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Behavioral Reactions to Emotional and Physical Infidelity: An Evolutionary Perspective

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BEHAVIORAL REACTIONS TO EMOTIONAL AND PHYSICAL INFIDELITY:

AN EVOLUTIONARY PERSPECTIVE

By

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Abstract

This thesis examined the effects of sex and type of partner infidelity, including both physical (i.e., sexually involved with another person) and emotional (i.e., emotionally involved with another person) infidelity, on mate abandonment behaviors. Previous research has demonstrated sex differences in emotional responses to infidelity, where men react more negatively to physical infidelity and women react more negatively to emotional infidelity. While various studies have investigated perceived behavioral reactions using imagined scenarios, this study expands current research by utilizing actual retrospective reports. It was hypothesized that males would engage in significantly more mate abandonment behaviors after experiencing a physical infidelity, while females would engage in significantly more mate abandonment behaviors after experiencing an emotional infidelity. Two hundred and eight participants (133 female, 75 male) completed a variety of questionnaires to assess actual behavioral reactions to partner infidelity, along with various personality measures (self and partner mate value, dispositional jealousy, positive and negative affect). The hypothesis was only partially supported. Although men were more likely to abandon their mate after experiencing a physical infidelity, women showed no significant differences in mate abandonment behaviors after experiencing a physical or emotional infidelity.

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Evolution within a species is an observed change in the relative frequency of attributes present in organisms over time (Brandon, 1978). Charles Darwin (1859) proposed a theory of evolution based on three principles: variation, inheritance, and selection. First, Darwin observed that all organisms are unique in a variety of ways within a species. Second, he noted that only some of the organism's variation is passed on to its offspring. Third, he observed that organisms with certain inheritable characteristics produced more offspring, and he speculated that these characteristics helped increase the organism's reproductive success. That is, Darwin noted that certain traits are better suited for an organisms' environment; therefore, if these traits are inherited by offspring then these variations which assisted survival would be conveyed to subsequent generations at greater frequencies than others. Consequently, Darwin theorized that across generations the species would become dominated by individuals possessing those characteristics, and thus the species would change or evolve. Darwin's theory has led to a revolution in the understanding of biological processes and has been successfully applied to the understanding of behavior in a number of species.

Evolutionary Psychology. Evolutionary psychology attempts to apply the insights derived from Darwinian evolutionary theory to understanding human thought and behavior. To do this, evolutionary psychologists distinguish between proximate and ultimate causation. Proximate causation examines how biological, neurological, and ecological events affect behavior (Corning, 2008). Ultimate causation explains the causes that produce survival and reproduction, such as inborn tendencies, and helps explain why proximate causes develop (Corning, 2008). Evolutionary psychologists focus on the ultimate causes of human cognition and how these cognitions direct human behavior. For example, within the behavioral tradition in psychology there is a long research history examining classical conditioning. An integral part of

classical conditioning involves an unconditioned stimulus (US) leading to an unconditioned response (UR) (Clark, 2004). It is important to note that unconditioned is used to describe a response that is not learned, but is instead an innate reflex (Clark, 2004). One of the most well known examples of classical conditioning is that of Pavlov (1951). He demonstrated that the repeated presentation of a glass of carbon bisulphide (US) lead to salvation (UR) in dogs (Pavlov, 1951). One goal of evolutionary psychology is to explain the relationship between the US and the UR.

Selecting for Cognitive Mechanisms. To understand the ultimate causes of behavior, evolutionary psychologists have proposed that human thought patterns and behaviors are a product of natural selection. Although this explanation has been widely accepted for many other species (Barash, 1977), it remains controversial within the social sciences (Fodor, 2008). Evolutionary psychologists argue that the brain's structure and its physiological processes are responsible for human thought and behavior. Additionally, evolution via natural selection is responsible for the formation of all the tissue in the human body including that of the brain. Therefore, evolution determines human thought patterns and behavior. That is, evolution determines the structure and function of the brain which directs the interaction with the environment and the specific types of behaviors, thoughts, and feelings emitted.

Modularity. In the social sciences, a great deal of research has been guided by what is often referred to as the Standard Social Science Model (SSSM). The SSSM suggests that at birth the brain is a *tabula rasa*, more modernly known as a general purpose learning machine, and that humans are born with a limited number of cognitive processes (Levy, 2004). According to this model, behavior is a result of environmental factors and socialization, such as the content and organization of the human brain flows inward from the environment (Tooby & Cosmides, 2005).

Evolutionary psychologists have rejected the SSSM and suggest instead that the brain was designed by natural selection to solve for the adaptive problems faced by our ancestors (e.g. selecting a mate, avoiding predators, kin cooperation) (Buss, 2009). Thus, the brain should be comprised of many different programs, or modules, specialized for solving these problems. Evolutionary psychologists claim that the brain is not a general purpose computer, but is instead a set of evolved adaptations to environmental problems.

The assumption of modularity suggests that like all tissue in the body, the brain is composed of an exquisitely designed set of separate information processing machines that each have distinct functions. Similar to a Swiss Army Knife, the mind is an organized assembly of tools that serve a particular purpose (Cosmides & Tooby, 1994; Pinker, 1997; Sperber, 1994). This belief in modularity is supported by an evolutionary process which has produced modularity within the rest of human physiology (e.g. specialized tissue in heart and lungs). Additionally, modularity reduces computational intractability as it provides increased processing time and capacity within the brain (Toates, 1995). This flexibility results in cognitive processes that offer behavioral solutions in a changing environment. Consequently, explaining human behavior involves both an understanding of the evolved cognitive mechanisms that allow humans to perform behavior and also their ability to exploit such capabilities (Buss, Haselton, Shackelford, Bleske, & Wakefield, 1998).

Ancestral Environment and Adaptations. According to Darwin's theory, adaptations are selected for by being the most well suited for the environment (Bereczkei, 2000). Although adaptations are by definition inherited, environmental factors greatly influence their ontogenetic development (Buss et al., 1998). Therefore, when analyzing adaptations, it is necessary to speculate about the ancestral environment from which they evolved. For example, an

environment with limited male parental investment may have resulted in more adaptive short-term mating strategies (Belsky, Steinberg, & Draper, 1991). Likewise, input from the environment, such as committed sexual relationships, activates sex-linked jealousy adaptations (Buss, Larsen, Westen, & Semmelroth, 1992). It is important to recognize that ancestral environments might differ significantly from current environments. Consequently, current thoughts and behaviors might not serve any adaptive function; and therefore, may hurt reproductive success. That is, evolutionary psychologists avoid using simple fitness maximization as an explanation for thought and behavior.

Instead, evolutionary psychologists emphasize internal cognitive adaptations. They propose that natural selection does not operate on behavior, but on functionally contingent information processing (Buss et al., 1998). For example, running is a behavior that is neither adaptive nor maladaptive for fitness. However, running is an evolutionarily beneficial behavior if the goal is to escape from a predator. Conversely, running towards a predator would be maladaptive. Therefore, behavior alone does not constitute as an evolved mechanism, but rather the environmental stimuli and our responses to them. Evolution would not produce rigid behavioral responses, but would act on neural circuits that would contingently respond to informational inputs. Consequently, the focus of evolutionary psychology is on the cognitive and emotional underpinnings of behavior.

Sexual Selection Theory. Darwin (1871) noted that although many traits seemed obvious for reproductive success (e.g. long bill of hummingbirds, large ears of elephants) others traits appeared to hinder the animal's survival (e.g. brilliant peacock plumage, large antlers of stags). To further complicate these issues, Darwin also recognized these maladaptive characteristics to have a higher frequency in males (Hosken & House, 2011). To explain the

purpose of these unfavorable characteristics, Darwin proposed a theory of sexual selection. Sexual selection was used to explain the advantages certain individuals have over others of the same sex in respect to reproduction (Darwin, 1871). He concluded that these maladaptive traits aided in reproductive competition, and helped to secure a mate. Sexual selection is driven by two mechanisms: intrasexual competition and intersexual selection. Intrasexual competition suggests that when males compete, the winner gains mating access to the female. Thus, evolution occurs because the victorious male is able to pass off the genes that contributed to his success. For example, when competing for a mate, male insects commonly offer nuptial gifts to females in the form of prey to secure reproductive access (Lang, 1996; Perry & Rowe, 2010). In humans, men are also more willing to share resources with women. When asked to divide resources between same-sex or opposite sex partners, Buunk and Massar (2012) found that men were more willing to share resources with women, while limiting the resources of other men. An example of this mechanism operating in the modern world might be that of a man competing for a top salary job, which would result in more money and attraction of mates.

The second mechanism, intersexual selection, demonstrates that the mate preferences of one sex determine the mating success of the opposite sex. This occurs when the preference of one sex dictates the desirable characteristics of the other. For example, female killifish show mating preferences by exclusively interacting and mating with larger bodied males (Passos, Tassino, Loureiro, & Rosenthal, 2013). As a result male body size is not only selected for, but results in greater social dominance and mating success. An example of this in humans would be if the majority of women favored men with blue eyes. Blue eyes would then become more prevalent in the population, assuming they did not lead to a significant disadvantage in other aspects of survival. Though this theory answered Darwin's main concern of maladaptive traits,

the central driving force behind sexual selection was still unknown. The question still remained as to why certain traits were more desirable. For example, why do female peacocks prefer to mate with male peacocks that have large, colorful tails?

