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Psychopathy and Attachment: Examining the Relationship between Secure Attachment Priming and Psychopathy

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PSYCHOPATHY AND ATTACHMENT:
EXAMINING THE RELATIONSHIP BETWEEN SECURE ATTACHMENT PRIMING
AND PSYCHOPATHY

by

VICTORIA ROSE ALLEN

(Under the Direction of Amy A. Hackney)

ABSTRACT

The purpose of this research was to employ implicit and explicit security priming in order to examine the relationship between attachment dimensions and expressed psychopathy; specifically, it was hypothesized that security priming would reduce levels of expressed psychopathy. A repeated measures design was also used to assess the association between state attachment variables and expressed psychopathy. The results showed that security priming was effective at reducing expressed psychopathy for individuals high in trait attachment anxiety. Security priming also caused changes in the associative relationships between attachment dimensions and expressed psychopathy. These findings increase our understanding of the relationships between attachment and psychopathy and have implications for clinicians treating psychopathy. Future research is needed to fully understand the relationships between attachment and expressed psychopathy. Future research should also attempt to replicate the current findings with methodological modifications to address the current study's limitations.

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VICTORIA ROSE ALLEN

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CHAPTER 1

INTRODUCTION

The purpose of this study is to examine the relationships between attachment and psychopathy by testing whether secure attachment priming can alter levels of expressed psychopathy, or state psychopathy, in a sample of undergraduate college students. This avenue of research is important for two reasons; it will help to expand upon the possible correlates of psychopathy, and it will provide insight into potential therapeutic opportunities to treat individuals with higher scores on measures of psychopathy. Previous research examining the relationship between attachment and psychopathy has produced inconsistent results, particularly when examining the relationships between attachment styles and levels of trait psychopathy. By employing more reliable methods of secure attachment priming, this research will shed some light on how attachment dimensions and psychopathy are related.

Psychopathy

Hervey Cleckley's book, *The Mask of Sanity*, sparked a great interest in psychopathy (Cleckley, 1941). Cleckley described psychopathy in terms of personality characteristics, identifying 16 core features of psychopathy, such as superficial charm, absence of nervousness, lack of remorse or shame, and pathologic egocentricity. Many of Cleckley's 16 traits proposed continue to be used to describe psychopathy (e.g., Hare, 2003; Lilienfeld & Andrews, 1996). Psychopathy is currently described as a severe personality disorder marked by a constellation of behavioral, interpersonal, and affective traits (Hare, 1996, 2003).

A majority of psychopathy researchers have focused their efforts on examining institutionalized populations (Patrick, 2007) because the prevalence rates of psychopathy there are higher within this population compared to the general population. It is estimated that 15-30% of incarcerated adult men and women meet the criteria for psychopathy (Hare, 1991, 1996; Salekin, Rogers, & Sewell, 1997; Salekin, Rogers, Ustad, & Sewell, 1998). Within the psychopathy literature, there is a term used to describe individuals who possess elevated levels of psychopathy traits but do not engage in criminal behavior. Such individuals are referred to as possessing “successful psychopathy” (Lykken, 1995, p. 127). This term is important when considering psychopathy in non-institutionalized populations because possessing a criminal record is not considered the hallmark characteristic of psychopathy (Gao & Raine, 2010). In other words, an individual can meet the criteria for psychopathy yet not be involved in criminal behavior. It is still unclear if criminal behavior does belong as a core feature of psychopathy or if criminal behavior is simply a correlate of the disorder (Skeem & Cooke, 2010). Cooke and Michie (2001) suggest one’s engagement in criminal behavior is perhaps a consequence of the core psychopathic features, which are a lack of emotion and remorse (Cooke & Michie, 2001). Further research and factor analysis is required before the extent to which criminal behavior is related to psychopathy can be determined (Skeem & Cooke, 2010).

Cleckley (1941) suggested that successful psychopathy may prove successful in pursuing higher education in fields such as business, medicine, and law because the psychopathy exhibited in these individuals may be milder and less severe. Additionally, these individuals may have the ability to maintain the appearance of normal behavior

allowing them to experience success. Therefore, it is important to also examine psychopathy in non-institutionalized populations. Psychopathy exists at a lower prevalence rate in non-institutionalized populations when compared to institutionalized populations. Neumann and Hare (2008) examined psychopathy in 514 community members using the Psychopathy Checklist-Screening Version (PCL:SV; Hart, Cox, & Hare, 1995), which is derived from the Psychopathy Checklist: Revised (PCL-R). The results suggest 1-2% of the study sample presented with scores indicative of potential psychopathy, which compliments other research suggesting prevalence rates between 0.6-1% in the general population (Coid, Yang, Ullrich, Roberts, & Hare, 2009, Hare, 2003).

Unfortunately, there are a limited number of studies that have examined the successful psychopath in the fields of business, medicine, and law as suggested by Cleckley (1941). However, it is estimated that psychopathy exists at 3.5% in the business community (Babiak & Hare, 2006). Babiak, Neumann, and Hare (2010) examined the relationship between psychopathy and successful careers in 203 managers and executives from seven U.S. companies. PCL-R scores were gathered from field notes from meetings with participants, observations, and interviews with associates. The results showed an association between higher scores of psychopathy and holding senior positions, such as vice-president, director, and supervisor. This research also uncovered an association between higher scores of psychopathy and poor management styles, failure to act as a team-leader, and poor performance. Interestingly, the results also showed that higher psychopathy scores were associated with good communication skills, creative and innovative ability, and strategic thinking.

This combination of results suggests that these well-developed interpersonal skills within individuals higher in levels of psychopathy may help to mask deficits in work place performance. Overall, our limited knowledge about successful psychopathy calls for further investigation.

Etiology of Psychopathy

Several theories have been suggested to explain the etiology of psychopathy including brain abnormalities, genetic and environmental influences, personal life experiences, and attachment orientations. Koenigs, Baskin-Sommers, Zeier, and Newman (2011) reviewed 19 structural and functional brain imaging studies published between 1997 and 2010. Overall, structural imaging studies have linked psychopathy with structural abnormalities within the frontal and temporal areas involving cortical and subcortical gray matter structures and white-matter pathways. However, research has yet to produce consistent replication of specific structural brain abnormalities that are associated with increased levels of psychopathy. Functional brain imaging studies have reported abnormal activity in all four lobes and several subcortical structures in adult participants with psychopathy. Although the structural and functional brain imaging studies have produced a wide range of results, they have consistently identified that the frontal and temporal lobes are associated with psychopathy. It is important to remember, however, that the identification of areas in the brain that are associated with psychopathy does not imply that abnormal brain development caused psychopathy. It is also likely that the development of psychopathy led to changes in brain structures.

A second avenue explored in the etiology research is on genetics contributions and environmental influences. In a sample of adult male twins, Blonigen, Carlson,

Krueger and Patrick (2003) found that genetics accounted for 29-56% of the variance in all psychopathic dimensions, assessed by the Psychopathic Personality Inventory (PPI). Another study found that genetic factors accounted for approximately 40% of the variation in the emotional detachment trait dimension and antisocial/impulsive trait dimension, assessed by the Minnesota Temperament Inventory (Taylor, Loney, Bobaliila, Loacono, & McGue, 2003).

Hicks, Carlson, Blonigen, Patrick, Lacono, and McGue, (2012) examined the gene-environment interaction on primary psychopathy (i.e., affective-interpersonal features) and secondary psychopathy (i.e., social deviance features) by conducting a large scale adolescent twin study. The researchers assessed psychopathic personality traits using the Multidimensional Personality Questionnaire (MPQ; Tellegen & Waller, 2008), which contain the subscales of fearless dominance (primary psychopathy) and impulsive antisociality (secondary psychopathy). The MPQ subscales were found to be highly correlated with the fearless dominance and impulsive antisociality subscales of the PPI. Additionally, the researchers collected information on environmental risk factors, such as parent-child relationship problems, antisocial and prosocial peer affiliations, academic achievement and engagement, and school and legal problems.

Using standard biometric models, the results revealed that primary and secondary psychopathy were correlated with environmental measures and concluded that the association was mediated by genetics. In other words, a person's genetics can alter ones exposure to environmental risk factors. Although both factors were correlated with environmental risk factors and mediated by genetics, neither factor was correlated

with one another indicating the association between genetics and the psychopathy factors were independent of one another.

The researchers further concluded that the association between primary psychopathy and genetics was largely independent of environmental risk factors. In other words, environmental risk factors play little role in the relationship between genetics and primary psychopathy features. However, for secondary psychopathy, the association with genetics may increase one's general exposure to environmental risk factors. Risk factors may include parent-child relationship problems, antisocial peer affiliations, academic achievement and engagement, and stressful life events associated with school and legal problems. Although there is a growing body of research suggesting that genetics play a significant role in the development of psychopathy, to date no particular gene or gene sequence has been identified as a cause of psychopathy.

A third line of research suggests the personal life experiences of abuse and neglect may contribute to the development of psychopathy. Weiler and Widom (1996) administered the PCL-R to men and women who had documented cases of physical/sexual abuse and or neglect in childhood. Individuals who experienced physical/sexual abuse and or neglect during childhood scored higher on the PCL-R compared to matched individuals who did not have documented experiences of physical/sexual abuse and or neglect. Groups were matched on sex, age, race, and socioeconomic status. However, the abuse/neglect group had an average PCL-R score of 9.2 and the control group had an average PCL-R score of 6.8. These scores are

substantially lower than the commonly used cutoff score of 30 for a classification of psychopathy (Hare, 1991).

Graham, Kimonis, Wasserman, and Kline (2012) examined male sexual offenders and found that reports of childhood abuse, particularly sexual abuse, were associated with higher scores on the PCL-R, specifically the lifestyle facet (e.g., impulsivity, irresponsibility, and proneness toward boredom and need for stimulation). This is consistent with past findings that childhood abuse was only directly related to the lifestyle facet on the PCL-R (Poythress, Skeem, & Lilienfeld, 2006). Additionally, reports of physical abuse and neglect were associated with higher psychopathy scores compared to reports of emotional abuse, which was primarily driven by the antisocial behavioral facet (e.g., criminal versatility, poor behavioral controls) because the association was stronger for this facet than other facets.

Finally, research is beginning to investigate the role attachment orientations have on the development of psychopathy. Fowles and Dindo (2006) suggested that an examination of psychopathy traits (i.e., lovelessness/emotional detachment and negative interpersonal orientation) through an attachment lens may provide useful insight into the development of psychopathy. Frodi, Dernevik, Sepa, Philipson, and Bragesjo (2001) sampled 14 incarcerated men and found an over representation of insecure attachment orientations and having no secure attachment orientation within the sample. The researchers also concluded that psychopathy was not correlated to attachment orientations. However, this study was hindered by a small sample size. Unfortunately, there is little research that has examined the relationship between attachment and psychopathy further. A more elaborate discussion of the literature

concerning the relationship between attachment orientations and psychopathy will be discussed later.

Conceptual Models and Measurements of Psychopathy

The conceptualization of psychopathy is a source of much disagreement in the psychopathy literature. Several different, yet similar, conceptual models have been proposed using a variety of instruments, all of which are tailored for specific populations. The Psychopathy Checklist (PCL) and the Psychopathy Checklist-Revised (PCL-R) were developed with the intent that they be used on institutionalized populations. The Levenson Self-Report of Psychopathy (LSRP), the Psychopathic Personality Inventory-Revised (PPI-R), and the Self-Report Psychopathy Scale (SRP) also provide conceptual models of psychopathy; these instruments are intended for non-institutionalized populations.

Many of the conceptual models were developed using the PCL and the PCL-R. For decades, many of the instruments used in psychopathy research were neither reliable nor validated (Hare, 2003). However, the development of the PCL and PCL-R scales provided research and clinical communities with a sound instrument for assessing psychopathy (Edens, Skeem, Cruise, & Cauffman, 2001; Hare, 1985; Hare, 2003). Additionally, the PCL and the PCL-R has been described as the "gold standard" of psychopathy measurement (Lilienfeld & Fowler, 2006; Ross, Molto, Poy, Segarra, Pastor, & Montanes, 2007; Williams, Paulhus, & Hare, 2007). The PCL has been used to develop several models to describe the conceptualization of psychopathy.

The conceptual models that have been proposed using the PCL instruments are the two-factor, three-factor, and four-facet models of psychopathy. Originally, Hare

(1991) developed the two-factor model of psychopathy using the PCL. Factor one is comprised of the interpersonal and affective traits (i.e., selfishness, callousness, remorselessness). Factor two encompasses the behavioral traits (i.e., antisocial lifestyle, social deviance). Cooke and Michie (2001) proposed a three-factor model of psychopathy using the PCL-R. Their model includes an (a) arrogant/deceitful interpersonal style factor, (b) a deficient affective experience factor, and an (c) impulsive/irresponsible behavioral lifestyle factor. The third model of psychopathy essentially elaborates on the original two-factor model proposed by Hare (1991) by including two facets per factor. The (a) primary factor consists of an (1a) interpersonal facet and (2a) affective facet and the (b) secondary factor consists of a (1b) lifestyle facet and an (2b) antisocial facet (Hare, 2003). However, the instruments used to develop these conceptual models were never intended to be used on non-institutionalized populations (Hare, 1991, 2003).

There are instruments that have been developed to assess psychopathy within non-institutionalized populations. One instrument is the Levenson Self-Report of Psychopathy Scale (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995). This instrument was originally developed to assess the two factors in the two-factor model proposed by Hare (1991). Further research has reported moderate but significant correlations with the PCL-R in two samples of male prisoners (Brinkley, Schmitt, Smith, & Newman, 2001). Subsequently, Sellbom (2010) conducted a Confirmatory Factor Analysis and concluded the LSRP best fit a three-factor model of psychopathy. This model breaks the original primary factor into egocentric and callous affect factors and the secondary factor into an antisocial factor. Additionally, it creates a total score of psychopathy. This

new organization allows for a better understanding of the total LSRP psychopathy score.

Another measurement tool developed to assess psychopathy in non-institutionalized populations is the Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld & Widows, 2005). This measure is distinct in that it assesses prototypical psychopathy traits and does not assess antisocial behavior. In the original PPI, eight subscales were identified that do not represent any higher-order psychopathy factor, which is different from other measurements of psychopathy. A third instrument commonly used to assess and provide a conceptual model of psychopathy in non-institutionalized populations is the Self-Report Psychopathy Scale (SRP; Hare, 1985). Similar to the LSRP, the SRP was designed to assess the two-factor model of psychopathy developed from the PCL. The current version of this scale, SRP-III (Paulhus, Neumann, & Hare, in press) contains four factors, which reflect the four-facet model of psychopathy from the PCL-R.

The instrument a researcher chooses to use to assess psychopathy will correspond to a specific conceptual model of psychopathy. The lack of consensus on the core features of psychopathy and their organization has led to the use of a variety of measurements within the literature, which may prove disadvantageous when examining the full scope of the psychopathy construct. Despite a lack of overall consensus on one accepted model, these models all contain the same core features to describe psychopathy (i.e., interpersonal traits, affective deficits, and impulsive, irresponsible lifestyle and behavior) but they differ in the factor organization.

Attachment Theory

Bowlby (1969, 1973, and 1980) first proposed the theory of attachment in his trilogy of attachment and loss. Attachment theory states that humans have an evolutionally based behavioral system that aims to establish and maintain a bond or attachment between oneself and a mother figure as a means of survival. Starting in infancy, the experiences with an attachment figure or figures gradually shape a person's attachment system into a fairly stable attachment style in adulthood. An attachment style is "a systematic pattern of relational expectations, emotions, and behaviors, that results from a particular attachment history" (Mikulincer, Shaver, Gillath, Nitzberg, 2005 p. 818). The attachment style provides an individual with a framework for how to approach relationships all the way into and throughout adulthood (Ainsworth, 1979; Bowlby, 1969, 1973). Bowlby (1969, 1973, and 1980) theorized one's experiences during infancy and childhood produce internal working models that guide our attachment behavior throughout life. Research has also provided empirical evidence to support Bowlby's claim (Egeland & Farber, 1984; Erickson, Sroufe, & Egeland, 1985; Hazan & Shaver, 1987).

Ainsworth was the first to use Bowlby's theory to establish parent-child interaction patterns. Using the Strange Situations Procedure, Ainsworth, Blehar, Waters, and Wall (1978) identified three parent-child interaction patterns including secure, insecure-avoidant, and insecure-ambivalent. Subsequent research by Hazan and Shaver (1987) examined if the parent-infant attachment pattern extended into adulthood. The subsequent research examined adult attachment styles in terms of romantic relationships.

Hazan and Shaver's (1987) research led to the establishment of adult attachment styles that reflect the original parent-infant patterns established by Ainsworth and colleagues in 1978. These three adult attachment styles include secure, insecure-avoidant, and insecure-preoccupied. Bartholomew and Horowitz (1991) expanded on the three style model by including a fourth attachment style, insecure fearful avoidant. Brannon, Clark, and Shaver (1998) provided further support for the four style model and revealed that adult attachment styles fit into a two-dimensional model comprising of attachment-related avoidance and attachment-related anxiety.

The attachment dimensions are considered to be secondary attachment strategies. Secondary attachment strategies develop when the attachment figure is not reliable and supportive, and the strategy acts as a tool for emotion regulation. Individuals high in attachment anxiety have an attachment system that is hyperactive. When in an attachment activated situation, such as a romantic relationship, an individual would be hyperaware of their partner's responsiveness, and would engage in proximity seeking behaviors when threat to the relationship is perceived. Individuals high in attachment avoidance have an attachment system that is deactivated such that concerns with vulnerability and dependence are suppressed. When an individual is in an attachment activated situation, one would have thoughts and concerns that the partner is undependable and would rely on the self to provide and maintain one's needs (Brennan, Clark, & Shaver, 1998; Mikulincer, & Shaver, 2007).

