships were found (proximity shoulders closest, r(93) = -.01, *p* = .95; proximity shoulders farthest, r(93) = -.04, *p* = .71; proximity closest, r(93) = -.06, *p* = .55; touching duration, r(93) = .05, *p* = .62). For female participants, no significant relationships were found (proximity shoulders closest, r(95) = .01, *p* = .91; proximity shoulders farthest, r(95) = -.03, *p* = .76; proximity closest, r(95) = .00, *p* = .98; times touching, r(95) = .15, *p* = .14; touching duration, r(95) = .12, *p* = .25).

Confederate gender was taken into consideration and each level of gender and confederate gender was analyzed separately. For male participant and male confederate, no significant correlations were found (proximity shoulders closest, r(37) = -.10, *p* = .54; proximity shoulders farthest, r(37) = -.10, *p* = .55; proximity closest, r(37) = -.01, *p* = .96; times touching, r(37) = .10, *p* = .53; touching duration, r(37) = -.05, *p* = .76). For male participant and female confederate, the Commitment Scale was significantly correlated with times touching (r(39) = .40, *p* = .009), such that male participants who had higher commitment to their partner resulted in couples who touched each other more while the female confederate was in the room as opposed to when she was not, than male participants who had lower commitment to their partner. No other significant correlations were found (proximity shoulders closest, r(39) = .06, *p* = .72; proximity shoulders farthest, r(39) = -.04, *p* = .80; proximity closest, r(39) = .00, *p* = .98; touching duration, r(39) = .20, *p* = .21). For male participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = -.02, *p* = .94; proximity shoulders farthest, r(13) = -.23, *p* = .42; proximity closest, r(13) = -.30, *p* = .28; times touching, r(13) = .23, *p* = .41; touching duration, r(13) = -.14, *p* = .62). For female participant and male confederate, no significant correlations were found (proximity shoulders closest, r(38) = -.01, *p* = .94; proximity shoulders farthest, r(38) = -

.10, $p$ = .53; proximity closest, r(38) = -.02, $p$ = .92; times touching, r(38) = -.02, $p$ = .89; touching duration, r(38) = .19, $p$ = .24). For female participant and female confederate, no significant correlations were found (proximity shoulders closest, r(40) = .02, $p$ = .90; proximity shoulders farthest, r(40) = .15, $p$ = .36; proximity closest, r(40) = -.03, $p$ = .84; times touching, r(40) = .09, $p$ = .58; touching duration, r(40) = .04, $p$ = .81). For female participant and no confederate, the Commitment Scale was significantly correlated with times touching (r(13) = .65, $p$ = .008) such that female participants who had higher commitment to their partner resulted in couples who touched each other more during the middle five minutes, as opposed to the first and last two and a half minutes, when there was no confederate, than female participants who had lower commitment to their partner. No other significant correlations were found (proximity shoulders closest, r(13) = .07, $p$ = .81; proximity shoulders farthest, r(13) = -.27, $p$ = .34; proximity closest, r(13) = .06, $p$ = .84; touching duration, r(13) = .16, $p$ = .58).

**Attentiveness to alternatives.** Overall, no significant relationships were found between the Attentiveness to Alternatives Index and difference in proximity or touching behaviors (proximity shoulders closest, r(190) = .01, $p$ = .88; proximity shoulders farthest, r(190) = -.04, $p$ = .60; proximity closest, r(190) = .03, $p$ = .71; times touching, r(190) = -.11, $p$ = .15; touching duration, r(190) = -.11, $p$ = .13; see table 15). The relationships were then analyzed by gender. For male participants, no significant relationships were found (proximity shoulders closest, r(93) = -.03, $p$ = .76; proximity shoulders farthest, r(93) = -.11, $p$ = .31; proximity closest, r(93) = .00, $p$ = .99; times touching, r(93) = -.10, $p$ = .32; touching duration, r(93) = -.09, $p$ = .38). For female participants, no significant relationships were found (proximity shoulders closest, r(95) = .05, $p$ = .61; proximity shoulders farthest, r(95) = .03, $p$ = .80; proximity closest, r(95) = .05, $p$ = .61; times touching, r(95) = -.11, $p$ = .29; touching duration, r(95) = -.13, $p$ = .21).

Confederate gender was taken into consideration and each level of gender and confederate gender was analyzed separately. For male participant and male confederate no significant correlations were found (proximity shoulders closest, r(37) = .03, *p* = .85; proximity shoulders farthest, r(37) = .03, *p* = .84; proximity closest, r(37) = .01, *p* = .97; times touching, r(37) = -.03, *p* = .85; touching duration, r(37) = -.05, *p* = .76). For male participant and female confederate, the Attentiveness to Alternatives Index significantly correlated with times touching (r(39) = -.34, *p* = .031), such that male participants who had a higher attention dedicated to potential alternatives to their partner resulted in couples who touched each other less when the female confederate was in the room than when she was not, than male participants who had lower attention dedicated to potential alternatives to their partner. No other significant correlations were found (proximity shoulders closest, r(39) = -.14, *p* = .37; proximity shoulders farthest, r(39) = -.19, *p* = .24; proximity closest, r(39) = -.14, *p* = .39; touching duration, r(39) = -.24, *p* = .10). For male participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = .15, *p* = .60; proximity shoulders farthest, r(13) = .00, *p* = .99; proximity closest, r(13) = .16, *p* = .58; times touching, r(13) = .10, *p* = .71; touching duration, r(13) = .24, *p* = .38). For female participant and male confederate, no significant correlations were found (proximity shoulders closest, r(38) = .01, *p* = .94; proximity shoulders farthest, r(38) = .13, *p* = .43; proximity closest, r(38) = .06, *p* = .71; times touching, r(38) = -.14, *p* = .39; touching duration, r(38) = -.25, *p* = .11). For female participant and female confederate, no significant correlations were found (proximity shoulders closest, r(40) = .04, *p* = .81; proximity shoulders farthest, r(40) = -.14, *p* = .40; proximity closest, r(40) = .00, *p* =.98; times touching, r(40) = -.07, *p* =.69; touching duration, r(40) = -.09, *p* = .57). For female participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = .21, *p* = .46; proximity shoulders farthest, r(13) = .40, *p* = .14; proximity

closest, r(13) = .08, *p* = .77; times touching, r(13) = -.42, *p* = .12; touching duration, r(13) = -.05, *p* = .86).

**MARQ**

Each scale and item from the MARQ, the Love Scale and questions relating to worry about infidelity, actual infidelity committed, and touching, were analyzed independently. See table 16 for the descriptives for each scale.

**Relationship satisfaction.** Overall, The Love Scale significantly correlated with times touching (r(192) = .18, *p* = .015; see table 17), such that participants who had greater relationship satisfaction resulted in couples who touched each other more times while the confederate was in the room, or during the middle five minutes if there was no confederate, as opposed to participants with lower relationship satisfaction. No other significant relationships were found between the Love Scale and difference in proximity or touching behaviors, though touching duration was less than *p* = .10 (proximity shoulders closest, r(192) = -.05, *p* = .48; proximity shoulders farthest, r(192) = -.02, *p* = .74; proximity closest, r(192) = -.04, *p* = .58; touching duration, r(192) = .13, *p* = .063). The relationships were then analyzed by gender. For male participants, no significant relationships were found, though times touching was less than *p* = .10 (proximity shoulders closest, r(95) = -.09, *p* = .38; proximity shoulders farthest, r(95) = -.05, *p* = .64; proximity closest, r(95) = -.09, *p* = .36; times touching, r(95) = .17, *p* = .098; touching duration, r(95) = .15, *p* = .15). For female participants, no significant relationships were found, though times touching was less than *p* = .10 (proximity shoulders closest, r(95) = -.02, *p* = .85; proximity shoulders farthest, r(95) = -.00, *p* = .97; proximity closest, r(95) = .01, *p* = .96; times touching, r(95) = .18, *p* = .077; touching duration, r(95) = .12, *p* = .23).

Confederate gender was taken into consideration, and each level of gender and confederate gender was analyzed separately. For male participant and male confederate, no significant correlations were found (proximity shoulders closest, r(38) = -.07, *p* = .67; proximity shoulders farthest, r(38) = -.01, *p* = .95; proximity closest, r(38) = -.09, *p* = .60; times touching, r(38) = .08, *p* = .61; touching duration, r(38) = .08, *p* = .63). For male participant and female confederate, the Love Scale was significantly correlated with times touching (r(40) = .36, *p* = .018) and touching duration (r(40) = .41, *p* = .008), such that when male participants had higher relationship satisfaction, the couple touched each other more times and for longer durations when the female confederate was in the room than when she was not, as opposed to male participants who had lower relationship satisfaction. No other significant correlations were found (proximity shoulders closest, r(40) = -.08, *p* = .60; proximity shoulders farthest, r(40) = -.13, *p* = .43; proximity closest, r(40) = -.01, *p* = .96). For male participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = -.29, *p* = .29; proximity shoulders farthest, r(13) = -.13, *p* = .65; proximity closest, r(13) = -.16, *p* = .57; times touching, r(13) = .17, *p* = .55; touching duration, r(13) = -.13, *p* = .63). For female participant and male confederate, the Love Scale significantly correlated with touching duration (r(38) = .31, *p* = .048), such that when female participants had higher relationship satisfaction, the couple touched each other for longer durations when the male confederate was in the room than when he was not, as opposed to female participants who had lower relationship satisfaction. No other significant correlations were found (proximity shoulders closest, r(38) = -.02, *p* = .92; proximity shoulders farthest, r(38) = .09, *p* = .58; proximity closest, r(38) = .02, *p* = .88; times touching, r(38) = .10, *p* = .53). For female participant and female confederate, no significant correlations were found (proximity shoulders closest, r(40) = .04, *p* = .79; proximity shoulders farthest, r(40) = .13, *p* = .44; proximity closest,

r(40) = .03, $p$ = .84; times touching, r(40) = .15, $p$ = .37; touching duration, r(40) = .04, $p$ = .80). For female participant and no confederate, the Love Scale significantly correlated with proximity shoulders farthest (r(13) = -.54, $p$ = .038) and times touching (r(13) = .58, $p$ = .024), such that when female participants had higher relationship satisfaction, the couple's farthest point between their shoulders was farther apart and they touched each other more times during the middle five minutes. No other significant correlations were found (proximity shoulders closest, r(13) = -.23, $p$ = .42; proximity closest, r(13) = -.06, $p$ = .84; touching duration, r(13) = .04, $p$ = .89).

**Worry about infidelity.** Overall, no significant relationships were found between the MARQ worry about infidelity question, "Do you worry about your partner being unfaithful?", and difference in proximity or touching behaviors, though touching duration was less than $p$ = .10 (proximity shoulders closest, r(192) = -.06, $p$ = .39; proximity shoulders farthest, r(192) = -.04, $p$ = .62; proximity closest, r(192) = -.06, $p$ = .39; times touching, r(192) = .05, $p$ = .49; touching duration, r(192) = .13, $p$ = .070; see table 18). The relationships were then analyzed by gender. For male participants, worry about infidelity significantly correlated with touching duration (r(95) = .21, $p$ = .040), such that male participants who had greater worry about their partner being unfaithful resulted in couples who touched each other more when the confederate was in the room, or during the middle five minutes if there was no confederate, as opposed to male participants who had less worry about partner infidelity. No other significant relationships were found (proximity shoulders closest, r(95) = -.13, $p$ = .22; proximity shoulders farthest, r(95) = -.14, $p$ = .17; proximity closest, r(95) = -.08, $p$ = .46; times touching, r(95) = .14, $p$ = .17). For female participants, no significant relationships were found (proximity shoulders closest, r(95) = -.00, $p$ = .97; proximity shoulders farthest, r(95) = .06, $p$ = .56; proximity closest, r(95) = -.05, $p$ = .63; times touching, r(95) = .04, $p$ = .74; touching duration, r(95) = .06, $p$ = .58).

Confederate gender was taken into consideration and each level of gender and confederate gender was analyzed separately. For male participant and male confederate, no significant correlations were found (proximity shoulders closest, r(38) = -.14, *p* = .40; proximity shoulders farthest, r(38) = -.20, *p* = .22; proximity closest, r(38) = -.09, *p* = .57; times touching, r(38) = .03, *p* = .87; touching duration, r(38) = .13, *p* = .44). For male participant and female confederate, worry about infidelity significantly correlated with times touching (r(40) = .53, *p* <. 001) and touching duration (r(40) = .40, *p* = .009), such that male participants who had greater worry about their partner being unfaithful resulted in couples who touched each other more times and for a greater duration when a female confederate was in the room, as opposed to male participants who had less worry about partner infidelity. No other significant correlations were found (proximity shoulders closest, r(40) = -.12, *p* = .44; proximity shoulders farthest, r(40) = -.04, *p* = .81; proximity closest, r(40) = -.25, *p* =.11). For male participant and no confederate, no significant correlations were found, though times touching was less than *p* = .10 (proximity shoulders closest, r(13) = -.14, *p* = .61; proximity shoulders farthest, r(13) = -.25, *p* = .38; proximity closest, r(13) = .34, *p* = .21; times touching, r(13) = -.45, *p* = .089; touching duration, r(13) = -.13, *p* = .64). For female participant and male confederate. no significant correlations were found, though proximity closest was less than *p* = .10 (proximity shoulders closest, r(38) = -.08, *p* = .61; proximity shoulders farthest, r(38) = .03, *p* = .86; proximity closest, r(38) = -.27, *p* = .095; times touching, r(38) = .21, *p* = .19; touching duration, r(38) = .02, *p* = .92). For female participant and female confederate, no significant correlations were found (proximity shoulders closest, r(40) = -.09, *p* = .57; proximity shoulders farthest, r(40) = -.05, *p* = .76; proximity closest, r(40) = .01, *p* = .95; times touching, r(40) = .07, *p* = .68; touching duration, r(40) = .01, *p* = .93). For female participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = .34, *p* =

.22; proximity shoulders farthest, r(13) = .32, *p* = .25; proximity closest, r(13) = .27, *p* =.34; times touching, r(13) = -.11, *p* =.71; touching duration, r(13) = .20, *p* = .47).

**Infidelity.** Overall, no significant relationships were found between the MARQ actual infidelity question, "Do you find sexual fulfillment outside your relationship?", and difference in proximity or touching behaviors (proximity shoulders closest, r(190) = .01, *p* = .94; proximity shoulders farthest, r(190) = -.08, *p* = .26; proximity closest, r(190) = -.06, *p* = .44; times touching, r(190) = .06, *p* = .41; touching duration, r(190) = .00, *p* = .97; see table 19). The relationships were then analyzed by gender. For male participants, no significant relationships were found (proximity shoulders closest, r(95) = -.04, *p* = .71; proximity shoulders farthest, r(95) = -.07, *p* = .48; proximity closest, r(95) = -.07, *p* = .51; times touching, r(95) = .10, *p* = .33; touching duration, r(95) = .02, *p* = .88). For female participants, no significant relationships were found (proximity shoulders closest, r(93) = .05, *p* = .64; proximity shoulders farthest, r(93) = -.09, *p* = .37; proximity closest, r(93) = -.05, *p* = .67; times touching, r(93) = .02, *p* = .85; touching duration, r(93) = -.02, *p* = .84).