Parental Investment Theory. Nearly a hundred years later Trivers (1972) offered answers to this question with his theory of parental investment. Trivers defined parental investment as an investment by the parent in an offspring that increases the offspring's chance of survival, but limits the parent's investment in other offspring (1972). Trivers recognized a number of key sex differences in human reproduction that influenced parental investment in humans. For example, women contribute large amounts of energy to fertilization, gestation, and lactation after birth (Buss & Schmitt, 1993; Kriegman, 1999). Because of these constraints on investment, women are limited in the number of offspring they can reproduce. Men, however, are not limited to these constraints. Because the minimum men may invest is sperm, they have a much higher reproductive capacity than women (Goetz & Shackelford, 2009). Additionally, men have a longer reproductive period during their lifespan than women, who usually reach menopause around age 51 (McKinlay, Brambilla, & Posner, 1992). Trivers also noted that women experience internal fertilization; and therefore, possess paternal certainty. As a result of internal fertilization ancestral men could not be certain that offspring were genetically their own, thus limiting investment (Goetz & Shackelford, 2009). According to Trivers, the sex that has the greatest amount of investment in the offspring should be more discriminating with whom they choose to mate and the sex that invests least in the offspring should be more competitive in gaining access to the high investing member of the opposite sex. Consequently, the mate preferences of the high investing sex (females) may influence the evolution of certain traits of the low investing sex (males) by granting males differential access based on those traits.

Mating Preferences and Strategies. Trivers (1972) also postulated that these biological differences in reproduction have resulted in men and women developing different optimal mating strategies and different mate preferences that drive these different strategies. Accordingly, the best male mating strategy would be to have as many offspring as possible, limit investment, and engage in short-term relationships with many females. Short-term mating strategies are more beneficial to males as this behavior increases reproductive success, leads to a greater number of offspring, and uses limited resources and energy (Apostolou, 2009). Further, men do not have parental certainty, and may restrict investment as a result. The costs associated with short-term mating for males is relatively low, and include losing the current long-term mate and aggression from rivals while mate poaching. In contrast, the best female mating strategy would be to limit reproduction, invest heavily in each offspring, and acquire long-term male commitment. This mating strategy is most beneficial as females have limited reproductive capacity; therefore, they must increase investment to assure the offspring's survival. Further, women who engage in long-term mating behaviors ensure male parental investment (Buss & Schmitt, 1993).

An extensive body of literature has found that men and women have mate preferences that are congruent with their optimal mating strategies. For example, women prefer men who are interested in committed relationships (Hamida, Mineka, & Bailey, 1998; Marlowe, 2004), and are interested in child rearing (Buss, Shackelford, Kirkpatrick, & Larsen, 2001; Hoyt & Hudson, 1981; Hudson & Henze, 1969). Moreover, women favor men who have resources to offer (Buss, Abbott, Angleitner, Asherian, Biaggio, et al., 1990; Buss et al., 2001), high intelligence (Buss et al., 1990; Buss et al., 2001; Fisman, Iyengar, Kamenica, & Simonson, 2006), ambition (Buss et al., 1990; Buss et al., 2001), and have high social status (Buss et al., 1990; Regan, Levin, Sprecher, Christopher, & Cate, 2000). Alternatively, men desire women who are physically

attractive (Buss et al., 1990; Buss et al., 2001; Fisman et al., 2006; Hoyt & Hudson, 1981), sexually available (Regan et al., 2000), have a high sex drive (Regan et al., 2000), and are youthful (Hamida et al., 1998; Hudson & Henze, 1969; Marlowe, 2004).

Sexual Conflict and Infidelity. Opposing optimal mating strategies result in conflict between men and women. That is, women are searching for high genetic quality men who are willing to commit and invest in children. Men, however, are searching for high genetic quality women who are available for short-term relationships that do not require commitment or investment in offspring. The extent to which either mating strategy is adopted depends on numerous environmental factors (e.g. sex-ratio, resource availability, parasitic prevalence) and personal factors (e.g. mate value). However, in most circumstances persons do not get to wholly pursue their preferred strategy. Men have difficulty finding women who are only interested in short-term sexual relations and women have difficulty finding men that are only interested in long-term committed relationships. To combat the difficulties associated with sexual conflict, men and women employ mixed mating strategies in which they simultaneously seek both short- and long-term mates. These mixed mating strategies often allow men and women to maximize their reproductive capacity (Gangestad & Simpson, 2000).

There are many advantages to utilizing mixed mating strategies. For example, women are able to secure resources from a long-term mate, while gaining access to higher genetic quality mates from short-term mating. Further, extra-pair relations increase women's reproductive success (Scelza, 2011).When looking at the Himba society, Scelza (2011) found that extra-pair relations accounted for 17% of childbirths. Likewise, men gain access to high quality mates by entering long-term relationships, while at the same time pursuing short-term mates. It is important to note, however, that these same advantages are also disadvantages to the individual

cheated upon. Infidelity may jeopardize a man's paternal certainty. Conversely, women risk losing long-term resources (Shackelford, Buss, & Bennet, 2002). There are also several disadvantages in employing mixed mating strategies. For example, mixed-mating strategies may result in loss of a partner. Betzig (1989) found that infidelity is the leading cause of divorce in over 100 cultures. Additionally, the individual committing the infidelity is more likely to experience psychological distress. These individuals have higher rates of depression, shame, and lower well-being (Hall & Fincham, 2009).

Given the advantages of infidelity we would expect it to be a widespread and recurring phenomenon. An extensive body of literature has demonstrated the prevalence of infidelity within the context of various relationships. It is estimated that 30-60% of men and 20-50% of women engage in extra-pair affairs over the course of their marriage (Athanasiou, Shaver, & Tavris, 1970; Glass & Wright, 1992; Hunt, 1974; Levin, 1975; Petersen, 1983). Whisman, Gordon, and Chatav (2007) reported that 2.3% of married couples had experienced infidelity within the past year. Additionally, 70.9% of men and 57.4% of women have engaged in extra-pair relations in dating relationships (Hansen, 1987). Another study broadened the definition of infidelity to include any form of short- or long-term romantic or sexual involvement (e.g. kissing), and found that 20.4% of men and 31.4% of women report having engaged in extra-pair relations (Brand, Markey, Mills, & Hodges, 2007). Thus, no matter what statistics or studies are considered, infidelity clearly occurs in many relationships.

The motivations for infidelity, both emotional and physical, vary greatly and include dissatisfaction with the current relationship (Allen, Rhoades, Stanley, Markman, Williams, Melton, & Clements, 2008; McAnulty & Brineman, 2007; Yeniçeri & Kokdemir, 2006), revenge (Emmers-Sommer, Warber, & Halford, 2010; McAnutly et al., 2007; Yeniçeri & Kokdemir,

2006), physical attraction (Feldman & Cauffman, 1999; Yeniçeri & Kokdemir, 2006), and opportunities (Emmers-Sommer, Warber, & Halford, 2010; Treas & Giesen, 2000; Yeniçeri & Kokdemir, 2006). In congruence with parental investment theory, previous research suggests that the motivation for infidelity is moderated by sex (Allen, Atkins, Baucom, Snyder, Gordon, & Glass, 2005). For example, women are more likely to engage in extra-pair relations when there is a general relationship dissatisfaction (e.g. poor communication), whereas men are more likely to engage in extra-pair relations when there is sexual dissatisfaction within the relationship.

Emotional Reactions to Infidelity. Reactions to infidelity are also moderated by sex. Men respond more negatively to sexual infidelity compared to women, while women respond more negatively to emotional infidelity compared to men (Harris, 2003; Kuhle, 2011; Miller & Maner, 2008). Evolutionary and parental investment theory would suggest that these responses to infidelity serve an adaptive function. For example, women's sexual infidelity may result in genetic cuckoldry (Miller & Maner, 2008). Men, who lack parental certainty, risk investing energy and resources in another man's offspring. Because of the costs associated with cuckoldry, previous research suggests that men may have evolved a sexual jealousy mechanism that is triggered by sexual infidelity (Harris, 2003). Men's emotional infidelity, however, may result in redirecting resources away from the current relationship and towards another woman and her offspring (Harris, 2003; Miller & Maner, 2008). Similarly, women may have developed an emotional jealousy mechanism which is triggered by emotional infidelity (Harris, 2003). Sex differences in response to the different types of infidelity have been found cross culturally. When comparing Chinese and American adults, Geary, Rumsey, Bow-Thomas, and Hoard (1995) found support for patterns of sex differences. Although America is more sexually permissive than China, in both cultures males reacted more negatively to sexual infidelity and females

reacted more negatively to emotional infidelity. This finding is important as it offers support for evolutionary predictions of sex differences in jealousy.

Mate Retention. Because infidelity can potentially inflict heavy costs on long-term relationships, several tactics exist to prevent a mate from being unfaithful. To decrease the likelihood of infidelity, men have evolved adaptations to prevent cuckoldry. This adaptation, sexual jealousy, motivates men to use mate retention tactics (described in the paragraph below) (Buss et al., 1992; Daly, Wilson, & Weghorst, 1982; Symons, 1979). Ancestral women, however, risked losing resources and protection if a long-term mate was unfaithful (Buss & Duntley, 2008). As a result, women also developed specific adaptations to prevent infidelity. Similar to men, emotional jealousy motivates women to use mate retention tactics as a means of retaining resources and protection (Buss et al., 1992; Daly et al., 1982; Symons, 1979). These mate retention tactics are specific behaviors intended to ward off rivals and deter a mate from straying, or preventing further acts of infidelity (Buss, 2006).

