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Psychopathy and Attachment: The Effect of Security Priming on Psychopathy in a College Student Sample

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PSYCHOPATHY AND ATTACHMENT:
THE EFFECT OF SECURITY PRIMING ON PSYCHOPATHY IN A COLLEGE
STUDENT SAMPLE

by

Blake D. Herd

(Under the Direction of Amy A. Hackney)

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ABSTRACT

Psychopathy has been defined as a pattern of negative behaviors, social interactions, and affective features, including impoverishment of emotion, unethical and manipulative actions, and impulsivity (Neumann & Hare, 2008). It is estimated that between 15 to 30 percent of incarcerated adults meet the criteria for psychopathy (Hare, 1991, 1996; Salekin, Rogers, Ustad, & Sewell, 1998). Because psychopathy is linked with deviant behaviors and a significant portion of incarcerated adults are high in psychopathy, methods of reducing psychopathy are needed. The current longitudinal study sought to reduce state psychopathy levels through secure attachment priming. It was first hypothesized that the mean of state levels of psychopathy would correlate with trait measures of psychopathy. Secondly, it was hypothesized that participants primed with secure attachment would report higher levels of state secure attachment and lower levels of state avoidant and anxious attachment. Finally, it was hypothesized that participants primed with secure attachment would report lower levels of state psychopathy than participants primed with a neutral concept. Forty undergraduate students (33 women and 7 men) participated in the experiment. Results indicated that the mean of state levels of psychopathy were positively associated with trait measures of psychopathy. Contrary to hypotheses, however, the secure attachment prime did not significantly affect levels of state security, anxiety, or avoidance, and the security prime did not reduce state levels of psychopathy over time. These findings provide initial support for a measure of state psychopathy, and call for further research to better understand the relationship between attachment and psychopathy.

INDEX WORDS: Psychopathy, security priming, attachment, state, trait

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Spring 2015

DEDICATION

I dedicate this to my father and mother, Paul and Claudia Herd, for their constant support and encouragement throughout my life. They have motivated me to reach for my dreams and provided me with the opportunities to do so. Thank you both so much for showing me what hard work and dedication can do.

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TABLE OF CONTENTS

DEDICATION	5
ACKNOWLEDGMENTS	6
LIST OF TABLES	8
LIST OF FIGURES	9
CHAPTER	
1 INTRODUCTION	11
Defining Psychopathy	12
Etiology	15
Attachment	19
Secure Attachment	21
Attachment and Psychopathy	26
Present Study Rationale and Overview of Procedures	29
2 METHOD	33
Participants	33
Apparatus	34
Procedures	38
3 RESULTS	42
Data analysis decisions and preliminary analyses check	42
Hypothesis 1	47
Hypothesis 2	48
Hypothesis 3	50

4 DISCUSSION	52
Limitations	53
Implications and Future Directions.....	55
Conclusion	56
REFERENCES	57

LIST OF TABLES

Table 1: Cronbach’s Alpha levels of Measures of State and Trait Psychopathy and Attachment in Time 1, 2, 3, and 4.....	43
Table 2: Inter-correlations among Measures of State and Trait Psychopathy and Attachment Time 1	44
Table 3: Inter-correlations among Measures of State Psychopathy and Attachment Time 2.....	45
Table 4: Inter-correlations among Measures of State Psychopathy and Attachment Time 3	45
Table 5: Manipulation Check Question Mean and Standard Deviations	47
Table 6: Inter-correlations among Measures of State and Trait Psychopathy	47

LIST OF FIGURES

Figure 1: Mean Levels of State Secure Attachment.....	48
Figure 2: Mean Levels of State Anxious Attachment.....	49
Figure 3: Mean Levels of State Avoidant Attachment.....	49
Figure 4: Mean Levels of State Psychopathy Across Time.....	50
Figure 5: Mean Levels of State Psychopathy Across Conditions	51
Figure 6: Mean Levels of State Psychopathy by Time and Condition.....	51