This two-dimensional model of attachment fits into a four quadrant model producing four attachment patterns (Fraley, Waller, & Brennan, 2000). An individual high in attachment anxiety and low attachment avoidance would have an anxious,

preoccupied attachment style and the attachment system would be hyperactive. An individual low in attachment anxiety and high in attachment avoidance would have an avoidant, dismissing attachment style. The attachment system would be one that is deactivated (Mikulincer & Shaver, 2007; Brennan, Clark, & Shaver, 1998). An individual high in attachment anxiety and high in attachment avoidance would have a fearful, avoidant attachment style. The attachment system would be one that is hyperactive and deactivated simultaneously. In other words, an individual would engage in proximity seeking behaviors when a threat is perceived but would also avoid attachment relationships and intimacy out of fear of harm and abandonment (Coan, 2010; Brennan, et al., 1998). An individual low in attachment anxiety and low in attachment avoidance would have a secure attachment style. This attachment style possesses neither hyperactive nor deactivated attachment systems. An individual would be neither hyperaware of a partner's responsiveness nor overly concerned with abandonment. Securely attached individuals also do not actively avoid attachment relationships (Mikulincer & Shaver, 2007; Brennan, Clark, & Shaver, 1998).

There are many benefits associated with having a secure attachment. Secure attachments are associated with having higher quality relationships, including marital relationships (Brennan & Shaver, 1995; Beach, 1998), and trusting relationship partners and others (Bachman & Bippus, 2005; Collins & Read, 1990). Additionally, it is suggested that secure attachment relationships allow children to develop social competencies, which permits them to maintain close and supportive relationships into adulthood (Mallinckrodt, 2000). Secure attachment has also been associated with having less psychological distress and problems (Burge et al, 1997, Mallinckrodt & Wei,

2005). Overall, research has demonstrated that individuals with a secure attachment system have a number of positive life outcomes related to interpersonal interactions. Given the benefits of a secure attachment system, research is exploring whether secure attachment priming can be beneficial for psychological well-being.

Secure Attachment Priming

Research is beginning to explore the effects of attachment dimensions through the use of secure attachment priming, also known as “security priming” (Mikulincer & Shaver, 2007, p. 143). In general, security priming works by activating one’s internal working models. Internal working models are the mental representations about the expectations one has about the self, others, and the relationship between the self and other (Bowlby, 1969, 1973; Pietromonaco & Feldman-Barrett, 2000). These mental representations are stored in representational structures, also known as the semantic network; the mental representations can be activated through spreading activation (Bowlby, 1980; Bretherton, 1990; Collins & Read, 1994; Klauer & Musch, 2003). Spreading activation occurs when a prime activates a concept in the representational structures which will spread and activate related concepts in the structure (Klauer & Musch, 2003). Security priming has been shown to alter a variety of human behaviors by activating the internal working models in the semantic network; Security priming can occur in two ways, subliminally and supraliminally, also known as implicit and explicit priming, respectively.

Implicit security priming involves exposing participants to secure attachment style related words, pictures, or names for periods of time below conscious awareness. This process can arouse thoughts and feelings related to secure attachment without the

participants knowing where their thoughts and feelings are originating from, the security prime (Mikulincer & Shaver, 2007). Explicit security priming is induced by asking participants to recall or imagine a scenario that describes a secure attachment style. This process also brings about thoughts and feelings related to secure attachment but the participants are aware of where the thoughts and feelings are originating from, the security prime (Mikulincer & Shaver, 2007). According to Gawronski and Bodenhausen's (2006) associative-propositional model of implicit and explicit attitudes, the thoughts and feelings generated by an implicit prime can have an effect regardless of a person's conscious validation of the truth value of the thought or feeling. In other words, an implicit security prime may produce a stronger reduction in state psychopathy if the participants do not consciously evaluate the truth value of their feelings. On the other hand, if participants engage in propositional reasoning regarding the thoughts and feelings generated by the security prime (regardless of whether the prime is implicit or explicit), a participant could either accept or reject the truth value of the generated attitude, and subsequently respond either symmetrically or asymmetrically. Using this current study as an example, a symmetrical response would result in the security prime decreasing psychopathy. An asymmetrical response could result in a contrast effect, in which an implicit or explicit security prime would produce an increase in expressed psychopathy.

Gillath, Sesko, Shaver, and Chun (2010) used implicit and explicit attachment priming to demonstrate that security priming increases authenticity and honesty, while anxious and avoidant priming increases inauthenticity and dishonesty. The authors hypothesized that this occurs because the attachment security priming allows a person

to be more open and trustful and not access their secondary strategies. Further research suggests that security priming can lead to a reduction of psychological pain by directing individuals away from using secondary attachment strategies, such as suppressing painful emotions (i.e., deactivation in attachment avoidance) or intensifying psychological distress (i.e., hyperactivation in attachment anxiety) (Cassidy, Shaver, Mikulincer, & Lavy, 2009). Furthermore, security priming can cause an increase in altruistic empathy by activating empathic memories in the semantic network (Mikulincer, Gillath, Halevy, Avihou, Avidan, & Eshkoli, 2001), and increase positive mood, positive self-view, and positive relationship expectations by activating secure attachment mental representations (Rowe & Carnelley, 2003; Carnelley & Rowe, 2007). Finally, research suggests security priming can cause a decrease in negative attitudes toward out-group members by activating secure attachment mental representations that act to relieve negative reactions toward the outgroup (Mikulincer & Shaver, 2001).

Psychopathy and Attachment Theory

Fowles and Dindo (2006) suggested that examining psychopathy in reference to attachment theory may provide useful insight into the development of the disorder. As mentioned earlier, this section will discuss the research examining the relationship between attachment orientations and psychopathy. Overall, the research has presented inconsistent results but more recent studies using more valid procedures and instruments may be providing a more accurate view of the relationship.

Bowlby (1979) theorized that having a poor attachment in infancy would lead an individual to become detached, cold, and affectionless in adulthood. However, there is relatively little research examining the relationship between attachment styles and

psychopathy. Kosson, Cyterski, Steuerwald, Neumann, and Walker-Mathews (2002), studying a sample of 115 delinquent male adolescents, found that a negative relationship exists between reported secure attachment to parents, assessed by the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987) and the Psychopathy Checklist: Youth Version (PCL:YV; Forth, Kosson, & Hare, 2003). Similarly, Flight and Forth (2007) found a negative relation between adolescent's secure attachment to fathers and measures of psychopathy using the IPPA and PCL: YV in a sample of 51 incarcerated male adolescents.

However, Frodi, et al., (2001) found no reliable relation between attachment styles assessed by the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985) and psychopathy, assessed by the Psychopathy Checklist: Screening Version (PCL: SV; Hart, Cox, & Hare, 1995) in a sample of 14 incarcerated men. Unfortunately, this study has a major limitation of a very small sample size. Similarly, Brennan and Shaver (1998) found no relation between attachment styles and psychopathy in a sample of 1407 college students using the Personality Diagnostic Questionnaire Revised Version (PDQ-R; Hyler & Rieder, 1987) to measure psychopathy. However, the instrument used in this study, the PDQ-R, was designed to measure passive-aggressive, sadistic, and antisocial personality disorders among others, but not psychopathy. Although the authors argued that passive-aggressiveness, sadism, and antisocial personality disorders are "akin to psychopathy" (p. 836), the PDQ-R is not a validated measure of psychopathy.

More recently, Mack, Hackney, and Pyle (2011) assessed the associations between the Experiences in Close Relationships-Revised Scale (ECR-R; Fraley, Waller,

& Brennan, 2000) and the LSRP in college students and found that individuals who scored high in attachment anxiety and high in attachment avoidance (fearful avoidant attachment) reported more primary psychopathy traits. In other words, individuals who have attachment systems that are hyperactive and deactivated tend to report more interpersonal and affective psychopathy traits. Additionally, individuals high in attachment avoidance (dismissing attachment) and individuals high in attachment anxiety (preoccupied attachment) reported more secondary psychopathy traits. It is important to note that this research is correlational and provides no information about causation. Fortunately, attachment priming may provide a useful way to understand the relationships between attachment and psychopathy by experimentally testing whether activating secure attachment schemas results in a change in psychopathy responses when compared to the activation of a neutral concept. If secure attachment priming can lower levels of psychopathy it would suggest a causal link between secure attachment and lower levels of psychopathy.

Hackney, Allen, and Vitacco (in preparation) had participants complete the ECR-R and then primed participants with one of four attachment orientations using a guided imagination task adopted from Broemer and Blumle (2003) and Mikulincer and Arad (1999). Participants were asked to visualize a problematic situation they could not solve by his or herself. Next, participants were asked to imagine being with another person in the problematic situation they visualized. The description of the other person they were asked to imagine corresponded to one of the four attachment orientations. Following the attachment prime, participants completed the LSRP.

The results of hierarchical multiple regression analyses showed that the effects of security priming were gender specific. For males, higher levels of attachment anxiety and avoidance were predictive of levels of self-reported psychopathy, regardless of priming condition. For females, the positive relationship between attachment anxiety and levels of psychopathy was modified by prime type. Females high in attachment anxiety that experienced secure attachment priming reported lower levels of psychopathy than females high in attachment anxiety in the control condition.

Study Overview

The current study will incorporate implicit and explicit security priming in order to examine the relationship between attachment dimensions and expressed psychopathy. This will be done by using the implicit security priming methodology used in previous research (Gillath, Sesko, Shaver, & Chun, 2010; Mikulincer, Gillath, Halevy, Avihou, Avidan, & Eshkoli, 2001) and by improving the explicit security priming methodology used in Hackney, Allen, and Vitacco (in preparation).

Instead of testing whether attachment security priming alters trait levels of psychopathy, the current study will assess whether security priming can alter levels of expressed psychopathy. Given the assumed stability of psychopathic traits (Hare, 2003; Salekin, Rogers, Ustad, & Sewell, 1998; Hare, 1991), a one-time security prime may not be powerful enough to cause an immediate change in reported traits. The trait measures of psychopathy assess typical thoughts, feelings, and behaviors from the past. However, it is reasoned that security priming should affect current thoughts and feelings related to psychopathy. Therefore, this study will test if security priming alters currently expressed levels of psychopathy, which we call state psychopathy.

Because Hackney, Allen, and Vitacco (in preparation) found that the effects of security priming were dependent upon trait levels of attachment, the current study measured participants' trait levels of attachment anxiety and avoidance before the security prime. We also measured trait levels of psychopathy prior to the security prime. In addition, the current design measured both state psychopathy and state attachment before and after the priming procedure. This repeated measures design allows the additional benefit of assessing whether the semantic associations between state attachment and state psychopathy change in strength as a function of security priming. It is reasoned that if there is an association in the semantic network between attachment and psychopathy, then this association will change in strength after the security priming.

Hypotheses

Hypothesis 1: The primary hypothesis of the current study was that a security prime would decrease levels of state psychopathy.

Hypothesis 1a): It was hypothesized that participants primed with attachment security would report lower levels of state psychopathy compared to participants who received a neutral prime.

Hypothesis 1b) It was further hypothesized that this effect of security priming would be dependent upon trait levels of attachment anxiety. Specifically, following Hackney, Allen, and Vitacco (in prep), it was hypothesized that participants high in trait level attachment anxiety who were primed with attachment security would report lower levels of state psychopathy than participants high in trait attachment anxiety who received the neutral prime.

Hypothesis 1c) The current study also assessed whether trait levels of attachment avoidance and trait levels of psychopathy modified the effects of the security priming on state psychopathy. .

Hypothesis 1d) It was also hypothesized that the effects of the attachment security prime may differ by attachment security priming technique. This hypothesis was nondirectional. In other words, compared to the explicit prime, the implicit prime may have a stronger effect on changes in levels of state psychopathy; alternatively, compared to the explicit prime, the implicit prime may have a weaker effect on changes in levels of state psychopathy. We reasoned that an implicit attachment security prime could have a stronger effect on changes in levels of state psychopathy because implicit primes, being experienced outside of conscious awareness, would not be affected by participants' conscious processing of the prime.

Hypothesis 2: The second hypothesis of this study examined any change in the associative strength between state attachment and state psychopathy from Time 1 to Time 2 as a function of security priming. If there was an association in the semantic network between attachment and psychopathy, then this association will change in strength after the security prime. It was specifically hypothesized a weakened positive association between state attachment anxiety and state psychopathy and state attachment avoidance and state psychopathy would be seen in the security priming conditions. Furthermore, it was hypothesized a strengthened negative association between state attachment security and state psychopathy would be seen in the security priming conditions. It was hypothesized the same pattern would not be seen in the neutral priming conditions.

Hypothesis 3: The state attachment measures can also serve as a manipulation check for the secure attachment priming.

Hypothesis 3a) It was hypothesized the participants primed with a security prime would report more state attachment security and less state attachment anxiety and state attachment avoidance from Time 1 to Time 2 compared to participants in the neutral priming conditions.

Hypothesis 3b) It was also hypothesized that the effects of the security prime would differ by security priming technique. As with hypothesis 1d, this hypothesis was nondirectional.

Hypothesis 3c) It was also hypothesized that trait levels of psychopathy, attachment avoidance, and attachment anxiety would modify the effects of the security prime.

CHAPTER 2

METHODS

Participants

One-hundred and twenty undergraduate students participated in the study. However, manipulation checks and experimenter bias reduced the sample size to 85 for hypothesis testing. The sample is comprised of 35 (41.2%) males and 50 (58.8%) females; sixty percent of the sample identified as Caucasian, 35.3% as African-American, and 3.5% as other, with a mean age of 19.81 (with a range of 18 years to 42 years). Participants were recruited through the Psychology Department's online SONA system, which is an online human subjects pool management software system designed for universities. Participants received course credit or extra credit from their professors.

Materials

The *Experiences in Close Relationships: Revised* (ECR-R; Fraley, Waller, & Brennan, 2000): The ECR-R is a 36 item measure designed to assess trait adult attachment. Eighteen items measure the avoidant dimension of attachment (e.g., I prefer not to show a partner how I feel deep down) and the other 18 items measure the anxious dimension of attachment (e.g., I'm afraid that I will lose my partner's love). All questions are assessed using a 7-point Likert scale (strongly disagree to strongly agree). Past research has demonstrated the convergent and discriminant validity of the ECR-R (Sibley, Fischer, & Liu, 2005). See Appendix A for a copy of the ECR-R. Reliability analysis revealed a Cronbach's alpha of .92 for attachment anxiety and .95 for attachment avoidance for the current sample.

The *State Adult Attachment Measure* (SAAM; Gillath, Hart, Nofhle, & Stockdale, 2009): The SAAM is a state measure of attachment and was specifically developed to capture temporary fluctuations in attachment orientations, and is considered a better measure of short-term changes in attachment (Xu & Shrout, 2013). The scale contains 21 items that pertain to three subscales: attachment-related anxiety, avoidance, and security on a 7-point Likert scale (1-disagree strongly, 7-agree strongly). Seven questions measured attachment anxiety (e.g., I really need to feel loved right now), seven questions measure attachment avoidance (e.g., If someone tried to get close to me, I would try to keep my distance), and the last seven questions measure attachment security (e.g., I feel relaxed knowing that close others are there for me right now).

Gillath, Hart, Nofhle, and Stockdale (2009) originally attempted to adapt the state measure from the ECR-R. They revised the 36 questions from the ECR-R to make them assess more current states and developed additional questions that assessed current attachment states for a total of 56 questions. Gillath, et al. (2009), used Confirmatory Factor Analysis (CFA) to examine their results to determine the best fit for the data. They examined the two-dimensional model in the ECR-R (i.e., attachment anxiety and attachment avoidance) as well as a three-factor model with attachment anxiety, attachment avoidance, and attachment security as three independent non-dimensional factors. They concluded the best fit for the data was the three-factor model.

Research has used secure attachment priming to demonstrate an increase in state attachment security and a decrease in state attachment anxiety and avoidance when compared to the priming of a neutral concept (Gillath, Hart, Nofhle, & Stockdale,

2009). Additionally, past research has established the convergent and discriminate validity of the SAAM (Gillath, Hart, Nofhle, & Stockdale, 2009).

In the current study participants responded to the SAAM by marking a line on a visual analog scale 100 mm in length, anchored with disagree strongly and agree strongly (see Appendix B) as opposed to a 7-point Likert scale. We chose to use a visual analog scale for the current study because they are particularly sensitive to participant responses across time. This is particularly advantageous when examining changes across time within individuals (hypothesis 2) rather than between individuals. Another advantage is that when a measure is repeated over time, it is nearly impossible for participants to repeat past responses on a visual analog scale (DeVellis, 2012). Reliability analysis was conducted for the SAAM at time 1 and time 2. For time 1, the results revealed a Cronbach's alpha of .86 (anxiety), .86 (avoidance), and .92 (security). For time 2, the results revealed alpha levels of .91 (anxiety), .87 (avoidance), and .94 (security). See Appendix B for a copy of the SAAM.

The *Levenson's Self-Report of Psychopathy Scale* (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995): The LSRP is a self-report measure designed to detect the presence of psychopathic traits. The scale consists of 19 items rated on a 4 point Likert scale (1 disagree strongly to 4 agree strongly). Past research has demonstrated both the reliability (Brinkley, Schmitt, Smith, & Newman, 2001) and the divergent validity (McHoskey, Worzel, & Szyarto, 1998) of the LSRP. The LSRP was developed to consist of two factors of psychopathy: primary and secondary psychopathy traits.

However, Sellbom (2010) recently demonstrated that the LSRP should be analyzed using a total psychopathy score and three factors: egocentricity, callous affect,

and antisocial. Egocentricity and callous affect factors are related to the primary psychopathy traits and the antisocial factor is related to the secondary psychopathy traits. Ten items on the LSRP measure the egocentricity component of psychopathy (e.g., Success is based on the survival of the fittest; I am not concerned about the losers), four items measure the callous affect component which are all reversed scored (e.g., I make a point of trying not to hurt others in pursuit of my goals), and five items measure the antisocial component (e.g., I find myself in the same kind of trouble, time after time). Reliability analysis in the current sample revealed a Cronbach's alpha of .83 (total), .85 (egocentricity), .57 (callous affect), and .67 (antisocial behavior). Although the alpha levels for callous affect and antisocial behavior were below .70, the alpha level for antisocial is consistent with the alpha levels found in Sellbom (2010). However, due to the low alpha level in antisocial behavior, only the total score was used in further analyses. See Appendix C for a copy of the LSRP.