Similar to most mating strategies, there are obvious sex differences regarding mate retention tactics. Male mate retention tactics can be either benefit-provisioning or cost-inflicting (Starratt & Shackelford, 2012). Benefit-provisioning tactics are intended to entice women to stay committed to a long-term relationship by increasing overall satisfaction. The use of this tactic often requires access to resources (e.g. money). These specific tactics include complimenting a woman's appearance and buying expensive gifts (Miner, Starratt, & Shackelford, 2009; Starratt & Shackelford, 2012). However, benefit-provisioning behaviors require both physical and psychological energy that may not be expendable, and can be costly for men to use (Starratt & Shackelford, 2012). Men who lack the necessary resources to entice a long-term mate are more likely to utilize cost-inflicting strategies. Unlike benefit-provisioning, this tactic is intended to

lower a woman's self-esteem using manipulation, insults, intimidation, and possessiveness (Miner et al., 2009; Starratt & Shackelford, 2012). Consequently, cost-inflicting behaviors may result in mate retaliation, familial retaliation, and social stigmatization (Starratt & Shackelford, 2012). As parental investment theory would predict, women are much more limited in their mate retention tactics. Because men place greater emphasis on physical appearance, these tactics generally center on appearance enhancement to deter a mate from extra-pair affairs (Buss & Shackelford, 1997a; Kaighobadi, Shackelford, & Buss, 2010).

Mate Abandonment. When the reproductive costs of infidelity are too high, mate abandonment may occur. Mate abandonment is the act of deserting a current mate (Jonason, Li, & Buss, 2010). As previously mentioned, male infidelity may lead to a redirection of resources and protection. For women, this would be considered reproductively costly as she risks sharing her mate's energy and resources. Female infidelity may lead to genetic cuckoldry (Harris, 2003; Miller & Maner, 2008). Likewise, genetic cuckoldry is reproductively costly to men as they are providing energy and resources to an offspring that is not their own. Although very little research has studied the direct consequence of these specific types of infidelities, it seems logically adaptive that if the reproductive costs are too high, one would abandon his or her mate.

Current Study

The main goal of this thesis is to demonstrate the evolutionary adaptations of men and women to avoid costs in situations involving infidelities. Specifically, this study aims to examine sex differences in assessing the costs associated with infidelity, and how those costs influence mate abandonment. Drawing on evolutionary theory, I hypothesized that physical infidelity leads to more mate abandonment behavior in men than emotional infidelity, while emotional infidelity leads to more mate abandonment behavior in women than physical infidelity. Previous research has demonstrated sex differences in emotional responses to infidelity. Men demonstrate greater jealousy in response to a partner's physical infidelity, whereas women demonstrate greater jealousy in response to a partner's emotional infidelity (Buss et al., 1992). These sex differences in jealousy are further supported by Trivers' (1972) Parental Investment Theory, which states that a man's reproductive fitness is endangered by sexual infidelity, and a woman's reproductive fitness is endangered by emotional infidelity. However, the literature lacks research demonstrating the direct behavioral consequences of specific forms of infidelity.

Methods

Participants

Participants were 133 female and 75 male participants who experienced infidelity within a relationship. Participants were recruited from the psychology subject pool at the University of Nevada, Las Vegas and class credit was offered in exchange for participation. The average age of the participants was 20 and the range of ages was 18 to 35 years. Thirty six percent were White, 25% were Asian, 17% were Mexican/Mexican American/Chicano, 10% were Black/African American, and 12% were other. Only participants who identified as heterosexual (as measured by a question in the demographic questionnaire) and between the ages of 18 and 50 were included in the study. Participants who identified as gay, lesbian, or a member of another sexual minority group were excluded because the theoretical foundations for the current hypothesis (sexual selection theory and parental investment theory) were primarily developed to explain heterosexual mating. Participants over the age of 50 were excluded because Life History Theory (Charlesworth, 1994; Gadgil & Bossert, 1970; Michod, 1979; Stearns, 1976) suggests that by this point in life mating motivations and behaviors change.

Procedures

The study was conducted using an online survey program. Once registered, participants were given a direct link to the study. After opening the link participants were shown a general instruction page that included a brief summary of the study. Participants were asked to complete a variety of surveys to assess their attitudes and behaviors towards romantic relationships. Participants were also assured that their responses would be anonymous. All participants then filled out a demographic questionnaire. In the demographic questionnaire participants were asked to provide their age, sex, sexual orientation (e.g. heterosexual, homosexual, bisexual, other), and relationship status (e.g. single [never married], single [divorced], casual dating, in an exclusive

relationship, engaged, married, widowed). Following the general demographic questions, participants were asked, "have you ever been in a relationship where your partner has been either emotionally (e.g. developed romantic feeling to someone else) or physically (e.g. had sexual relations with someone else) unfaithful to you?" Participants who answered yes to this question continued on to complete the survey (see Appendix A).

Behavioral Responses. Once the demographic survey was completed, participants were asked to complete a survey assessing infidelity. Participants were asked to think of a previous romantic relationship in which their partner engaged in an infidelity, and to identify the type of infidelity the partner committed: (a) physical infidelity (sexually involved with another person), (b) emotional infidelity (emotionally involved with another person), or (c) both physical and emotional infidelity. Additionally, participants were asked to identify the specific behaviors in which their partner engaged for physical infidelity (e.g. kissing, fondling, oral sex, sexual intercourse) and emotional infidelity (e.g. flirting, dating, intimate conversations, falling in love) (see Appendix B).

Participants then completed two measures of their behavioral response to the infidelity. One measure utilized a forced-choice method in which participants indicated whether they initially started looking for a way out of the relationship or started looking for a way to maintain the relationship (see Appendix B). Buss et al. (1992) found that using forced-choice methods along with imagined scenarios revealed a pattern of preference in situations where it is difficult to fully endorse either behavior. Because the current study uses retrospective reports of actual behaviors, forced-choice methods will allow me to clearly identify in which behavior the participant engaged. Another measure consisted of a list of behavioral responses. Participants were shown a list of fifteen items describing both mate retention and mate abandonment

behaviors, and were asked to indicate whether or not they engaged in the specific behaviors. This behavioral measure also included an open ended question which allowed participants to indicate any other behaviors in which they may have engaged. The order of these two measures were counterbalanced (see Appendix C).

Potential Moderators

Partner Mate Value. Following the behavioral measures, participants were asked to rate the mate value of their partner using the California Observer Evaluation Scale developed by Phinney & Gough (1986). Previous research has demonstrated that a partner's mate value moderates mate retention tactics. For example, men mated to physically attractive women use more mate retention tactics than men mated to women who are not physically attractive (Goetz, Shackelford, Weekes-Shackelford, Euler, Hoier, Schmitt, LaMunyon, 2005). Similarly, mate retention tactics are more frequently used by women when their partner has a higher mate value (Salkicevic, Stanic, & Grabovac, 2014) (see Appendix D).

Participant Mate Value. Participants also completed the Mate Value Scale (MVS) developed by Edlund and Sagarin (2010). The MVS is a four-item measure used to asses an individual's overall mate value. Each item is rated on a seven point Likert scale. The first two items have endpoints of 1 (*Extremely undesirable*) to 7 (*Extremely desirable*). The third item has endpoints of 1 (*Very much lower than average*) to 7 (*Very much higher than average*). Lastly, the fourth item has endpoints of 1 (*Very bad catch*) to 7 (*Very good catch*). The MVS has been implemented in numerous studies, and has high internal consistency, $\alpha = .86$. Mate retention tactics are used more frequently by low mate value individuals (Brewer & Riley, 2009). Mate value may moderate the rate of mate abandonment behaviors. For example, high mate value

individuals may engage in more mate abandonment behaviors whereas low mate value individuals may engage in more mate retention behaviors (see Appendix E).

Dispositional Jealousy. After completing the infidelity questionnaire, participants completed several personality measures. Participants were asked to complete the Multidimensional Jealousy Scale (MJS) to assess jealousy within an imagined romantic relationship (Pfeiffer & Wong, 1989). The MJS is comprised of three subscales which assess cognitive, behavioral, and emotional jealousy. Each subscale consists of eight items to ensure an adequate measure of jealousy. All items are rated on a seven point Likert scale. The cognitive and behavioral subunits rate items with endpoints of 1 (*Never*) to 7 (*All the time*). The emotional subunit rates items with endpoints of 1 (*Very pleased*) to 7 (*Very upset*). This scale has been used extensively, and all subunits have high inter-item reliability (cognitive, $\alpha = .92$; behavioral, $\alpha = .89$; emotional, $\alpha = .85$). Additionally, participants were asked to rate how they felt upon discovering their partner's infidelity on four scales with ends points 1 (*Moderately jealous*) to 5 (*Extremely jealous*), 1 (*Moderately angry*) to 5 (*Extremely angry*), 1 (*Moderately threatened*) to 5 (*Extremely threatened*), and 1 (*Moderately hurt*) to 5 (*Extremely hurt*). Brewer and Riley (2009) found that an increased tendency to experience jealousy increases mate retention tactics. The inclusion of these scales is important as jealousy may moderate mate abandonment behaviors (see Appendix F).