CHAPTER 1

INTRODUCTION

Psychopathy has been defined as a pattern of behaviors, social interactions, and affective features, including impoverishment of emotion, unethical and manipulative actions, and impulsivity (Neumann & Hare, 2008). Many television shows, such as *Criminal Minds*, have brought this personality trait to the forefront of peoples' minds (Bibel, 2013). This attention is valuable because it is estimated that between 15 to 30 percent of incarcerated adults meet the criteria for psychopathy (Hare, 1991, 1996; Salekin, Rogers, & Sewell, 1997; Salekin, Rogers, Ustad, & Sewell, 1998). Salekin, et al. (1998) also found that approximately 50 percent of incarcerated women and 62.6 percent of incarcerated men that are high in psychopathy reoffend within 14 months of being released compared to 56.7 percent of all the total prison population that reoffends (Cooper, Durose, & Snyder, 2014). As awareness of this personality trait has increased and knowledge about its severity has grown, many questions on reducing levels of psychopathy have arisen. One way to reduce psychopathy levels might be through secure attachment priming.

Brennan, Clark, and Shaver (1998) found that attachment styles fall along two major dimensions, anxiety and avoidance. People can be categorized within these two dimensions as either high or low. People who score high in anxiety and low in avoidance would be considered anxiously attached, and people who score high in avoidance and low in anxiety would be considered avoidantly attached. Those who score low on anxiety and avoidance would be considered securely attached. Those who are anxiously attached tend to worry about ending up alone or being abandoned (Brennan et al., 1998). People

who are avoidantly attached do not tend to engage in or seek out close relationships, preferring to remain detached (Brennan et al., 1998). Finally, those who are securely attached feel comfortable being close to others and do not fear that their partner will abandon them (Brennan et al., 1998). Additionally, individuals who are securely attached feel that they are deserving of love and that they can trust their partners to accept them and help them in times of need (Brennan et al., 1998). There has been other research demonstrating a fourth attachment style, called fearful (Bartholomew & Horowitz, 1991). People with this attachment style are both high in anxiety and high in avoidance. The purpose of the current study was to assess whether secure attachment priming can reduce levels of psychopathy.

Defining Psychopathy

Although the criminal aspects of psychopathy are widely known today, psychopathy was originally defined by 16 characteristics, including charisma, insincerity, lack of remorse, and absence of irrational thinking. Psychopathy was first conceptualized as a two factor model (Hare, 1991). These two factors were called primary and secondary psychopathy. People high in primary psychopathy exhibit more interpersonal detachment and callousness. Those high in secondary psychopathy exhibit impulsivity and antisocial behavior. Scales like the Levenson Self-Report Psychopathy Scale, commonly used today, are based on this two factor method of assessing psychopathy.

In recent years, some researchers have suggested moving towards a four factor model of psychopathy (Babiak, 2000; Neumann & Hare, 2008; Williams, Paulhus, & Hare, 2007). The main reason behind this shift was that the two-factor model was believed to place too much weight on criminality and violence in psychopathy instead of

focusing on the interpersonal, affective, lifestyle, and antisocial components (Williams et al., 2007; Babiak, 2000). When criminality is stressed more than the other components listed, measures of psychopathy can under detect rates of psychopathy in the general population (Neumann & Hare, 2008; Williams et al., 2007). Focusing on criminality might also cause an overestimation of psychopathy in incarcerated populations because the mere fact that incarcerated individuals have committed criminal acts might cause them to score high in criminality even if they do not possess other psychopathic characteristics (e.g., interpersonal and affective impoverishment). The expansion of psychopathy measures, such as the PCL-R, to include these additional factors, is said to increase strength of the measures and allow for the screening of noncriminal psychopaths (Williams et al., 2007).

Corporate Psychopathy

There is a widely held belief that the main feature of psychopathy is criminal behavior, whether violent or non-violent (Skeem & Cooke, 2010). According to research conducted by Skeem and Cooke, however, this belief is inaccurate. Skeem and Cooke make the argument that although criminal behavior, especially when multiple infractions are involved, may be a way to identify some personality characteristics that commonly are present in individuals high in psychopathy, criminality should not be the determining factor when assigning people the label of psychopath. One reason for including criminal behavior as an element of psychopathy but not using it as the sole means of assessment is that focusing on criminal behavior runs the risk of over labeling people with psychopathy. While criminality might be one facet of the label of psychopathy, if someone does not share other characteristics (such as emotional impoverishment or

impulsivity) then they would not be deserving of the label of psychopath. In this way researchers dilute the meaning of the label of psychopath to include all criminals even if most criminal offenders do not have any impulsive, callous, or detached tendencies (Skeem & Cooke, 2010).