A *State Psychopathy Scale* (SPS; Holtzman, 2013): Currently, there is no instrument available that assesses state psychopathy; therefore, a measure of state psychopathy was created directly from the LSRP (Holtzman, 2013). It was reasoned that because personality traits are the means of behavioral states, changing a measurement of trait personality to reflect behavioral states would allow for the assessment of currently expressed personality characteristics, in this case, psychopathy (see Augustine & Larsen, 2009). The SPS was created by writing questions that reflect current thoughts and feelings. Attempts were made to make as little alterations to the original questions on the LSRP as possible. For example, an original LSRP question is, "for me, what's right is whatever I can get away with." Alterations were then made to

assess current thoughts and feelings (i.e., right now, whatever I can get away with is what I consider “right” action). Additionally, the instructions on the SPS also emphasized that participants should respond in terms of their current thoughts and feelings.

All 19-items were assessed using a visual analog scale 100 mm in length, anchored with disagree strongly and agree strongly (see Appendix D). As with the LSRP, the SPS contains a total psychopathy score along with three subscales (egocentricity, callous affect, antisocial behavior). Ten items measure the egocentricity component of psychopathy (e.g., right now, my success justifies my every behavior), four items measure the callous affect component, which are all reversed scored (e.g., right now, I would really get a kick out of manipulating another person’s feelings), and five items measure the antisocial component (e.g., right now, I feel like I could get into a shouting match with someone). All the questions sum to create a total psychopathy score. For time 1, reliability analysis revealed Cronbach alpha levels of .77 (total), .82 (egocentricity), .43 (callous affect), and .58 (antisocial behavior). For time 2, alpha levels were .83, (Total), .87 (egocentricity), .57 (callous affect), and .66 (antisocial behavior). Due to the lower alpha levels on the callous and antisocial behavior subscales, only the total psychopathy score was used in further analyses. See Appendix D for a copy of the SPS.

The *Implicit Prime* (adapted from Gillath, Sesko, Shaver, & Chun, 2010, Study 4; Mikulincer, Gillath, Halevy, Avihou, Avidan, & Eshkoli, 2001, Study 3): Participants were randomly assigned to one of two implicit primes (Secure vs. Neutral), which was disguised as a cognitive assessment task. Participants were asked to rate the similarity or association between two pieces of furniture for 20 trials. After reading the

instructions, participants saw an X on the screen, followed by a brief flash, and then a pair of furniture words (e.g., table-television). Participants were asked to rate how similar or associated the two words were on a scale of 1 to 7, with 1 indicating that the two pieces of furniture are not similar or associated at all, 7 indicating that they are highly similar or associated, and intervening numbers, 2 through 6, indicating degrees of similarity or association. The brief flash contained the implicit prime. The implicit prime consisted of three words presented randomly for 22ms followed by a visual-noise pattern, a series of Xs, for 500ms. The priming words for the security prime were love, secure, and affection. The priming words for the neutral prime were lamp, staple, and building. See Appendix E a demonstration of the implicit prime.

The *Explicit Prime* (adapted from Bartz & Lydon, 2004; Mikulincer & Shaver, 2001, Study 3): The explicit prime was disguised as a visual imagination task. Participants were randomly assigned to receive one of two explicit primes (Secure vs. Neutral). For the explicit security prime, the experimenter read aloud,

“The next part of the study is a visual imagination task. We’re interested in how you visualize another person. I’m going to describe the characteristics of a secure relationship to you. As you listen to the description, please think of the name of someone in your life who comes closest to the description. A secure relationship is one in which you have found that it was easy to be emotionally close to the other person. In this relationship, you felt comfortable depending on the other person and having them depend on you. In this relationship, you did not particularly worry about being alone or about the other person not accepting

you. You trust that this person accepts and loves you and will help you in times of need.”

Next, the participant answered several questions. These questions included the name of the person that came closest to this description, what the person looks like, what it is like being with this person, what would the person say to the participant, what would the participant say in return, how the participant feels when he or she is with the person, and how the participant would feel if the person were here with them now. See Appendix F for a copy of the explicit secure attachment prime.

For the explicit neutral prime, the experimenter read aloud,

“The next part of the study is a visual imagination study. We’re interested in how you visualize a location. Please think about a time you went to a grocery store, examples include a visit to Wal-Mart, a farmer’s market, or BI-LO. Please take a moment and try to get a visual image of a time you made a trip to a grocery store.”

Next, the participants were asked the name of the store imagined, what the participant was shopping for, when the visit took place, how often the participant visits the grocery store, whether the store was busy with other shoppers at the time of their visit, and how satisfied the participant was with his or her purchases. See Attachment G for a copy of the explicit neutral prime.

All participants were asked what thoughts and feelings he or she had regarding him or herself in relation to his or her chosen person or grocery store visit. Finally, the participant was asked to what extent the imagination task aroused feelings of

happiness, good, bad, warmth, love, closeness, and trust on a scale of 1 to 5 (not at all, very much).

Manipulation Check: Participants in the explicit condition were asked a series of questions in order to assess if participants attended to the task and to assess the effectiveness of the task. For the secure condition, questions included how long they have known the person they imagined in the visual imagination task, how easy it was to visualize the person, how vivid the image was, how close they felt to the imagined person, and if the feelings experienced were typical to how they feel when they are with the person (1 not at all, 5 very). Additionally, participants were asked if they currently had someone in their life that comes close to matching the provided description. If they answered no, they were asked if they had ever had someone in their life that had come close to the provided description, as well as asked to provide an estimated age of when the relationship occurred. For the neutral condition, participants were asked on a scale of 1 to 5 (not at all, very) how easy it was to visualize the goal and how vivid was the image. Additionally, the SAAM was used as a manipulation check of the explicit priming condition; this allowed the researchers to assess if security priming altered state levels of attachment security, attachment anxiety, and attachment avoidance (hypothesis 3).

Procedure

Each experimental session was randomly assigned to be one of four conditions prior to students entering the session. The conditions include Implicit Secure, Implicit Neutral, Explicit Secure, and Explicit Neutral. For example, the Implicit Secure refers to a participant receiving an implicit prime (vs. an explicit prime) and the type of prime is secure. Participants in the Explicit Neutral condition received an explicit prime and the

prime type was neutral. This organization allowed for the examination of security priming vs. neutral priming across priming technique (implicit vs. explicit) and priming technique across priming type (secure vs. neutral).

Once in the lab, students were instructed to sit at a computer, and asked to read and sign the informed consent. The students who agreed to participate were asked to complete a series of questionnaires and either a computer cognitive assessment task (Implicit), or a visual imagination task (Explicit). First, all participants received a packet containing the ECR-R, LSRP, SAAM, and SPS, which were presented in random order. Next, participants completed the appropriate tasks associated with their randomly assigned condition (Secure vs. Neutral) as well as completed a second packet containing the randomly ordered SAAM and SPS. As a final step, participants completed demographic information and any associated manipulation checks, which was specific to the explicit conditions.

Finally, participants were thanked and asked to provide contact information if they wished to be debriefed at the conclusion of the data collection period. This was to ensure potential participants were not made aware of the priming procedures. Figure 1 provides a visual representation of the procedures.

Figure 1. Visual Representation of Procedures

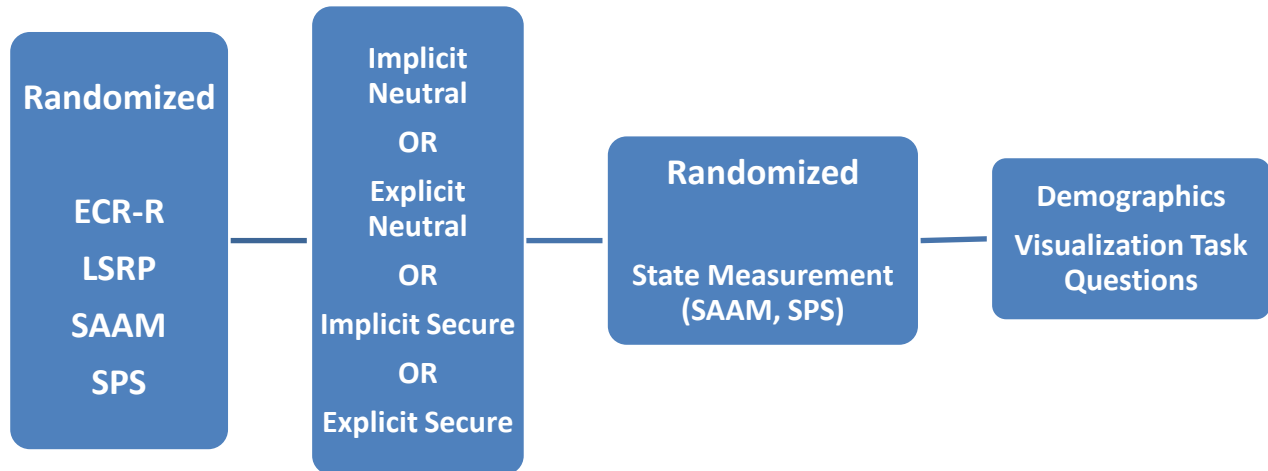


Figure 1. Participants received all measures in a random order, were randomly assigned to one condition, received the state measures in random order, and filled out demographic information and appropriate manipulation checks.

CHAPTER 3

RESULTS

One hundred and twenty-two undergraduate students participated in this study. Exclusion from the analyses was based on the manipulation check assessing how easy and vivid the participants found the imagination task to be. This manipulation check was limited to only the explicit priming conditions. Exclusion criteria were based on scores reported below the midpoint of three, which led to the removal of four participants. Additional participants were excluded from the analyses due to experimenter bias, which lead to the inclusion of 85 participants in the analyses.

Experimenter Differences

Multivariate Analysis of Variance (MANOVA) analyses were conducted to determine whether any differences existed in the trait and state measurement reports by experimenter. Six experimenters helped with data collection. The results revealed participants were differing at Time 1 ($F(5, 112) = 3.44, p = .01$) and Time 2 ($F(5, 112) = 2.40, p = .04$) on the SAAM state attachment anxiety subscale. Further analysis revealed significant differences for the interaction between experimenter and participant gender on Time 1 state attachment anxiety. For females, two experimenters had female participants report significantly lower state attachment anxiety scores compared to all other experimenters, and one experimenter had female participants report significantly higher scores on state attachment anxiety compared to three other experimenters, $F(5, 69) = 7.30, p < .01$). For males, one experimenter had male participants report significantly lower scores on state attachment anxiety compared to two other

experimenters, $F(5, 37) = 3.27, p = .02$. See Table 1 for means and standard deviations for Time1 state attachment anxiety for each experimenter.

Table 1

Time One State Attachment Anxiety Means and Standard Deviations for Each Experimenter

Experimenter	<u>Females</u>		<u>Males</u>	
	Mean	Standard Deviation	Mean	Standard Deviation
Experimenter 1	30.88**	18.29	59.17	18.30
Experimenter 2	61.18	15.20	54.10	16.38
Experimenter 3	73.12	15.95	48.71	8.28
Experimenter 4	60.55	20.60	31.86**	10.99
Experimenter 5	42.29*	20.02	49.00	11.06
Experimenter 6	75.63 **	18.21	40.81	9.80

Note. Pairwise comparisons revealed experimenter 1 and 5 has significantly lower means on SAAM anxiety scores compared to all other experimenters. Experimenter 6 has significantly higher means on SAAM anxiety compared to three other experimenters. ** = p-values below .01, * = p-values below .05.

These participants were dropped from the study because the results suggest they were affected by experimenter bias. In other words, the female participants for experimenter 1 and experimenter 5 treated the participants in such a way that allowed them to report significantly less state attachment anxiety. Additionally, experimenter 6 treated the female participants in such a way that allowed the participants to report significantly more state attachment anxiety. Furthermore, the male participants for experimenter 4 were treated in such a way that allowed them to report significantly less state attachment anxiety. In total, 33 participants were dropped from the study.

The MANOVA analysis was conducted again to examine if there were any differences on the trait and state measures based on experimenters. Results revealed that the significant differences on Time 1 state attachment anxiety ($F(5, 79) = 1.32, p = .26$) and Time 2 state attachment anxiety ($F(5, 79) = .81, p = .54$) disappeared. Additionally, dropping the participants affected by the experimenter bias revealed no other significant differences between the experimenters for any of the other state and trait attachment and psychopathy measures. Table 2 contains the final sample size for prime type, prime technique, and the interaction between prime type and prime technique.

Table 2

Sample Sizes for Conditions

Condition	S	N	I	E	S/I	N/I	S/E	N/E
Females (n=50)	29	21	21	29	9	12	20	9
Males (n=35)	17	18	18	17	12	6	5	12
Total (n=85)	46	39	39	46	21	18	25	21

Note. S = secure conditions, N = neutral conditions, I = implicit conditions, E = explicit conditions, S/I = secure implicit condition, N/I = neutral implicit condition, S/E = secure explicit condition, and N/E = neutral explicit condition.

Gender Differences

Preliminary analyses were conducted to see if there were any gender differences on each measure. Results revealed significant gender differences on the LSRP Total score (trait psychopathy), $F(1, 82) = 4.26, p = .04$ with males reporting more trait psychopathy ($M = 1.96, SD = .41$) than females ($M = 1.78, SD = .38$). As well as, significant gender differences for state psychopathy at Time 1, $F(1, 82) = 4.82, p = .03$

with males reporting more state psychopathy ($M = 30.89$, $SD = 11.46$) than females ($M = 25.94$, $SD = 9.17$). Finally, females reported more state attachment anxiety at Time 1 ($M = 62.31$, $SD = 18.20$) and Time 2 ($M = 63.95$, $SD = 20.84$) compared to males at Time 1 ($M = 53.34$, $SD = 15.31$) and Time 2 ($M = 51.39$, $SD = 18.43$) (Time 1 state attachment anxiety, $F(1, 82) = 5.57$, $p = .02$, Time 2 state attachment anxiety, $F(1, 82) = 8.05$, $p = .01$). No other gender differences on the measures were revealed in the analyses

Differences at Time 1

Next, analyses was conducted to determine if there were any significant differences for the Time 1 measures as a function of prime type and prime technique. This test was done to insure random assignment did not create any differences in the condition groups. The analyses revealed few significant differences at Time 1 across the priming conditions. There was a significant difference at Time 1 for ECR-R attachment anxiety (trait attachment anxiety), $F(1, 80) = 8.55$, $p = .01$, such that participants in the secure conditions reported more trait attachment anxiety ($M = 4.08$, $SD = 1.20$) than participants in the neutral conditions ($M = 3.35$, $SD = .94$). These results are for all participants, males and females.

When the analyses were separated into separate genders, female participants reported significant differences on two Time 1 measures. Specifically, females in the secure conditions reported more trait attachment anxiety ($M = 4.21$, $SD = 1.26$) than females in the neutral conditions ($M = 3.23$, $SD = .91$), $F(1, 46) = 6.29$, $p = .02$. Females in the secure conditions also reported more trait attachment avoidance ($M = 3.43$, $SD = 1.18$) than females in the neutral conditions ($M = 2.62$, $SD = 1.11$), $F(1, 46)$

= 4.39, $p = .03$. There were no significant differences in Time 1 measures for males. However, similar to the females, there were small sample sizes for the prime condition interactions (see Table 2).

Examining Trait and State Psychopathy Measures

The SPS was created from the LSRP by adapting the questionnaire in such a way as to assess current thoughts and feelings in order to measure currently expressed levels of psychopathy, which we call state psychopathy. Bivariate correlational analyses were conducted to determine how associated the trait and state psychopathy subscales were and if the scales assess two distinct constructs. Correlations below .70 would suggest that the two measures are conceptually different. The results of the analysis revealed the trait psychopathy subscales were highly correlated with the state psychopathy subscales at Time 1 and Time 2 (see Table 3), with Pearson's r correlations ranging from .56 to .81 for the total psychopathy subscale.

Table 3

Correlations Coefficients for the LSRP (Trait Psychopathy) and SPS (State Psychopathy) Subscales

Subscales	Time 1				Time 2			
	Total	Ego	Callous	Anti	Total	Ego	Callous	Anti
All Conditions	.77**	.74**	.56**	.68**	.81**	.81**	.56**	.65**
Secure Conditions	.73**	.75**	.56**	.62**	.81**	.85**	.58**	.61**
Neutral Conditions	.82**	.75**	.57**	.75**	.82**	.74**	.53**	.74**

Note. ** indicates $p < .01$. Anti.= antisocial subscale.

Hypothesis 1

The analyses for hypothesis 1 were completed in several steps. First, an Analysis of Variance (ANOVA) was conducted (hypothesis 1a) then three Analysis of Covariance (ANCOVA) analyses were conducted to examine the role of the trait measures (hypotheses 1b and 1c). Differences on trait attachment anxiety and avoidance across the conditions are controlled for by running trait attachment anxiety and avoidance as a covariate. There were gender differences for trait psychopathy; therefore, the analysis examining trait psychopathy was conducted for each gender separately.

A 2 (Time 1, Time 2) X 2 (Prime Type: Secure, Neutral) X 2 (Prime Technique, Implicit, Explicit) mixed-subjects ANOVA was conducted to examine any significant change in state psychopathy scores from Time 1 to Time 2 for prime type and prime technique (hypothesis 1a and 1d). The results revealed a significant decrease in state psychopathy from Time 1 ($M = 27.70$, $SD = 10.55$) to Time 2 ($M = 24.93$, $SD = 12.49$), $F(1, 81) = 13.11$, $p = .01$. The results revealed no significant change in state psychopathy from Time 1 to Time 2 for the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type and prime technique. See table 4 for test results.

Table 4

Results for the Mixed-Subjects ANOVA Examining the Change in State Psychopathy

Source	df	F	p	η^2
Time	1	13.11	.00	.139
Time X Type	1	1.28	.26	.00
Time X Technique	1	.10	.75	.02

Source	df	F	p	η^2
Time X Type X Technique	1	1.09	.30	.01
Error	81			

Next, a series of 2 (Time 1, Time 2) X 2 (Prime Type: Secure, Neutral) X 2 (Prime Technique, Implicit, Explicit) X Covariate (Trait) mixed-subjects ANCOVAs were conducted to examine how trait psychopathy, trait attachment anxiety, and trait attachment avoidance affected the change in state psychopathy by prime type and prime technique (hypothesis 1b and 1c).