Positive and Negative Affect. Finally, participants completed the Positive and Negative Affect Scale (PANAS) which consists of 20 emotions (10 positive, 10 negative). Participants were asked to rate the extent they felt when they discovered their partner's infidelity. Each item is rated on a five-point scale with endpoints of 1 (*Very slightly*) to 5 (*Extremely*). Research has shown that unforgiving behavior is associated with higher levels of negative affect and lower

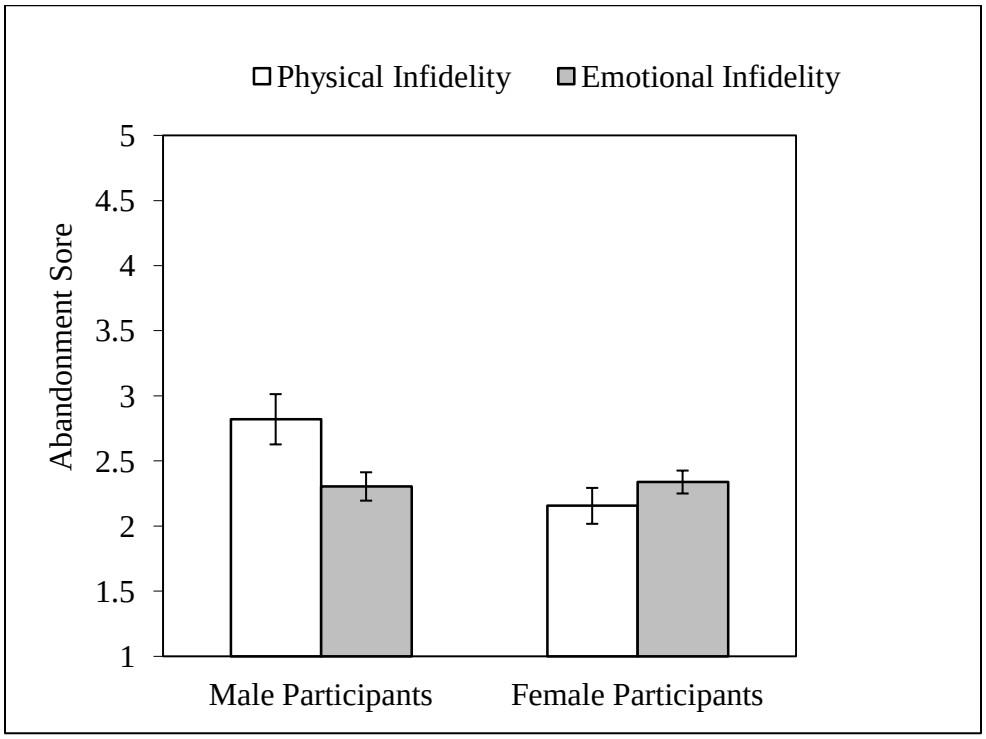
levels of positive affect (Kluwer & Karremans, 2009). Thus, individuals with more negative affect may engage in more mate abandonment behaviors (see Appendix G).

Results

To examine the main hypothesis, the likelihood ratings for the abandonment behaviors were averaged and the likelihood ratings from the retention behaviors were averaged for each participant. These scores were analyzed in separate 2(Physical vs. Emotional Infidelity) x 2(Sex) analyses of variance (ANOVA).

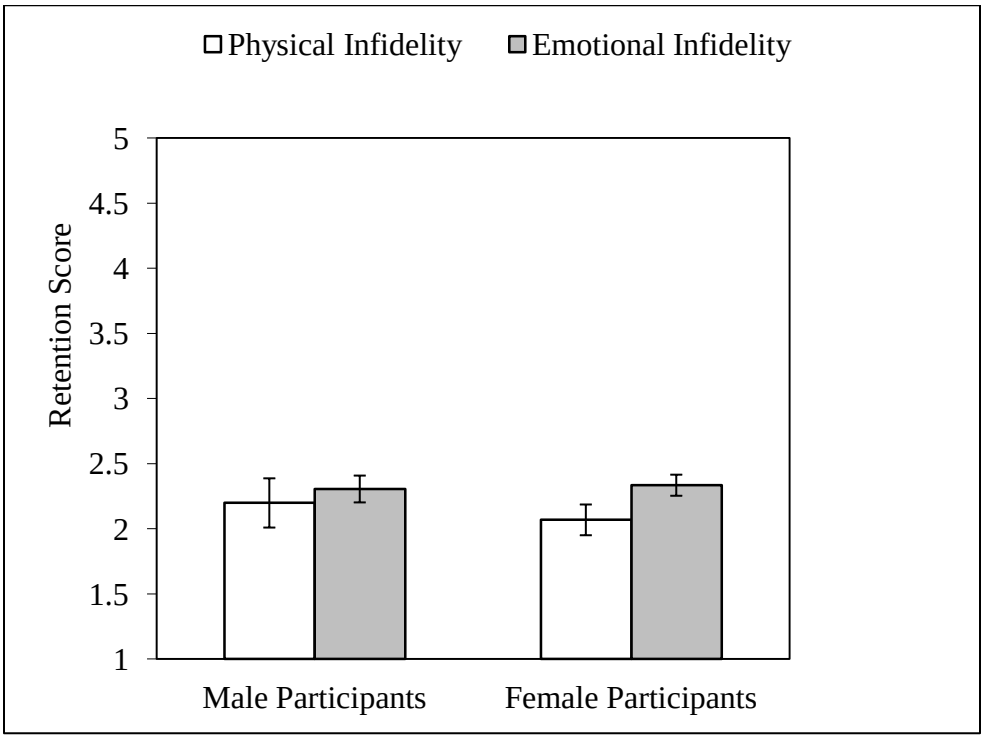
When abandonment scores were examined a significant main effect for sex was obtained, ($F(1, 180) = 5.24$, $p = .023$, $\eta_p^2 = .028$), with men more likely to endorse abandonment behavior ($M = 2.43$) than women ($M = 2.28$) ($F(1, 180) = 5.44$, $p = .021$, $MSE = .631$; $F(1, 180) = 1.23$, $p = .266$, $MSE = .631$). In addition, a significant interaction between Sex and Type of Infidelity was found, ($F(1, 180) = 6.43$, $p = .01$, $\eta_p^2 = .035$). Simple effect analyses revealed that men were significantly more likely to endorse abandonment behaviors after a physical infidelity ($M = 2.82$) than after an emotional infidelity ($M = 2.3$), ($F(1, 180) = 5.43$, $p = .02$, $\eta_p^2 = .03$). With women there was a nonsignificant tendency for this effect to reverse (physical infidelity: $M = 2.15$, emotional infidelity: $M = 2.33$), ($F(1, 180) = 1.24$, $p = .26$, $\eta_p^2 = .007$), (see Figure 1).

Figure 1: Gender Differences in Mate Abandonment Behaviors in Response to a Physical or Emotional Infidelity.



When retention scores were examined in a 2(Physical vs. Emotional Infidelity) x 2(Sex) analyses of variance (ANOVA), there was not a significant main interaction between Sex and Type of Infidelity (men: $M = 2.28$, women: $M = 2.25$), ($F(1, 195) = .378$, $p = .539$, $\eta_p^2 = .002$). Simple effect analyses revealed no significant differences in retention behavior for men (physical infidelity: $M = 2.19$, emotional infidelity: $M = 2.3$), ($F(1, 195) = .25$, $p = .617$, $\eta_p^2 = .001$), and women (physical infidelity: $M = 2.06$, emotional infidelity: $M = 2.33$), ($F(1, 195) = 3.47$, $p = .064$, $\eta_p^2 = .018$, (see Figure 2).

Figure 2: Gender Differences in Mate Retention Behaviors in Response to a Physical or Emotional Infidelity.



Forced choice measure. A binary logistic regression analysis was used to examine the forced choice measure because it has only two categories (start looking for a way out of the relationship or start looking for a way to maintain the relationship). In the analysis, "I wanted to start looking for a way out of the relationship" was coded as "1" and "I wanted to start looking for a way to maintain the relationship" was coded as "0." In the model, Sex of the Participant, Infidelity Type, and the interaction of Sex X Infidelity Type were used to predict the participants' forced choice responses.

A test of this full model against a constant only model was statistically significant, indicating that the predictors as a set reliably distinguished between "looking for way out" and "looking for way to maintain" the relationship (X^2 (3, N = 208) = 10.07, p = .018, df = 3). However, the Nagelkerke's R^2 of .07 indicated that there was a very modest relationship between

the predictors and responses. Wald's tests indicated that only the interaction term was significantly associated with the participants' responses, Waldχ^2 = 6.55, p = .01. Men were more likely to choose abandonment behavior after a physical infidelity (95% choose abandonment and 5% choose retention) than an emotional infidelity, and women were more likely to choose abandonment (61% choose abandonment and 39% choose retention) after an emotional infidelity than a physical infidelity.

Moderating Variables. To examine whether any of the individual differences (partner/participant mate value, dispositional jealousy, positive and negative affect) moderate the relationship between sex of participant and type of infidelity, separate four-step hierarchical regression analyses were performed for each moderator variable. In step one, sex of the participant and the type of infidelity and the interaction between sex and type of infidelity were the predictors. In step two, the same predictors were used with the addition of one of the moderator variables (partner/participant mate value, dispositional jealousy, positive and negative affect).

In step three, the same predictors used in step two were used with the addition of the interaction of moderator with sex and the interaction of the moderator with type of infidelity. In step four, the same predictors were used with the addition of the three way interaction between sex, type of infidelity, and the moderator variable. The interaction terms were created by centering and multiplying the initial variables (see Aiken and West [1991] for a description of this procedure).