Babiak, Neumann, and Hare (2010) also conducted research looking at noncriminal psychopaths. In their study, they looked specifically at psychopathy in the corporate world. Babiak et al. performed assessments on employees of several different corporations, screening for psychopathic tendencies. The results of their analysis indicate that psychopaths, while not a large percentage of employees in large corporations, are indeed present (approximately four percent of their corporate sample would be considered high in psychopathy). Positions in companies were also looked at in relation to psychopathy scores. The results of this comparison indicated that those high in psychopathy actually excel in the work place, quickly rising through the ranks of their chosen field.

Another interesting finding in Babiak et al.'s (2010) research came from comparing the performance reviews with job rankings of participants high in psychopathy. Babiak et al. found that even though participants high in psychopathy were rated fairly low in performance reviews, those low evaluations did not seem to impede their rise through the ranks. The explanation of this might be that even if employees high in psychopathy do not perform as well as others in the work place, they have more skills in manipulation and charisma that blind coworkers and bosses to their inadequacies. The results of Babiak et al. and Skeem and Cooke (2010) support the notion that psychopaths are not just offenders that commit violent crimes. This means that the prevalence of

psychopathy may be even more common than previously thought. Lowman (1989) found that many organizations are loath to test for psychopathic traits. Despite the fact that organizations do not like testing for psychopathy, finding a relatively easy and inexpensive way to reduce psychopathy in all employs could improve interpersonal work place relations.

Etiology

In order to answer the question of ways that psychopathic traits can be reduced in individuals, the etiology of psychopathy must be addressed. Taylor, Loney, Bobadilla, Iacono, and McGue (2003) looked at environmental and genetic factors in an attempt to evaluate the underlying cause of psychopathy. Psychopathy was measured in a sample of 16 to 18 year old male twins, including 142 monozygotic and 70 dizygotic duos, and used two psychopathic trait dimensions, impulsivity/antisocial and detachment/callousness measured and adapted from the Minnesota Temperament Inventory (MTI). Participants took the MTI and a Social Closeness scale and then their results were analyzed and compared to their twin. Researchers examined the likeness of the scores of both monozygotic and dizygotic twins and whether the twins shared or did not share a common environment growing up. Taylor et al. concluded that just over half of the covariance (.53) was accounted for by genetics and just under half was accounted for by environmental factors (.47). The results of Taylor et al.'s study indicate that while a significant portion of psychopathic traits seem to be linked to genetic factors, environment still play a significant role in the development of psychopathic characteristics.

Newman et al. (2005) wanted to further study the link between psychopathy and genetics found by Taylor et al. (2003). In Newman et al.'s study, they expanded upon Gray's model of motivation, as applied to psychopathy (Gray, 1970; 1987). Gray's model was used to determine if psychopathy could be caused by the behavioral activation system (BAS) and the behavioral inhibition system (BIS). The BAS is believed to relate to rewards and approaching behaviors and the BIS is associated with feeling and understanding punishment and avoidant behaviors (Gray, 1970; 1987). These systems are theorized to shape how individuals interact and respond to situations (Gray, 1970; 1987). Newman et al. used the file information and semistructured interviews to collect participant scores in the Psychopathy Checklist-Revised (PCL-R), Welsh Anxiety Scale (WAS), Sensitive to Punishment and Sensitivity to Reward Questionnaire (SPSRQ), and BIS/BAS Scales to assess levels of psychopathy, negative affect, and responses to punishment and reward stimuli. These scales allowed Newman et al. to compare levels of psychopathy to levels of BIS and BAS activity. Newman et al.'s study found that there was less activity in the BIS of individuals high in primary psychopathy and increased activity in the BAS and BIS for individuals high in secondary psychopathy. This change in activity indicated that there was indeed a link between the BAS and BIS and psychopathy.

Ross, Molto, Poy, Segarra, Pastor, and Montanes (2007) sought to confirm that this link did indeed exist in their study and determine what traits might be specifically linked to each system. They did this by having participants, from a university in Spain, complete the BIS and BAS Scales, the Antisocial Processes Screening Device (APSD) based on the PCL-R, the Levenson Self-Report Psychopathy (LSRP), and Hare Self-

Report Psychopathy Scale- III (SRP-III). Upon testing participants, Ross et al. found that the BIS was negatively linked to the primary psychopathy traits of fearless dominance, callousness, and low emotionality. Ross et al. also found that the BAS was positively correlated with both primary and secondary psychopathy; specifically the psychopathic traits of fearless dominance, callousness, low emotionality, social deviance, impulsivity, and self-centered impulsivity. Ross et al.'s findings, that the BAS was positively correlated with primary and secondary psychopathy, along with Newman et al.'s findings (2005), that less activity in the BIS is linked to primary psychopathy and increased activity in the BAS and BIS is linked to secondary psychopathy, indicate that the key to a biological predisposition to psychopathic traits may be largely determined by a low functioning BIS and high functioning BAS.