The first ANCOVA analysis examined the change in state psychopathy from Time 1 to Time 2 with trait attachment anxiety as a covariate and as an interaction term. The results for the analysis with trait attachment anxiety as a covariate revealed a significant two-way interaction between time and prime type, $F(1, 76) = 7.93, p = .01$. This was further clarified by the significant three-way interaction when trait attachment anxiety was entered as an interaction term. The results revealed a significant three-way interaction between time, prime type and trait attachment anxiety, such that there was a significant decrease in state psychopathy from Time 1 to Time 2, $F(1, 76) = 9.39, p < .01$. As predicted, participants higher in trait attachment anxiety who received a secure prime showed a marked decrease in state psychopathy from Time 1 to Time 2 compared to participants who received a neutral prime (see Figure 2). In contrast, participants lower in trait attachment anxiety reported similar state psychopathy scores from Time 1 to Time 2 regardless of priming type (see Figure 3).

Furthermore, the results, with trait attachment anxiety as a covariate, revealed no significant change in state psychopathy from Time 1 to Time 2 for the main effect of time, the two-way interaction between time and prime technique, or the three-way

interaction between time, prime type, and prime technique. The results, with trait attachment anxiety as an interaction term, revealed no significant change in state psychopathy from Time 1 to Time 2 for the three-way interactions between time, prime technique, and trait attachment anxiety or for the four-way interaction between time, prime type, prime technique, and trait attachment anxiety (see Table 5).

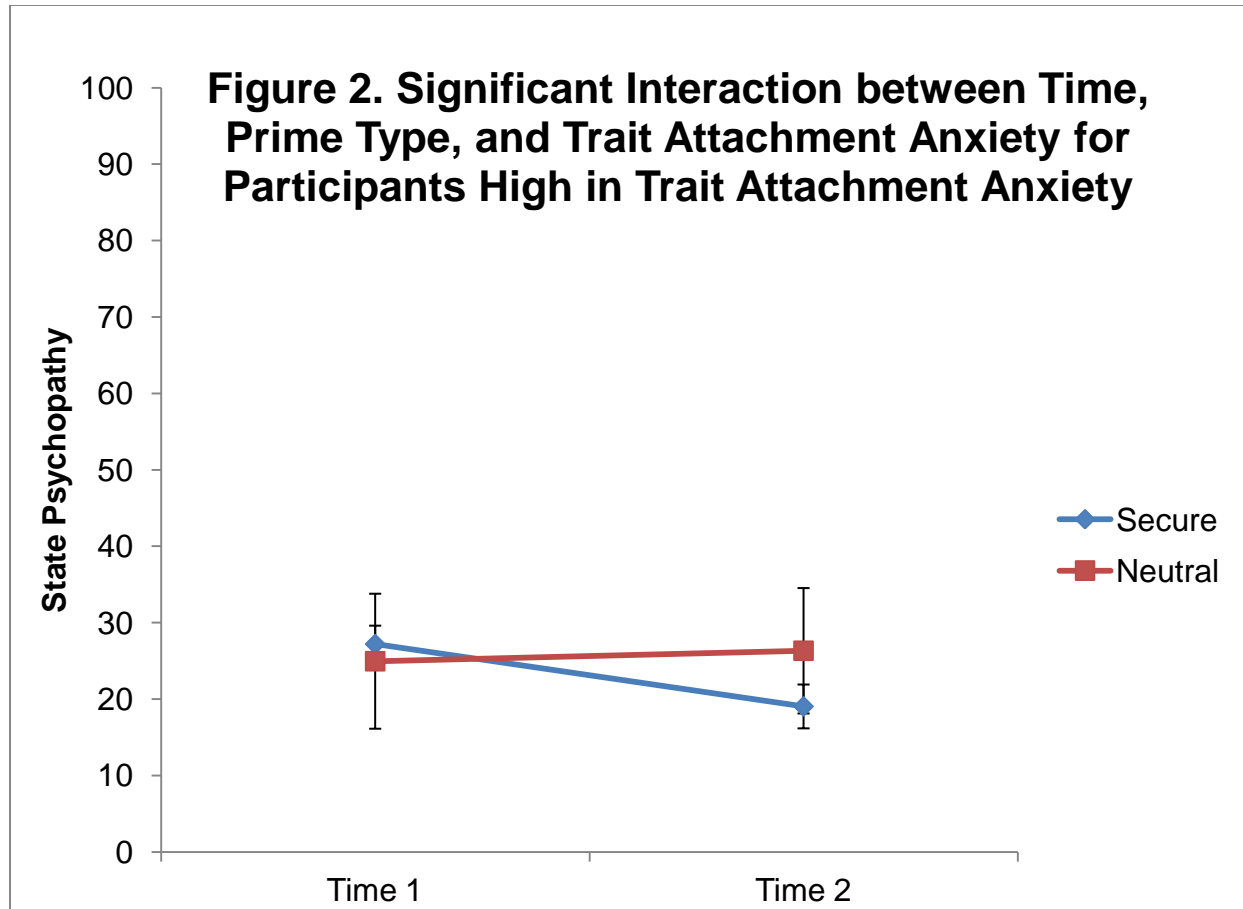


Figure 2. For participants high in trait attachment anxiety, participants in the secure conditions reported a decrease in state psychopathy compared to participants in the neutral conditions. Error bars depict standard error.

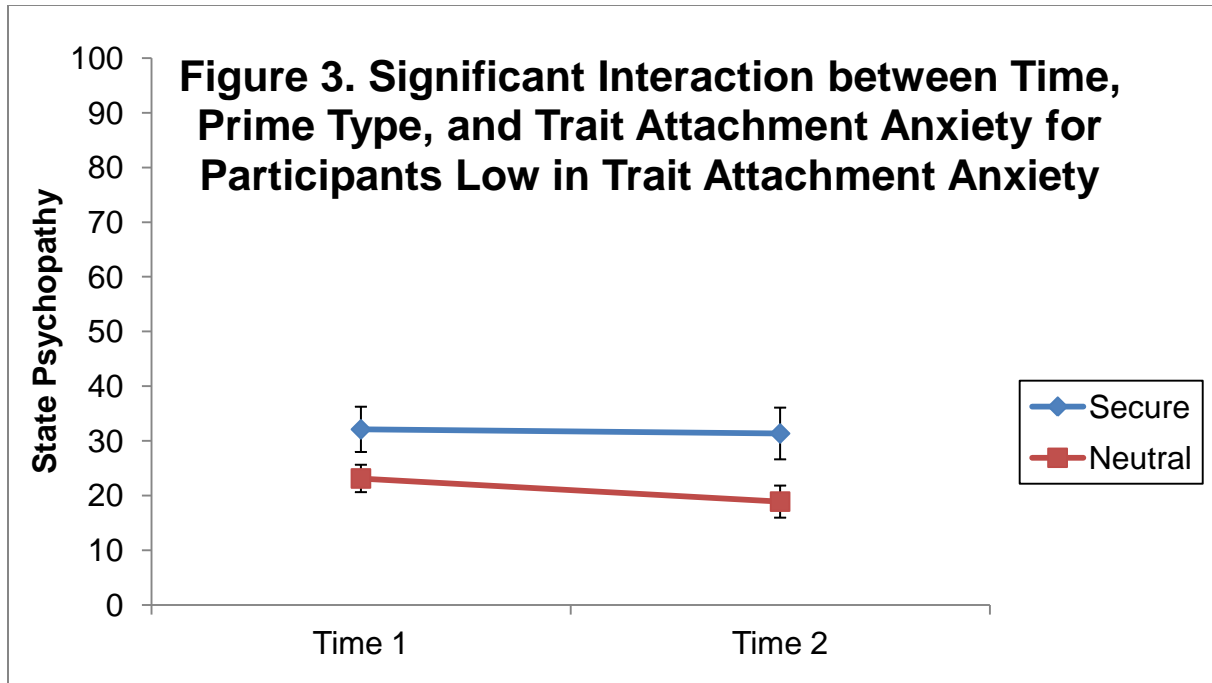


Figure 3. For participants low in trait attachment anxiety, participants did not report a change in state attachment regardless of prime type conditions. Error bars depict standard error.

Table 5

Results for the Mixed-Subjects ANCOVA Examining the Change in State Psychopathy with Trait Attachment Anxiety

Source	df	F	p	η^2
Trait Attachment Anxiety as a Covariate				
Time	1	.24	.63	.00
Time X Type	1	7.93	.01	.10
Time X Technique	1	1.49	.23	.02
Time X Type X Technique	1	.08	.77	.00
Trait Attachment Anxiety as an Interaction Term				
Time X Type X Anxiety	1	9.39	.00	.11
Time X Technique X Anxiety	1	1.18	.28	.02
Time X Type X Technique X Anxiety	1	.13	.72	.00
Error	76			

The associations between the state and trait psychopathy subscales were assessed using a bivariate correlation analysis in order to determine if the two instruments assessed two different constructs for individuals low and high in trait attachment anxiety. Pearson's r correlations ranged from .55 to .96 for the total psychopathy scores (see Table 6).

Table 6

Correlations Coefficients for the LSRP (Trait Psychopathy) and SPS (State Psychopathy) Subscales for Low and High Trait Attachment Anxiety Participants

Subscales	Low Anxiety				High Anxiety			
	Secure		Neutral		Secure		Neutral	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
Total	.82*	.76*	.81*	.55	.61*	.85**	.73	.96
Egocentric	.65	.72	.59	.61	.72**	.89**	.61	.41
Callous	.24	-.01	.74*	.62	.20	.56	.95	.91
Antisocial	-.18	.33	.63*	.52	.42	.80**	.88	.96

The second ANCOVA analysis examined the change in state psychopathy from Time 1 to Time 2 with trait psychopathy as a covariate and as an interaction term. Results with trait psychopathy as a covariate revealed a significant main effect for time, $F(1, 77) = 12.90, p < .001$. There was a significant decrease in state psychopathy from Time 1 ($M = 27.70, SD = 10.55$) to Time 2 ($M = 24.93, SD = 12.49$). The results revealed no significant change in state psychopathy for the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique (see Table 7).

The results with trait psychopathy as an interaction term revealed no significant change in state psychopathy for the three-way interaction between time, prime type and

trait psychopathy, the three-way interaction between time, prime technique, and trait psychopathy, or the four-way interaction between time, prime type, prime technique, and trait psychopathy (see Table 7).

Table 7

Results for the Mixed-Subjects ANCOVA Examining the Change in State Psychopathy with Trait Psychopathy

Source	df	F	p	η^2
Trait Psychopathy as a Covariate				
Time	1	12.90	.00	.14
Time X Type	1	1.97	.16	.03
Time X Technique	1	.09	.77	.00
Time X Type X Technique	1	.49	.48	.01
Trait Psychopathy as an Interaction Term				
Time X Type X Psychopathy	1	1.19	.28	.02
Time X Technique X Psychopathy	1	.18	.67	.02
Time X Type X Technique X Psychopathy	1	.18	.68	.00
Error	77			

The third ANCOVA analysis examined the change in state psychopathy from Time 1 to Time 2 with trait attachment avoidance as a covariate and as an interaction term. The results with trait attachment avoidance as a covariate revealed no significant change in state psychopathy for the main effect of time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique (see Table 8).

The results with trait attachment avoidance as an interaction term revealed no significant change in state psychopathy for the three-way interaction between time,

prime type, and trait attachment avoidance, the three-way interaction between time, prime technique, and trait attachment avoidance, or the four-way interaction between time, prime type, prime technique and trait attachment avoidance (see Table 8).

Table 8

Results for the Mixed-Subjects ANCOVA Examining the Change in State Psychopathy with Trait Attachment Avoidance

Source	df	F	p	η^2
Trait Attachment Avoidance as a Covariate				
Time	1	1.86	.18	.02
Time X Type	1	.17	.68	.00
Time X Technique	1	.04	.84	.00
Time X Type X Technique	1	.97	.33	.01
Trait Attachment Avoidance as an Interaction Term				
Time X Type X Avoidance	1	.72	.40	.01
Time X Technique X Avoidance	1	.01	.94	.00
Time X Type X Technique X Avoidance	1	.48	.49	.01
Error	76			

The final step was to examine trait psychopathy for each gender separately because of the gender differences observed in the preliminary analysis. A 2 (Time 1, Time 2) X 2 (Prime Type: Secure, Neutral) X 2 (Prime Technique, Implicit, Explicit) X Covariate (Trait Psychopathy) mixed-subjects ANOVA was conducted for each gender separately. For females, the results with trait psychopathy as a covariate revealed a significant main effect for time, $F(1, 42) = 12.08, p < .001$. Participants reported a decrease in state psychopathy from Time 1 ($M = 27.70, SD = 10.55$) to Time 2 ($M = 24.93, SD = 12.49$). The results revealed no significant change in state psychopathy for the two-way interaction between time and prime type, the two-way interaction between

time and prime technique, or the three-way interaction between time, prime type, and prime technique (see Table 9).

The results with trait psychopathy as an interaction term revealed no significant change in state psychopathy for the three-way interaction between time, prime type, and trait psychopathy, the three-way interaction between time, prime technique, and trait psychopathy, or the four-way interaction between time, prime type, prime technique, and trait psychopathy (see Table 9).

Table 9

Results for the Mixed-Subjects ANCOVA Examining the Change in State Psychopathy with Trait Psychopathy for Females

Source	df	F	P	η^2
Trait Psychopathy as a Covariate				
Time	1	12.08	.00	.22
Time X Type	1	.35	.56	.01
Time X Technique	1	.01	.92	.00
Time X Type X Technique	1	.32	.57	.01
Trait Psychopathy as an Interaction Term				
Time X Type X Psychopathy	1	.17	.68	.00
Time X Technique X Psychopathy	1	.04	.85	.00
Time X Type X Technique X Psychopathy	1	.07	.80	.00
Error	42			

For males, the results with trait psychopathy as a covariate revealed no significant change in state psychopathy for the main effect for time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique (see Table 10).

The results with trait psychopath as an interaction term revealed no significant change in state psychopathy for the three-way interaction between time, prime type, and trait psychopathy, the three-way interaction between time, prime technique, and trait psychopathy, or the four-way interaction between time, prime type, prime technique, and trait psychopathy (see Table 10).

Table 10

Results for the Mixed-Subjects ANCOVA Examining the Change in State Psychopathy with Trait Psychopathy for Males

Source	df	F	P	η^2
Trait Psychopathy as a Covariate				
Time	1	.94	.34	.03
Time X Type	1	2.19	.15	.08
Time X Technique	1	.11	.74	.00
Time X Type X Technique	1	.01	.91	.00
Trait Psychopathy as an Interaction Term				
Time X Type X Psychopathy	1	1.50	.23	.05
Time X Technique X Psychopathy	1	.02	.88	.00
Time X Type X Technique X Psychopathy	1	.10	.76	.00
Error	27			

Hypothesis 2

In order to examine any change in the associative strength between state attachment and state psychopathy from Time 1 to Time 2, bivariate correlational analyses were conducted for each prime type condition. It was hypothesized a weakened negative association between state attachment anxiety and state psychopathy and state attachment avoidance and state psychopathy would be seen in the secure priming conditions. It was also hypothesized a strengthened positive

association between state attachment security and state psychopathy would be observed in the secure priming conditions. Furthermore, it was hypothesized the same pattern would not be seen in the neutral priming conditions.

Pearson's r correlation coefficients were compared for Time 1 to Time 2 for each prime type group (see Table 11). Significance testing of the differences between correlation coefficients was two-tailed. The differences were also given as effect sizes, known as q , which is the difference between z -transformed r s (Cohen, 1988) and compared with Cohen's (1988) criteria for small (.10) medium (.30), and large (.50) effects.

With respect to the state attachment measures and state psychopathy associations, Table 11 shows no significant change in the strength of the relationships between any of the state attachment variables and state psychopathy, as indicated by the lack of significant q -scores. Although not statistically significant, the association between state attachment avoidance and state psychopathy in the secure conditions weakened from Time 1 ($r = .29, p < .05$) to Time 2 ($r = .12, p > .05$), $q = .18, p > .05$, as predicted. The association between state attachment anxiety and state psychopathy in the secure conditions strengthened from Time 1 ($r = -.03, p > .05$) to Time 2 ($r = -.08, p > .05$), $q = .21, p > .05$, which was not predicted. Finally, the association between state attachment security and state psychopathy in the secure conditions strengthened from Time 1 ($r = .03, p > .05$) to Time 2 ($r = -.04, p > .05$), $q = .26, p > .05$, as predicted.

In the neutral conditions the strength of the relationships changed in such a way that was inconsistent with the hypothesis. Although not significant, the relationship between state attachment anxiety and state psychopathy weakened from Time 1 ($r =$

.33, $p < .05$) to Time 2 ($r = .27$, $p > .05$), $q = .06$, $p > .05$. The association between state attachment avoidance and state psychopathy strengthened from Time 1 ($r = .26$, $p > .05$) to Time 2 ($r = .38$, $p < .05$), $q = .13$, $p > .05$. Finally, the association between state attachment security and state psychopathy strengthened from Time 1 ($r = -.33$, $p < .05$) to Time 2 ($r = -.54$, $p < .01$), $q = .26$, $p > .05$.

Table 11

Bivariate Correlations for State Attachment Variables and State Psychopathy at Time 1 and Time 2 for Each Priming Type Condition

Measures	Secure Attachment Priming (n=46)					Neutral (n=39)					
	T1	State Psychopathy		T2	z	q	T1	State Psychopathy		T2	z
Anxiety	-.03	-.03	-.08	-.09	.21	.33*	.34	.27	.28	.06	
Avoidance	.29*	.30	.12	.12	.18	.26	.27	.38*	.40	.13	
Security	.03	.30	-.04	-.04	.26	-.33*	-.34	-.54**	-.60	.26	

Notes.* = .05 or below, ** = .01 or below. T1 = Time 1, T2 = Time 2.