Confederate gender was taken into consideration and each level of gender and confederate gender was analyzed separately. For male participant and male confederate no significant correlations were found (proximity shoulders closest, r(38) = -.06, *p* = .69; proximity shoulders farthest, r(38) = -.10, *p* = .56; proximity closest, r(38) = .05, *p* = .78; times touching, r(38) = .04, *p* = .80; touching duration, r(38) = -.03, *p* = .84). For male participant and female confederate, actual infidelity significantly correlated with times touching (r(40) = .31, *p* = .043), such that when male participants had committed past infidelity, it resulted in couples who touched each other more times when a female confederate was in the room, as opposed to male participants who had not committed infidelity. No other significant correlations were found (proximity shoulders closest, r(40) = -.03, *p* = .83; proximity shoulders farthest, r(40) = -.14, *p* = .36; proximity closest, r(40) =

-.09, $p$ = .56; touching duration, r(40) = .14, $p$ = .39). For male participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = .12, $p$ = .67; proximity shoulders farthest, r(13) = .13, $p$ = .65; proximity closest, r(13) = -.20, $p$ = .48; times touching, r(13) = -.09, $p$ = .74; touching duration, r(13) = -.10, $p$ = .71). For female participant and male confederate, no significant correlations were found (proximity shoulders closest, r(37) = .17, $p$ = .29; proximity shoulders farthest, r(37) = .14, $p$ = .40; proximity closest, r(37) = .22, $p$ = .17; times touching, r(37) = .09, $p$ = .57; touching duration, r(37) = .12, $p$ = .47). For female participant and female confederate, actual infidelity significantly correlated with proximity shoulders farthest (r(39) = -.37, $p$ = .019) and proximity closest (r(39) = -.35, $p$ = .024), such that when female participants had committed past infidelity it resulted in couples sitting farther apart when a female confederate was in the room, as opposed to female participants who had not committed infidelity. No other significant correlations were found (proximity shoulders closest, r(39) = -.10, $p$ = .56; times touching, r(39) = -.05, $p$ = .77; touching duration, r(39) = -.10, $p$ = .53). For female participant and no confederate, actual infidelity significantly correlated with proximity closest (r(13) = .57, $p$ = .026), such that female participants who had committed past infidelity resulted in couples who sat closer together during the middle five minutes when there was no confederate, as opposed to female participants who had not committed past infidelity. No other significant correlations were found (proximity shoulders closest, r(13) = .14, $p$ = .62; proximity shoulders farthest, r(13) = .15, $p$ = .61; times touching, r(13) = .22, $p$ = .43; touching duration, r(13) = .19, $p$ = .50).

**Self-report touching.** To determine if self-reported desire to touch one's partner was related to actual touching behaviors, correlational analyses were run on the MARQ general touching question, "Do you want to touch your partner?" and all touching behavioral measures,

before, during, and after the confederate was in the room. Overall, the correlation between the general touching question and actual touching was significant for all measures of touching (touching times before, r(184) = .36, $p < .001$; touching times during, r(191) = .14, $p = .049$; touching times after, r(191) = .21, $p = .004$; touching duration before, r(184) = .20, $p = .005$; touching duration during, r(191) = .20, $p = .006$; touching duration after, r(191) = .24, $p = .001$; see table 20), such that those who reported a greater desire to touch their partner resulted in couples who touched each other more times and for a longer duration before, during, and after the confederate was in the room. When gender was taken into consideration, for males only, two relationships remained significant (touching times before, r(91) = .23, $p = .029$; touching times after, r(95) = .23, $p = .023$), such that male participants who reported a greater desire to touch their partner resulted in couples who touched more times before and after the confederate was in the room. All other correlations were not significant (touching times during, r(95) = .02, $p = .87$; touching duration before, r(91) = .09, $p = .38$; touching duration during, r(95) = .13, $p = .21$; touching duration after, r(95) = .09, $p = .37$). For females, all correlations were significant (touching times before, r(91) = .28, $p = .006$; touching times during, r(94) = .25, $p = .015$; touching times after, r(94) = .20, $p = .048$; touching duration before, r(94) = .30, $p = .003$; touching duration during, r(94) = .28, $p = .006$; touching duration after, r(94) = .29, $p = .004$), such that female participants who reported a greater desire to touch their partner resulted in couples who touched each other more times and for a longer duration before, during, and after the confederate was in the room.

Confederate gender was taken into consideration and each level of gender and confederate gender was analyzed separately. For male participant and male confederate, no significant correlations were found, though touching times after was less than $p = .10$ (touching times before,

r(34) = .20, *p* = .26; touching times during, r(38) = .05, *p* = .75; touching times after, r(38) = .28, *p* = .080; touching duration before, r(34) = .04, *p* = .83; touching duration during, r(38) = .19, *p* = .24; touching duration after, r(38) = .21, *p* = .20). For male participant and female confederate, no significant correlations were found (touching times before, r(40) = .21, *p* = .19; touching times during, r(40) = .02, *p* = .90; touching times after, r(40) = .21, *p* = .19; touching duration before, r(40) = .10, *p* = .52; touching duration during, r(40) = .04, *p* = .80; touching duration after, r(40) = .03, *p* = .83). For male participant and no confederate, no significant correlations were found (touching times before, r(13) = .34, *p* = .21; touching times during, r(13) = .23, *p* = .41; touching times after, r(13) = .26, *p* = .36; touching duration before, r(13) = .16, *p* = .57; touching duration during, r(13) = .30, *p* = .29; touching duration after, r(13) = .16, *p* = .56). For female participant and male confederate, four correlations were significant (touching times before, r(34) = .36, *p* = .030; touching times during, r(37) = .35, *p* = .030; touching duration during, r(37) = .47, *p* = .003; touching duration after, r(37) = .45, *p* = .004), such that female participants who reported a greater desire to touch their partner resulted in couples who touched each other more times before and while a male confederate was in the room, and for longer during and after the male confederate was in the room. The other two correlations were not significant, but were both less than *p = .10 (*touching times after, r(37) = .29, *p* = .078; touching duration before, r(34) = .32, *p* = .059*).* For female participant and female confederate, no significant correlations were found (touching times before, r(40) = .19, *p* = .24; touching times during, r(40) = .03, *p* = .85; touching times after, r(40) = .02, *p* = .92; touching duration before, r(40) = .19, *p* = .23; touching duration during, r(40) = .02, *p* = .89; touching duration after, r(40) = .06, *p* = .70). For female participant and no confederate, one correlation was significant (touching duration before, r(13) = .58, *p* = .023). All other correlations were not significant (touching times before, r(13) = .39, *p* = .15; touching times during,

r(13) = .40, $p$ = .14; touching times after, r(13) = .34, $p$ = .22; touching duration during, r(13) = .40, $p$ = .14; touching duration after, r(13) = .36, $p$ = .18).

Next, the touching question was compared to the difference between when the confederate was in the room and not in the room, in proximity and touching behaviors. Overall, a significant correlation was found between the MARQ general touching question and the difference in times touching (r(191) = .15, $p$ = .038; see table 21), such that participants who had reported a greater desire to touch their partner resulted in the couple touching more times while the confederate was in the room, or the middle five minutes if there was no confederate. No other significant relationships were found in difference in proximity or touching behaviors (proximity shoulders closest, r(191) = -.03, $p$ = .66; proximity shoulders farthest, r(191) = .01, $p$ = .89; proximity closest, r(191) = -.04, $p$ = .56; touching duration, r(191) = .06, $p$ = .45). The relationships were then analyzed by gender. For male participants, the MARQ general touching question significantly correlated with times touching (r(95) = .27, $p$ = .007), such that male participants who had reported a greater desire to touch their partner resulted in the couple touching more times while the confederate was in the room, or the middle five minutes if there was no confederate. No other significant relationships were found (proximity shoulders closest, r(95) = -.06, $p$ = .54; proximity shoulders farthest, r(95) = -.08, $p$ = .42; proximity closest, r(95) = -.00, $p$ = .99; touching duration, r(95) = .05, $p$ = .65). For female participants, no significant relationships were found (proximity shoulders closest, r(94) = -.01, $p$ = .95; proximity shoulders farthest, r(94) = .09, $p$ = .39; proximity closest, r(94) = -.08, $p$ = .45; times touching, r(94) = .05, $p$ = .64; touching duration, r(94) = .06, $p$ = .55).

Confederate gender was taken into consideration and each level of gender and confederate gender was analyzed separately. For male participant and male confederate, the MARQ general

touching question significantly correlated with times touching (r(38) = .34, *p* = .031), such that male participants who had reported a greater desire to touch their partner resulted in the couple touching more times while a male confederate was in the room. No other significant correlations were found (proximity shoulders closest, r(38) = .02, *p* = .92; proximity shoulders farthest, r(38) = .07, *p* = .69; proximity closest, r(38) = .01, *p* = .97; touching duration, r(38) = .13, *p* = .44). For male participant and female confederate no significant correlations were found (proximity shoulders closest, r(40) = -.08, *p* = .61; proximity shoulders farthest, r(40) = -.07, *p* = .67; proximity closest, r(40) = -.03, *p* = .84; times touching, r(40) = .25, *p* = .11; touching duration, r(40) = .05, *p* = .75). For male participant and no confederate, no significant correlations were found, though proximity shoulders farthest was less than *p* = .10 (proximity shoulders closest, r(13) = -.26, *p* = .35; proximity shoulders farthest, r(13) = -.44, *p* = .099; proximity closest, r(13) = .03, *p* = .90; times touching, r(13) = .17, *p* = .54; touching duration, r(13) = -.28, *p* = .32). For female participant and male confederate no significant correlations were found (proximity shoulders closest, r(37) = -.10, *p* = .57; proximity shoulders farthest, r(37) = .06, *p* = .71; proximity closest, r(37) = -.12, *p* = .48; times touching, r(37) = .08, *p* = .64; touching duration, r(37) = .09, *p* = .61). For female participant and female confederate no significant correlations were found (proximity shoulders closest, r(40) = .13, *p* = .40; proximity shoulders farthest, r(40) = .19, *p* = .24; proximity closest, r(40) = .01, *p* = .95; times touching, r(40) = .01, *p* = .96; touching duration, r(40) = .20, *p* = .20). For female participant and no confederate no significant correlations were found (proximity shoulders closest, r(13) = .02, *p* = .95; proximity shoulders farthest, r(13) = .03, *p* = .92; proximity closest, r(13) = -.15, *p* = .60; times touching, r(13) = .09, *p* = .76; touching duration, r(13) = .15, *p* = .59).

***Public touching***. The MARQ contained two supplementary touching questions. The first was related to a desire to touch one's partner in public. Correlation analyses found that the MARQ question "Do you want to touch your partner?" was significantly correlated with the MARQ question "Do you want to touch your partner in public?" at all levels (overall, $r(191) = .55$, $p < .001$; in male participants, $r(95) = .57$, $p < .001$; in female participants, $r(94) = .55$, $p < .001$). There were some specific differences in the relationship between these two questions and the proximity and touching behaviors, so all analyses for the public touching question are reported here.

Overall, no significant relationships were found between the MARQ public touching question, "Do you want to touch your partner in public?", and difference in proximity or touching behaviors (proximity shoulders closest, $r(191) = .07$, $p = .36$; proximity shoulders farthest, $r(191) = .09$, $p = .24$; proximity closest, $r(191) = -.07$, $p = .31$; times touching, $r(191) = .11$, $p = .14$; touching duration, $r(191) = .06$, $p = .42$; see table 22). The relationships were then analyzed by gender. For male participants, no significant relationships were found (proximity shoulders closest, $r(95) = .07$, $p = .49$; proximity shoulders farthest, $r(95) = .07$, $p = .49$; proximity closest, $r(95) = -.07$, $p = .49$; times touching, $r(95) = .15$, $p = .15$; touching duration, $r(95) = .10$, $p = .34$). For female participants, no significant relationships were found (proximity shoulders closest, $r(94) = .06$, $p = .55$; proximity shoulders farthest, $r(94) = .10$, $p = .34$; proximity closest, $r(94) = -.08$, $p = .46$; times touching, $r(94) = .07$, $p = .52$; touching duration, $r(94) = .02$, $p = .86$).

Confederate gender was taken into consideration and each level of gender and confederate gender was analyzed separately. For male participant and male confederate, the MARQ public touching question significantly correlated with times touching ($r(38) = .36$, $p = .022$), such that when male participants reported a greater desire to touch their partner in public it resulted in the couple touching a greater number of times when a male confederate was in the room. No other no

significant correlations were found (proximity shoulders closest, r(38) = .09, *p* = .60; proximity shoulders farthest, r(38) = .04, *p* = .81; proximity closest, r(38) = .02, *p* = .92; touching duration, r(38) = .02, *p* = .91). For male participant and female confederate, no significant correlations were found (proximity shoulders closest, r(40) = .06, *p* = .73; proximity shoulders farthest, r(40) = .09, *p* = .58; proximity closest, r(40) = -.12, *p* = .47; times touching, r(40) = .02, *p* = .91; touching duration, r(40) = .20, *p* = .20). For male participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = .07, *p* = .81; proximity shoulders farthest, r(13) = -.03, *p* = .92; proximity closest, r(13) = .05, *p* = .87; times touching, r(13) = .14, *p* = .61; touching duration, r(13) = .26, *p* = .36). For female participant and male confederate, no significant correlations were found (proximity shoulders closest, r(37) = .03, *p* = .85; proximity shoulders farthest, r(37) = .04, *p* = .61; proximity closest, r(37) = -.17, *p* = .29; times touching, r(37) = .02, *p* = .92; touching duration, r(37) = .18, *p* = .27). For female participant and female confederate, the MARQ public touching question significantly correlated with proximity shoulders farthest (r(40) = .33, *p* = .034). When a female participant reported a greater desire to touch their partner in public, it resulted in the couple's shoulders farthest point being closer when a female confederate was in the room. No other significant correlations were found (proximity shoulders closest, r(40) = .21, *p* = .18; proximity closest, r(40) = .06, *p* = .72; times touching, r(40) = .04, *p* = .80; touching duration, r(40) = .02, *p* = .92). For female participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = -.15, *p* = .59; proximity shoulders farthest, r(13) = -.26, *p* = .35; proximity closest, r(13) = -.32, *p* = .24; times touching, r(13) = .40, *p* = .14; touching duration, r(13) = .32, *p* = .25).