Participant mate value. When participant mate value was examined, sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity were entered in step one. Sex of the participant, type of infidelity, the interaction term

between sex of the participant and type of infidelity, and participant mate value were entered in the step two. Sex of the participant, type of infidelity, the interaction term between sex of the participant and type of infidelity, participant mate value, and the interaction terms between participant mate value and sex and participant mate value and type of infidelity were entered in step three. Sex of the participant, type of infidelity, the interaction term between sex of the participant and type of infidelity, participant mate value, the interaction terms between participant mate value and sex and participant mate value and type of infidelity, and a three way interaction between sex, type of infidelity, and participant mate value were entered in step four. When abandonment scores were used as the dependent variable, the hierarchical multiple regression revealed that sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity contributed significantly to the model, ($F(3, 180) = 2.703$ $p = .047$), and accounted for 4.3% of the variance (see Table 1). Adding participant mate value and the interaction terms between participant mate value and sex and type of infidelity in the subsequent models did not increase the original models ability to predict abandonment behaviors (R^2 changes < .03 and $F(s) < 1$). Further, none of the interactions associated with mate value were significant predictors of abandonment behavior, $t(s) < 1$.

Table 1. Results of Hierarchical Regression Analysis of Predictors of Abandonment Behaviors.

	Predictor Variables	*B*	β	*t*
Model 1				
	Sex of participant	-1.365	-0.825	-2.758**
	Type of infidelity	-1.216	-0.673	-2.574*
	Sex X Infidelity	0.699	0.966	2.537*
Model 2				
	Sex of participant	-1.380	-0.834	-2.770**
	Type of infidelity	-1.232	-0.682	-2.588*
	Sex X Infidelity	0.704	0.973	2.545*
	Participant Mate Value	-0.022	-0.025	-0.329
Model 3				
	Sex of participant	-1.400	-0.846	-2.626**
	Type of infidelity	-1.251	-0.693	-2.443*
	Sex X Infidelity	0.715	0.988	2.423*
	Participant mate value	-0.065	-0.074	-0.164
	Participant mate value X Sex	0.028	0.056	0.197
	Participant mate value X Infidelity	-0.003	-0.005	-0.016
Model 4				
	Sex of participant	-1.397	-0.844	-2.392*
	Type of infidelity	-1.247	-0.691	-2.209*
	Sex X Infidelity	0.713	0.986	2.248*
	Participant mate value	-0.048	-0.054	-0.038
	Participant mate value X Sex	0.019	-0.037	0.027
	Participant mate value X Infidelity	-0.012	-0.024	-0.018
	Participant mate value X Sex X Infidelity	0.005	0.019	0.14

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

When retention scores were used as the dependent variable, the hierarchical multiple regression revealed that in step one, the variables were not significant predictors to the model ($F(3, 195) = 1.269$ $p = .286$) (see Table 2). Adding participant mate value and the interaction terms between participant mate value and sex and participant mate value and type of infidelity in models two and three did not increase the original models ability to predict abandonment behaviors (R^2 changes < .03 and $F(s) < 1$). In step four, adding participant mate value and the interaction terms between participant mate value and sex and participant mate value and type of infidelity, and the three way interaction between participant mate value and sex and infidelity did not contribute significantly to the regression model, ($F(7, 191) = 2.703$, $p = .047$) but accounted for 2% of the variance (see Table 2). All of the predictors (mate value ($\beta = 2.903$, $t = 2.046$, $p = .042$); mate value X sex ($\beta = -2.824$, $t = -2.098$, $p = .037$); mate value X infidelity type ($\beta = -2.782$, $t = -2.054$, $p = .041$); mate value X sex X infidelity ($\beta = 2.595$, $t = 2.013$, $p = .046$)), significantly predicted retention scores.

Table 2. Results of Hierarchical Regression Analysis of Predictors of Retention Behaviors.

Predictor Variables		*B*	β	*t*
Model 1				
	Sex of participant	-0.289	-0.183	-0.623
	Type of infidelity	-0.051	-0.031	-0.113
	Sex X Infidelity	0.159	0.231	0.615
Model 2				
	Sex of participant	-0.354	-0.224	-0.762
	Type of infidelity	-0.124	-0.074	-0.272
	Sex X Infidelity	0.183	0.267	0.712
	Participant mate value	-0.089	-0.107	-1.484
Model 3				
	Sex of participant	-0.240	-0.152	-0.485
	Type of infidelity	-0.008	-0.005	-0.017
	Sex X Infidelity	0.124	0.180	0.453
	Participant mate value	0.154	0.185	0.423
	Participant mate value X Sex	-0.083	-0.175	-0.615
	Participant mate value X Infidelity	-0.058	-0.125	-0.412
Model 4				
	Sex of participant	0.272	0.172	0.493
	Type of infidelity	0.496	0.297	0.912
	Sex X Infidelity	-0.130	-0.189	-0.434
	Participant mate value	2.412	2.903	2.046*
	Participant mate value X Sex	-1.336	-2.824	-2.098*
	Participant mate value X Infidelity	-1.294	-2.782	-2.054*
	Participant mate value X Sex X Infidelity	0.691	2.595	2.013*

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

Partner mate value. The same set of hierarchical regressions was used to examine partner mate value. First, sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity and then the three models containing the interactions with partner mate value were tested. When abandonment scores were used as the dependent variable, the hierarchical multiple regression revealed that sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity contributed significantly to the model, ($F(3, 173) = 3.190$, $p = .025$), and accounted for 5.2% of the variance (see Table 3). Adding partner mate value and the interaction terms between partner mate value and sex and type of infidelity in the subsequent models did not increase the original models ability to predict abandonment behaviors (R^2 changes < .03 and $F(s) < 1$). Further, none of the interactions associated with partner mate value were significant predictors of abandonment behavior, $t(s) < 1$.

Table 3. Results of Hierarchical Regression Analysis of Predictors of Abandonment Behaviors.

Predictor Variables		*B*	β	*t*
Model 1				
	Sex of participant	-1.511	-0.900	-2.962**
	Type of infidelity	-1.401	-0.767	-2.866**
	Sex X Infidelity	0.782	1.069	2.752**
Model 2				
	Sex of participant	-1.517	-0.904	-2.986**
	Type of infidelity	-1.408	-0.771	-2.894**
	Sex X Infidelity	0.782	1.070	2.765**
	Partner mate value	0.099	0.117	1.591
Model 3				
	Sex of participant	-1.477	-0.880	-2.919**
	Type of infidelity	-1.380	-0.756	-2.849**
	Sex X Infidelity	0.765	1.046	2.716**
	Partner mate value	-0.296	-0.349	-0.861
	Partner mate value X Sex	0.250	0.484	1.950
	Partner mate value X Infidelity	0.003	0.005	0.019
Model 4				
	Sex of participant	-1.448	-0.863	-2.847**
	Type of infidelity	-1.353	-0.741	-2.777**
	Sex X Infidelity	0.750	1.026	2.651**
	Partner mate value	-0.833	-0.982	-0.899
	Partner mate value X Sex	0.568	1.100	1.080
	Partner mate value X Infidelity	0.306	0.635	0.605
	Partner mate value X Sex X Infidelity	-0.183	-0.606	-0.624

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

When retention scores were used as the dependent variable, sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity explained 1.8% of the variance, but were not significant predictors of retention, $F(3, 189) = 1.131$, $p = .338$ (see Table 4). Adding partner mate value explained an additional .22% of the variation in retention scores, and the change in R^2 was significant, $F(1, 188) = 4.398$, $p = .037$. Adding partner mate value and the interaction terms between partner mate value and sex and type of infidelity in the subsequent models did not increase the original models ability to predict retention behaviors (R^2 changes < .03 and $F(s) < 1$). Further, none of the interactions associated with partner mate value were significant predictors of retention behavior, $t(s) < 1$.

Table 4. Results of Hierarchical Regression Analysis of Predictors of Retention Behaviors.

	Predictor Variables	*B*	β	*t*
Model 1				
	Sex of participant	-0.409	-0.260	-0.866
	Type of infidelity	-0.222	-0.134	-0.480
	Sex X Infidelity	0.243	0.356	0.924
Model 2				
	Sex of participant	-0.408	-0.259	-0.872
	Type of infidelity	-0.211	-0.128	-0.461
	Sex X Infidelity	0.246	0.360	0.945
	Partner mate value	-0.120	-0.156	-2.186*
Model 3				
	Sex of participant	-0.403	-0.256	-0.855
	Type of infidelity	-0.203	-0.123	-0.440
	Sex X Infidelity	0.243	0.355	0.927
	Partner mate value	-0.217	-0.283	-0.694
	Partner mate value X Sex	-0.007	0.014	0.057
	Partner mate value X Infidelity	-0.051	0.117	0.414
Model 4				
	Sex of participant	-0.381	-0.242	-0.803
	Type of infidelity	-0.183	-0.110	-0.394
	Sex X Infidelity	0.232	0.340	0.880
	Partner mate value	-0.599	-0.780	-0.693
	Partner mate value X Sex	0.229	0.492	0.474
	Partner mate value X Infidelity	0.266	0.606	0.566
	Partner mate value X Sex X Infidelity	-0.127	-0.464	-0.474

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

Jealousy. Hierarchical regression analyses could not be performed for abandonment or retention scores as a large number of participants failed to complete the three sub categories for this measure.