Due to the gender differences in state attachment, correlation coefficients were compared from Time 1 to Time 2 for each prime type group for each gender separately. Table 12 contains the test results for females; Table 13 contains the results for males.

Table 12

Bivariate Correlations for State Attachment Variables and State Psychopathy at Time 1 and Time 2 for Each Priming Type Condition for Females

Measures	Secure Attachment Priming (n=46)					Neutral (n=39)					
	T1	State Psychopathy		T2	z	q	T1	State Psychopathy		T2	z
Anxiety	-.06	-.06	-.09	-.09	.03	.38	.40	.34	.35	.05	
Avoidance	.28	.29	.01	.01	.28	.43*	.46	.47*	.51	.05	

Measures	Secure Attachment Priming (n=46)					Neutral (n=39)				
	T1	State Psychopathy		T2	z	q	T1	z	T2	z
Security	.13	.13	.14	.14	.01	-.36	-.38	-.73**	-.93	.57**

Note. * = .05 or below, ** = .01 or below. T1 = Time 1, T2 = Time 2.

For females in the secure conditions, there was no significant change in the associations between any of the state attachment measures and state psychopathy, as indicated by the lack of significant q-scores (see Table 10). Although not significant, there was an observed change in the association between the state attachment measures and state psychopathy in the secure conditions. The association between state attachment anxiety and state psychopathy strengthened from Time 1 ($r = -.06, p > .05$) to Time 2 ($r = -.09, p > .05$), $q = .03, p > .05$. The association between state attachment avoidance and state psychopathy weakened from Time 1 ($r = .28, p > .05$) to Time 2 ($r = .01, p > .05$), $q = .28, p > .05$. There were no observed changes in the association between state attachment security and state psychopathy from Time 1 ($r = .13, p > .05$) to Time 2 ($r = .14, p > .05$), $q = .01, p > .05$.

For females in the neutral conditions, there was a significant change in the association between state attachment security and state psychopathy. The association between state attachment security and state psychopathy strengthened from Time 1 ($r = -.36, p > .05$) to Time 2 ($r = -.73, p < .01$), $q = .57, p < .01$). Although not significant, there was an observed change in the association between state attachment anxiety and state psychopathy, such that the relationship weakened from Time 1 ($r = .38, p > .05$) to Time 2 ($r = .34, p > .05$), $q = .05, p > .05$. Also, there was an observed change in the

association between state attachment avoidance and state psychopathy from Time 1 ($r = .43, p < .05$) to Time 2 ($r = .47, p < .05$), although not significant, $q = .05, p > .05$.

Table 13

Bivariate Correlations for State Attachment Variables and State Psychopathy at Time 1 and Time 2 for Each Priming Type Condition for Males

Measures	Secure Attachment Priming (n=46)					Neutral (n=39)					
	T1	State Psychopathy		T2	Z	q	T1	State Psychopathy		z	q
Anxiety	.18	.18	.02	.20	.02	.43	.46	.41	.44	.02	
Avoidance	.46	.50	.37	.39	.11	.06	.06	.31	.32	.26	
Security	-.27	-.28	-.45	.49*	.21	-.28	-.29	-.39	-.41	.12	

Note. * = .05 or below, ** = .01 or below. T1 = Time 1, T2 = Time 2.

For males in the secure priming conditions, there was a significant change in the association between state attachment security and state psychopathy, such that there was a strengthening of the association from Time 1 ($r = -.27, p > .05$) to Time 2 ($r = -.45, p > .05$), $q = .21, p < .05$. Although not significant, there was an observed weakening in the association between state attachment anxiety and state psychopathy from Time 1 ($r = .18, p > .05$) to Time 2 ($r = .02, p > .05$), $q = .02, p > .05$. There was also an observed weakening in the association between state attachment avoidance and state psychopathy from Time 1 ($r = .46, p > .05$) to Time 2 ($r = .37, p > .05$), $q = .11, p > .05$.

For males in the neutral conditions, there was no significant change in the associations between any of the state attachment variables and state psychopathy. Although not significant, there was an observed strengthening in the association between state attachment security from Time 1 ($r = -.28, p > .05$) to Time 2 ($r = -.39, p > .05$), $q = .12, p > .05$. Although not significant, there was an observed strengthening in

the association between state attachment avoidance and state psychopathy from Time 1 ($r = .06, p > .05$) to Time 2 ($r = .31, p > .05$). Finally, there was no observed change in the association between state attachment anxiety and state psychopathy from Time 1 ($r = .43, p > .05$) to Time 2 ($r = .41, p > .05$), $q = .02, p > .05$.

Hypothesis 3

The analyses for hypothesis 3 were completed in several steps. First, a Multivariate Analysis of Variance (MANOVA) analysis was conducted (hypothesis 3a and 3b) then three Multivariate Analysis of Covariance (MANCOVA) analyses were conducted to examine the modifying effects of the three trait measures (hypotheses 1c and 3b).

First, a 2 (Time 1, Time 2) X 2 (Prime Type: Secure, Neutral) X 2 (Prime Technique, Implicit, Explicit) mixed-subjects MANOVA analysis was conducted to examine any significant change in state attachment anxiety, state attachment avoidance, and state attachment security as modified by prime type and prime technique. For state attachment anxiety, the results revealed no significant change in state attachment anxiety for the main effect of time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique (see Table 14).

Table 14

Results for the Mixed-Subjects MANOVA Examining the Change in State Attachment Anxiety

Source	df	F	p	η^2
Time	1	.00	.95	.00
Time X Type	1	1.18	.28	.01

Source	df	F	p	η^2
Time X Technique	1	.05	.83	.00
Time X Type X Technique	1	.18	.67	.00
Error	81			

For state attachment avoidance, the results revealed no significant change in state attachment avoidance for the main effect of time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique (see Table 15).

Table 15

Results for the Mixed-Subjects MANOVA Examining the Change in State Attachment Avoidance

Source	df	F	p	η^2
Time	1	.08	.78	.00
Time X Type	1	.70	.41	.01
Time X Technique	1	.28	.60	.00
Time X Type X Technique	1	.10	.75	.00
Error	81			

For state attachment security, the results revealed a significant change in state attachment security for the two-way interaction between time and prime technique, $F(1, 81) = 3.92, p = .05$. Participants in the explicit conditions reported an increase in state attachment security from Time 1 ($M = 75.70, SD = 20.94$) to Time 2 ($M = 79.03, SD = 20.20$) compared to participants in the implicit condition from Time 1 ($M = 83.81, SD = 14.80$) to Time 2 ($M = 83.07, SD = 14.96$). Additionally, there was a marginally significant three-way interaction between time, prime type, and prime technique. Further examination revealed a trend that participants in the explicit secure condition reported

the greatest amount of increase in state attachment security scores compared to the other priming conditions (see figure 3). The results revealed no significant main effect for time or the two-way interaction between time and prime type (see Table 16).

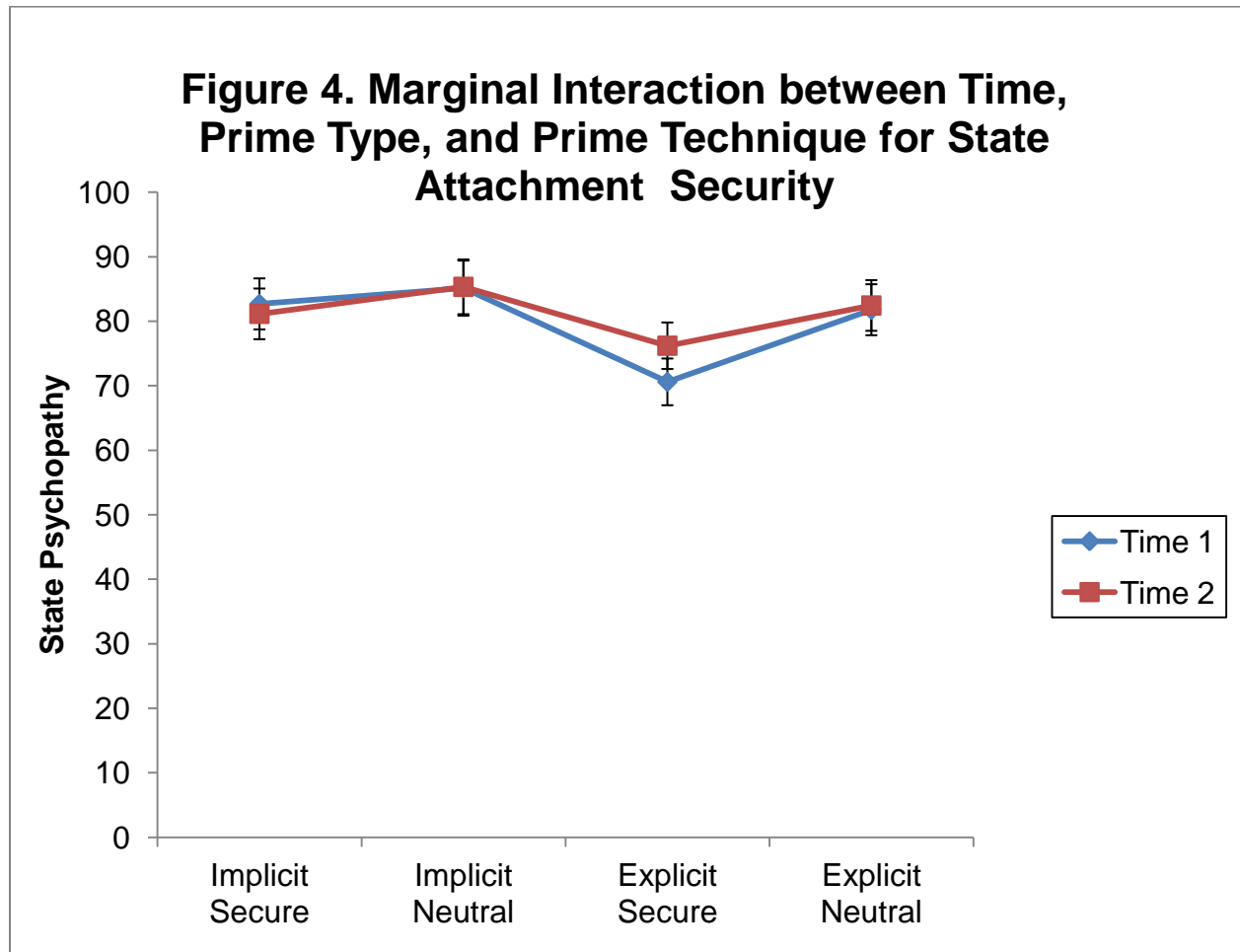


Figure 4. Results of a marginally significant three-way interaction between time, prime type, and prime technique suggesting participants in the explicit secure condition reported an increase in state security from Time 1 to Time 2. Error bars depict standard error.

Table 16

Results for the Mixed-Subjects MANOVA Examining the Change in State Attachment Security

Source	df	F	p	η^2
Time	1	1.63	.21	.02
Time X Type	1	.69	.41	.01
Time X Technique	1	3.92	.05	.05
Time X Type X Technique	1	3.02	.086	.04
Error	81			

The next step was to examine the modifying effects that trait psychopathy, trait attachment anxiety, and trait attachment avoidance on the change in state attachment from Time 1 to Time 2 in a series of 2 (Time 1, Time 2) X 2 (Prime Type: Secure, Neutral) X 2 (Prime Technique, Implicit, Explicit) X Covariate (Trait) mixed-subjects MANCOVA. The analyses were run as a MANOVA because the subscales belong to the same instrument, the SAAM, and to reduce the chance of a type I error.

The first MANCOVA analysis examined the change in state attachment from Time 1 to Time 2 with trait psychopathy as a covariate and as an interaction term. For state attachment anxiety, the results with trait psychopathy as a covariate revealed no significant change in state attachment anxiety for the main effect of time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique. The results with trait psychopathy as an interaction term revealed no significant change in state attachment anxiety for the three-way interaction between time, prime type, trait psychopathy, three-way interaction between time, prime

technique, and trait psychopathy, or the four-way interaction between time, prime type, prime technique, and trait psychopathy (see Table 17).

Table 17

Results for the Mixed-Subjects MANCOVA Examining the Change in State Attachment Anxiety with Trait Psychopathy

Source	df	F	P	η^2
Trait Psychopathy as a Covariate				
Time	1	.00	.99	.00
Time X Type	1	.10	.75	.00
Time X Technique	1	.64	.43	.01
Time X Type X Technique	1	2.38	.13	.03
Trait Psychopathy as an Interaction Term				
Time X Type X Psychopathy	1	.01	.91	.00
Time X Technique X Psychopathy	1	.82	.37	.01
Time X Type X Technique X Psychopathy	1	2.27	.14	.03
Error	77			

For state attachment avoidance, the results with trait psychopathy as a covariate revealed no significant change in state attachment avoidance for the main effect of time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique. The results with trait psychopathy as an interaction term revealed no significant change in state attachment avoidance for the three-way interaction between time, prime type, trait psychopathy, three-way interaction between time, prime technique, and trait psychopathy, of the four-way interaction between time, prime type, prime technique, and trait psychopathy (see Table 18).

Table 18

Results for the Mixed-Subjects MANCOVA Examining the Change in State Attachment Avoidance with Trait Psychopathy

Source	df	F	p	η^2
Trait Psychopathy as a Covariate				
Time	1	.15	.70	.00
Time X Type	1	.36	.55	.01
Time X Technique	1	.95	.33	.01
Time X Type X Technique	1	1.66	.20	.02
Trait Psychopathy as an Interaction Term				
Time X Type X Psychopathy	1	.15	.70	.00
Time X Technique X Psychopathy	1	1.09	.30	.01
Time X Type X Technique X Psychopathy	1	1.42	.24	.02
Error	77			

For state attachment security, the results with trait psychopathy as a covariate revealed no significant change in state attachment security for the main effect of time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique. The results with trait psychopathy as an interaction term revealed no significant change in state attachment security for the three-way interaction between time, prime type, trait psychopathy, three-way interaction between time, prime technique, and trait psychopathy, and the four-way interaction between time, prime type, prime technique, and trait psychopathy (see Table 19).

Table 19

Results for the Mixed-Subjects MANCOVA Examining the Change in State Attachment Security with Trait Psychopathy

Source	df	F	p	η^2
Trait Psychopathy as a Covariate				
Time	1	1.27	.26	.02
Time X Type	1	.73	.40	.01
Time X Technique	1	1.32	.25	.02
Time X Type X Technique	1	.30	.59	.00
Trait Psychopathy as an Interaction Term				
Time X Type X Psychopathy	1	1.16	.29	.02
Time X Technique X Psychopathy	1	.66	.42	.01
Time X Type X Technique X Psychopathy	1	.89	.35	.01
Error	77			

The second MANCOVA analysis examined the change in state attachment from Time 1 to Time 2 with trait attachment anxiety as a covariate and as an interaction term. Preliminary analysis revealed trait attachment anxiety experienced significant differences at Time 1 across the priming type conditions. Participants in the secure conditions reported more anxiety than participants in the neutral conditions. The statistical model will control for these differences by controlling for trait attachment anxiety as a covariate.

For state attachment anxiety, the results with trait attachment anxiety as a covariate revealed no significant change in state attachment anxiety for the main effect of time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique. The results with trait attachment anxiety as an interaction

term revealed no significant change in state attachment anxiety for the three-way interaction between time, prime type, trait attachment anxiety, three-way interaction between time, prime technique, and trait attachment anxiety, or the four-way interaction between time, prime type, prime technique, and trait attachment anxiety (see Table 20).

Table 20

Results for the Mixed-Subjects MANCOVA Examining the Change in State Attachment Anxiety with Trait Attachment Anxiety

Source	df	F	p	η^2
Trait Attachment Anxiety as a Covariate				
Time	1	.91	.35	.01
Time X Type	1	.30	.59	.00
Time X Technique	1	.31	.58	.00
Time X Type X Technique	1	.00	.95	.00
Trait Attachment Anxiety as an Interaction Term				
Time X Type X Anxiety	1	.49	.49	.01
Time X Technique X Anxiety	1	.26	.61	.00
Time X Type X Technique X Anxiety	1	.00	.96	.00
Error	76			

For state attachment avoidance, the results with trait attachment anxiety as a covariate revealed no significant change in state attachment avoidance for the main effect of time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique. The results with trait attachment anxiety as an interaction term revealed no significant change in state attachment avoidance for the three-way interaction between time, prime type, trait attachment anxiety, three-way interaction between time, prime technique, and trait attachment anxiety, or the four-way

interaction between time, prime type, prime technique, and trait attachment anxiety (see Table 21).

Table 21

Results for the Mixed-Subjects MANCOVA Examining the Change in State Attachment Avoidance with Trait Attachment Anxiety

Source	df	F	p	η^2
Trait Attachment Anxiety as a Covariate				
Time	1	1.48	.23	.02
Time X Type	1	2.12	.15	.03
Time X Technique	1	1.00	.32	.01
Time X Type X Technique	1	1.5	.22	.02
Trait Attachment Anxiety as an Interaction Term				
Time X Type X Anxiety	1	3.10	.08	.04
Time X Technique X Anxiety	1	.52	.48	.01
Time X Type X Technique X Anxiety	1	1.65	.20	.02
Error	76			

For state attachment security, the results with trait attachment anxiety as a covariate revealed no significant change in state attachment security for the main effect of time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique. The results with trait attachment anxiety as an interaction term revealed no significant change in state attachment security for the three-way interaction between time, prime type, trait attachment anxiety, three-way interaction between time, prime technique, and trait attachment anxiety, or the four-way interaction between time, prime type, prime technique, and trait attachment anxiety (see Table 22).