Although Taylor et al.'s (2003) research indicates that biological factors, such as the BAS and BIS activity, do not account for the sole reason a person might grow-up to be labeled a psychopath, assessment of the BAS and BIS systems could help identify individuals at risk for elevated levels of psychopathy. One limitation of this research into the BAS and BIS is that it is almost exclusively correlational in nature. This means that researchers do not know if having low activity in the BIS and high activity in the BAS actually cause psychopathic traits in people or if the preexisting presence of psychopathic traits lowers activity in the BIS and increases activity in the BAS. It could be that environmental factors actually cause psychopathic traits to be activated, which in turn cause a biological shift in activity in the BIS and BAS, or that the BIS/BAS systems are indirectly related to psychopathy via other, unknown variables.

Investigations into environmental factors of psychopathy have found a link between childhood abuse and neglect and psychopathy (Partridge, 1928; Haller, 1942; Jenkins & Hewitt, 1944; McCord and McCord, 1959; and Hodge, 1992). Weiler, and Widom (1996) sought to further evaluate psychopathy's link to childhood abuse and neglect. In their study, participants were selected by the researchers, after looking through past court records, for children who had been abused or neglected. After selection, participants were asked to complete several measures of psychopathy. Their results were then compared to a group of participants that had no record of being abused or neglected as children.

Weiler and Widom (1996) found support for the hypothesis that participants who were abused or neglected as children scored higher on psychopathic traits than participants who were not abused or neglected. They did not, however, find a link between abuse and neglect and violence. One possibility for this could be that the violent traits in psychopathy are determined more by genetics than environment. This would support Taylor et al.'s (2003) findings that genetics play a crucial role in the development of psychopathic traits.

Following Weiler and Widom's (1996) study, another study was conducted on criminal offenders by Poythress, Skeem, and Lilienfeld (2006). Poythress et al.'s study sought to further illuminate the effects of abuse on children, later in life. Poythress and colleagues found that although abuse was not directly linked to interpersonal characteristics of psychopathy, abuse was correlated with irresponsible and impulsive features, but not affective responses. Poythress et al.'s study partially contradicted Weiler and Widom's study, which found a direct link between psychopathy, abuse, and neglect,

finding direct links only to key features of psychopathic traits (e.g., impulsivity and emotional impoverishment).

This contraction could be because Poythress et al. did not evaluate the effects of neglect on psychopathy. Abuse through neglect might be responsible for the affective link between psychopathy and abuse found in Weler and Widom's study. Despite this discrepancy, these studies do indicate that psychopathy has a clear environmental link with abuse. The types of relationships where abuse and neglect occur lack security of attachment. Therefore, the formation of secure attachments may be one method to buffer abused and neglected children from developing high levels of psychopathy.

Attachment

According to Bowlby (1977), attachment styles determine peoples' abilities to form emotional bonds with others. These bonds are important from an evolutionary standpoint to aid in survival. Bowlby also found that early relationships with family members factor greatly into their later relationships. This means that regardless of biological predispositions, environment does play a significant role in the types of relationships people have later in life. These environmental influences are particularly impactful in early years of development (Ainsworth, Blehar, Waters, & Wall, 1978; T-thesis).

Hazan and Shaver (1987) sought to further evaluate Bowlby's research in their studies. Hazan and Shaver conducted a series of studies first verifying that there were three distinct attachment styles (secure attachment, avoidant attachment, and anxious/ambivalent attachment) that all thought about romantic relationships in a unique way. They then looked to see if the distinct styles of attachment, if they were indeed

distinct, were carried over from childhood to adulthood. The results of their research indicated that there were three different attachment styles that were unique in the way they feel and act in relationships. Hazan and Shaver also found these unique attachment styles exist in approximately the same percentages in children as in adults and that people tended to recall a similar attachment style to their mothers in childhood as they had later with romantic partners. These results supported Bowlby's initial theory on attachment, however, more research needs to be conducted that attempts to link attachment styles modeled in childhood to adulthood.