***Private touching.*** The second supplementary MARQ touching question was related to a desire to touch one's partner in private. Correlation analyses found that the MARQ question "Do

you want to touch your partner?", was significantly correlated with the MARQ question "Do you want to touch your partner in private?" at all levels (overall, r(191) = .78, $p < .001$; in male participants, r(95) = .76, $p < .001$; in female participants, r(94) = .80, $p < .001$). Additionally, the item relating to touching in public was significantly correlated with the item relating to touching in private at all levels (overall, r(191) = .60, $p < .001$; in male participants, r(95) = .60, $p < .001$; in female participants, r(94) = .61, $p < .001$). There were some specific differences in the relationship between the private touching question and the two previous touching questions, relating to the proximity and touching behaviors, so all analyses for the private touching question are reported here.

Overall, no significant relationships were found between the MARQ private touching question, "Do you want to touch your partner in private?", and difference in proximity or touching behaviors, though times touching was less than $p = .10$ (proximity shoulders closest, r(191) = -.06, $p = .41$; proximity shoulders farthest, r(191) = -.02, $p = .74$; proximity closest, r(191) = -.11, $p = .14$; times touching, r(191) = .12, $p = .090$; touching duration, r(191) = -.03, $p = .70$; see table 23). The relationships were then analyzed by gender. For male participants, no significant relationships were found, though times touching was less than $p = .10$ (proximity shoulders closest, r(95) = -.08, $p = .45$; proximity shoulders farthest, r(95) = -.09, $p = .38$; proximity closest, r(95) = -.11, $p = .29$; times touching, r(95) = .18, $p = .086$; touching duration, r(95) = -.02, $p = .81$). For female participants, no significant relationships were found (proximity shoulders closest, r(94) = -.04, $p = .68$; proximity shoulders farthest, r(94) = .04, $p = .69$; proximity closest, r(94) = -.11, $p = .30$; times touching, r(94) = .07, $p = .49$; touching duration, r(94) = -.03, $p = .76$).

Confederate gender was taken into consideration and each level of gender and confederate gender was analyzed separately. For male participant and male confederate, no significant

correlations were found, though times touching was less than $p = .10$ (proximity shoulders closest, r(15) = -.17, $p = .30$; proximity shoulders farthest, r(38) = .02, $p = .89$; proximity closest, r(38) = -.12, $p = .46$; times touching, r(38) = .31, $p = .056$; touching duration, r(38) = .10, $p = .54$). For male participant and female confederate, no significant correlations were found (proximity shoulders closest, r(40) = .08, $p = .63$; proximity shoulders farthest, r(40) = -.10, $p = .51$; proximity closest, r(40) = -.06, $p = .73$; times touching, r(40) = .15, $p = .34$; touching duration, r(40) = -.03, $p = .86$). For male participant and no confederate, the MARQ private touching question significantly correlated with proximity shoulders farthest (r(13) = .54, $p = .039$). When a male participant reported a greater desire to touch his partner in private, it resulted in the couple's shoulders farthest point being closer during the middle five minutes when there was no confederate. No other significant correlations were found, though proximity shoulders closest was less than $p = .10$ (proximity shoulders closest, r(13) = -.48, $p = .069$; proximity closest, r(13) = -.16, $p = .58$; times touching, r(13) = .17, $p = .55$; touching duration, r(13) = -.30, $p = .28$). For female participant and male confederate, no significant correlations were found (proximity shoulders closest, r(37) = -.08, $p = .64$; proximity shoulders farthest, r(37) = .02, $p = .89$; proximity closest, r(37) = -.23, $p = .15$; times touching, r(37) = .08, $p = .64$; touching duration, r(37) = -.23, $p = .17$). For female participant and female confederate, no significant correlations were found (proximity shoulders closest, r(40) = .12, $p = .45$; proximity shoulders farthest, r(40) = .24, $p = .12$; proximity closest, r(40) = .02, $p = .89$; times touching, r(40) = -.01, $p = .95$; touching duration, r(40) = .15, $p = .33$). For female participant and no confederate, no significant correlations were found (proximity shoulders closest, r(13) = -.18, $p = .51$; proximity shoulders farthest, r(13) = -.24, $p = .42$; proximity closest, r(13) = .07, $p = .80$; times touching, r(13) = .27, $p = .34$; touching duration, r(13) = .15, $p = .60$).

**Fertility**

Fifty female participants completed the question, “Are you on any form of hormonal birth control?” (yes = 17, no = 33). Forty-one female participants completed the question, “How many days since the start of your last menstrual cycle?” ($\bar{x}$ = 14.85, σ = 7.93). See table 24 for descriptives for these two items.

Correlational analyses were run to identify any relationships between these two questions and all categories of actual touching and proximity behaviors. Only two significant relationships were found relating to days since last menstrual cycle, both when there was a female confederate (proximity shoulders closest before, r(7) = -.85, *p* = .004; proximity shoulders farthest before, r(7) = -.83, *p* = .006; see tables 28 and 29). When the confederate was female, and female participants had had fewer days since the start of her last menstrual cycle, the couple sat closer together before the confederate came into the room. Nearly all correlations were significant relating to the question of hormonal birth control when the confederate was male (proximity shoulders closest before, r(25) = .43, *p* = .025; proximity shoulders closest during, r(27) = .40, *p* = .031; proximity shoulders closest after, r(27) = .34, *p* = .073; proximity shoulders farthest before, r(25) = .42, *p* = .028; proximity shoulders farthest during, r(27) = .39, *p* = .036; proximity shoulders farthest after, r(27) = .37, *p* = .047; proximity closest before, r(25) = .39, *p* = .044; proximity closest during, r(27) = .37, *p* = .050; proximity closest after, r(27) = .37, *p* = .048; see table 25; touching times before, r(25) = -.04, *p* = .83; touching times during, r(27) = .05, *p* = .81; touching times after, r(27) = .34, *p* = .076; touching duration before, r(25) = .09, *p* = .67; touching duration during, r(27) = .35, *p* = .064; touching duration after, r(27) = .42, *p* = .025; see table 26). When the confederate was male, and the female participants were not on hormonal birth control, the couples sat closer together before, during, and after the confederate was in the room, touched more times after the confederate

left the room, and touched longer when the confederate was in the room and after he left. No significant correlations were found relating to hormonal birth control and actual touching and proximity behaviors when the confederate was female or when a confederate was not present.

Correlation analyses were then run to identify any relationships between these two questions and change in touching and proximity behaviors from when the confederate was in the room and not in the room. For days since the start of the last cycle and the difference in touching and proximity behavior, only two relationships were found, both when the confederate was female (proximity shoulders closest, r(7) = -.71, $p$ = .031; touching times, r(7) = -.73, $p$ = .027; see table 30). When the confederate was female, and the female member of the couple was earlier in her cycle, the couples sat closer together and touched more times when the confederate was in the room. All other relationships with days since the start of the last cycle were not significant. Irrespective of confederate gender or presence, only the relationship between hormonal birth control and the difference in proximity closest was significant (r(48) = .33, $p$ = .018; see table 27). When the female participant was not on hormonal birth control, the couple sat closer together when the confederate was in the room than when the confederate was not in the room, or during the middle five minutes if there was no confederate. No other relationships were significant (proximity shoulders closest, r(48) = .02, $p$ = .90; proximity shoulders farthest, r(48) = -.05, $p$ = .73; times touching, r(48) = .12, $p$ = .41; touching duration, r(48) = .21, $p$ = .14). When confederate gender was taken into consideration, hormonal birth control significantly correlated with both touching behaviors when the confederate was female (touching times; r(10) = .71, $p$ = .010, touching duration, r(10) = .60, $p$ = .040). When the female participant was not on hormonal birth control, and there was a female confederate, the couple touched more times and longer when the confederate was in the room than when she was not in the room, as opposed to female participants

who were on hormonal birth control. No other significant correlations were found when the confederate was female, though proximity closest was less than $p = .10$ (proximity shoulders closest, $r(10) = .31$, $p = .32$; proximity shoulders farthest, $r(10) = .49$, $p = .11$; proximity closest, $r(10) = .55$, $p = .064$). No significant correlations between hormonal birth control and change in touching and proximity behaviors were found when the confederate was male or when there was no confederate.

# CHAPTER 4: DISCUSSION

The present study featured two innovative approaches to the study of mate retention tactics: 1) use of direct behavioral observation and 2) the assessment of a biological factor (testosterone) previously linked to sexual competitive and dominant behaviors in humans. While the study was conducted in a laboratory setting, the facilities used were ideal for human ethological research. The room that the participants interacted with the confederate does not look like a research lab; the participants believed that they were in a waiting room, prior to the actual research, giving the research a more naturalistic setting. When participants are in a more natural setting, they behave more normally than they would in a laboratory setting.

While the sample size was smaller than is ideal, the demographics revealed a wide range of racial and ethnic backgrounds, making the study more generalizable. The average age, at 23.26, was lower than in the general population, but the nature of the study, looking at hormonal data, meant that age had to be, at least partially, controlled for to avoid the confounding factor of age on testosterone. Another potential confound of testosterone, that testosterone tends to increase early in a relationship, was avoided by requiring participants to have been in a relationship for at least one year. However, given that the study mostly consisted of couples in which at least one member of the dyad was in college, the average duration of the relationship, 18 months, was also lower than in the general population.

## Proximity

Couples sitting closer together in the presence of a romantic rival could mean many different things. The couple could be sitting closer for protection. Humans seek out those they are attached to when they feel threatened. Another reason for sitting closer together in the presence of a potential romantic rival, and consistent with the hypotheses of the current study, is that the

member of the couple who is the same gender as the rival could be using proximity as a mate retention tactic. By sitting closer to their partner and using that closeness to keep track of their partner, they are reducing the chances that their partner could to leave the relationship or commit infidelity. In the present study, the use of proximity as a mate retention tactic was supported.

As predicted in *hypothesis 1*, proximity to an individual's romantic partner was related to the presence of a potential romantic rival. Couples sat closer together while the potential rival was in the room for both male and female rivals. Conversely, the couples did not sit closer together during the middle five minutes in the waiting room, when there was no rival assigned to engage with the couple. All three measures of proximity, closest distance between shoulders, farthest distance between shoulders, and closest distance anywhere on the body, showed this effect, that couples sat closer together when the rival was in the room.

**Touching**

Human touch has many meanings. Touch is used to give comfort and as a means of intimacy. The use of touch, when in the presence of a potential romantic rival, could be used to as a mate retention tactic. In this case, the touching can convey multiple messages. First, the touching tells the potential romantic rival that their partner is not available, that he or she is taken. Second, the touching tells their partner that they are being watched, a form of vigilance. In the present study, the use of touching as a mate retention tactic was partially supported.

As predicted in *hypothesis 2*, the amount of time that couples spent touching was related to the presence of a potential romantic rival. Couples spent a longer time touching each other while the rival was present. This effect held true for both male and female rivals. When there was no rival assigned to the couple, touching duration did not change during the time a rival would have been in the room.

However, contrary to *hypothesis 2*, the amount of times that a couple touched was not related to the presence of a potential romantic rival. Couples did not touch each other more times when a rival was present. This lack of effect remained constant for both male and female rivals and when no rival was assigned.

The contradictory findings for touching are likely due to amount of time touching and number of times touching being potentially inversely related. If a couple spent an entire segment touching, they would only be recorded as touching one time, but would be given the highest score for amount of time touching. While a high number of times touching is an important measure, as it shows how mobile couples are, amount of time touching is likely a better measure of touching used as a mate retention tactic.

**Testosterone**

Change in testosterone is associated with many things: it can predict many behaviors, such as aggression in some cases, response to provocation by a rival, and some measures of dominance. In these cases, it is one of the mechanisms driving these behaviors. Change in testosterone should then also affect mate retention behaviors, at least in some cases, thus being one of the mechanisms diving these behaviors. In the present study, change in testosterone relating to the touching and proximity mate retention tactics was supported in a limited capacity.

As predicted in *hypothesis 3*, rise in testosterone concentrations was related to proximity mate retention tactics, but only in a few instances. An increase in testosterone in male participants was related to couples sitting closer together, as measured by both closest and farthest point between their shoulders. This effect held partially true when the potential romantic rival was a male, though only relating to one measure of proximity, but also held true when there was no rival assigned to the couple.

However, contrary to *hypothesis 3*, for most measures, rise in testosterone concentrations did not relate to proximity and touching behaviors. No effects were found at all in female participants. In male participants, no relationship was found between change in testosterone and touching.

The lack of findings in female participants is not surprising. Not only is it harder to measure testosterone levels in females, the actual testosterone levels tend to have less of an effect on outward behaviors of aggression. The limited findings in male participants was surprising. While the presence of a male romantic rival did show a relationship in one measure of proximity, it was not found in the other measures or in touching. It is possible that the limitations of the study, including a small sample size for each sub-category, are the reason for the limited results. It is also possible that change in testosterone is not the mechanism responsible for the relationship between presence of a potential rival and touching and proximity being used as mate retention tactics, as was predicted.

Interestingly, a rise in testosterone in men was related to multiple proximity and touching behaviors where there was no rival assigned to the couple. In these couples an increase in testosterone was related to couples sitting closer together and touching for longer during the middle half of the time they were in the waiting room. While these findings may be an anomalous type I error, they may also be due to closeness and touch inherently causing a rise in testosterone in men, in preparation for sexual intimacy. The lack of a rival, combined with close proximity and increased touching, may have set the stage for the body of the male participants to interpret a mating opportunity, causing a rise in testosterone.

The results of this study relating to change in testosterone should be interpreted with caution. As stated earlier, the company that issued the testosterone assay kits found issues with

kits from the same lot as eleven of the fifteen kits used in this study. All kits from this lot were ordered destroyed. While running the assay kits, we noticed abnormally low values on the first four plates run. We adjusted some of the chemical ratios used when running the plates and this corrected the abnormally low values obtained. Additionally, we reran the first four plates with new kits that were not from the same lot. It is possible that the values obtained from the kits where the chemical ratios were adjusted are inaccurate, thus invalidating these findings. It is also possible that the limited support for the hypothesis, that change in testosterone is related to mate retention tactics, is due to the error in these kits. Future studies would be needed to elucidate more on this association.