Table 22

Results for the Mixed-Subjects MANCOVA Examining the Change in State Attachment Security with Trait Attachment Anxiety

Source	df	F	p	η^2
Trait Attachment Anxiety as a Covariate				
Time	1	.96	.33	.01
Time X Type	1	.00	.96	.00
Time X Technique	1	.00	.99	.00
Time X Type X Technique	1	.18	.67	.00
Trait Attachment Anxiety as an Interaction Term				
Time X Type X Anxiety	1	.00	.99	.00
Time X Technique X Anxiety	1	.18	.67	.00
Time X Type X Technique X Anxiety	1	.59	.45	.01
Error	76			

The third MANCOVA analysis examined the change in state attachment from Time 1 to Time 2 with trait attachment avoidance as a covariate and as an interaction term. For state attachment anxiety, the results with trait attachment avoidance as a covariate revealed no significant change in state attachment anxiety for the main effect of time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique. The results with trait attachment avoidance as an interaction term revealed no significant change in state attachment anxiety for the three-way interaction between time, prime type, trait attachment anxiety, three-way interaction between time, prime technique, and trait attachment anxiety, or the four-way interaction between time, prime type, prime technique, and trait attachment anxiety (see Table 23).

Table 23

Results for the Mixed-Subjects MANCOVA Examining the Change in State Attachment Anxiety with Trait Attachment Avoidance

Source	df	F	p	η^2
Trait Attachment Avoidance as a Covariate				
Time	1	.95	.33	.01
Time X Type	1	.04	.84	.00
Time X Technique	1	.04	.84	.00
Time X Type X Technique	1	.00	.98	.00
Trait Attachment Avoidance as an Interaction Term				
Time X Type X Avoidance	1	.20	.65	.00
Time X Technique X Avoidance	1	.03	.86	.00
Time X Type X Technique X Avoidance	1	.03	.87	.00
Error	76			

For state attachment avoidance, the results with trait attachment avoidance as a covariate revealed a significant change in state attachment avoidance for the three-way interaction between time, prime type, and trait attachment avoidance, $F(1, 76) = 4.24$, $p = .04$. Participants lower in trait attachment avoidance showed a marked decrease in state attachment avoidance from Time 1 to Time 2 after experiencing the attachment security prime; This pattern was not seen in the neutral condition (see Figure 5). Participants higher in trait attachment avoidance in the secure condition reported similar state attachment avoidance scores from Time 1 to Time 2. However, participants high in trait attachment avoidance in the neutral condition reported similar levels at Time 1 but report marked differences at Time 2 (see Figure 6). Additionally, the results revealed no significant main effect for time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction

between time, prime type, and prime technique. The results with trait attachment avoidance as an interaction term revealed no significant change in state attachment avoidance for the three-way interaction between time, prime technique, and trait attachment anxiety, or the four-way interaction between time, prime type, prime technique, and trait attachment anxiety (see Table 24).

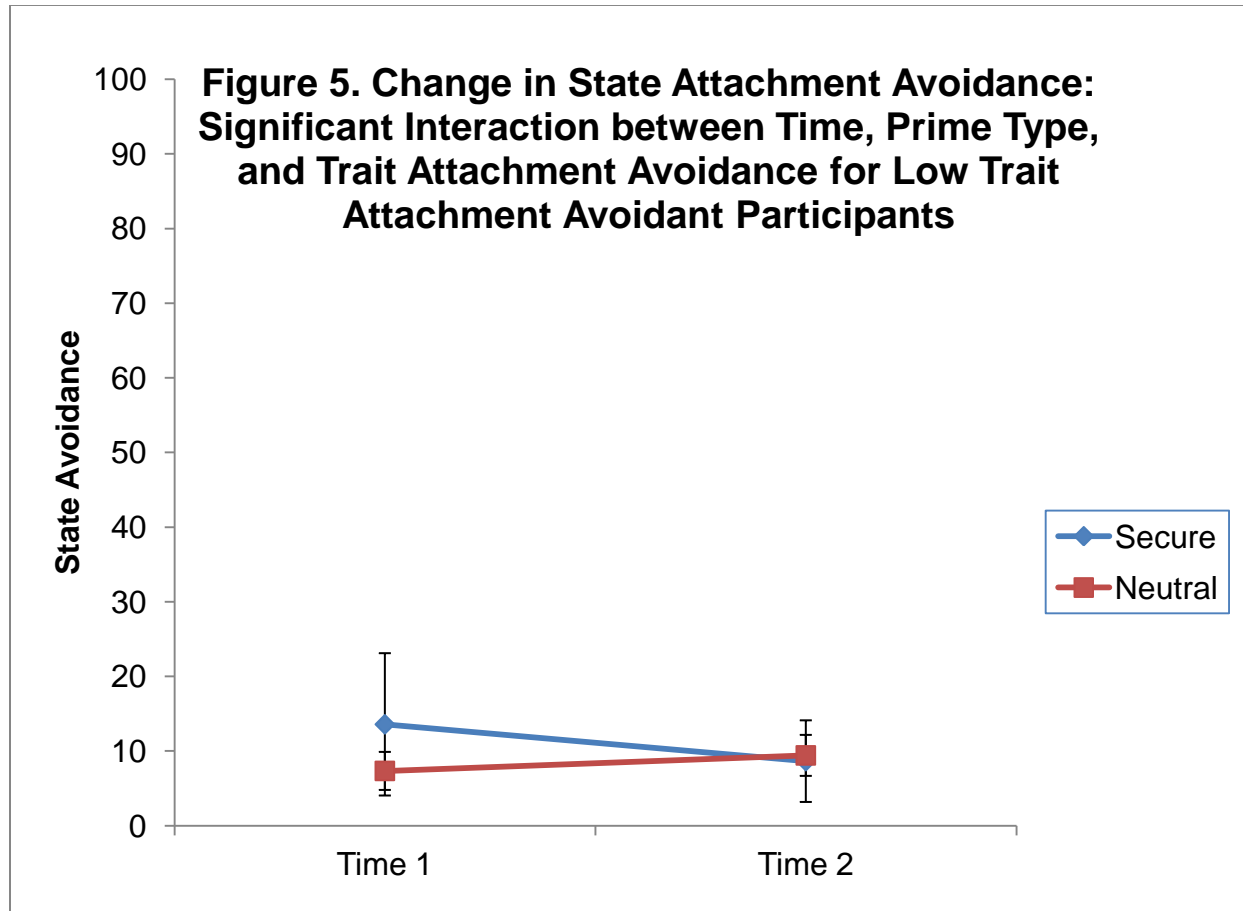


Figure 5. The significant three-way interaction between time, prime type, and trait avoidance suggests participants low in trait attachment avoidance in the secure conditions report a decrease in state attachment avoidance from Time 1 to Time 2. Error bars depict standard error.

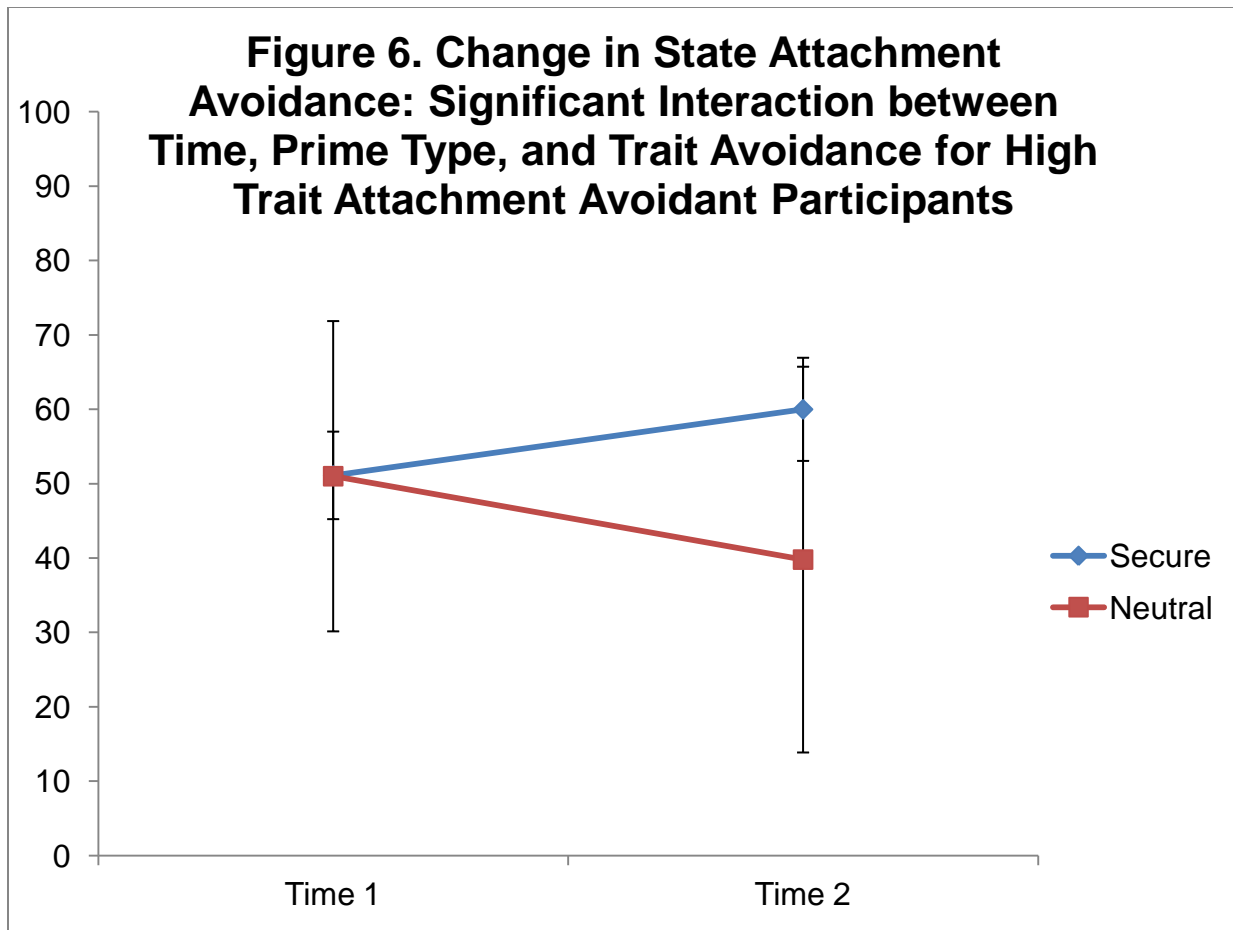


Figure 6. The significant three-way interaction between time, prime type, and trait attachment avoidance suggests participants high in trait attachment avoidance report similar scores at Time 1 in both priming type conditions but different scores at Time 2. Error bars depict standard error.

Table 24

Results for the Mixed-Subjects MANCOVA Examining the Change in State Attachment Avoidance with Trait Attachment Avoidance

Source	df	F	p	η^2
Trait Attachment Avoidance as a Covariate				
Time	1	.23	.64	.00
Time X Type	1	2.97	.09	.04
Time X Technique	1	.39	.54	.01

Time X Type X Technique	1	.43	.52	.01
Trait Attachment Avoidance as an Interaction Term				
Time X Type X Avoidance	1	4.24	.04	.05
Time X Technique X Avoidance	1	.14	.71	.00
Time X Type X Technique X Avoidance	1	.45	.51	.01
Error	76			

For state attachment security, the results with trait attachment avoidance as a covariate revealed no significant change in state attachment security for the main effect of time, the two-way interaction between time and prime type, the two-way interaction between time and prime technique, or the three-way interaction between time, prime type, and prime technique. The results with trait attachment avoidance as an interaction term revealed no significant change in state attachment security for the three-way interaction between time, prime type, trait attachment anxiety, three-way interaction between time, prime technique, and trait attachment anxiety, or the four-way interaction between time, prime type, prime technique, and trait attachment anxiety (see Table 25)

Table 25

Results for the Mixed-Subjects MANCOVA Examining the Change in State Attachment Security with Trait Attachment Avoidance

Source	df	F	p	η^2
Trait Attachment Avoidance as a Covariate				
Time	1	1.13	.29	.02
Time X Type	1	.08	.78	.00
Time X Technique	1	.42	.52	.01
Time X Type X Technique	1	.08	.77	.00
Trait Attachment Avoidance as an Interaction Term				
Time X Type X Avoidance	1	.03	.87	.00

Source	df	F	p	η^2
Time X Technique X Avoidance	1	1.60	.21	.02
Time X Type X Technique X Avoidance	1	.61	.44	.01
Error	76			

CHAPTER 4

DISCUSSION

The purpose of this study was to examine how security priming alters levels of expressed psychopathy (state psychopathy) as opposed to trait psychopathy. Because of the overall stability of psychopathy (Hare, 2003; Salekin, Rogers, Ustad, & Sewell, 1998; Hare, 1991) it was reasoned a one-time security prime may not cause an immediate change in reported psychopathy traits. The primary hypothesis examined if a security prime would alter levels of expressed psychopathy. First, it was hypothesized participants primed with attachment security would report lower levels of expressed psychopathy compared to participants who received a neutral prime. The results do not support this hypothesis. Although there was an overall decrease in psychopathy over time, there were no observed changes in psychopathy over time as a function of just the secure prime. In other words, security priming did not alter levels of expressed psychopathy.

The second and third part of the primary hypothesis examined the effects of trait attachment anxiety, attachment avoidance, and psychopathy. The analyses demonstrated varying results. As predicted, levels of trait attachment anxiety modified the effects of the security prime. Participants high in attachment anxiety who experienced the security prime reported lower levels of expressed psychopathy over time. This pattern was not observed in participants high in attachment anxiety in the neutral conditions or participants low in trait attachment anxiety in either prime type condition. The third part of the hypothesis was not supported by the results. Trait levels

of attachment avoidance and trait psychopathy did not modify the effects of the security prime.

The fourth part of the hypothesis examined the modifying effects of the priming techniques. Neither the explicit priming nor the implicit priming conditions produced any overall change in the levels of expressed psychopathy. When security priming did alter levels of psychopathy (for those high in trait attachment anxiety), it appears that explicit priming and implicit priming were equally effective. In conclusion, the results suggest that security priming may be effective at reducing levels of psychopathy for individuals who are high in trait attachment anxiety regardless of the technique used to prime attachment security.

The second hypothesis examined the change in the associations between the state attachment variables and expressed psychopathy as a function of priming type. Although the hypothesis was only partially supported, the results suggest the security prime altered the associative relationships between state attachment and expressed psychopathy. When examining men and women together, there was no significant change in the associations between any of the three state attachment variables and expressed psychopathy in either the secure or neutral priming conditions. Although there was not a statistically significant change in the association, there were observed changes in the strength of the associations between the state attachment variables and expressed psychopathy. In the security priming conditions, there was an observed strengthening between state attachment security and expressed psychopathy and a weakening between state attachment avoidance and expressed psychopathy, as predicted. However, it was not predicted that the association between state attachment

anxiety and expressed psychopathy would strengthen, as observed. There were also observed changes, although not statistically significant, in the associations between the state attachment variables and expressed psychopathy in the neutral conditions, which was not predicted. The association between state attachment anxiety and expressed psychopathy weakened, the association between state attachment avoidance and expressed psychopathy strengthened, and the association between state attachment security and expressed psychopathy strengthened.

When examining only women, there was a significant change in the association between state attachment security and expressed psychopathy, such that the association strengthened. However, this was observed for women in the neutral conditions, which was not predicted. Although not a statistically significant change, women in the security priming condition reported a weakening in the association between state attachment avoidance and expressed psychopathy over time. Again, although not statistically significant, there were changes in the association between state attachment variables and expressed psychopathy in the neutral condition, which was not predicted.

When examining only men, there was a significant change in the association between state attachment security and expressed psychopathy in the security priming conditions, such that it strengthened. Additionally, there was weakening in the association between state attachment anxiety and avoidance and expressed psychopathy, which was consistent with the hypothesis although it was not statistically significant. Finally, there was a strengthening in the association between state

attachment security and expressed psychopathy for men in the neutral conditions, which was not predicted.

Overall, there were changes in the associations between attachment and psychopathy over time. However, it would be beneficial to continue with data collection to include a larger sample size in order to have a more statistically valid analysis. This increase may better demonstrate if and where the priming conditions truly differ.

The third and final hypothesis examined the state attachment measures as a manipulation check for the security prime. The first and second part of the hypothesis sought to explore how security priming alters levels of state attachment. Security priming did so but only when modified by trait attachment avoidance and was limited to state attachment avoidance. In other words, the results suggest participants low in trait attachment avoidance reported a decrease in state attachment avoidance over time after receiving the security prime. For both priming conditions, participants high in trait attachment avoidance reported similar reports at time one but reported became dissimilar at time two.

The third part of the hypothesis examined the modifying effects of the priming technique. However, there was only marginal support that the effects were specific to a priming type condition. Overall, participants in the explicit conditions reported an increase in state attachment security and marginal support that participants in the secure explicit condition reported an increase in state attachment security compared to other conditions.

Implications for Theory, Research, and Practice

The results of this study may be particularly advantageous for clinicians who treat psychopathy. Traditionally, it is believed that psychopathy is extremely difficult to treat, if not impossible. However, this long held belief is simply a myth based on one study that contained methodological limitations (Berg, Smith, Watts, Ammirati, Green, & Lilienfeld, 2013). Salekin (2002) conducted a meta-analysis of 42 studies that examined psychopathy treatments. The results of this meta-analysis suggest that some therapeutic avenues have shown some success in reducing psychopathic traits and characteristics and recidivism. These therapeutic avenues include psychoanalytic therapy, with a success rate of 39%, and cognitive-behavioral therapy, with a success rate of 42%.

Although the studies these success rates are based on have several limitations, such as the use of case studies, out-dated conceptualization of psychopathy, and poor methodologies, it disputes the long held belief that psychopathy is untreatable. Overall, more research is needed to better understand the full extent and limits of psychopathy treatment. The current research may provide a useful avenue for researchers to explore concerning treatment options, especially given the conclusion by Salekin (2002). Research has demonstrated insecure attachment styles and levels of psychopathy are positively associated (Mack, et al., 2011; Flight and Forth, 2007). The current research and others (Mack, et al., 2011; Hackney, et al., in prep.) supports the notion that implicit and explicit security priming may be effective at reducing psychopathy for those high in attachment anxiety in a nonclinical sample.