Bartholomew and Horowitz (1991) further evaluated research on childhood relationships and adult attachment styles in their study. In their study, Bartholomew and Horowitz had participants complete an interview; the first interview had participants talk about their relationship to family members, now and as they were growing up, and had a friend rate the participant on their relationship and attachment style. Researchers then compared the relationships styles of close family members, early in life, to that of current relationships, information provided by the participants' friend. Their research showed that there are four different types of attachment: secure, dismissing, preoccupied, and fearful. Bartholomew and Horowitz defined secure attachment as being at ease with intimacy and independence, dismissing as avoidant of intimacy and striving for complete independence from partners, preoccupied as obsessive about getting into and maintaining relationships, and fearful as anxious of intimacy while also being avoidant of relationships.

Further research on the links between attachment style and perspectives on relationships has been conducted (Bachman & Bippus, 2005). Bachman and Bippus

investigated these links in both friend and romantic relationships. They theorized that childhood attachment to influential figures shapes how people interpret their relationships later in life, particularly in their perceptions of comforting messages. The results of Bachman and Bippus's study were that people high in preoccupation and fearfulness do not view others as comforting. Instead of viewing an attempt at comforting as warm and loving, those high in preoccupation and fearfulness actually viewed such attempts as judgmental and condescending.

On the other hand, those who scored high in secure attachment saw people with less negativity and were more open to emotional comforting from others (Bachman & Bippus, 2005). These results further indicate the role that attachment has in how people view their later relationships. Those raised with secure relationships are more receptive towards emotional openness and support later in life (Bachman & Bippus, 2005).

Secure Attachment

Since Bowlby first developed attachment theory, there has been extensive research into the effects of secure attachment later in life (Mikulincer & Arad, 1999; Mikulincer & Shaver, 2001; Mikulincer, Shaver, Gillath, & Nitzberg, 2005). Secure attachment has been established as a key component in peoples' levels of many desirable characteristics, such as compassion, helping behavior, and empathy. These desirable characteristics produce feelings of empathy for those in need and drive to provide assistance when able to help others, without ulterior motives. High levels of anxious and avoidant attachment styles have been linked to less desirable characteristics, such as egotistical acts of helping behavior, lack of compassion, and more personal distress when viewing others in need. Individuals higher in anxiety and avoidance have a tendency to

only help others when other people are around to observe the helping behavior (Mikulincer et al., 2005).

Looking specifically at the benefits of secure attachment within romantic relationships, Mikulincer and Arad (1999) conducted research evaluating the effects of attachment style on cognitive openness in relationships. To do this, Mikulincer and Arad asked participants to imagine both congruent situations (where their romantic partner met expectations) and ambiguous situations (where their romantic partners either did or did not meet expectations), and then assessed how much those situations changed participants' views of their romantic partner. Results of their study indicated that people high in secure attachment had more change in their view of their romantic partner than those high in other attachment styles in ambiguous situations. This change in view was because they were more open to contrasting information while those high in anxious or avoidant attachment closed themselves off to unexpected information. This means that individuals who are securely attached have a less biased view of situations than people high in other attachment styles. Those high in anxious and avoidant attachment styles tend to have a perspective that they filter situations through, and that perspective is often a negative view of relationships partners.

In a third study, Mikulincer and Arad (1999) found that participants primed with secure attachment had more positive views of their partner when their romantic partner acted in a positive manner even if the positive behavior was not expected. Inversely, participants primed with secure attachment had more negative views of their partner when their partner acted in a negative way than participants not primed with secure attachment. Participants not primed with secure attachment recalled less incongruent

information (information that went against their view of their partner) and thus did not change their views of their partner. This research supports Pietromonaco and Feldman-Barret's (2000) research, that people higher in secure attachment are able to have more healthy relationships than those high in other attachment styles. Mikulincer and Arad's research shows even those primed with secure attachment can have a more unbiased perception of events, even when expectations are not met, and thus evaluate the relationship in a more healthy way.