Positive affect. The same set of hierarchical regressions was used to examine positive affect. First, sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity and then the three models containing the interactions with positive affect were tested. When positive affect was examined sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity were entered in step one. Sex of the participant, type of infidelity, the interaction term between sex of the participant and type of infidelity, and positive affect were entered in the step two. Sex of the participant, type of infidelity, the interaction term between sex of the participant and type of infidelity, positive affect, and the interaction terms between positive affect and sex and positive affect and type of infidelity were entered in step three. Sex of the participant, type of infidelity, the interaction term between sex of the participant and type of infidelity, positive affect, the interaction terms between positive affect and sex and positive affect and type of infidelity, and a three way interaction between sex, type of infidelity, and positive affect were entered in step four. When abandonment scores were used as the dependent variable, the hierarchical multiple regression revealed that sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity accounted for 2.2% of the variance, but did not significantly contribute to the model, $F(3, 174) = 2.45$, $p = .065$ (see Table 5). Adding positive affect and the interaction terms between positive affect and sex and type of infidelity in the subsequent models did not increase the original models ability to predict abandonment behaviors

(R^2 changes < .03 and F(s) < 1). Further, none of the interactions associated with positive affect were significant predictors of abandonment behavior, t(s) < 1.

Table 5. Results of Hierarchical Regression Analysis of Predictors of Abandonment Behaviors.

	Predictor Variables	*B*	β	*t*
Model 1				
	Sex of participant	-1.368	-0.817	-2.666**
	Type of infidelity	-1.216	-0.665	-2.480*
	Sex X Infidelity	0.709	0.969	2.486*
Model 2				
	Sex of participant	-1.069	-0.639	-2.149*
	Type of infidelity	-1.051	-0.575	-2.224*
	Sex X Infidelity	0.569	0.778	2.064*
	Positive affect	0.037	0.292	4.009***
Model 3				
	Sex of participant	-0.953	-0.569	-1.840
	Type of infidelity	-0.966	-0.528	-1.997*
	Sex X Infidelity	0.513	0.700	1.792
	Positive affect	0.084	0.657	1.747
	Positive affect X Sex	-0.008	-0.106	-0.421
	Positive affect X Infidelity	0.019	-0.268	-0.907
Model 4				
	Sex of participant	-0.952	-0.569	-1.832
	Type of infidelity	-0.967	-0.529	-1.991*
	Sex X Infidelity	0.512	0.700	1.786
	Positive affect	0.076	0.593	0.591
	Positive affect X Sex	-0.003	0.038	-0.037
	Positive affect X Infidelity	-0.015	-0.203	-0.203
	Positive affect X Sex X Infidelity	-0.003	-0.070	-0.069

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

When retention scores were used as the dependent variable, the hierarchical multiple regression revealed that sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity accounted for 2.2% of the variance, but did not significantly contribute to the model, $F(3, 187) = 1.396$, $p = .246$ (see Table 6). Adding positive affect and the interaction terms between positive affect and sex and type of infidelity in the subsequent models did not increase the original models ability to predict retention behaviors (R^2 changes < .03 and $F(s) < 1$). Further, none of the interactions associated with positive affect were significant predictors of retention behavior, $t(s) < 1$.

Table 6. Results of Hierarchical Regression Analysis of Predictors of Retention Behaviors.

	Predictor Variables	*B*	β	*t*
Model 1				
	Sex of participant	-0.335	-0.213	-0.707
	Type of infidelity	-0.118	-0.071	-0.255
	Sex X Infidelity	0.204	0.297	0.775
Model 2				
	Sex of participant	-0.108	-0.068	-0.234
	Type of infidelity	0.024	0.014	0.053
	Sex X Infidelity	0.092	0.133	0.359
	Positive affect	0.034	0.275	3.876***
Model 3				
	Sex of participant	-0.061	-0.039	-0.131
	Type of infidelity	0.070	0.042	0.156
	Sex X Infidelity	0.071	0.103	0.274
	Positive affect	0.103	0.824	2.265*
	Positive affect X Sex	-0.028	-0.380	-1.550
	Positive affect X Infidelity	-0.014	-0.192	-.723
Model 4				
	Sex of participant	-0.065	-0.041	-0.137
	Type of infidelity	0.081	0.049	0.180
	Sex X Infidelity	0.072	0.105	0.277
	Positive affect	0.167	1.333	1.394
	Positive affect X Sex	-0.067	-0.906	-0.957
	Positive affect X Infidelity	-0.051	-0.710	-0.757
	Positive affect X Sex X Infidelity	0.023	0.532	0.576

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

Negative affect. The same set of hierarchical regressions was used to examine negative affect. First, sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity and then the three models containing the interactions with negative affect were tested. When negative affect was examined sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity were entered in step one. Sex of the participant, type of infidelity, the interaction term between sex of the participant and type of infidelity, and negative affect were entered in the step two. Sex of the participant, type of infidelity, the interaction term between sex of the participant and type of infidelity, negative affect, and the interaction terms between negative affect and sex and negative affect and type of infidelity were entered in step three. Sex of the participant, type of infidelity, the interaction term between sex of the participant and type of infidelity, negative affect, the interaction terms between negative affect and sex and negative affect and type of infidelity, and a three way interaction between sex, type of infidelity, and negative affect were entered in step four. When abandonment scores were used as the dependent variable, the hierarchical multiple regression revealed that sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity accounted for 4.3% of the variance, but did not significantly contribute to the model, $F(3, 173) = 2.578$, $p = .055$ (see Table 7). Adding negative affect and the interaction terms between negative affect and sex and type of infidelity in the subsequent models did not increase the original models ability to predict abandonment behaviors (R^2 changes < .03 and $F(s) < 1$). Further, none of the interactions associated with negative affect were significant predictors of abandonment behavior, $t(s) < 1$.

Table 7. Results of Hierarchical Regression Analysis of Predictors of Abandonment Behavior.

	Predictor Variables	*B*	β	*t*
Model 1				
	Sex of participant	-1.355	-0.806	-2.685**
	Type of infidelity	-1.252	-0.689	-2.591*
	Sex X Infidelity	0.708	0.973	2.508*
Model 2				
	Sex of participant	-1.293	-0.769	-2.567*
	Type of infidelity	-1.221	-0.672	-2.537*
	Sex X Infidelity	0.673	0.925	2.389*
	Negative affect	0.011	0.122	1.637
Model 3				
	Sex of participant	-1.311	-0.780	-2.631**
	Type of infidelity	-1.249	-0.687	-2.638**
	Sex X Infidelity	0.690	0.948	2.478*
	Negative affect	0.106	1.181	3.019**
	Negative affect X Sex	-0.036	-0.679	-2.561
	Negative affect X Infidelity	-.021	-0.420	-1.413
Model 4				
	Sex of participant	-1.311	-0.779	-2.609*
	Type of infidelity	-1.249	-0.687	-2.626**
	Sex X Infidelity	0.690	0.947	2.462*
	Negative affect	0.106	1.174	1.092
	Negative affect X Sex	-0.035	-0.671	-0.621
	Negative affect X Infidelity	-0.021	-0.412	-0.385
	Negative affect X Sex X Infidelity	0.000	-0.008	-0.007

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

When retention scores were used as the dependent variable, the hierarchical multiple regression revealed that sex of the participant, type of infidelity, and the interaction term between sex of the participant and type of infidelity accounted for 1.8% of the variance, but did not significantly contribute to the model, $F(3, 188) = 1.164$, $p = .325$ (see Table 8). Adding negative affect and the interaction terms between negative affect and sex and type of infidelity in the subsequent models did not increase the original models ability to predict retention behaviors (R^2 changes < .03 and $F(s) < 1$). Further, none of the interactions associated with negative affect were significant predictors of retention behavior, $t(s) < 1$.

Table 8. Results of Hierarchical Regression Analysis of Predictors of Retention Behaviors.

	Predictor Variables	*B*	β	*t*
Model 1				
	Sex of participant	-0.272	-0.173	-0.588
	Type of infidelity	-0.077	-0.047	-0.169
	Sex X Infidelity	0.169	0.249	0.653
Model 2				
	Sex of participant	-0.100	-0.063	-0.249
	Type of infidelity	0.020	0.012	0.050
	Sex X Infidelity	0.063	0.092	0.279
	Negative affect	0.042	0.503	7.982***
Model 3				
	Sex of participant	-0.106	-0.067	-0.264
	Type of infidelity	0.007	0.004	0.018
	Sex X Infidelity	0.069	0.102	0.308
	Negative affect	0.093	1.115	3.285**
	Negative affect X Sex	-0.017	-0.350	-1.503
	Negative affect X Infidelity	-0.013	-0.285	-1.164
Model 4				
	Sex of participant	-0.065	-0.041	-0.163
	Type of infidelity	0.034	0.020	0.086
	Sex X Infidelity	0.050	0.073	0.222
	Negative affect	-0.011	-0.138	-0.146
	Negative affect X Sex	0.044	0.933	1.002
	Negative affect X Infidelity	0.047	0.991	1.067
	Negative affect X Sex X Infidelity	-0.035	-1.304	-1.424

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

Discussion

Men and women have each evolved specific adaptations to combat the costs of infidelity. Buss et al. (1992) postulated that men have developed a sexual jealousy mechanism while women have developed an emotional jealousy mechanism to facilitate certain behaviors (e.g. mate retention and abandonment). Numerous studies have supported Buss's predictions (Easton, Schipper, & Shackelford, 2007; Schützwohl, 2005; Shackelford, Buss, & Bennett, 2002). Although the current study employed the Buss et al. (1992) forced-choice method, it also expands these predictions by utilizing retrospective reports. Retrospective reports of actual events should provide more ecological validity than imagined scenarios.