The security priming research has utilized implicit and explicit techniques to activate attachment security (for review see Mikulincer & Shaver, 2007). According to Gawronski and Bodenhausen's (2006) associative-propositional model of implicit and explicit attitudes, the thoughts and feelings generated by an implicit prime can have an effect regardless of a person's conscious validation of the truth value of the thought or feeling. In other words, participants may react in one of two ways. An implicit security prime may produce a stronger reduction in state psychopathy if the participants do not consciously evaluate the truth value of their feelings or the participants may engage in propositional reasoning regarding the thoughts and feelings generated by the attachment security prime, regardless of whether the prime is implicit or explicit. If the later occurs, the participants could then either accept or reject the truth value of the generated attitude, and subsequently respond either symmetrically or asymmetrically. The results from the current study suggest that participants were able to accept the truth value of the generated thoughts and feelings regardless of the priming technique and report a decrease in expressed psychopathy (Hypothesis 1b).

Past research has demonstrated the state attachment measure, the SAAM, as able to detect an increase in state attachment security and a decrease in state attachment anxiety and avoidance after the introduction of a security prime (Gillath, et al, 2009). Although the current study did not demonstrate similar results as Gillath, et al. (2009), it still demonstrated a decrease in expressed psychopathy.

Limitations:

This study does not come without limitations. However, future research may help to minimize some of these limitations. One of the most obvious limitations of this study

was the poor reliability seen in the psychopathy measures, the LSRP and SPS, which made the analyses of the psychopathy subscales impossible. Another limitation of the study was the small sample size. In order to more adequately examine the interactions between prime type and prime technique, the analyses require a minimum of 20 participants per condition. The study would need approximately 320 participants in order to examine the priming conditions and their interactions with the trait variables. Unfortunately, time constraints and experimenter bias limited the sample size to 85 participants. Data collection should be continued in order to address the sample size limitation and improve the statistical validity of the analyses.

Another limitation of this study was the lack of a double-blind experimental procedure. The experimenters were not blind to the participant's priming conditions prior to the start of the session. Although unaware of the prime type for those in the implicit conditions, experimenters were aware of the prime type before the start of the session for the explicit conditions. In the explicit conditions, experimenters read aloud the prime, which was done to insure the participants fully attended to the secure and neutral prime. These attempts may have inadvertently led to 33 participants being affected by experimenter bias. It appears multiple experimenters treated participants differently causing them to report difference at Time 1 on state attachment anxiety, which was primarily seen in the female participants. The decision was made to drop these participants from further analyses. In doing so, it created a "researcher's degree of freedom," which may lead to the reporting of false positives (Simmons, Nelson, & Simonsohn, 2011, p. 5).

Simmons, Nelson, and Simonsohn, (2011) suggest that the best practice for dealing with a researcher's degree of freedom would be to report the analyses with all the participants in addition to the analyses with the participants dropped. This was not done because of why the participants needed to be dropped, the effects of experimenter bias. These participants may have been influenced by the experimenters and would influence the results in such a way that could have led to inaccurate conclusions. Correcting for the experimenter bias by implementing double-blind procedures could eliminate the experimenter bias, thus removing the issue of the researcher's degree of freedom.

The study design itself is also a potential limitation. The pre- and post-test design does come with drawbacks, particularly when it comes to responses on the repeated measures. Participants were susceptible to answering the state measures similarly at time 2 after taking the measures at time 1. Precautions were taken to help limit this drawback by using a visual analog scale (VAS), which makes it difficult for participants to respond identically on a repeated measure (DeVellis, 2012). Unfortunately, there was no way to test if this technique prevented this issue because the study did not use the original Likert scale in which to compare, and past research has not demonstrated that the VAS can be used to prevent this limitation in the SAAM or the SPS. Nevertheless, the pre- and post-test design was chosen because it allows for us to test the strength of the relationship between the state attachment variables and state psychopathy before and after a secure attachment prime (hypothesis 2).

Additionally, no final debriefing was given to the participants at the end of the experimental sessions. Therefore, no attempt was made to determine if participants had

become aware of the true purpose of the study. Future research needs to address this issue by guiding participants through a funneled debriefing in which their thoughts about the purpose of the study can be assessed.

This study was also unable to examine the primary and secondary psychopathy factors, which has been used in past attachment and psychopathy research (Mack, et al. 2011). We chose to analyze the LSRP using the three-factor model proposed by Sellbom (2010). The three-factor model was derived from the original two-factor model and used a smaller set of questions than the original LSRP created by Levenson, et al. (1995). The original two-factor model was designed to assess primary and secondary psychopathy traits. Unfortunately, the three-factor model proposed by Sellbom (2010) eliminates questions from the original LSRP, which made the assessment of the two-factor model impossible for this study. Further use of the LSRP should include all the questions assessed in the original two-factor LSRP instrument in order to allow for both factor models to be analyzed.

Future Research

In addition to extending the data collection, implementing a double-blind experimental procedure, and using the full length LSRP, further research is needed to better understand trait and state psychopathy. A measurement for expressed psychopathy, or state psychopathy, does not currently exist within the literature. Therefore, a state measure was created from an existing measurement of trait psychopathy, the LSRP. It was created in such a way as to assess current thoughts and feelings. It was reasoned that because personality traits are the means of behavioral states, changing a measurement of trait personality to reflect behavioral states would

allow for the assessment of currently expressed personality characteristics, in this case, psychopathy (Augustine & Larsen, 2009).

Analysis on the association between the measurements of trait psychopathy and state psychopathy was conducted to determine if they two measurements assessed conceptually different concepts. The results concluded that the two measures are highly correlated and suggest that they may be conceptually related. The correlations ranged from .55–.96 and are higher than ideally wanted to demonstrate that trait and state psychopathy are distinct constructs but it does not mean a state psychopathy, or expressed psychopathy, does not exist (Matthews, Deary, & Whiteman, 2009).

Scale development requires more than just altering questions from a trait measure. Ultimately, scale development is required in order to fully understand the possibility of state psychopathy, and future research should attempt to develop such a scale. Such a scale should assess behavioral states related to psychopathy and establish that it is not assessing mean behavioral states, or trait psychopathy. Additionally, all measures in the current study were given within ten minutes of each other. Therefore, the high correlations could be due to measurement error. Participants could have been drawing upon very similar questions that were previously taken and responding similarly. Ideally, future research should have the state measures taken at a separate time from the trait measures. Nonetheless, the high correlations do not negate the main findings that were observed, which was mean level reductions in expressed psychopathy for individuals high in attachment anxiety.

It would also be beneficial for future research to examine the change in the association between attachment and psychopathy for participants high in trait

attachment anxiety. This group of individuals may produce significantly strengthened associations between state attachment security and state psychopathy after experiencing a security prime compared to low trait attachment anxiety individuals.

Finally, future research is required using different populations in order to establish external validity. College students have been the primary subject pool using in the secure attachment priming research (Gillath, et al., 2010; Gillath, et al., 2009; Cassidy, et al, 2009; Mikulincer, et al, 2001). The full extent to which attachment and psychopathy are related needs to be further examined in populations other than college students such as other nonclinical populations, such as community members, but also forensic populations given the high prevalence rates in this population (Hare, 1991, 1996; Salekin, et al., 1997; Salekin, et al., 1998)

Conclusion

In conclusion, the results demonstrate that the secure attachment priming was able to decrease state attachment avoidance, for those low in trait attachment avoidance. Additionally, secure attachment priming strengthened the relationship between the state attachment security and state psychopathy in males. Although there was evidence of an overall decrease in state psychopathy, this was not influenced by the priming procedures. However, secure attachment priming was shown to decrease state psychopathy for those high in trait attachment anxiety. This suggests that security priming may be beneficial to individuals higher in psychopathy, but only for those who are also high in attachment anxiety.

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APPENDIX A

THE EXPERIENCES IN CLOSE RELATIONSHIPS: REVISED (ECR-R)

Instructions: The statements below concern how you feel in emotionally intimate relationships. We are interested in how you *generally* experience relationships, not just in what is happening in a current relationship. Respond to each statement by circling a number that best indicates how much you agree or disagree with the statement.

1. It helps to turn to my romantic partner in times of need.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

2. I rarely worry about my partner leaving me.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

3. I find it easy to depend on romantic partners.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

4. My romantic partner makes me doubt myself.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

5. I feel comfortable depending on romantic partners.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

6. I get uncomfortable when a romantic partner wants to be very close.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

7. I find it difficult to allow myself to depend on romantic partners.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

8. I prefer not to show a partner how I feel deep down.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

9. I do not often worry about being abandoned.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

10. I worry that romantic partners won't care about me as much as I care about them.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

11. I am very comfortable being close to romantic partners.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

12. It makes me mad that I don't get the affection and support I need from my partner.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

13. It's not difficult for me to get close to my partner.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

14. I talk things over with my partner.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

15. My partner really understands me and my needs.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

16. It's easy for me to be affectionate with my partner.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

17. I find it relatively easy to get close to my partner.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

18. I tell my partner just about everything.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

19. I am nervous when partners get too close to me.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

20. When I show my feelings for romantic partners, I'm afraid they will not feel the same about me.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

21. I feel comfortable sharing my private thoughts and feelings with my partner.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

22. My partner only seems to notice me when I'm angry.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

23. I find that my partner(s) don't want to get as close as I would like.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

24. I'm afraid that once a romantic partner gets to know me, he or she won't like who I really am.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

25. I often wish that my partner's feelings for me were as strong as my feelings for him or her.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

26. I usually discuss my problems and concerns with my partner.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

27. I prefer not to be too close to romantic partners.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

28. When my partner is out of sight, I worry that he or she might become interested in someone else.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

29. Sometimes romantic partners change their feelings about me for no apparent reason.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

30. I often worry that my partner doesn't really love me.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

31. I'm afraid that I will lose my partner's love.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

32. I don't feel comfortable opening up to romantic partners.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

33. I worry a lot about my relationships.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

34. I often worry that my partner will not want to stay with me.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

35. I worry that I won't measure up to other people.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

36. My desire to be very close sometimes scares people away.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

APPENDIX B

THE STATE ADULT ATTACHMENT MEASURE (SAAM)

Instructions: The following statements concern how you feel right now. Please respond to each statement by indicating how much you agree or disagree with it as it reflects your current feelings. For each item, make a vertical slash on the line between disagree strongly to agree strongly where it best represents your perception of your current state.

For example, Right now.....

<p>I feel happy.</p> <p>Disagree Strongly _____ Agree Strongly</p>
--

Right now...

1. I wish someone would tell me they really love me.

Disagree Strongly | _____ | Agree Strongly

2. I would be uncomfortable having a good friend or relationship partner close to me.

Disagree Strongly | _____ | Agree Strongly

3. I feel alone and yet don't feel like getting close to others.

Disagree Strongly | _____ | Agree Strongly

4. I feel loved.

Disagree Strongly | _____ | Agree Strongly

Right now...

5. I wish someone close could see me now.

Disagree Strongly | _____ | Agree Strongly

6. If something went wrong right now I feel like I could depend on someone.

Disagree Strongly | _____ | Agree Strongly

7. I feel like others care about me.

Disagree Strongly | _____ | Agree Strongly

8. I feel a strong need to be unconditionally loved right now.

Disagree Strongly | _____ | Agree Strongly

9. I'm afraid someone will want to get too close to me.

Disagree Strongly | _____ | Agree Strongly

10. If someone tried to get close to me, I would try to keep my distance.

Disagree Strongly | _____ | Agree Strongly

11. I feel relaxed knowing that close others are there for me right now.

Disagree Strongly | _____ | Agree Strongly

Right now...

12. I really need to feel loved right now.

Disagree Strongly | _____ | Agree Strongly

13. I feel like I have someone to rely on.

Disagree Strongly | _____ | Agree Strongly

14. I want to share my feelings with someone.

Disagree Strongly | _____ | Agree Strongly

15. I feel like I am loved by others but I really don't care.

Disagree Strongly | _____ | Agree Strongly

16. The idea of being emotionally close to someone makes me nervous.

Disagree Strongly | _____ | Agree Strongly

17. I want to talk with someone who cares for me about things that are worrying me.

Disagree Strongly | _____ | Agree Strongly

18. I feel secure and close to other people.

Disagree Strongly | _____ | Agree Strongly

Right now...

19. I really need someone's emotional support.

Disagree Strongly | _____ | Agree Strongly

20. I feel I can trust the people who are close to me.

Disagree Strongly | _____ | Agree Strongly

21. I have mixed feelings about being close to other people.

Disagree Strongly | _____ | Agree Strongly

APPENDIX C

THE LEVENSON'S SELF-REPORT OF PSYCHOPATHY SCALE (LSRP)

Instructions: The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by circling the appropriate statement below each question. Read each item carefully before responding. Remember that your answers are completely anonymous and cannot be linked to your identification. Please answer each question as honestly as you can.

1. Success is based on the survival of the fittest; I am not concerned about the losers.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

2. For me, what's right is whatever I can get away with

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

3. In today's world, I feel justified in doing anything I can get away with to succeed.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

4. My main purpose in life is getting as many goodies as I can.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

5. Making a lot of money is my most important goal.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

6. I let others worry about higher values; my main concern is with the bottom line.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

7. People who are stupid enough to get ripped off usually deserve it.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

8. I tell other people what they want to hear so that they will do what I want them to do.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

9. I often admire a really clever scam.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

10. I make a point of trying not to hurt others in pursuit of my goals.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

11. I enjoy manipulating other people's feelings.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

12. I feel bad if my words or actions cause someone else to feel emotional pain.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

13. Even if I were trying very hard to sell something, I wouldn't lie about it.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

14. Cheating is not justified because it is unfair to others.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

15. I find myself in the same kind of trouble, time after time.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

16. I am often bored.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

17. I quickly lose interest in tasks that I start.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

18. I have been in a lot of shouting matches with other people.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

19. When I get frustrated, I often "let off steam" by blowing my top.

Disagree	Disagree	Agree	Agree
Strongly	Somewhat	Somewhat	Strongly

APPENDIX D

THE STATE PSYCHOPATHY SCALE (SPS)

Instructions: The following statements concern how you feel right now. Please respond to each statement by indicating how much you agree or disagree with it as it reflects your current feelings. For each item, make a vertical slash on the line between disagree strongly to agree strongly where it best represents your perception of your current state. Remember your answers are completely anonymous and cannot be linked to your identification. Please answer each question as honestly as you can.

For example, Right now, I feel happy.

Disagree Strongly | _____ | Agree Strongly

1. Right now, I don't care about the welfare of losers.

Disagree Strongly | _____ | Agree Strongly

2. Right now, whatever I can get away with is what I consider "right" action.

Disagree Strongly | _____ | Agree Strongly

3. Right now, my success justifies my every behavior

Disagree Strongly | _____ | Agree Strongly

4. Right now, I feel like getting as many goodies as I can.

Disagree Strongly | _____ | Agree Strongly

5. Right now, I feel reward-driven, no matter the consequences

Disagree Strongly | _____ | Agree Strongly

6. Right now, it is up to others to worry about morality; I'm just worried about my welfare.

Disagree Strongly | _____ | Agree Strongly

7. Right now, I feel like dumb people deserve it when they get tricked.

Disagree Strongly | _____ | Agree Strongly

8. Right now, I would tell a lie if it meant that I would get my way.

Disagree Strongly | _____ | Agree Strongly

9. Right now, I wish I were scamming someone.

Disagree Strongly | _____ | Agree Strongly

10. Right now, if I were pursuing a personal goal, I would be careful not to step on anyone's toes.

Disagree Strongly | _____ | Agree Strongly

11. Right now, I would really get a kick out of manipulating another person's feelings.

Disagree Strongly | _____ | Agree Strongly

12. Right now, I would feel bad if my words or actions led someone to feel emotional pain.

Disagree Strongly | _____ | Agree Strongly

13. Right now, if I were trying really hard to sell something, I wouldn't lie about it.

Disagree Strongly | _____ | Agree Strongly

14. Right now, I feel like cheating is not justified because it is unfair to others.

Disagree Strongly | _____ | Agree Strongly

15. Right now, I feel like I could do something that would get me into trouble again.

Disagree Strongly | _____ | Agree Strongly

16. Right now, I am bored.

Disagree Strongly | _____ | Agree Strongly

17. Right now, I have become disinterested in this task.

Disagree Strongly | _____ | Agree Strongly

18. Right now, I feel like I could get into a shouting match with someone.

Disagree Strongly | _____ | Agree Strongly

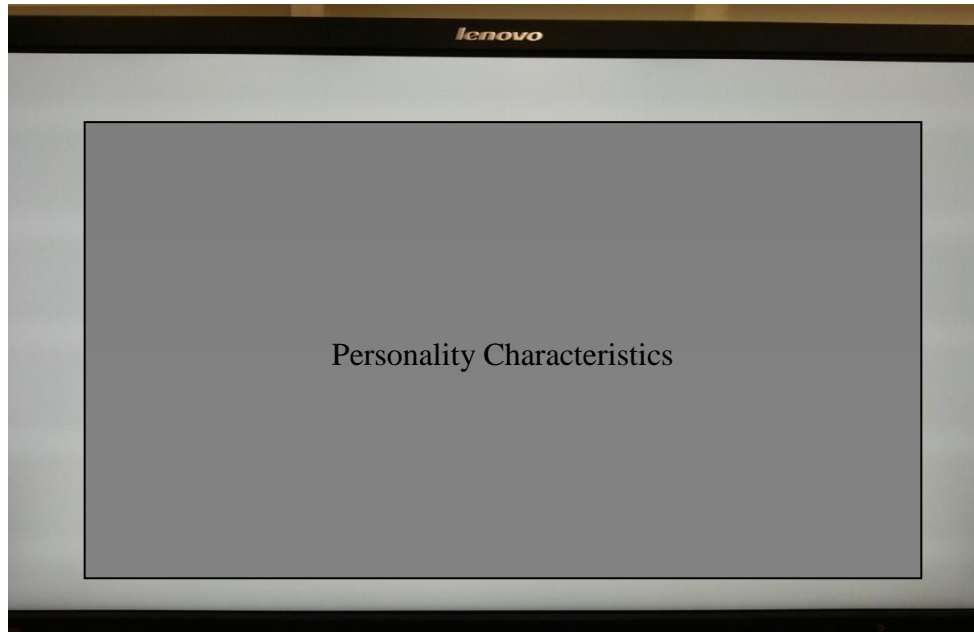
19. Right now, if I were frustrated, I might just “blow my top”