Mikulincer et al. (2001) sought to determine the effects of attachment style on empathy and altruistic responses. Mikulincer et al. found that participants higher in anxious attachment empathized less with people in need than those higher in secure attachment. Furthermore, individuals high in anxious attachment experienced higher personal distress than those with secure or avoidant attachment styles. This is interesting because even though seeing someone in need of assistance distressed participants high in anxious attachment, they did not empathize with the confederate. They also found that participants primed with secure attachment have less personal distress when hearing about other people's troubles and a stronger empathetic response than those not primed with a secure attachment. The effect was observed for all participants primed with secure attachment regardless of their individual attachment style.

In order to further investigate why people primed with secure attachment empathized more than participants that were not primed with a secure attachment, Mikulincer et al. (2001) also investigated the cognitive accessibility of empathy in participants. Their results indicated that the reason why securely primed participants were able to empathize more with someone in need was that they could recover

empathetic memories faster than other participants. Priming secure attachment increased cognitive accessibility of empathy for all participants, regardless of their attachment style at the beginning of the study (Mikulincer et al., 2001). This effect was stronger when the participants primed were lower in anxiety and avoidance attachment at the start of the study. The effect that anxious attachment had on feelings of personal distress was also explained by participants high in anxious attachment having increased cognitive accessibility to distressful memories. However, those higher in attachment avoidance and attachment anxiety had lower levels of empathy than those high in secure attachment. These findings indicate that secure attachment priming is a valuable tool to increase empathy in all individuals, regardless of their primary attachment style.

Mikulincer et al.'s (2001) findings were helpful in establishing the link between attachment styles and empathy. In a subsequent study, Mikulincer et al. (2005) assessed the relationship between attachment styles and compassion and altruistic behaviors. Participants that were primed with secure attachment exhibited higher levels of compassion and altruism and were more willing to help a woman in need than those not primed with secure attachment.

Mikulincer et al. (2005) also found, using a four-step hierarchical regression, collapsing across conditions, that individuals high in avoidant attachment were less likely to show compassion or help the woman in the experiment. Participants high in anxious attachment were more distressed by the person in need, but did not show an increase in willingness to help. Mikulincer et al. also found that the perceived level of psychological closeness between the participants and the target influenced the likelihood that a person would help. Participants who felt psychologically closer to the woman in need helped

her more than those who felt less psychologically close. Adding to this finding, individuals primed with secure attachment were more compassionate and willing to help than individuals in the neutral condition regardless of how close they felt to the individual in need. Overall, these findings suggest that secure attachment plays a key role in helping behavior and compassion.

Mikulincer and Arad (1999) also sought to investigate priming attachment by asking participants to think about and report on a past secure, avoidant, or anxious relationship. Participants completed both congruent situations (where their romantic partner met expectations) and ambiguous situations (where their romantic partners either did or did not meet expectations), and then were assessed on how much those situations changed participants' views of their romantic partner. The results of their study indicate that participants randomly assigned to the secure condition were able to recall more congruent scenarios than those in any other condition. This research indicates that even the simple act of having people think about past relationships impacts their view of current relationships.

Rowe and Carnelley (2003) sought to further assess the impact of priming on participant positive and negative word recall. Participants were first tested to determine a base score for positive and negative word recall along with their individual attachment style. Participants were then primed with either secure, anxious-ambivalent, or avoidant attachment styles. The prime consisted of writing for 10 minutes on a relationship that matched a description of either secure, anxious-ambivalent, or avoidant attachment style. After being primed, participants did a word recall task again. Results showed that before the prime, participants performed in correspondence with their attachment style, with

secure participants recalling more positive words, avoidant participants recalling the most negative words, and anxious-ambivalent participants falling in the middle. This pattern of results, however, did not remain after the attachment prime was administered. Participants responded on the second word recall task in line with their primed attachment style, regardless of their individual levels of anxiety and avoidance.

In summary, past research has recognized numerous benefits to priming secure attachments in adulthood relationships. Mikulincer and Shaver (2007) wrote an article reviewing many of the effects found when participants are primed with secure attachment including: increased compassion, altruism, self-worth, better body image, reduced PTSD symptoms, reduced hostility and increased empathy (Admoni, 2006; Mikulincer et al. 2001; Mikulincer et al., 2006; Arndt, Schimel, Greenberg, & Pyszczynski, 2002). Although these positive effects of security priming are important, it is unknown whether these positive effects extend to individuals who have dark personality traits, such as individuals high in psychopathy.