**Mate Retention Inventory**

Much of human mate retention research has been self-reported, specifically using the Mate Retention Inventory (MRI). Of interest in the current study is if these self-reported mate retention tactics relate to observable mate retention behaviors (*hypothesis 4*). While the two MRI scales strongly correlated with each other, overall, they did not correlate with the observable behaviors of touching and proximity. It is possible that the different mate retention tactics are domain specific, in that willingness to use one specific tactic differs from other tactics. If mate retention tactics are domain-specific, then a domain-general scale, such as the MRI, may not relate directly to each of the domain-specific tactics. To determine if this concept is at work, individual items from the MRI relating to proximity and touching were compared to the proximity and touching behaviors. Using these analyses, the results confirmed the prediction of hypothesis 4. When male participants reported a greater desire to stay near their partner, they sat closer to their partner when the male rival was in the room; when they reported a greater desire to hold their partner's hand, they touched their partner more when the male rival was in the room. When female participants

reported a greater desire to stay near their partner, they sat closer to their partner when the female rival was in the room; when they reported a greater desire to hold their partner's hand, they touched their partner more when the female rival was in the room.

**Loyalty**

Another important component of relationships is loyalty. The domain-specific trait of romantic partner loyalty was predicted to relate to mate retention tactics (*hypothesis 5*). Those who have greater romantic partner loyalty should show more mate retention behaviors to keep their partners. Additionally, if a member of the dyad shows willingness to commit infidelity, mate retention tactics performed by both themselves and their partner should increase. The support for this hypothesis was limited to one association. When male participants had a greater willingness to commit infidelity, and a male rival was in the room, the distance between the couple's shoulders closest point was less. All other associations failed to support this hypothesis.

It is possible that the lone significant association was a type I error, and there is no relationship. It is also possible that the effect size is small. Together with the smaller sample size could mean that the lack of findings is due to type II errors. Supporting the possibility of type II errors, many of the associations were approaching significance, with p-values less than .20 at a greater rate than would be expected by chance.

**Rusbult's Model**

Rusbult's Model contains four components: couple satisfaction, investment, commitment, and attentiveness to alternatives. These four components encompass an individual's desire to maintain a romantic relationship. Therefore, each of these components were predicted to relate to the touching and proximity mate retention tactics (*hypothesis 6).*

In the domain of couple satisfaction, as predicted, couple satisfaction was related to times touching in half of the participant/rival categories and touching duration in one category. Overall, couples in which one or both members having a higher couple satisfaction touched each other more times when the rival was in the room. The relationship between couple satisfaction and the number of times touching held true for male participants irrespective of rival gender, male participants when there was a female rival, and female participants when there was no rival. Additionally, when the male in the dyad had greater couple satisfaction the couple spent longer touching when a female rival was in the room. Contrary to what was predicted, couple satisfaction had no relationship to proximity and most touching duration categories.

In the domain of investment in the relationship, contrary to what was predicted, investment did not relate to the mate retention tactics of touching and proximity except in one instance. Investment was related to an increase in touching duration in male participants irrespective of rival gender. When a male participant had higher investment in the relationship, the couple spent more time touching when the rival was in the room. No other relationships were found, though a few were approaching significance and would have likely been significant with a larger sample size. The borderline relationships with investment were with touching duration when the participant was male and the rival was male or female, touching times when the participant was male and the rival was female, and the participant was female and there was no rival, and the farthest distance between shoulders when the participant was female and there was no rival.

In the domain of relationship commitment, as predicted, commitment was related to an increase in the number of times touching while the rival was in the room. This relationship held true for male participants irrespective of rival gender and male participants when a female rival was present. When a male participant had higher commitment to the relationship, the couple

touched each other longer when the rival was in the room, especially if the rival was female. Contrary to what was predicted, commitment did not relate to any other categories of proximity or touching mate retention tactics.

In the domain of attentiveness to alternatives, contrary to what was predicted, attentiveness to alternatives did not relate to the mate retention tactics of touching and proximity except in one instance, attentiveness to alternatives related to times touching when the participant was male and the rival was female. When a male participant spent more focus on alternatives to their partner, the couple touched each other fewer times when a female rival was in the room. No other relationships were found between attentiveness to alternatives and touching and proximity.

Rusbult's model's four parts only partially related to the mate retention tactics of touching and proximity. If there is a relationship between the scales of Rusbult's model and touching and proximity, the strength of the relationship is likely small. A combination of small effect size and small sample size would result in a lot of missed relationships. However, one consistent finding is the relationship between these scales in male participants and touching times and touching duration when the rival was female. Male participants who were more satisfied, invested, committed, and paid less attention to possible alternatives to their partner touched their partner more times and spent more time touching their partner. Even if all these relationships were not significant, the ones that were not still had low p-values. In this case, it is less likely that touch is being used as a form of mate retention, unless the female in the relationship is initiating the touching to guard a highly committed partner. It is more likely that the male who is more committed to his partner is touching his partner more to reassure them that he is not going to stray.

**MARQ**

The Marriage and Relationship Questionnaire (MARQ) provided many useful tools for checking for relationships between the touching and proximity mate retention tactics and various relationship components. The MARQ measures that were analyzed in the current study were relationship satisfaction, worry about partner infidelity, actual infidelity committed, and touching in multiple domains.

**Relationship satisfaction.** The MARQ's Love Scale was used as a measure of relationship satisfaction. This scale is similar to Rusbult's couple satisfaction index but is independent, therefore was included in analysis. Higher relationship satisfaction was predicted to relate to increased use of mate retention tactics (*hypothesis 7*). As predicted, relationship satisfaction related to the number of times touching and touching durations in a few categories, but contrary to what was predicted, it did not relate to any of the proximity measures or the touching measures in the other categories. The relationship between relationship satisfaction and the number of times touching and touching duration were found in male participants when the rival was female, and female participants when the rival was male. The same explanation for the relationships found in Rusbult's model are likely at work here, but also including female participants. The explanation is that instead of touch being used as a mate retention tactic, it could be that touch is being used by the people with high relationship satisfaction to reassure their partner that they are not going to stray.

**Worry about infidelity.** Worrying about one's partner committing infidelity, and through that, being poached away from the relationship, is strongly related to use of mate retention tactics in the literature. Therefore, a greater worry about partner infidelity was predicted to relate to an increased use of mate retention tactics (*hypothesis 8*). There was a little support for this hypothesis, but most associations had no relationship between worry about partner infidelity and touching or

proximity. Male participants who were more worried about their partner being unfaithful spent more time touching their partner while a potential rival was in the room irrespective of rival gender. When rival gender was taken into consideration, only female rivals, not male rivals, resulted in more time spent touching when the male participant had an increased worry about their partner being unfaithful. This is counter to our predictions. If our predictions were true, the increased touching would occur when the rival was the same gender as the individual with the increased worry. As with the previous measures, small effect size combined with a small sample size could be responsible for the lack of findings in the current study.

**Infidelity.** Acts of infidelity can be very damaging to a relationship and may result in mate poaching and cuckoldry. Individuals rarely know when their partners commit an act of infidelity. Even without directly knowing, people are very good at intuiting when their partner is being unfaithful, sometimes only subconsciously. Thus, acts of infidelity were predicted to relate to an increased use of mate retention tactics (*hypothesis 9*). In support of this hypothesis, when male participants had committed past infidelity, the couple spent more time touching when the rival was a female. However, contrary to this hypothesis, no other relationships were found in the direction expected. One interesting finding was that when female participants had committed past infidelity, the couples sat farther apart when the rival was female. While there was a lack of substantial support for this hypothesis, these results should be taken with caution due to the low number of participants who admitted to having committed a past infidelity (22 male and 15 female) with only a fraction those reporting anything greater than a small amount of infidelity (7 male and 4 female).

**Self-report touching.** It has been found that self-reported desire to touch one's partner was related to characteristics that lead to mate retention tactics (Shattuck et. al, 2012). One of the primary reasonings behind the current study was this previous use of self-report touching desire

and wanting to see if this held up with actual touching behavior. Before self-report touching desire could be compared to actual touching as a mate retention tactic, the relationship between self-report touching desire and actual touching behavior had to be analyzed. It was found that self-reported touching desire was related to actual touching behavior in almost all categories. Additionally, two supplemental touching questions were added to the MARQ, specifically asking about desire to touch one's partner in private and in public, rather than just in general. Each of these questions were also related to actual touching behavior. Therefore, it was predicted that an increased desire to touch one's partner would be related to an increased use of touch as a mate retention tactic (*hypothesis 10*). In support of this hypothesis, when a male participant reported a greater desire to touch their partner, the number of times the couple touched increased when a male rival was in the room. This relationship held true for all three touching questions. Contrary to this hypothesis, all other associations between self-reported desire to touch one's partner were not related to touching mate retention tactics.

**Fertility**

Female fertility is another topic that has been related to mate retention tactics, especially in the domain of non-human animal research. Periods of increased female fertility, when the female is most likely to become pregnant, are when their male partners should be especially vigilant against possible cuckoldry, and as a result increase their mate retention tactics. There are two areas of concern relating to the female's ability to get pregnant: use of hormonal birth control, and ovulation. A female that is taking hormonal birth control is less likely to get pregnant, therefore for the purposes of fertility and possible cuckoldry, needs less mate guarding. The number of days each month that a female can get pregnant is limited to her ovulatory cycle; thus, when she will be ovulating. Increased feminine fertility, both lack of birth control and where she was in her

ovulatory cycle, was predicted to relate to an increased use of mate retention tactics (*hypothesis 9*). While there was a strong relationship between hormonal birth control and actual proximity and touching behaviors, there was little support for the hypothesis that female fertility was related to proximity and touching being used as a mate retention tactic. Interestingly, when a female was not on hormonal birth control, the couple sat closer together, touched more times, and touched longer when a female rival was in the room. Additionally, ovulation yielded two relevant results both also when a female rival was in the room. Days since the start of last menstrual cycle, when adjusted to a few days before ovulation, related to both closest point between shoulders and number of times touching. When a female was earlier in her cycle, the couple sat closer together and touched more times when a female rival was in the room. In both of these cases, it could be that a fertile female is using these proximity and touching behaviors as mate retention tactics at a point when she is fertile. These results should be taken with caution, as the fertility questions were added half-way through data collection, so not all participants completed these items.

**Mate Retention in Humans**

Mate retention tactics in humans are difficult to measure, especially in a more naturalistic setting. These tactics are often small and nuanced, making them difficult to observe and measure. Also, these tactics are not performed constantly or consistently, making them even more difficult to observe and measure. In the current study, participants were observed in a more natural setting, but were still manipulated into performing these behaviors by a somewhat forward rival who showed interest in the opposite gender member of the couple.

The Mate Retention Inventory has identified many potential mate retention tactics that humans use. One of those tactics is the use of proximity. While the current study observed no relationships between the touching and proximity mate retention tactics that were found, and the

Mate Retention Inventory, it is not of concern. It is more likely that human mate retention tactics are more nuanced, specifically that they are domain specific. Supporting this is that while the proximity and touching behaviors were related, the relationship was weak and there were more instances in which they differed than they were similar.

In this study, the presence of the confederate resulted in couples sitting closer together and touching each other more. The potential implications of this are that humans are using these behaviors, touching and closer proximity, as mate retention tactics. Through these behaviors, they are preventing potential mate poaching and cuckoldry. Those performing the proximity mate retention tactic are assuring themselves that their partner has not had an opportunity to be unfaithful. Those performing the touching mate retention tactics are using it to tell potential romantic rivals that their partner is taken, while at the same time telling their partner that they are being watched.

**Limitations and Future Directions**

There are many potential limitations to this study, most of which have already been discussed briefly. One potential limitation of this study was the small sample size. The smaller than ideal sample size means that small effects may be missed in the statistical process. Another potential limitation is the small effect sizes. The motivations behind human mate retention tactics are varied and nuanced. Some of the associations examined in this study should be related, but that association should be weak. Smaller effect sizes are difficult to detect. The best way to detect small effect sizes is with larger sample sizes. In the present study, detecting small effect sizes is made even more difficult by the small sample size. Complicating the small sample size is the division into subcategories, first by participant gender, then by confederate gender. These subcategories broke the sample up into ever smaller sample sizes for each category, making even larger effect

sizes more difficult to detect. Moderation, mediation, and multiple regression analyses were planned and conducted for the current study, but no results were found, even in cases where moderation was clearly occurring. This lack of results was likely due to the small sample size. Ideally, this study should be replicated with at least 400 couples to be able to identify some of the smaller effect size results.

As was discussed earlier, there was a problem with the testosterone assay kits that were used in this study. While we feel that the correction that was made after the fourth kit was sufficient, it is still possible that the testosterone values are incorrect and unusable. Future replications should be performed to confirm the testosterone results from this study.

Another potential limitation to the current study is honesty by the participants. It is suspected that some of the participants may have lied about being in a relationship. Extra credit for psychology classes was given for participating in the study. While the study was being conducted, there was a shortage of research studies being conducted, resulting in student's desperation to get into the studies that were being conducted. Due to this desperation, some participants may have lied about being in a relationship with the person that they brought into the lab with them to get credit. Participants also filled out surveys for between twenty-five and forty-five minutes, possibly resulted in fatigue, and some participants may have stopped paying attention to answering the questions honestly.

The primary benefit to this study was that it was observational in nature. There are two potential limitations relating to the observational nature of the study. First, the participants were in a laboratory setting, and the room where they interacted with the confederate had wall-mounted cameras. Most participants noted the cameras in the room. Despite this, it is believed that the deception worked. During the debriefing, most participants acted surprised that the confederate

was part of the study and that they had been recorded. The second limitation related to the observational nature of the study was the quality of the video recordings. The video recordings were low-resolution, which made measuring some touching and proximity behaviors difficult. While this limitation is worrying, the high inter-rater reliability in touching and proximity measures should mitigate those worries. One other complication of the low-resolution recordings was what could be measured. One thing missing from these analyses is who initiated the touching and reduction in proximity. The recordings were not clear enough for this to be coded as a useful variable, so it was not used.

Another concern with the current study is the possibility that the touching and proximity are not being used as mate retention tactics, but are instead being used for some other reason, such as security or affection. While couples did sit closer together and touch more when the confederate was in the room, very few of the expected supplemental relationships were found with touching and proximity. Self-reported mate retention tactics, which should have had strong relationships with the touching and proximity behaviors, failed to have any relationship; the relationship was present when the self-report mate retention tactics were broken down into domain-specific components. It is possible then, that the increased touching and proximity are not mate retention tactics but are instead the result of some other mechanism that would increase those behaviors in the presence of another individual; refuting that are social norms. One of the worries at the onset of this study is that touching and proximity would not be usable, because of social norms against public touching in front of strangers, especially amongst individuals of Arab decent, who made up the second largest group of participants. The fact that couples touched more and sat closer together while the confederate was in the room goes against that social norm, lending more weight towards proximity and touching being used as a mate retention tactic.

Future directions include a replication of this study with a larger sample size, elucidating if touching and proximity are being used as mate retention tactics or for some other reason, a further examination of these behaviors in relation to other mate retention tactics, and a look deeper into who is initiating the touching and proximity behaviors. While the results of this study are not as solid as would be desired, it is hoped that this study will lead to further work that will help answer more questions about human behavior in the context of mate guarding and mate retention tactics.