Disagree Strongly | _____ | Agree Strongly

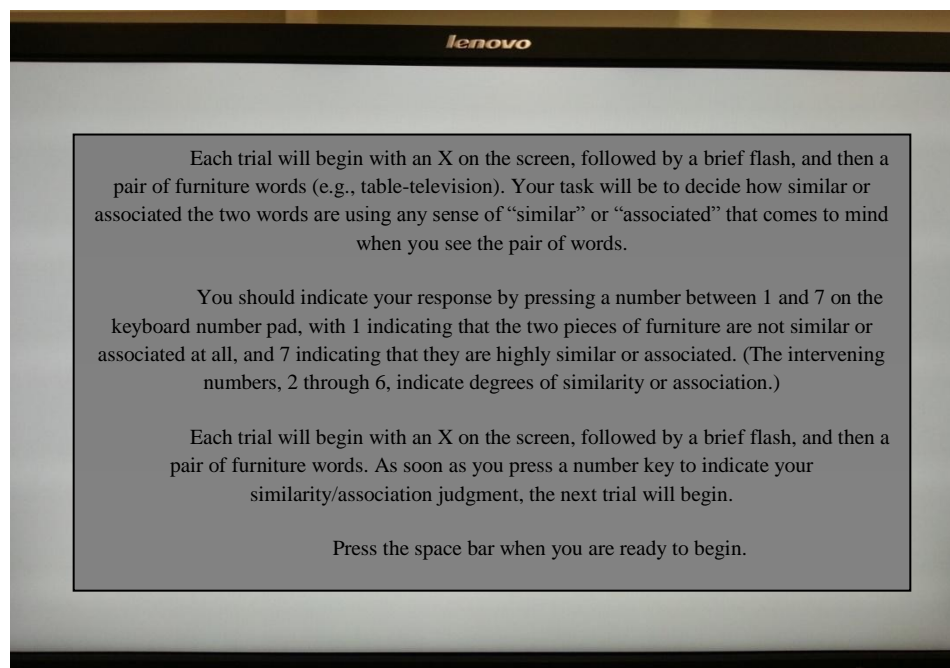
APPENDIX E

THE IMPLICIT PRIME

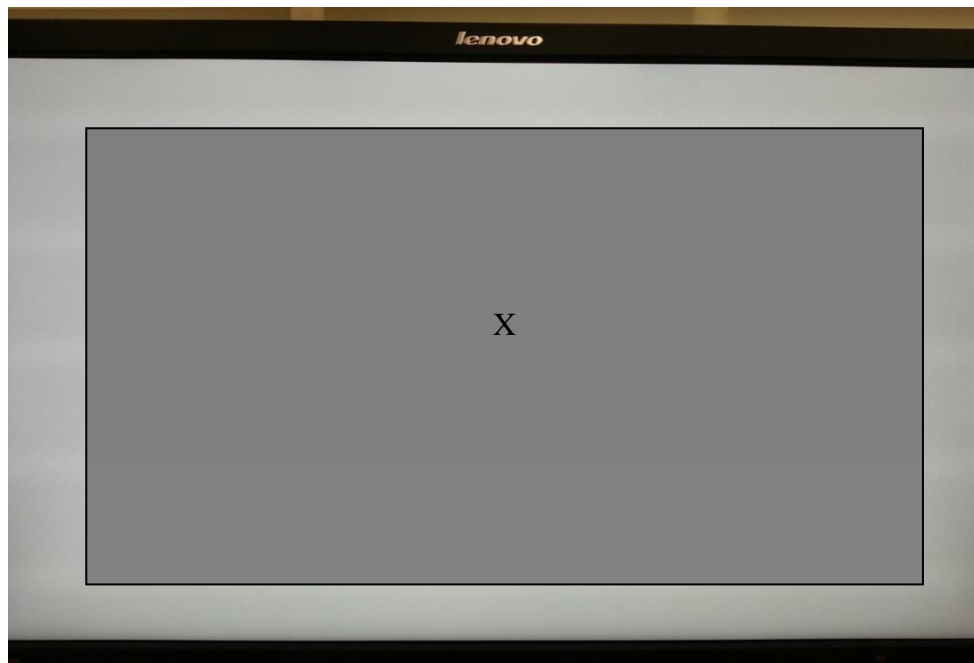
Participants enter the lab with a study title on the computer screen.



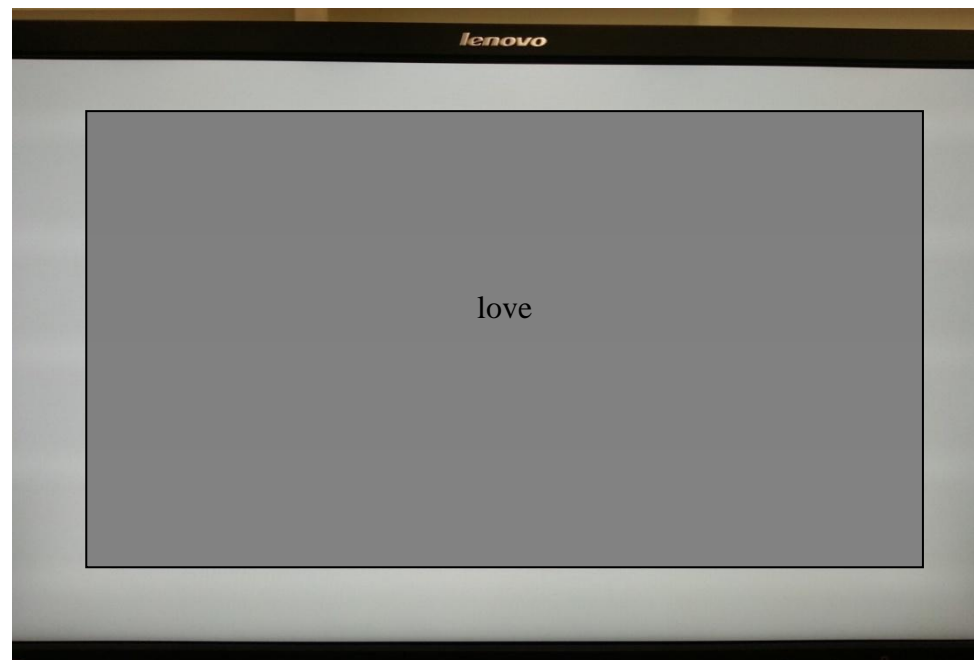
When appropriate, participants are instructed to hit the space bar and read the instructions.

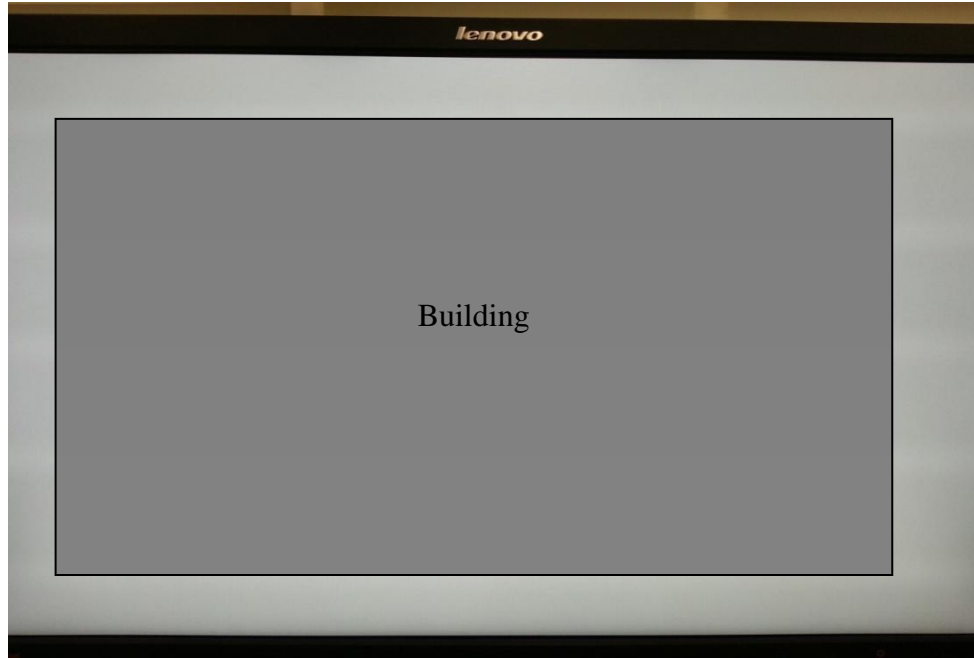


After hitting the space bar participants are presented with an 'X' on the screen for 478ms.

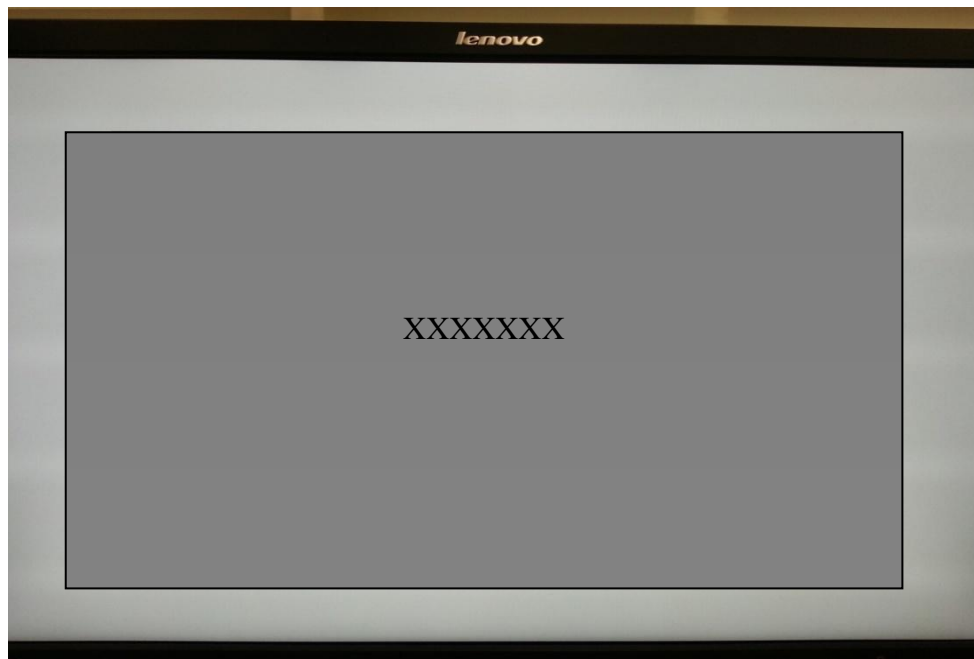


Next, participants will be presented one of the prime words for the conditions which they have been randomly assigned. Prime word is presented for 22ms.

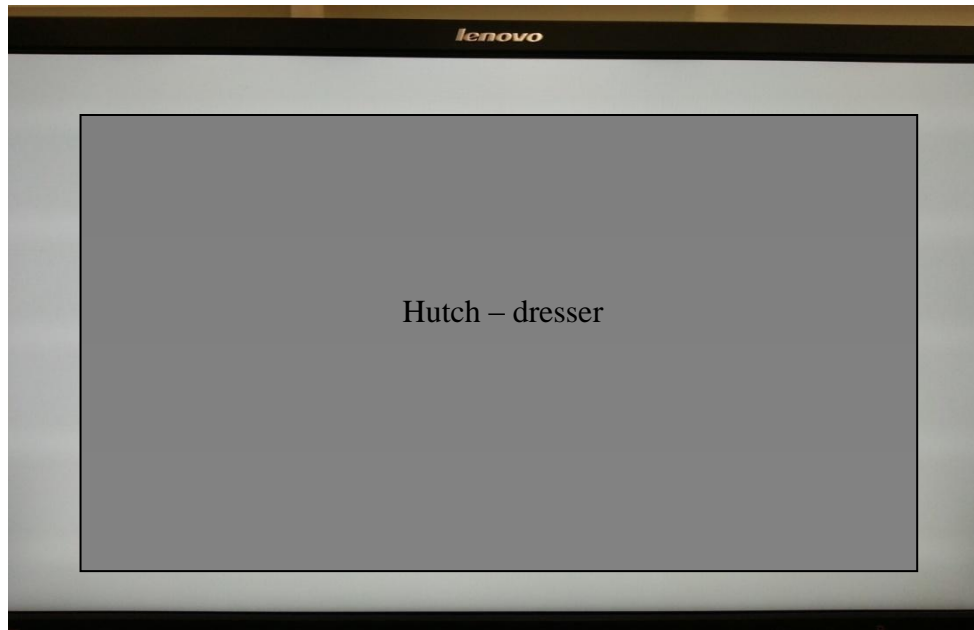




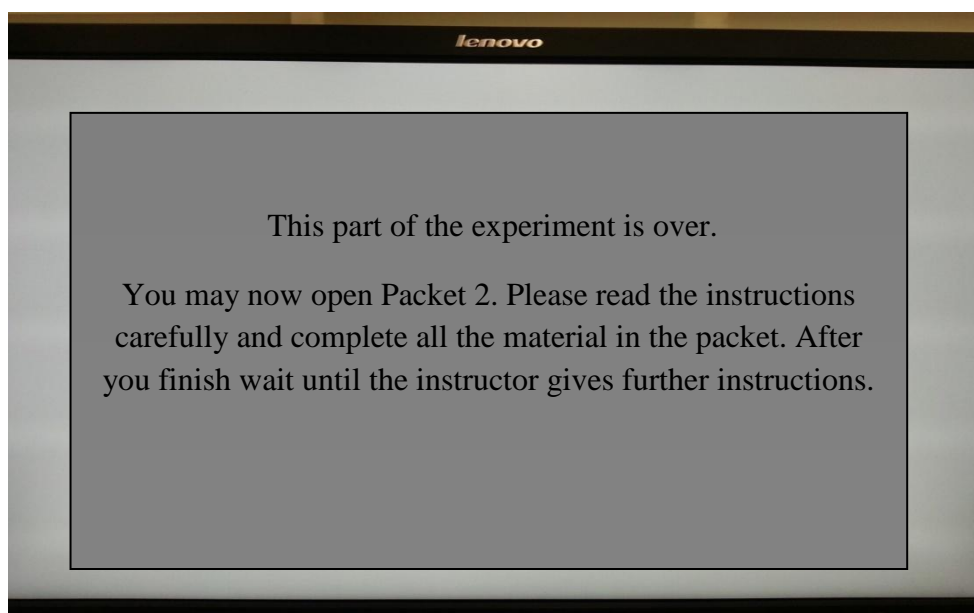
A visual-noise pattern will be presented for 500ms in order to mask any image remains on the retina.



The furniture word pair will appear next for an infinite amount of time or until the participant provides a numerical response.



Afterwards, the X will appear on the screen for 478 ms, followed by the prime words, visual-noise pattern, and the next furniture word pair. The study ends with instructions that direct the participants to a packet that contains the SAAM and SPS.



APPENDIX F

THE EXPLICIT SECURE PRIME

Visual Imagination (Secure)

Instructions: The next part of the study is a visual imagination task. We're interested in how you visualize another person. Please read the description of the characteristics of a secure relationship. As you read the description, please think of the name of someone in your life who comes closest to this description.

A secure relationship is one in which you have found that it was easy to be emotionally close to the other person. In this relationship, you felt comfortable depending on the other person and having them depend on you. In this relationship, you did not particularly worry about being alone or about the other person not accepting you. You trust that this person accepts and loves you and will help you in times of need.

1. What is the name of the person that comes closest to the description of a secure relationship?

2. What does this person look like?

3. What is it like being with this person?

4. Remember a time you were actually with this person. What would he or she say to you and what would you say in return?

5. How do you feel when you are with this person?

6. How would you feel if this person was here with you now?

7. What thoughts and feelings do you have regarding yourself in relation to your chosen person?

8. To what extent did this visual imagination task arouse feelings of:

Bad:

Not at all	Very little	Somewhat	Moderately	Very Much
1	2	3	4	5

Love:

Not at all	Very little	Somewhat	Moderately	Very Much
1	2	3	4	5

Closeness:

Not at all	Very little	Somewhat	Moderately	Very Much
1	2	3	4	5

Good:

Not at all	Very little	Somewhat	Moderately	Very Much
1	2	3	4	5

Happiness:

Not at all	Very little	Somewhat	Moderately	Very Much
1	2	3	4	5

Trust:

Not at all

Very little

Somewhat

Moderately

Very Much

1

2

3

4

5

Warmth:

Not at all

Very little

Somewhat

Moderately

Very Much

1

2

3

4

5

APPENDIX G

THE EXPLICIT NEUTRAL PRIME

Visual Imagination

Instructions: The next part of the study is a visual imagination task. We're interested in how you visualize a location. Please think about a time you went to a grocery store. Examples include a visit to Wal-Mart, a farmer's market, or Bi-Lo. Please take a moment and try to get a visual image of a time you made a trip to a grocery store.

1. What is the name of the store that you imagined?

2. What were you shopping for?

3. When did this visit to the grocery store take place?

4. How often do you visit this grocery store?

5. Was the store busy with other shoppers?

6. How satisfied were you with your purchases?

7. What thoughts and feelings do you have regarding yourself in relation to your chosen location?

8. To what extent did this visual imagination task arouse feelings of:

Bad:

Not at all	Very little	Somewhat	Moderately	Very Much
1	2	3	4	5

Love:

Not at all	Very little	Somewhat	Moderately	Very Much
1	2	3	4	5

Closeness:

Not at all	Very little	Somewhat	Moderately	Very Much
1	2	3	4	5

Good:

Not at all	Very little	Somewhat	Moderately	Very Much
1	2	3	4	5

Happiness:

Not at all	Very little	Somewhat	Moderately	Very Much
1	2	3	4	5

Trust:

Not at all

Very little

Somewhat

Moderately

Very Much

1

2

3

4

5

Warmth:

Not at all

Very little

Somewhat

Moderately

Very Much

1

2

3

4

5