Attachment and Psychopathy

Many of the characteristics of psychopathy are similar to those found in people who are insecurely attached, (i.e. a lack of empathy, compassion, detached and self-serving behavior; Mikulincer et al., 2001; Mikulincer et al., 2005; Williams et al., 2007). Bowlby (1969) suggested that having insecure attachment relationships at an early age caused people to become unemotional, cold, and distant in relationships later in life. This theory might point to a causal environmental root to psychopathy not previously investigated. Even though many researchers have found avoidant and anxious attachment

styles to be more detached and less empathetic (Mikulincer et al., 2001), little research has been conducted into the relationship between attachment and psychopathy.

Mack, Hackney, and Pyle (2011) conducted a study to assess the relationship between attachment dimensions and psychopathy. Mack et al. had participants complete the Experiences in Close Relationships-Revised scale, a trait measure of attachment, and the Levenson Self-Report Psychopathy scale, a trait measure of psychopathy, then conducted hierarchical multiple regression analyses to analyze the relationship between attachment dimensions and psychopathy. The results showed that individuals high in attachment avoidance and also high in attachment anxiety had a marked increase in primary psychopathy. Mack et al. also found that participants high in either attachment avoidance or high in attachment anxiety had higher levels of secondary psychopathy. Because these findings were only correlational, more research needs to be conducted. However, these findings do indicate that there is a relationship between attachment dimensions and psychopathy.

Craig, Gray, and Snowden (2013) conducted a study to further examine the relationship between psychopathy and attachment in a cross-sectional design. Their study also used the Experiences in Close Relationships Scale, used by Mack et al. (2011), along with the Parental Bonding Instrument, and Triarchic Psychopathy Measure. Results revealed that parenting styles correlated with psychopathy but that these effects were mediated by attachment style. This research indicates that insecure attachment plays a role in the development and maintenance of psychopathy.

Allen, Hackney, Vitacco, and Holtzman (in preparation) further investigated the link between psychopathy and attachment, established by Mack et al. (2011) by testing

the effects of security priming on levels of psychopathy. In Allen et al.'s study, participants were randomly assigned to either an explicit secure or neutral prime or an implicit secure or neutral prime in order to test the effects of secure attachment priming on psychopathy levels. For this study, a state measure of psychopathy, the State Psychopathy Scale, was created to assess any changes in psychopathy caused by the security priming. Allen et al. reasoned that due to the high stability of traits, any effects of a brief security priming procedure would not be detected in a measure of trait psychopathy. To address this problem, the State Psychopathy Scale was developed from the Levenson Self-Report of Psychopathy Scale (Levenson, Kiehl, & Fitzpatrick, 1995).

The State Psychopathy Scale was adapted to assess people's current levels of affect, cognition, and behaviors related to psychopathy rather than participants' reports of their past affect, cognition, and behaviors (trait psychopathy). Participants randomly assigned to the secure attachment priming condition completed a visualization task in which the participants heard a description of a secure relationship and then participants were asked to visualize the individual in their life that came closest to matching the description of a securely attached relationship partner. Participants randomly assigned to the control condition were asked to visualize a trip to the grocery store. Participants randomly assigned to the implicit security priming condition were primed with words related to a secure attachment, such as love and trust, while participants in the implicit neutral condition were primed with neutral words.

The results indicated that regardless of whether the security priming was implicit or explicit, there was not a significant main effect of security priming on levels of state psychopathy. However, results showed a significant interaction between security priming

and attachment dimensions. Specifically, individuals high in trait attachment anxiety in the secure attachment priming conditions reported lower levels of state psychopathy than individuals high in trait attachment anxiety in the control conditions. Although Allen et al. found evidence that security priming could reduce levels of state psychopathy in individuals high in trait attachment anxiety, there were several limitations in the study that limit the confidence in this finding. Specifically, Allen et al. reported potential experimenter effects, a small sample size, and problems with the internal consistency of the State Psychopathy Scale. The intent of the current research was to address the limitations reported in Allen et al. to better understand whether security priming can reduce state psychopathy levels.