It was hypothesized that physical infidelity will lead to more mate abandonment behavior in men, and emotional infidelity will lead to more mate abandonment behavior in women. The current study only partially supported the hypothesis. Men were more likely to abandon their mate after experiencing a physical infidelity. Women, however, showed no significant differences in mate abandonment behaviors after experiencing a physical or emotional infidelity. As previously mentioned, short-term mating strategies are beneficial to males because they are able to have multiple offspring and use less energy and resources. It may be that men are more likely to abandon their mate after experiencing a physical infidelity because they are less compelled to stay in committed relationships. The costs associated with physical infidelity (e.g. genetic cuckoldry) may be too great to remain committed to the partner. The predictions for females, however, were not supported by the results. This finding was not consistent with previous research, which shows that females react more negatively to the thought of emotional infidelity (Buss et al., 1992).

Failure to find significant effects with women on the forced choice and abandonment measures is puzzling. A possible explanation for this failure relates to women’s use of birth

control. Geary et al. (2001) has found that women on birth control typically report a partner's physical infidelity as more distressing than emotional infidelity. It is likely that a portion of the women in both the emotional infidelity condition and the physical infidelity condition were using birth control. If birth control causes women to report physical infidelity as more distressing, then the differences between the groups may have been reduced. The current study did not assess birth control usage, which should be addressed in future research.

In addition, the current study found that only one of the five individual differences examined moderated the relationship between sex and behavioral reactions. Participants of a lower mate value tended to use more mate retention tactics after experiencing partner infidelity. This is consistent with past research, which shows that lower mate value individuals are more likely to adopt mate retention tactics as they have a heightened awareness of infidelity (Brewer & Riley, 2009). These individuals often increase the amount of love and affection for their partner, as riskier behaviors may encourage comparisons to higher mate value rivals (Brewer & Riley, 2009). Partner mate value, dispositional jealousy, positive affect, and negative affect did not moderation the relationship between sex and behavioral reactions. Past research has demonstrated that the costs of infidelity (e.g. male infidelity may lead to a redirection of resources and protection, female infidelity may lead to genetic cuckoldry) may be too high to expend further energy retaining the mate (Harris, 2003; Miller & Maner, 2008). While it is possible that these costs overshadow factors such as partner mate value and affect, more research is needed to properly assess jealousy. Further research is needed to adequately assess these, and other, potential moderating variables.

Research Issues and Future Directions

There are a number of limitations in the current study. First, the study utilized both retrospective and self-report measures. Participants were asked to recall a previous relationship

in which a partner was unfaithful, and provide detailed information of the behaviors that followed. Additionally, participants completed a variety of personality measures. While there are validity concerns with the accuracy of self-reports, there is evidence that participants can accurately predict their future behaviors (Shrauger, Ram, Greninger, & Mariano, 1996). Self-reports also accurately describe past undesirable behaviors. For example, when asked about recent drug use, high agreement is found between self-reports and urinalysis of substance abusers (see Brener, Billy, & Grady [2003] for a review of the literature; Peters, Kremling, & Hunt, 2014).

Despite this evidence, retrospective reports when describing responses to infidelity are still somewhat suspect. It may be that infidelity, and reactions to partner infidelity, are more socially sanctioned than the behaviors described previously by Peters et al. (2014). Disclosing partner infidelity, as well as one's behavioral reactions, may result in adverse negative effects within one's social network. For example, recent research has found that individuals who forgive partner infidelity are seen as weak and incompetent (Smith, Goode, Balzarini, Ryan, & Georges, 2014). Evidence of this can be seen in the 2008 presidential primaries. Female voters claimed that Hillary Clinton's forgiveness of Bill Clinton reflected poorly on all women; and therefore, cited this as a reason for not voting for her in the primary elections (Gerth & Van Natta, 2008, p. 195). In order to avoid these potential negative implications, individuals may alter retrospective reports regarding infidelity.

Consequently, it is very important to demonstrate that the sex by type of infidelity effects occur in real world situations that involve actual infidelity and result in actual changes in behavior. An ambitious approach to accomplishing this would be to examine archival sources. For example, researchers could attempt to review anonymized case files from marriage and

family therapists that involve infidelity. It might be possible to classify the type of infidelity (emotional vs. physical) and the type of behavioral responses emitted by the clients. A challenge for research examining real world infidelity will be to disentangle the host of moderating factors from the effects of sex and type of infidelity on behavioral responses.

Second, this study examined only undergraduate psychology students. Although undergraduate dating relationships are found to have higher rates of infidelity than marriages (McAnulty & Brineman, 2007), it seems likely that undergraduates will have limited experience with long-term relationships and the infidelities associated with those relationships. This presents an issue as these results may have low external validity. To increase the generalizability of the findings, it would be beneficial to study older populations with greater exposure to long-term relationships. When using imagined scenarios, however, Baker (2013) found that experience with infidelity did not moderate the relationship between an imagined infidelity and the type of behavioral response. This suggests that participants who have not experienced infidelity respond similar to those who have. Future research should attempt to replicate these findings with an older population by offering incentives, posting flyers throughout the community, and/or utilizing social media as a possible recruitment tool.

Third, evolutionary theory suggests a great number of potential personality and contextual variables that might moderate the relationship between sex and type of infidelity. In this study, several personality moderators were assessed (e.g. mate value of participants, mate value of partner). Although our results were not supportive, there are other individual differences (e.g. age) and a host of contextual variables (e.g. sex ratio in population) that we did not examine. For example, population sex-ratio may moderate the relationship between sex and infidelity. Biased adult sex ratios in bird populations predict mating behavior, as the rarer sex has

access to more potential partners (Liker, Freckleton, & Szekely, 2014). Further, this research found that infidelity among bird populations increases when males outnumber females. Szekely, Weissing, and Komduer (2014) suggest that adult sex ratios may affect mate choice, mating behaviors, and parental care. It is possible that unbalanced adult sex ratios in human populations may also moderate the relationship between sex and infidelity. Future research should explore other potential moderating variables.

Finally, in the current study participants were asked to differentiate between physical and emotional infidelity. Although participants were presented with clearly defined terms which aimed to disentangle the two behaviors, emotional infidelity remains a difficult construct to accurately assess. While physical infidelity is dependent on whether an actual physical relationship existed, emotional infidelity is more difficult to determine. It is possible that some extra-pair emotional relationships are completely innocent, and lack the deeper connection that may be deemed as cheating. Therefore, participants may differ in how they interpret their partner's extra-pair emotional relationships. Further, in real life situations it seems likely that emotional and physical infidelity often co-occur. It is possible that persons interpret physical infidelity as implying emotional infidelity.

Conclusion

Men and women have evolved specific adaptations which direct their emotional reactions to specific forms of partner infidelity. It would seem likely that these emotional reactions would also direct specific behavioral reactions (e.g. abandonment, retention). This thesis attempted to demonstrate the behavioral differences between men and women after experiencing different types of infidelity. The results, however, only demonstrated significant effects for men experiencing a physical infidelity. While these findings contradict previous research which shows women display greater jealousy towards emotional infidelity, it suggests that modern

cultural and societal trends (e.g. use of birth control) may have a large impact on evolutionary adaptations.

Appendix A

Demographic Information

What is your gender?

a. Male
b. Female

How old are you?

a. _____ years old

What is your current relationship status?

a. Single (never married)
b. Single (divorced)
c. Casual dating
d. In an exclusive relationship
e. Engaged
f. Married
g. Widowed

What is your sexual orientation?

a. Heterosexual
b. Homosexual
c. Bisexual
d. Other: _____

What is your ethnicity?

a. White
b. Black/African American
c. Mexican/Mexican American, Chicano
d. Asian
e. Other

Have you ever been in a relationship where you partner has been either emotionally (e.g. developed romantic feeling for someone else) or physically (e.g. had sexual relations with someone else) unfaithful to you?

a. Yes
b. No

Appendix B

Relationship Infidelity

If you answered yes, did your partner engage in:

a. Physical infidelity (sexually involved with another person)
b. Emotional infidelity (emotionally involved with another person)
c. Both physical and emotional infidelity

What type of behavior did your partner engage in with this other person? Check all that apply.

a. Kissing
b. Fondling
c. Oral sex
d. Sexual intercourse
e. Flirting
f. Spending quality time together/dating
g. Intimate conversations
h. Falling in love
i. Don't know

Overall, what course of action did you take after discovering your partner cheated?

a. Started looking for a way out of the relationship
b. Started looking for a way to maintain the relationship

How long has/did this relationship last(ed)?

a. _____ years and _____months

What is/was the nature of this relationship?

a. Casual dating
b. Going steady (boyfriend/girlfriend)
c. Engaged
d. Married

Appendix C

Behavioral List

1. Initially, what course of action did you plan to take after discovering your partner's infidelity?
   a. I wanted to start looking for a way out of the relationship
   b. I wanted to start looking for a way to maintain the relationship

2. After your partner cheated did you do any of the following things? Please indicate your answer by selecting yes or no.