**Table 1.** Demographics.

| | Total | | | | Male | | | Female | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *N* | Mean | SD | Range | *N* | Mean | SD | *N* | Mean | SD |
| Participants | 194 | | | | 97 | | | 97 | | |
| Age | | 23.26 | 3.48 | 20-32 | | 23.7 | 3.72 | | 22.81 | 3.12 |
| Length of relationship | | 18 mo. | 14 mo. | 12-146 mo. | | | | | | |
| Caucasian | 85 | | | | 42 | | | 43 | | |
| Arabic American | 35 | | | | 19 | | | 16 | | |
| African American | 33 | | | | 16 | | | 17 | | |
| Asian American | 31 | | | | 14 | | | 17 | | |
| Hispanic | 7 | | | | 4 | | | 3 | | |
| Native American | 5 | | | | 3 | | | 2 | | |
| Nationality: other | 13 | | | | 7 | | | 6 | | |
| Multi-racial | 14 | | | | 6 | | | 8 | | |

**Table 2.** Proximity descriptives

| | | | | | Confederate | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total | | | Male | | | Female | | | None | | |
| Measure | Time | *N* | Mean | SD | *N* | Mean | SD | *N* | Mean | SD | *N* | Mean | SD |
| Proximity shoulders closest | Before | 93 | 34.89 | 20.10 | 36 | 29.27 | 20.85 | 42 | 38.69 | 19.64 | 15 | 37.75 | 17.45 |
| | During | 97 | 32.81 | 19.42 | 40 | 25.88 | 17.11 | 42 | 35.33 | 18.00 | 15 | 44.25 | 22.94 |
| | After | 97 | 36.84 | 21.88 | 40 | 30.49 | 20.59 | 42 | 40.07 | 21.10 | 15 | 44.74 | 24.17 |
| | Before/After | 97 | 35.59 | 19.78 | 40 | 29.48 | 19.53 | 42 | 39.38 | 19.18 | 15 | 41.25 | 18.96 |
| | Difference | 97 | -2.78 | 6.25 | 40 | -3.61 | 3.72 | 42 | -4.05 | 5.82 | 15 | 3.00 | 9.35 |
| Proximity shoulders farthest | Before | 93 | 43.13 | 21.66 | 36 | 36.61 | 23.50 | 42 | 46.53 | 19.89 | 15 | 49.29 | 18.94 |
| | During | 97 | 37.85 | 22.02 | 40 | 30.06 | 21.24 | 42 | 40.02 | 18.76 | 15 | 52.50 | 24.91 |
| | After | 97 | 43.00 | 23.94 | 40 | 36.42 | 24.94 | 42 | 46.44 | 21.79 | 15 | 50.92 | 24.13 |
| | Before/After | 97 | 42.69 | 21.79 | 40 | 36.10 | 22.94 | 42 | 46.31 | 19.84 | 15 | 50.10 | 20.36 |
| | Difference | 97 | -4.84 | 8.76 | 40 | -6.04 | 6.22 | 42 | -6.28 | 8.41 | 15 | 2.40 | 12.05 |
| Proximity closest | Before | 93 | 5.19 | 8.61 | 36 | 5.17 | 7.37 | 42 | 4.39 | 8.35 | 15 | 7.47 | 11.84 |
| | During | 97 | 4.26 | 6.71 | 40 | 4.53 | 6.09 | 42 | 2.81 | 5.58 | 15 | 7.60 | 9.78 |
| | After | 97 | 6.33 | 9.41 | 40 | 5.74 | 7.13 | 42 | 5.10 | 8.86 | 15 | 11.33 | 14.26 |
| | Before/After | 97 | 5.74 | 8.13 | 40 | 5.41 | 6.57 | 42 | 4.74 | 7.20 | 15 | 9.40 | 12.78 |
| | Difference | 97 | -1.48 | 4.37 | 40 | -0.88 | 2.16 | 42 | -1.94 | 5.02 | 15 | -1.8 | 6.5 |

**Table 3.** Proximity paired-samples *t*-tests

| | | | Confederate | | |
|---|---|---|---|---|---|
| Measure | Measure | *Total* | Male | Female | None |
| Proximity shoulders closest | Mean Difference | **2.78*** ** | **3.61*** ** | **4.05*** ** | -3.00 |
| | SD | 6.25 | 3.72 | 5.82 | 9.35 |
| | *t* | 4.38 | 6.14 | 4.51 | -1.24 |
| | p-value | <.001 | <.001 | <.001 | .23 |
| Proximity shoulders farthest | Mean Difference | **4.84*** ** | **6.04*** ** | **6.28*** ** | 0.65 |
| | SD | 8.76 | 6.22 | 8.14 | 9.97 |
| | *t* | 5.44 | 6.15 | 4.84 | -0.419 |
| | p-value | <.001 | <.001 | <.001 | 0.45 |
| Proximity closest | Mean Difference | **1.49** ** | **0.88* ** | **1.94* ** | 1.80 |
| | SD | 4.37 | 2.16 | 5.02 | 6.51 |
| | *t* | 3.34 | 2.58 | 2.50 | 1.07 |
| | p-value | .001 | .014 | .017 | .30 |

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

**Table 4.** Touching descriptives

| | | | | | Confederate | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total | | | Male | | | Female | | | None | |
| Measure | Time | *N* | Mean | SD | *N* | Mean | SD | *N* | Mean | SD | *N* | Mean | SD |
| Touching times | Before | 93 | 0.99 | 0.98 | 36 | 1.06 | 0.94 | 42 | 0.97 | 1.01 | 15 | 0.86 | 1.06 |
| | During | 97 | 0.92 | 0.87 | 40 | 0.80 | 0.76 | 42 | 1.05 | 0.92 | 15 | 0.88 | 0.97 |
| | After | 97 | 0.91 | 1.11 | 40 | 0.87 | 0.89 | 42 | 0.97 | 1.15 | 15 | 0.88 | 1.53 |
| | Before/After | 97 | 0.94 | 0.93 | 40 | 0.95 | 0.78 | 42 | 0.97 | 0.95 | 15 | 0.87 | 1.28 |
| | Difference | 97 | -0.36 | 0.86 | 40 | -0.46 | 0.86 | 42 | -0.38 | 0.84 | 15 | 0.01 | 0.90 |
| Touching duration | Before | 93 | 11.33 | 11.08 | 36 | 12.18 | 11.06 | 42 | 10.63 | 10.96 | 15 | 11.28 | 12.04 |
| | During | 97 | 13.85 | 11.70 | 40 | 13.60 | 11.29 | 42 | 15.22 | 12.07 | 15 | 10.66 | 11.83 |
| | After | 97 | 10.36 | 11.32 | 40 | 10.77 | 11.54 | 42 | 10.74 | 11.14 | 15 | 8.19 | 11.78 |
| | Before/After | 97 | 10.80 | 9.92 | 40 | 11.33 | 10.02 | 42 | 10.68 | 9.84 | 15 | 9.73 | 10.43 |
| | Difference | 97 | -1.97 | 7.82 | 40 | -3.15 | 6.75 | 42 | -1.87 | 9.16 | 15 | 0.93 | 5.80 |

**Table 5.** Touching paired-samples *t*-tests

| | | | Confederate | | |
|---|---|---|---|---|---|
| Measure | Statistic | Total | Male | Female | None |
| Touching Times | Mean Difference | 0.02 | 0.15 | 0.09 | 0.01 |
| | SD | 0.83 | 0.82 | 0.82 | 0.9 |
| | *t* | 0.25 | 1.14 | 0.7 | 0.04 |
| | p-value | .81 | .26 | .49 | .97 |
| Touching Duration | Mean Difference | **3.04*** ** | **2.26** ** | **4.54*** ** | 0.93 |
| | SD | 5.39 | 3.82 | 6.17 | 5.8 |
| | *t* | 5.56 | 3.75 | 4.84 | 0.62 |
| | p-value | <.001 | .001 | <.001 | .55 |

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

**Table 6.** Testosterone

| Measure | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | .08 | **.23*** | **.32*** | .07 | **.64*** | -.01 | .04 | .02 | -.17 |
| | p-value | .28 | .026 | .048 | .67 | .011 | .92 | .82 | .92 | .59 |
| | *n* | 176 | 92 | 39 | 38 | 15 | 84 | 39 | 32 | 13 |
| Proximity shoulders farthest | *r* | .08 | **.25*** | .24 | .09 | **.73**** | -.04 | .02 | .12 | -.25 |
| | p-value | .28 | .015 | .14 | .59 | .002 | .74 | .89 | .51 | .42 |
| | *n* | 176 | 92 | 39 | 38 | 15 | 84 | 39 | 32 | 13 |
| Proximity closest | *r* | -.05 | -.05 | .03 | -.08 | .19 | -.05 | -.12 | -.15 | .07 |
| | p-value | .52 | .62 | .88 | .63 | .50 | .64 | .49 | .43 | .82 |
| | *n* | 176 | 92 | 39 | 38 | 15 | 84 | 39 | 32 | 13 |
| Touching Times | *r* | .02 | .05 | .09 | .03 | .16 | .00 | .18 | .08 | .28 |
| | p-value | .75 | .63 | .59 | .85 | .57 | .99 | .28 | .66 | .36 |
| | *n* | 176 | 92 | 39 | 38 | 15 | 84 | 39 | 32 | 13 |
| Touching Duration | *r* | .05 | .05 | .02 | .06 | **.64*** | .12 | .09 | .10 | .40 |
| | p-value | .52 | .63 | .90 | .75 | .010 | .29 | .57 | .60 | .18 |
| | *n* | 176 | 92 | 39 | 38 | 15 | 84 | 39 | 32 | 13 |

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

**Table 7.** Descriptives for Mate Retention Inventory and Romantic Partner Loyalty Scale

| | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Measure | Confederate: | | | Male | Female | None | | Male | Female | None |
| Mate Retention Inventory 1 | Mean | 2.03 | 2.03 | 2.02 | 2.01 | 2.09 | 2.02 | 2.01 | 1.99 | 2.16 |
| | SD | 0.4 | 0.37 | 0.36 | 0.39 | 0.34 | 0.43 | 0.43 | 0.45 | 0.41 |
| | *n* | 193 | 96 | 39 | 42 | 15 | 97 | 40 | 42 | 15 |
| Partner Loyalty 1 | Mean | 6.3 | 6.31 | 6.12 | 6.35 | 6.68 | 6.3 | 6.2 | 6.38 | 6.37 |
| | SD | 0.95 | 0.88 | 0.99 | 0.87 | 0.39 | 1.01 | 1.14 | 1.01 | 0.61 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Partner Loyalty 2 | Mean | 1.65 | 1.75 | 1.68 | 1.89 | 1.53 | 1.55 | 1.68 | 1.47 | 1.43 |
| | SD | 1.17 | 1.29 | 1.06 | 1.45 | 1.42 | 1.04 | 1.19 | 1.03 | 0.54 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |

**Table 8.** Mate Retention Inventory

| | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Measure | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | .01 | .09 | .02 | .20 | -.20 | .10 | .28 | .10 | -.35 |
| | p-value | .89 | .39 | .89 | .20 | .48 | .37 | .077 | .52 | .20 |
| | *n* | 193 | 96 | 39 | 42 | 15 | 97 | 40 | 42 | 15 |
| Proximity shoulders farthest | *r* | -.01 | .06 | .03 | .13 | -.12 | .03 | .08 | -.01 | -.21 |
| | p-value | .87 | .56 | .87 | .41 | .66 | .79 | .61 | .93 | .46 |
| | *n* | 193 | 96 | 39 | 42 | 15 | 97 | 40 | 42 | 15 |
| Proximity closest | *r* | .02 | .10 | .15 | .14 | -.25 | .12 | -.01 | .05 | .50 |
| | p-value | .78 | .35 | .37 | .38 | .37 | .25 | .93 | .77 | .058 |
| | *n* | 193 | 96 | 39 | 42 | 15 | 97 | 40 | 42 | 15 |
| Touching Times | *r* | .07 | .13 | .03 | .20 | .20 | .01 | .03 | .17 | -.49 |
| | p-value | .36 | .20 | .84 | .21 | .47 | .91 | .88 | .28 | .065 |
| | *n* | 193 | 96 | 39 | 42 | 15 | 97 | 40 | 42 | 15 |
| Touching Duration | *r* | -.01 | .11 | -.03 | .27 | -.04 | -.11 | .13 | .16 | -.31 |
| | p-value | .87 | .30 | .85 | .090 | .88 | .27 | .42 | .33 | .27 |
| | *n* | 193 | 96 | 39 | 42 | 15 | 97 | 40 | 42 | 15 |

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

**Table 9.** Romantic Partner Loyalty Scale 1

| | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Measure | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | -.06 | -.15 | -.21 | -.12 | -.01 | .01 | .10 | -.02 | -.20 |
| | p-value | .39 | .13 | .19 | .47 | .98 | .94 | .51 | .90 | .47 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Proximity shoulders farthest | *r* | .01 | .10 | -.21 | .06 | -.19 | .10 | .11 | .14 | -.09 |
| | p-value | .88 | .33 | .19 | .70 | .49 | .33 | .48 | .40 | .76 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Proximity closest | *r* | -.06 | -.05 | -.05 | .21 | -.10 | -.05 | -.03 | -.11 | .08 |
| | p-value | .42 | .64 | .78 | .19 | .71 | .50 | .84 | .51 | .79 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Touching Times | *r* | .10 | .20 | .10 | **.41**** | .39 | .02 | .02 | .03 | .23 |
| | p-value | .16 | .054 | .56 | .008 | .15 | .86 | .92 | .87 | .41 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Touching Duration | *r* | .06 | .00 | .17 | .21 | .06 | .11 | .23 | .00 | .11 |
| | p-value | .40 | .99 | .30 | .19 | .85 | .27 | .14 | .99 | .70 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |

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

**Table 10.** Romantic Partner Loyalty Scale 2

| | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Measure | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | .06 | .01 | **.35*** | .17 | .13 | -.14 | .22 | .02 | -.49 |
| | p-value | .41 | .96 | .029 | .29 | .66 | .18 | .17 | .91 | .064 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Proximity shoulders farthest | *r* | .04 | .08 | .15 | .17 | -.08 | .00 | .07 | .11 | -.25 |
| | p-value | .55 | .43 | .36 | .28 | .78 | .99 | .67 | .51 | .36 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Proximity closest | *r* | .12 | .13 | .25 | .07 | -.06 | -.11 | .15 | .05 | -.15 |
| | p-value | .093 | .20 | .12 | .68 | .84 | .28 | .36 | .78 | .60 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Touching Times | *r* | -.05 | -.11 | -.01 | -.23 | -.09 | -.02 | -.00 | .02 | -.22 |
| | p-value | .49 | .29 | .97 | .15 | .76 | .83 | .99 | .91 | .44 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Touching Duration | *r* | .05 | -.02 | -.15 | -.15 | -.11 | -.12 | -.16 | -.02 | -.37 |
| | p-value | .54 | .85 | .36 | .34 | .69 | .23 | .31 | .91 | .18 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |

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

**Table 11.** Descriptives for Rusbult scales

| Measure | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Confederate: | | | Male | Female | None | | Male | Female | None |
| Couple Satisfaction Index | Mean | 5.07 | 5.07 | 4.93 | 5.17 | 5.19 | 5.07 | 5.02 | 5.17 | 4.95 |
| | SD | 0.7 | 0.65 | 0.68 | 0.6 | 0.63 | 0.76 | 0.89 | 0.57 | 0.84 |
| | *n* | 193 | 96 | 39 | 42 | 15 | 97 | 40 | 42 | 15 |
| Investment | Mean | 5.87 | 5.72 | 5.69 | 5.54 | 6.28 | 6.02 | 5.73 | 6.2 | 6.33 |
| | SD | 1.62 | 1.54 | 1.64 | 1.45 | 1.54 | 1.68 | 1.66 | 1.58 | 2 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Commitment | Mean | 7.85 | 7.87 | 7.7 | 7.81 | 8.47 | 7.82 | 7.67 | 8.14 | 7.33 |
| | SD | 1.46 | 1.38 | 1.43 | 1.5 | 0.62 | 1.54 | 1.8 | 1.24 | 1.49 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Attentiveness to Alternatives | Mean | 2.02 | 2.06 | 2.12 | 2.11 | 1.81 | 1.97 | 2.07 | 1.91 | 1.9 |
| | SD | 0.59 | 0.59 | 0.62 | 0.58 | 0.62 | 0.59 | 0.72 | 0.49 | 0.4 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |

**Table 12.** Couple Satisfaction Index

| Measure | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | -.04 | -.03 | -.04 | -.13 | .16 | -.04 | -.12 | .02 | -.09 |
| | p-value | .58 | .75 | .82 | .42 | .57 | .67 | .44 | .90 | .76 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Proximity shoulders farthest | *r* | -.06 | -.07 | -.04 | -.14 | -.07 | -.05 | .14 | .14 | -.30 |
| | p-value | .43 | .52 | .80 | .39 | .80 | .62 | .37 | .38 | .28 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Proximity closest | *r* | -.01 | -.01 | .00 | .11 | -.19 | -.01 | .05 | -.02 | -.13 |
| | p-value | .90 | .90 | .99 | .48 | .49 | .95 | .77 | .93 | .65 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Touching Times | *r* | **.21**** | **.26*** | .10 | **.46**** | .39 | .17 | .11 | .07 | **.54*** |
| | p-value | .004 | .011 | .56 | .002 | .16 | .10 | .50 | .66 | .039 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Touching Duration | *r* | .14 | .15 | .08 | **.42**** | .06 | .13 | .18 | .09 | .14 |
| | p-value | .060 | .15 | .65 | .005 | .83 | .22 | .25 | .59 | .61 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |

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

**Table 13.** Investment

| Measure | Participant: / Confederate: | Total | Male | Male | Female | None | Female | Male | Female | None |
|---|---|---|---|---|---|---|---|---|---|---|
| Proximity shoulders closest | *r* | -.02 | .07 | .09 | .09 | -.04 | -.06 | -.01 | .01 | -.29 |
| | p-value | .98 | .53 | .59 | .59 | .90 | .56 | .96 | .97 | .30 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Proximity shoulders farthest | *r* | -.07 | .01 | .13 | -.02 | -.20 | -.13 | -.14 | .05 | -.48 |
| | p-value | .36 | .92 | .42 | .93 | .48 | .20 | .38 | .78 | .069 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Proximity closest | *r* | -.04 | .03 | .11 | .06 | -.15 | -.11 | -.13 | -.06 | .02 |
| | p-value | .56 | .81 | .50 | .70 | .60 | .31 | .41 | .74 | .94 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Touching Times | *r* | .08 | .11 | .04 | .30 | .02 | .06 | .05 | .01 | .50 |
| | p-value | .27 | .30 | .83 | .060 | .95 | .58 | .76 | .93 | .057 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Touching Duration | *r* | .12 | **.22*** | .31 | .31 | .07 | .04 | .12 | .02 | .04 |
| | p-value | .093 | .031 | .059 | .052 | .79 | .73 | .43 | .93 | .88 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |

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

**Table 14.** Relationship Commitment Inventory

| Measure | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | .00 | -.01 | -.10 | .06 | -.02 | .01 | -.01 | .02 | .07 |
| | p-value | .96 | .95 | .54 | .72 | .94 | .91 | .94 | .90 | .81 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Proximity shoulders farthest | *r* | -.04 | -.04 | -.10 | -.04 | -.23 | -.03 | -.10 | .15 | -.27 |
| | p-value | .63 | .71 | .55 | .80 | .42 | .76 | .53 | .36 | .34 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Proximity closest | *r* | -.03 | -.06 | -.01 | .00 | -.30 | .00 | -.02 | -.03 | .06 |
| | p-value | .70 | .55 | .96 | .98 | .28 | .98 | .92 | .84 | .84 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Touching Times | *r* | **.18*** | **.21*** | .10 | **.40**** | .23 | .15 | -.02 | .09 | **.65**** |
| | p-value | .015 | .046 | .53 | .009 | .41 | .14 | .89 | .58 | .008 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Touching Duration | *r* | .09 | .05 | -.05 | .20 | -.14 | .12 | .19 | .04 | .16 |
| | p-value | .23 | .62 | .76 | .21 | .62 | .25 | .24 | .81 | .58 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |

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

**Table 15.** Attentiveness to Alternatives Inventory

| | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Measure | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | .01 | -.03 | .03 | -.14 | .15 | .05 | .01 | .04 | .21 |
| | p-value | .88 | .76 | .85 | .37 | .60 | .61 | .94 | .81 | .46 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Proximity shoulders farthest | *r* | -.04 | -.11 | .03 | -.19 | .00 | .03 | .13 | -.14 | .40 |
| | p-value | .60 | .31 | .84 | .24 | .99 | .80 | .43 | .40 | .14 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Proximity closest | *r* | .03 | .00 | .01 | -.14 | .16 | .05 | .06 | .00 | .08 |
| | p-value | .71 | .99 | .97 | .39 | .58 | .61 | .71 | .98 | .77 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Touching Times | *r* | -.11 | -.10 | -.03 | **-.34*** | .10 | -.11 | -.14 | -.07 | -.42 |
| | p-value | .15 | .32 | .85 | .031 | .71 | .29 | .39 | .69 | .12 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |
| Touching Duration | *r* | -.11 | -.09 | -.05 | -.24 | .24 | -.13 | -.25 | -.09 | -.05 |
| | p-value | .13 | .38 | .76 | .10 | .38 | .21 | .11 | .57 | .86 |
| | *n* | 192 | 95 | 39 | 41 | 15 | 97 | 40 | 42 | 15 |

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

**Table 16.** Descriptives for MARQ

| Measure | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Confederate: | | | Male | Female | None | | Male | Female | None |
| Love Scale | Mean | 4.55 | 4.54 | 4.51 | 4.49 | 4.76 | 4.55 | 4.49 | 4.61 | 4.56 |
| | SD | 0.45 | 0.41 | 0.42 | 0.44 | 0.23 | 0.49 | 0.6 | 0.36 | 0.46 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Worry about infidelity | Mean | 1.71 | 1.78 | 1.9 | 1.69 | 1.73 | 1.63 | 1.5 | 1.71 | 1.73 |
| | SD | 0.81 | 0.78 | 0.81 | 0.75 | 0.8 | 0.83 | 0.6 | 0.94 | 1.03 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Infidelity | Mean | 1.71 | 1.78 | 1.9 | 1.69 | 1.73 | 1.63 | 1.5 | 1.71 | 1.73 |
| | SD | 0.81 | 0.78 | 0.81 | 0.75 | 0.8 | 0.83 | 0.6 | 0.94 | 1.03 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Touching | Mean | 1.71 | 1.78 | 1.9 | 1.69 | 1.73 | 1.63 | 1.5 | 1.71 | 1.73 |
| General | SD | 0.81 | 0.78 | 0.81 | 0.75 | 0.8 | 0.83 | 0.6 | 0.94 | 1.03 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Public | Mean | 1.71 | 1.78 | 1.9 | 1.69 | 1.73 | 1.63 | 1.5 | 1.71 | 1.73 |
| | SD | 0.81 | 0.78 | 0.81 | 0.75 | 0.8 | 0.83 | 0.6 | 0.94 | 1.03 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Private | Mean | 1.71 | 1.78 | 1.9 | 1.69 | 1.73 | 1.63 | 1.5 | 1.71 | 1.73 |
| | SD | 0.81 | 0.78 | 0.81 | 0.75 | 0.8 | 0.83 | 0.6 | 0.94 | 1.03 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |

**Table 17.** MARQ Love Scale

| | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Measure | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | -.05 | -.09 | -.07 | -.08 | -.29 | -.02 | -.02 | .04 | -.23 |
| | p-value | .48 | .38 | .67 | .60 | .29 | .85 | .92 | .79 | .42 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Proximity shoulders farthest | *r* | -.02 | -.05 | -.01 | -.13 | -.13 | -.00 | .09 | .13 | **-.54*** |
| | p-value | .74 | .64 | .95 | .43 | .65 | .97 | .58 | .44 | .038 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Proximity closest | *r* | -.04 | -.09 | -.09 | -.01 | -.16 | .01 | .02 | .03 | -.06 |
| | p-value | .58 | .36 | .60 | .96 | .57 | .96 | .88 | .84 | .84 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Touching Times | *r* | **.18*** | .17 | .08 | **.36*** | .17 | .18 | .10 | .15 | **.58*** |
| | p-value | .015 | .098 | .61 | .018 | .55 | .077 | .53 | .37 | .024 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Touching Duration | *r* | .13 | .15 | .08 | **.41**** | -.13 | .12 | **.31*** | .04 | .04 |
| | p-value | .063 | .15 | .63 | .008 | .63 | .23 | .048 | .80 | .89 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |

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

**Table 18.** MARQ worry about infidelity

| | Participant: | Total | Male | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Measure | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | -.06 | -.13 | -.14 | -.12 | -.14 | -.00 | -.08 | -.09 | .34 |
| | p-value | .39 | .22 | .40 | .44 | .61 | .97 | .61 | .57 | .22 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Proximity shoulders farthest | *r* | -.04 | -.14 | -.20 | -.04 | -.25 | .06 | .03 | -.05 | .32 |
| | p-value | .62 | .17 | .22 | .81 | .38 | .56 | .86 | .76 | .25 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Proximity closest | *r* | -.06 | -.08 | -.09 | -.25 | .34 | -.05 | -.27 | .01 | .27 |
| | p-value | .39 | .46 | .57 | .11 | .21 | .63 | .095 | .95 | .34 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Touching Times | *r* | .05 | .14 | .03 | **.53*** ** | -.45 | .04 | .21 | .07 | -.11 |
| | p-value | .49 | .17 | .87 | <.001 | .089 | .74 | .19 | .68 | .71 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |
| Touching Duration | *r* | .13 | **.21*** | .13 | **.40**** | -.13 | .06 | .02 | .01 | .20 |
| | p-value | .070 | .040 | .44 | .009 | .64 | .58 | .92 | .93 | .47 |
| | *n* | 194 | 97 | 40 | 42 | 15 | 97 | 40 | 42 | 15 |

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

**Table 19.** MARQ infidelity committed

| Measure | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | .01 | -.04 | -.06 | -.03 | .12 | .05 | .17 | -.10 | .14 |
| | p-value | .94 | .71 | .69 | .83 | .67 | .64 | .29 | .56 | .62 |
| | *n* | 192 | 97 | 40 | 42 | 15 | 95 | 39 | 41 | 15 |
| Proximity shoulders farthest | *r* | -.08 | -.07 | -.10 | -.14 | .13 | -.09 | .14 | **-.37*** | .15 |
| | p-value | .26 | .48 | .56 | .36 | .65 | .37 | .40 | .019 | .61 |
| | *n* | 192 | 97 | 40 | 42 | 15 | 95 | 39 | 41 | 15 |
| Proximity closest | *r* | -.06 | -.07 | .05 | -.09 | -.20 | -.05 | .22 | **-.35*** | **.57*** |
| | p-value | .44 | .51 | .78 | .56 | .48 | .67 | .17 | .024 | .026 |
| | *n* | 192 | 97 | 40 | 42 | 15 | 95 | 39 | 41 | 15 |
| Touching Times | *r* | .06 | .10 | .04 | **.31*** | -.09 | .02 | .09 | -.05 | .22 |
| | p-value | 0.41 | .33 | .80 | .043 | .74 | .85 | .57 | .77 | .43 |
| | *n* | 192 | 97 | 40 | 42 | 15 | 95 | 39 | 41 | 15 |
| Touching Duration | *r* | .00 | .02 | -.03 | .14 | -.10 | -.02 | .12 | -.10 | .19 |
| | p-value | .97 | .88 | .84 | .39 | .71 | .84 | .47 | .53 | .50 |
| | *n* | 192 | 97 | 40 | 42 | 15 | 95 | 39 | 41 | 15 |

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

**Table 20.** MARQ general touching

| | | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Measure | Time | Confederate: | | | Male | Female | None | | Male | Female | None |
| Touching times | Before | *r* | **.36*** ** | **.23*** | .20 | .21 | .34 | **.28**** | **.36*** | .19 | .39 |
| | | p-value | <.001 | .029 | .26 | .19 | .21 | .006 | .030 | .24 | .15 |
| | | *n* | 186 | 93 | 36 | 42 | 15 | 93 | 36 | 42 | 15 |
| | During | *r* | **.14*** | .02 | .05 | .02 | .23 | **.25*** | **.35*** | .03 | .40 |
| | | p-value | .049 | .87 | .75 | .90 | .41 | .015 | .030 | .85 | .14 |
| | | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| | After | *r* | **.21**** | **.23*** | .28 | .21 | .26 | **.20*** | 0.29 | .02 | .34 |
| | | p-value | .004 | .023 | .080 | .19 | .36 | .048 | 0.078 | .92 | .22 |
| | | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Touching duration | Before | *r* | **.20**** | .09 | .04 | .10 | .16 | **.30**** | 0.32 | .19 | **.58*** |
| | | p-value | 0.005 | .38 | .83 | .52 | .57 | .003 | .059 | .23 | .023 |
| | | *n* | 186 | 93 | 36 | 42 | 15 | 96 | 36 | 42 | 15 |
| | During | *r* | **.20**** | .13 | .19 | .04 | .30 | **.28**** | **.47**** | .02 | .40 |
| | | p-value | .006 | .21 | .24 | .80 | .29 | .006 | .003 | .89 | .14 |
| | | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| | After | *r* | **.24**** | .09 | .21 | .03 | .16 | **.29**** | **.45**** | .06 | .36 |
| | | p-value | .001 | .37 | .20 | .83 | .56 | .004 | .004 | .70 | .18 |
| | | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |

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

**Table 21.** MARQ general touching 2

| | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Measure | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | -.03 | -.06 | .02 | -.08 | -.26 | -.01 | -.10 | .13 | .02 |
| | p-value | .66 | .54 | .92 | .61 | .35 | .95 | .57 | .40 | .95 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Proximity shoulders farthest | *r* | .01 | -.08 | .07 | -.07 | -.44 | .09 | .06 | .19 | .03 |
| | p-value | .89 | .42 | .69 | .67 | .099 | .39 | .71 | .24 | .92 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Proximity closest | *r* | -.04 | -.00 | .01 | -.03 | .03 | -.08 | -.12 | .01 | -.15 |
| | p-value | .56 | .99 | .97 | .84 | .90 | .45 | .48 | .95 | .60 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Touching Times | *r* | **.15*** | **.27**** | **.34*** | .25 | .17 | .05 | .08 | .01 | .09 |
| | p-value | .038 | .007 | .031 | .11 | .54 | .64 | .64 | .96 | .76 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Touching Duration | *r* | .06 | .05 | .13 | .05 | -.28 | .06 | .09 | .20 | .15 |
| | p-value | .45 | .65 | .44 | .75 | .32 | .55 | .61 | .20 | .59 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |

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

**Table 22.** MARQ public touching

| | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Measure | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | .07 | .07 | .09 | .06 | .07 | .06 | .03 | .21 | -.15 |
| | p-value | .36 | .49 | .60 | .73 | .81 | .55 | .85 | .18 | .59 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Proximity shoulders farthest | *r* | .09 | .07 | .04 | .09 | -.03 | .10 | .04 | **.33*** | -.26 |
| | p-value | .24 | .49 | .81 | .58 | .92 | .34 | .61 | .034 | .35 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Proximity closest | *r* | -.07 | -.07 | .02 | -.12 | .05 | -.08 | -.17 | .06 | -.32 |
| | p-value | .31 | .49 | .92 | .47 | .87 | .46 | .29 | .72 | .24 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Touching Times | *r* | .11 | .15 | **.36*** | .02 | .14 | .07 | .02 | .04 | .40 |
| | p-value | .14 | .15 | .022 | .91 | .61 | .52 | .92 | .80 | .14 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Touching Duration | *r* | .06 | .10 | .02 | .20 | .26 | .02 | .18 | .02 | .32 |
| | p-value | .42 | .34 | .91 | .20 | .36 | .86 | .27 | .92 | .25 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |

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

**Table 23.** MARQ private touching

| | Participant: | Total | Male | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Measure | Confederate: | | | Male | Female | None | | Male | Female | None |
| Proximity shoulders closest | *r* | -.06 | -.08 | -.17 | .08 | -.48 | -.04 | -.08 | .12 | -.18 |
| | p-value | .41 | .45 | .30 | .63 | .069 | .68 | .64 | .45 | .51 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Proximity shoulders farthest | *r* | -.02 | -.09 | .02 | -.10 | **.54*** | .04 | .02 | .24 | -.24 |
| | p-value | .74 | .38 | .89 | .51 | .039 | .69 | .89 | .12 | .42 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Proximity closest | *r* | -.11 | -.11 | -.12 | -.06 | -.16 | -.11 | -.23 | .02 | .07 |
| | p-value | .14 | .29 | .46 | .73 | .58 | .30 | .15 | .89 | .80 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Touching Times | *r* | .12 | .18 | .31 | .15 | .17 | .07 | .08 | -.01 | .27 |
| | p-value | .090 | .086 | .056 | .34 | .55 | .49 | .64 | .95 | .34 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |
| Touching Duration | *r* | -.03 | -.02 | .10 | -.03 | -.30 | -.03 | -.23 | .15 | .15 |
| | p-value | .70 | .81 | .54 | .86 | .28 | .76 | .17 | .33 | .60 |
| | *n* | 193 | 97 | 40 | 42 | 15 | 96 | 39 | 42 | 15 |

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

**Table 24.** Descriptives for fertility items

| | Participant: Female | | | | |
|---|---|---|---|---|---|
| Measure | Confederate: | | Male | Female | None |
| Hormonal birth control | Yes | 17 | 10 | 4 | 3 |
| | No | 33 | 19 | 8 | 6 |
| | *n* | 50 | 29 | 12 | 9 |
| Cycle (days) | Mean | 14.85 | 13.72 | 14.67 | 19.14 |
| | SD | 7.93 | 8.09 | 8.02 | 6.69 |
| | *n* | 41 | 25 | 9 | 7 |

**Table 25.** Birth control and proximity raw

| Measure | Time | Confederate: | Total | Male | Female | None |
|---|---|---|---|---|---|---|
| Shoulders closest | Before | *r* | .10 | **.43*** | -.36 | -.54 |
| | | p-value | .52 | .025 | .24 | .13 |
| | | *n* | 48 | 27 | 12 | 9 |
| | During | *r* | .05 | **.40*** | -.47 | -.39 |
| | | p-value | .76 | .031 | .13 | .31 |
| | | *n* | 50 | 29 | 12 | 9 |
| | After | *r* | .02 | .34 | -.47 | -.37 |
| | | p-value | .89 | .073 | .12 | .33 |
| | | *n* | 50 | 29 | 12 | 9 |
| Shoulders farthest | Before | *r* | .09 | **.42*** | -.42 | -.52 |
| | | p-value | .53 | .03 | .18 | .15 |
| | | *n* | 48 | 27 | 12 | 9 |
| | During | *r* | .10 | **.39*** | -.37 | -.35 |
| | | p-value | .52 | .036 | .23 | .36 |
| | | *n* | 50 | 29 | 12 | 9 |
| | After | *r* | .09 | **.37*** | -.49 | -.21 |
| | | p-value | .54 | .047 | .10 | .58 |
| | | *n* | 50 | 29 | 12 | 9 |
| Closest | Before | *r* | .19 | **.39*** | .03 | -.03 |
| | | p-value | .19 | .044 | .94 | .94 |
| | | *n* | 48 | 27 | 12 | 9 |
| | During | *r* | .24 | **.37*** | .03 | .20 |
| | | p-value | .09 | .050 | .93 | .61 |
| | | *n* | 50 | 29 | 12 | 9 |
| | After | *r* | .01 | **.37*** | -.46 | -.01 |
| | | p-value | .94 | .048 | .13 | .97 |
| | | *n* | 50 | 29 | 12 | 9 |

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

**Table 26.** Birth control and touching raw

| Measure | Time | Confederate: | Total | Male | Female | None |
|---|---|---|---|---|---|---|
| Touching times | Before | *r* | .18 | .04 | .47 | .35 |
| | | p-value | .23 | .83 | .16 | .35 |
| | | *n* | 48 | 27 | 12 | 9 |
| | During | *r* | .10 | .05 | .38 | .20 |
| | | p-value | .49 | .81 | .23 | .61 |
| | | *n* | 50 | 29 | 12 | 9 |
| | After | *r* | .01 | .34 | .42 | .35 |
| | | p-value | .93 | .076 | .18 | .36 |
| | | *n* | 50 | 29 | 12 | 9 |
| Touching duration | Before | *r* | .07 | .09 | .32 | .22 |
| | | p-value | 0.64 | .67 | .31 | .58 |
| | | *n* | 48 | 27 | 12 | 9 |
| | During | *r* | .16 | .35 | .23 | .09 |
| | | p-value | .28 | .064 | .47 | .83 |
| | | *n* | 50 | 29 | 12 | 9 |
| | After | *r* | .19 | **.42*** | .31 | .04 |
| | | p-value | .18 | .025 | .33 | .92 |
| | | *n* | 50 | 29 | 12 | 9 |

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

**Table 27.** Birth control and change in proximity and touching

| Measure | Confederate: | Total | Male | Female | None |
|---|---|---|---|---|---|
| Proximity shoulders closest | *r* | .02 | -.03 | .31 | -.11 |
| | p-value | .90 | .89 | .32 | .78 |
| | *n* | 50 | 29 | 12 | 9 |
| Proximity shoulders farthest | *r* | -.05 | -.18 | .49 | -.15 |
| | p-value | .73 | .37 | .11 | .70 |
| | *n* | 50 | 29 | 12 | 9 |
| Proximity closest | *r* | **.33*** | .15 | .55 | .39 |
| | p-value | .018 | .20 | .064 | .30 |
| | *n* | 50 | 29 | 12 | 9 |
| Touching Times | *r* | .12 | .08 | **.71*** | .29 |
| | p-value | .41 | .68 | .010 | .46 |
| | *n* | 50 | 29 | 12 | 9 |
| Touching Duration | *r* | .21 | .01 | **.60*** | .46 |
| | p-value | .14 | .96 | .040 | .21 |
| | *n* | 50 | 29 | 12 | 9 |

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

**Table 28.** Cycle and proximity raw

| Measure | Time | Confederate: | Total | Male | Female | None |
|---|---|---|---|---|---|---|
| Shoulders closest | Before | *r* | -.11 | -.04 | **-.85**** | .30 |
| | | p-value | .49 | .87 | .004 | .51 |
| | | *n* | 39 | 23 | 9 | 7 |
| | During | *r* | -.06 | -.07 | -.59 | .04 |
| | | p-value | .69 | .75 | .094 | .94 |
| | | *n* | 41 | 25 | 9 | 7 |
| | After | *r* | -.15 | -.08 | -.47 | -.10 |
| | | p-value | .37 | .71 | .20 | .83 |
| | | *n* | 41 | 25 | 9 | 7 |
| Shoulders farthest | Before | *r* | -.13 | -.03 | **-.83**** | -.00 |
| | | p-value | .45 | .90 | .006 | .99 |
| | | *n* | 39 | 23 | 9 | 7 |
| | During | *r* | -.01 | -.02 | -.49 | -.03 |
| | | p-value | .96 | .94 | .18 | .95 |
| | | *n* | 41 | 25 | 9 | 7 |
| | After | *r* | -.14 | -.08 | -.47 | -.20 |
| | | p-value | .39 | .70 | .21 | .66 |
| | | *n* | 41 | 25 | 9 | 7 |
| Closest | Before | *r* | -.22 | -.08 | -.41 | -.28 |
| | | p-value | .19 | .70 | .28 | .54 |
| | | *n* | 39 | 23 | 9 | 7 |
| | During | *r* | -.01 | -.10 | .01 | .22 |
| | | p-value | .95 | .63 | .98 | .64 |
| | | *n* | 41 | 25 | 9 | 7 |
| | After | *r* | .01 | .02 | -.06 | .08 |
| | | p-value | .96 | .94 | .87 | .86 |
| | | *n* | 41 | 25 | 9 | 7 |

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

**Table 29.** Cycle and touching raw

| Measure | Time | Confederate: | Total | Male | Female | None |
|---|---|---|---|---|---|---|
| Touching times | Before | *r* | -.08 | .06 | -.56 | .11 |
| | | p-value | .65 | .80 | .12 | .82 |
| | | *n* | 39 | 23 | 9 | 7 |
| | During | *r* | -.08 | -.18 | -.47 | .43 |
| | | p-value | .63 | .40 | .21 | .33 |
| | | *n* | 41 | 25 | 9 | 7 |
| | After | *r* | .12 | -.13 | -.57 | .23 |
| | | p-value | .44 | .55 | .11 | .62 |
| | | *n* | 41 | 25 | 9 | 7 |
| Touching duration | Before | *r* | -.31 | -.15 | -.48 | -.51 |
| | | p-value | .059 | .50 | .19 | .24 |
| | | *n* | 39 | 23 | 9 | 7 |
| | During | *r* | -.24 | -.18 | -.48 | -.18 |
| | | p-value | .14 | .39 | .19 | .71 |
| | | *n* | 41 | 25 | 9 | 7 |
| | After | *r* | -.15 | -.04 | -.58 | -.15 |
| | | p-value | .35 | .87 | .10 | .75 |
| | | *n* | 41 | 25 | 9 | 7 |

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

**Table 30.** Cycle and change in proximity and touching

| Measure | Confederate: | Total | Male | Female | None |
|---|---|---|---|---|---|
| Proximity shoulders closest | *r* | -.04 | -.13 | **-.71*** | -.06 |
| | p-value | .80 | .55 | .031 | .90 |
| | *n* | 41 | 25 | 9 | 7 |
| Proximity shoulders farthest | *r* | -.07 | -.17 | -.65 | .09 |
| | p-value | .65 | .42 | .057 | .84 |
| | *n* | 41 | 25 | 9 | 7 |
| Proximity closest | *r* | .000 | -.19 | -.38 | .48 |
| | p-value | .99 | .37 | .32 | .27 |
| | *n* | 41 | 25 | 9 | 7 |
| Touching Times | *r* | -.15 | -.09 | **-.73*** | -.02 |
| | p-value | .36 | .66 | .027 | .97 |
| | *n* | 41 | 25 | 9 | 7 |
| Touching Duration | *r* | -.06 | -.33 | -.53 | -.30 |
| | p-value | .73 | .11 | .14 | .52 |
| | *n* | 41 | 25 | 9 | 7 |

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

## APPENDIX B

**The Marriage Questionnaire** (Russell and Wells, 1993)

How old are you?

How long have you been in a relationship?

How long did you live together before you were in a relationship?

How many relationships have you had?

(scale for each of the following items is 1-5 with some items reversed and some items being yes/no)

How sociable are you?

Is your relationship a traditional relationship?

Is your partner happy?

Do you find your partner easy to get along with?

Do you think that the main reason for relationship is to have children?

Did your parents divorce?

Do you enjoy your partner's company?

Do you both come from similar backgrounds?

Is your partner more clever than you?

As a child, were you close to your parents?

Do you have conflicting feelings about your partner?

Is money a problem in your relationship?

Do you feel possessive about your partner?

Do you like children?

Is your partner too busy to talk to you?

If you have been married before, does it still cause problems?

Are you kind to your partner?

Do you worry a lot?

Can you rely on one or two good friends?

Do you miss your partner when you are apart?

Do you both have the same outlook on life?

Are you the first to make up after a fight?

How hard do you usually work?

How much does your partner love you?

Do you think that sex gets less important as you get older?

Is it silly to stay together for the sake of children?