Yes	No	I started thinking about looking for another partner.
Yes	No	I started checking up on my partner's location throughout the day.
Yes	No	I encouraged my partner to spend most of his/her time with me.
Yes	No	If you were married to this person, I contacted a divorce attorney.
Yes	No	If you were living with this person, I would work on a way to move out.
Yes	No	I engaged in actions intended to make my partner jealous.
Yes	No	I tried to make my partner feel guilty.
Yes	No	I put down my rival in front of my partner.
Yes	No	I looked for a way to end the relationship.
Yes	No	I threatened my rival to stay away from my partner.
Yes	No	I prepared myself to find another partner.
Yes	No	I tried to entice my partner with frequent oral sex.
Yes	No	If you were sharing finances with this person, I worked on a way to separate the finances.
Yes	No	I put additional effort into my physical appearance.
Yes	No	I acted in a loving way towards my partner.

3. What other actions, if any, did you take? Please write in the box below.

Appendix D

Please rate your unfaithful partner on the following.

Your partner's physical attractiveness

Extremely Attractive **Average** **Extremely Unattractive**

1 2 3 4 5

Your partner's physical beauty

Very Beautiful/Handsome **Average** **Not Very Beautiful/Handsome**

1 2 3 4 5

Your partner's physique or figure

Extremely Good **Average** **Extremely Poor**

1 2 3 4 5

Your partner's personal appearance

Extremely Good **Average** **Extremely Poor**

1 2 3 4 5

What is your partner's current level of education?

a. High school or equivalent (GED)
b. Some college
c. Bachelors degree
d. Master's degree
e. Doctoral degree

In the future what do you expect your partner's highest level of education will be?

a. High school or equivalent (GED)
b. Some college
c. Bachelors degree
d. Master's degree
e. Doctoral degree

What is your partner's current approximate income?

a. $0 - 10,000
b. $11,000 - 20,000
c. $21,000 - 30,000
d. $31,000 - 40,000
e. $41,000 - 50,000
f. $51,000 - 60,000
g. $61,000 - 70, 000
h. $71,000 - 80,000
i. $81,000 - 90,000
j. $91,000 - 100,000
k. More than $100,000

Your partner's job would be described as

High Status **Average** **Low Status**

1 2 3 4 5

In the future you would expect your partner to obtain a job that is:

a. High status
b. Low status

In the future you would expect your partner's approximate income to be:

a. $0 - 10,000
b. $11,000 - 20,000
c. $21,000 - 30,000
d. $31,000 - 40,000
e. $41,000 - 50,000
f. $51,000 - 60,000
g. $61,000 - 70, 000
h. $71,000 - 80,000
i. $81,000 - 90,000
j. $91,000 - 100,000
k. More than $100,000

Appendix E

Mate Value Scale

Please answer the following questions.

Overall, how would you rate your level of desirability as a partner on the following scale?

Extremely Undesirable						**Extremely Desirable**
1	2	3	4	5	6	7

Overall, how would members of the opposite sex rate your level of desirability as a partner on the following scale?

Extremely Undesirable						**Extremely Desirable**
1	2	3	4	5	6	7

Overall, how do you believe you compare to other people in desirability as a partner on the following scale?

Very low	**Lower**	**Slightly lower**	**Average**	**Slightly higher**	**Higher**	**Very high**
1	2	3	4	5	6	7

Overall, how good of a catch are you?

Very bad catch	**Bad catch**	**Somewhat bad**	**Average catch**	**Somewhat good**	**Good catch**	**Very good catch**
1	2	3	4	5	6	7

Appendix F

Jealousy Scale

Imagine that you are in a relationship with individual X.

How often do you have the following thoughts about X?

Never Always
1 2 3 4 5

_____ I suspect that X is secretly seeing someone of the opposite sex.

_____ I am worried that some member of the opposite sex may be chasing after X.

_____ I suspect that X may be attracted to someone else.

_____ I suspect that X may be physically intimate with another member of the opposite sex behind my back.

_____ I think that some members of the opposite sex may be romantically interested in X.

_____ I am worried that someone of the opposite sex is trying to seduce X.

_____ I think that X is secretly developing an intimate relationship with someone of the opposite sex.

_____ I suspect that X is crazy about members of the opposite sex.

How would you emotionally react to the following situations?

Very pleased Very upset
1 2 3 4 5

_____ X comments to you on how great looking a particular member of the opposite sex is.

_____ X shows a great deal of interest or excitement in talking to someone of the opposite sex.

_____X smiles in a very friendly manner to someone of the opposite sex.

_____ A member of the opposite sex is trying to get close to X all the time.

_____ X is flirting with someone of the opposite sex.

_____ Someone of the opposite sex is dating X.

_____ X hugs and kisses someone of the opposite sex.

_____ X works closely with a member of the opposite sex (in school or office).

How often do you engage in the following behaviors?

Never Always
1 2 3 4 5

_____ I look through X's drawers, handbag, or pockets.

_____ I call X unexpectedly, just to see if he or she is there.

_____ I question X about previous or present romantic relationships.

_____ I say something nasty about someone of the opposite sex if X shows any interest in the person.

_____ I question X about his or her telephone calls.

_____ I question X about his or her whereabouts.

_____ I join in whenever I see X talking to a member of the opposite sex.

_____ I pay X a surprise visit just to see who is with him or her.

Please rate how you felt when you discovered that your partner had committed the infidelity.

Moderately jealous **Extremely jealous**
1 2 3 4 5

Moderately angry **Extremely angry**
1 2 3 4 5

Moderately threatened **Extremely threatened**
1 2 3 4 5

Moderately hurt **Extremely hurt**
1 2 3 4 5

Appendix G

Positive and Negative Affect Scale

Please indicate the extent you felt when you discovered your partner's infidelity.

Very slightly or not at all **Extremely**

1 2 3 4 5

_____ Interested

_____ Distressed

_____ Excited

_____ Upset

_____ Strong

_____ Guilty

_____ Scared

_____ Hostile

_____ Enthusiastic

_____ Proud

_____ Irritable

_____ Alert

_____ Ashamed

_____ Inspired

_____ Nervous

_____ Determined

_____ Attentive

_____ Jittery

_____ Active

_____ Afraid

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Curriculum Vitae

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Education:

Ph.D.	University of Nevada, Las Vegas, *expected: 2018* Experimental Psychology: Quantitative/Experimental
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B.A.	University of Nevada, Las Vegas, 2013 Psychology

Research Experience:

08/2013-present	Graduate student, University of Nevada, Las Vegas working with Dr. Murray Millar.
07/2012-08/2013	Undergraduate research assistant, University of Nevada, Las Vegas working with Dr. David Copeland.
12/2011-03/ 2012	Undergraduate research assistant, University of Nevada, Las Vegas working with Dr. Noelle Lefforge.
07/2011-12/2011	Undergraduate research assistant, University of Nevada, Las Vegas working with Dr. Jennifer Rennels.

Teaching Experience:

2015	Instructor of Record, Introduction to Psychology. *Syllabus available upon request.*

Honors and Awards:

2016	Graduate and Professional Student Association Travel Grant, UNLV
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Academic Service:

2015-2016	President, Experimental Student Committee
2014-2015	Psi Chi Liaison, Experimental Student Committee
2014-2015	Quantitative Experimental Emphasis Representative, Experimental Student Committee
2013-2014	General Experimental Emphasis Representative, Experimental Student Committee

Professional Service:

2015-2016 Member-at-Large, Society for Personality and Social Psychology Graduate Student Committee
2014, 2015 Student Grant Reviewer, Association for Psychological Science Student Caucus
2014, 2015 Campus Representative, Association for Psychological Science Student Caucus

Professional Membership:

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Conference Presentations:

Walsh, M., Millar, M. (April, 2016). The Effects of Relationship Priming on Sex Differences in Suspicion. Presented at the Western Psychological Association Convention, Long Beach, California.

Walsh, M., & Millar, M. (January, 2016). Behavioral Reactions to Emotional and Physical Infidelity: Mate Abandonment vs. Mate Retention. Presented at the Society for Personality and Social Psychology Annual Meeting, San Diego, California.

Walsh, M., & Millar, M. (April, 2015). Desirability of socially dominant males: The effects of female availability. Presented at the Western Psychological Association Convention, Las Vegas, Nevada.

Westfall, R. S., Millar, M., & **Walsh, M.** (April, 2015). Effects of instructor attractiveness on classroom learning. Presented at the Rocky Mountain Psychological Association Convention, Boise, Idaho.

Walsh, M., Millar, M., & Westfall, R. S. (April, 2015). The effects of female mate value on the desirability of male social status. Presented at the Rocky Mountain Psychological Association Convention, Boise, Idaho.

Walsh, M., & Millar, M. (February, 2015). Women's suspicion of costly traits varies throughout the menstrual cycle. Presented at the Society for Personality and Social Psychology Annual Meeting, Long Beach, California.

Walsh, M., & Millar, M. (2014, April). The effects of gender and cost on suspicion: An evolutionary perspective. Presented at the Western Psychological Association Convention, Portland, Oregon.

Rennels, J., Noles, E., Kayl, A., & **Walsh, M**. (2011, November). Comparing intermodal knowledge among 5-, 8-, and 11-month old infants. Presented at the UNLV Psi Chi Research Conference, Las Vegas, Nevada.

Manuscripts Submitted or in Preparation:

Westfall, R. S., Millar, M., & **Walsh, M.** (submitted) The effects of self-esteem threat on physical attractiveness stereotypes.

Walsh, M., Millar, M., & Westfall, R. S. (submitted). Women's suspicion of evolutionary costly claims in initial courtship communications: Menstrual cycle effects.

Walsh, M., & Millar, M. (2016). The effects of gender and cost on suspicion in initial courtship communications. *Evolutionary Psychological Science*, doi: 10.1007/s40806-016-0062-8

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