Does your partner embarrass you in public?

Do your moods go up and down?

Do you take your partner for granted?

Are you influenced by what other people think?

If you are unhappy, can you discuss it with your partner?

Do you make sure your partner looks neat and tidy before he/she goes out?

Do you think divorce is wrong?

Do you understand your partner?

Is yours a successful relationship?

Does your partner feel possessive about you?

Are you happy?

Who makes the important decisions?

When there is a problem, is it your partner's fault?

Did you sleep together before you started your relationship?

How much does money really matter to a good relationship?

Does your partner get on your nerves?

Do you give in when there is a disagreement?

Do you find your partner attractive?

How important is companionship in your relationship?

Do your partner's moods go up and down?

Do you enjoy doing things together?

Have you ever been attracted to people of the same sex as you?

Does your partner have irritating habits?

Do you think relationships suffer when children leave home?

If your partner was married before, does it still cause problems?

Do you have strong religious beliefs about relationships?

Can you leave your worries behind at the end of the day?

Are you pleased if friends drop in unexpectedly?

Have you ever thought of ending the relationship with your partner?

Do you agree on who does what in your relationship?

Does your partner find you attractive?

Is your partner totally honest about himself/herself?

Were you happier before you started your relationship?

Is your partner kind to you?

Do you find sexual fulfillment in your relationship?

Do you get on well with your partner’s parents?

Is your partner proud of you?

Is your health good?

Apart from work, does your partner go out without you?

Did you form a relationship with your partner partly for financial reasons?

Does your partner sympathize when you are under pressure?

Are you jealous of your partner's past relationships?

How much housework do you do?

How close do you feel to your partner?

Do you take much trouble over your appearance?

Does your partner worry a lot?

Have you ever asked for outside help with your relationship?

How sociable is your partner?

Do you have irritating habits?

Does your partner know what you really think and feel?

Do you hold hands?

Do you consider yourselves well off?

Do you wish your partner was more sexually responsive to you?

Are you from a different ethnic group as your partner?

Do you feel your relationship ties you down?

How often does your partner make you laugh?

How important do you think the sexual side of relationship is?

Do you bottle up your feelings?

Did your parents have a happy relationship?

Does your partner find other men/women attractive?

Do you love your partner more than you used to?

Can you depend on your partner in a crisis?

Do you enjoy cuddling with your partner?

How often do you have a serious fight?

Does your partner's work get in the way of your relationship?

Do you find other men/women attractive?

Does your relationship remind you of your parents' relationship?

Have you ever separated for a while?

Would you feel lost without your partner?

Do you think your partner is attractive to other people?

Did you start your relationship in order to get away from your parents?

Do you feel impatient with your partner?

Are you content with where you live?

Do you want to touch your partner?

Do you see relationships as an important public commitment?

Are you too busy to talk to your partner?

Would you have been happy living on your own?

How much education have you had?

Has your partner changed since you started your relationship?

Do you find sexual fulfillment outside your relationship?

Does your partner enjoy doing things about the house?

Does your partner pay enough attention to his/her appearance?

Does your partner take you for granted?

Were your parents well off?

Does your partner help you to choose your clothes?

Did you have realistic expectations about relationships?

Would your partner understand if you were unfaithful?

How much time do you spend just with each other?

Is there enough privacy in family life?

Is there enough give and take in your relationship?

Do you enjoy doing things about the house?

When you and your partner disagree, do you hide it from other people?

Do you respect your partner?

Do you think having children holds a relationship together?

If you could choose, would you form a relationship with your partner again?

Do you have a full-time job?

Are you proud of your partner?

Does your relationship have a romantic side?

Are you happy with your role in life?

Have you had sex against your will?

Do you discuss your day-to-day concerns with your partner?

How did your family react to your relationship?

Do you have a clear idea of the woman/man of your dreams?

How much do you love your partner?

Do you think you are good looking?

Do you feel lonely?

Do you enjoy pornography?

How well does your partner know your friends?

Does your partner nag you?

Have you had a divorce?

Would you be in a difficult position if your relationship ended?

Does your partner understand you?

Did you form a relationship with your partner at about the same time as your friends?

Do you worry about your partner being unfaithful?

Do you go out and see friends on your own?

Does your partner support you in what you are trying to do?

Did your parents play a part in choosing your partner?

Is your partner jealous of your past relationships?

Does your work get in the way of your relationship?

Does your partner respect you?

How many people did you seriously go out with before you started your current relationship?

Is your partner really nasty to you?

How often do you see members of your family?

Was it love at first sight?

If you have not had any children, why not?

Do you want to touch your partner in public?

Do you want to touch your partner in private?

## APPENDIX C

**Mate Retention Inventory: Short Form** (Buss, Shackelford, and McKibbin, 2008)

Instructions: On the following pages are listed a series of acts or behaviors. In this study, we are interested in the acts that people perform in the context of their relationship with their romantic partner. For each act, use the following scale to indicate how frequently you performed the act within the past ONE year: (scale 0-3 with 0 being never and 3 being often)

Called to make sure my partner was where she said she would be.

Did not take my partner to a party where other men would be present.

Insisted that my partner spend all her free time with me.

Talked to another woman at a party to make my partner jealous.

Became angry when my partner flirted too much.

Pleaded that I could not live without my partner.

Told my partner that we needed a total commitment to each other.

Pointed out to my partner the flaws of another man.

Bought my partner an expensive gift.

Performed sexual favors to keep my partner around.

Made myself ‘‘extra attractive’’ for my partner.

Complimented my partner on her appearance.

Gave in to my partner’s every wish.

Told my same-sex friends how much my partner and I were in love.

Put my arm around my partner in front of others.

Asked my partner to wear my ring.

Told other men that my partner was a pain.

Stared coldly at a man who was looking at my partner.

Got my friends to beat up someone who was interested in my partner.

Snooped through my partner's personal belongings.

Took my partner away from a gathering where other men were around.

Spent all my free time with my partner so that she could not meet anyone else.

Showed interest in another woman to make my partner angry.

Threatened to break-up if my partner ever cheated on me.

Told my partner that I was dependent on my partner.

Asked my partner to marry me.

Told my partner that another man was stupid.

Took my partner out to a nice restaurant.

Had a physical relationship with my partner to deepen our bond.

Made sure that I looked nice for my partner.

Displayed greater affection for my partner.

Went along with everything my partner said.

Bragged about my partner to other men.

Held my partner's hand while other men were around.

Gave my partner jewelry to signify that she was taken.

Told other men that my partner was not a nice person.

Gave a man a dirty look when he looked at my partner.

Slapped a man who made a pass at my partner.

## APPENDIX D

**Loyalty Scale** (Shattuck and Deaner, 2011)

Please answer each of the following questions as honestly as possible. (scale 1-7 with a 1 being strongly disagree and 7 being strongly agree)

I would never turn my back on my romantic partner, even if it cost me the respect of others.

I would not betray my romantic partner's trust.

If I make a promise to my romantic partner, I will keep it.

My romantic partner can always count on me.

I stand by my romantic partner, even when they make mistakes.

I am always ready to come to the aid of my romantic partner.

I would sacrifice my time and money to help my romantic partner.

I am concerned about the well-being of my romantic partner.

I will defend my romantic partner against criticism, even when they are not present.

I am loyal to my romantic partner.

If a very attractive person that was not my romantic partner wanted to sleep with me, I would do so.

I would talk on the phone for hours with someone of the opposite sex, who was not my romantic partner.

If given the opportunity to I would passionately kiss someone, other than my romantic partner.

If my romantic partner did something that really irritated me, I would sleep with someone else to get back at them.

If someone that I felt a connection to other than my romantic partner indicated they were in love with me, I would return the emotions.

I would allow myself to develop an emotional connection with someone of the opposite sex besides my romantic partner.

# APPENDIX E

## Rusbult's Scales

**Couples Satisfaction Index (CSI-16)** (Funk and Rogge, 2007)

Please indicate the degree of happiness, all things considered, of your relationship. (scale of 0-6 with 0 being extremely unhappy and 6 being perfect)

In general, how often do you think that things between you and your partner are going well? (scale of 5-0 with 5 being all of the time and 0 being never)

Our relationship is strong (scale of 0-5 with 0 being not at all true and 5 being completely true)

My relationship with my partner makes me happy (scale of 0-5 with 0 being not at all true and 5 being completely true)

I have a warm and comfortable relationship with my partner (scale of 0-5 with 0 being not at all true and 5 being completely true)

I really feel like part of a team with my partner (scale of 0-5 with 0 being not at all true and 5 being completely true)

How rewarding is your relationship with your partner? (scale of 0-5 with 0 being not at all and 5 being completely)

How well does your partner meet your needs? (scale of 0-5 with 0 being not at all and 5 being completely)

To what extent has your relationship met your original expectations? (scale of 0-5 with 0 being not at all and 5 being completely)

In general, how satisfied are you with your relationship? (scale of 0-5 with 0 being not at all and 5 being completely)

For each of the following items, select the answer that best describes how you feel about your relationship. Base your responses on your first impressions and immediate feelings about the item.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| INTERESTING | 5 | 4 | 3 | 2 | 1 | 0 | BORING |
| BAD | 0 | 1 | 2 | 3 | 4 | 5 | GOOD |
| FULL | 5 | 4 | 3 | 2 | 1 | 0 | EMPTY |
| STURDY | 5 | 4 | 3 | 2 | 1 | 0 | FRAGILE |
| DISCOURAGING | 0 | 1 | 2 | 3 | 4 | 5 | HOPEFUL |
| ENJOYABLE | 5 | 4 | 3 | 2 | 1 | 0 | MISERABLE |

**Commitment Scale** (Rusbult, Martz, and Agnew, 1998)

The following questions pertain to you AND your current romantic relationship partner. (scale of 1 to 8 with 1 being do not agree at all and 8 being completely agree)

I want our relationship to last a very long time.

I am committed to maintaining my relationship with my partner.

I would not feel very upset if our relationship were to end in the near future.

It is likely that I will date someone other than my partner within the next year.

I feel very attached to our relationship -- very strongly linked to my partner.

I want our relationship to last forever.

I am oriented toward the long-term future of my relationship (for example, I imagine being with my partner several years from now).

**Attentiveness to Alternatives** (Miller, 1997)

Please consider how OFTEN or SELDOM each of the following statements applies to you. (scale of 1-5 with a 1 being never and a 5 being always)

I am distracted by other people that I find attractive.

I flirt with people of the opposite sex without mentioning my partner.

I'm very aware that there are plenty more "fish in the sea."

I'm interested in having an affair.

I go out socially with opposite sex friends without telling my partner.

I rarely notice other good-looking or attractive people.

**Investment Scale** (Rusbult, Martz, and Agnew, 1998)

Please indicate the degree to which you agree with each of the following statements regarding your current relationship: (scale of 1-4 with 1 being don't agree at all and 4 being completely agree)

I have invested a great deal of time in our relationship

I have told my partner many private things about myself (I disclose secrets to him/her)

My partner and I have an intellectual life together that would be difficult to replace

My sense of personal identity (who I am) is linked to my partner and our relationship

My partner and I share many memories

I have put a great deal of effort into our relationship—effort that would be wasted if the relationship were to end. (scale of 0-8 with 0 being do not agree at all and 8 being agree completely)

Many aspects of my life have become linked to my partner (recreational activities, etc.), and I would lose all of this if we were to break up. (scale of 0-8 with 0 being do not agree at all and 8 being agree completely)

I feel very involved in our relationship – like I have put a great deal into it. (scale of 0-8 with 0 being do not agree at all and 8 being agree completely)

My relationships with friends and family members would be complicated if my partner and I were to break up (e.g., partner is friends with people I care about). (scale of 0-8 with 0 being do not agree at all and 8 being agree completely)

Compared to other people I know, I have invested a great deal in my relationship with my partner. (scale of 0-8 with 0 being do not agree at all and 8 being agree completely)

# APPENDIX F

## Excerpt of Confederate Script

1. Remain positive at all times and smile often, specifically at the opposite gender participant.
2. If engaged in conversation, or brought off script by the participants, respond in a positive manner.
3. If not engaged in conversation after approximately one minute, then start the script.
4. “Hi, are you here for the singles study?”
5. If the participants answer that they are there for the couple’s study, reply “Oh, I am here for the singles study.”

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## ABSTRACT

**PROXIMITY, TOUCHING, AND TESTOSTERONE: AN OBSERVATIONAL STUDY OF MATE RETENTION TACTICS IN HUMANS**

by

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**August 2019**

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**Major**: Psychology (Cognitive, Developmental, and Social)

**Degree**: Doctor of Philosophy

Mate guarding behaviors are strongly selected for in species that suffer from infidelity and cuckoldry. Two forms of mate guarding behaviors that have been found in self-report studies on humans are proximity and touching. Proximity actively prevents infidelity though the physical act of being present. Touching indirectly prevents infidelity by signaling to any potential rivals that their partner is taken, as well as signaling to the partner that they are being watched. Testosterone is a hormone implicated in competition and aggression. When in the presence of a potential rival, testosterone levels tend to increase. This increase should be related to mate retention behaviors. In the current study, proximity and touching, being used as forms of mate guarding while in the presence of a potential romantic rival, were analyzed. Change in testosterone's effect on these mate retention behaviors was also analyzed. Other potential measures that were compared to the proximity and touching behaviors included self-report mate retention tactics, loyalty, commitment to one's partner, investment in the relationship, attentiveness to romantic alternatives, relationship satisfaction, worry about partner infidelity, actual infidelity, self-reported touching desire, and fertility. Ninety-four couples interacted with an attractive confederate and their proximity and touching behaviors were recorded. Salivary testosterone measures were taken before and after the

interaction with the confederate. Results show that proximity and touching behaviors increased while in the presence of the confederate. When a potential romantic rival was present, couples sat closer to each other and touched each other more often than they did when they were alone. Change in testosterone correlated with proximity in males when the confederate was male. One notable finding was that specific self-report mate retention items pertaining to proximity and touching related to the observable proximity and touching mate retention behaviors when a rival of the same gender was present. While the sample size for each group was smaller than ideal, and many of the supplemental associations were not found, the primary results on proximity and touching show that humans are engaging in, and using, these behaviors as mate retention tactics.

## AUTOBIOGRAPHICAL STATEMENT

Kraig Shattuck earned his bachelor's degree with a major in Psychology and a minor in Applied Statistics from Grand Valley State University in 2011. He entered the Cognitive, Developmental, and Social Psychology program at Wayne State University in 2011 where he earned a Master of Arts degree in Psychology in 2015. He is a member of the International Society for Human Ethology and the Human Behavior and Evolution Society. His research interests include the evolutionary basis of gender differences in aggression, adolescent male development from a life-history perspective, and observable mate retention strategies.