Present Study Rationale and Overview of Procedures

Past research has indicated that attachment priming is both beneficial and effective for all people, regardless of attachment type (Mikulincer et al., 2005; Rowe & Carnelley, 2003). Some benefits of secure attachment priming include causing people to have increases in empathy and helping behaviors (Mikulincer et al., 2005). Past research has also indicated that attachment anxiety and attachment avoidance are independently positively related to secondary psychopathy while a combination of high attachment anxiety and high attachment avoidance is positively related to primary psychopathy (Mack et al., 2011). Allen et al.'s (in preparation) study found that individuals high in attachment anxiety, when primed with secure attachment, had significant decreases in state measures of psychopathy. Limitations in Allen et al.'s research, such as their small sample size, potential experimenter bias, and measurement errors, might have minimized the effects of secure attachment priming across all attachment styles. Building off of

Allen et al.'s research, the purpose of the current research is to test the causal relationship between secure attachment priming and levels of psychopathic states in a student sample.

In order to address the limitations of Allen et al.'s (in preparation) research, I made several alterations in the current study. In the current study, there was an attempt to increase the sample size, to provide the proper power for each condition (Cohens, 1992). Experimenter bias was reduced in the current study by making the experimenter and participants blind to the condition of the participants. In Allen et al., in the explicit priming conditions, the experimenters read a description of the priming task to the participants, which resulted in the experimenters knowing whether a participant was in the security priming condition or was in the neutral priming condition. This experimenter knowledge of priming condition could have affected the manner in which the experimenters interacted with the participants.

This potential for experimenter bias was reduced in the current study by having participants read the priming instructions to themselves. This procedural change allowed for a double blind experiment. Finally, measurement error was minimized through the revision of the State Psychopathy Scale developed in Allen et al.'s study. Specifically, the State Psychopathy Scale created by Allen et al. contained 19 items that corresponded to the 19 items on the Levenson Self-Report of Psychopathy Scale. Participants responded to the questions using a visual analog scale. In the current study, 77 questions based upon the Levenson scale were written and participants indicated their level of agreement on a Likert scale. In the current study, participants also completed the state measure of psychopathy three times prior to the priming task, to provide base-line levels of state psychopathy pre-manipulation. The second purpose of this repeated measures

approach was to provide information on the test-retest reliability of the state measure of psychopathy. In addition, participants completed the LSRP at pretest, so that responses on the state measure of psychopathy could be compared to trait levels of psychopathy. Past research has demonstrated that the mean of multiple state measures of personality characteristics are highly associated with trait measures of the same characteristic (Augustine & Larsen, 2012).

In summary, participants completed the state psychopathy measure three times prior to coming into the lab for the experimental priming procedure. During the baseline assessments, participants also completed measures of trait psychopathy and trait attachment (time one only), and measures of state attachment (three times). Participants were primed using a writing task, either asking them to imagine and write about a secure relationship or a trip to the store (neutral prime). Following this priming procedure, participants completed measures of state attachment, state psychopathy, and trait attachment and trait psychopathy. The baseline state measures of psychopathy allowed for the further investigation of changes in state attachment and psychopathy.

Hypothesis 1: It was hypothesized that the baseline for the State Psychopathy Scale Revised would be correlated with a trait measure of psychopathy. Research has demonstrated that the mean of multiple state measures of a personality characteristic is highly associated to trait measures of the same characteristic (Augustine & Larsen, 2012).

Hypothesis 2: It was hypothesized that the priming of attachment security would affect levels of state attachment. Specifically, it was hypothesized that participants primed with attachment security would report higher levels of state secure attachment and lower levels of state avoidant and state anxious attachment.

Hypothesis 3: It was hypothesized that the priming of attachment security would affect the expression of self-reported psychopathic states. Specifically, it was hypothesized that there would be a main effect of attachment priming, such that individuals primed with secure attachment would report lower levels of state psychopathy from pretest to posttest compared to individuals primed with a neutral concept. This would build upon Allen et al.'s (in preparation) finding that state attachment priming decreased state psychopathy in individuals with high trait attachment anxiety.

CHAPTER 2

METHODS

Participants

Georgia Southern undergraduate students were recruited to participate in the current study. Participants were recruited through the Psychology Department's online SONA system. Participants were also recruited from other classes with instructor permission. Data was collected through a series of questionnaires and no other personal information was collected that could jeopardize confidentiality. Attrition rates were high in the current study; Seven hundred and three participants completed time 1, 315 participants completed time 2, 166 participants completed time 3, and 67 participants completed all four parts of the experiment. However, twenty-seven participants were eliminated for missing more than 25% of the catch items that were designed to detect whether participants were carefully attending to the questions. This elimination procedure yielded a final sample of forty participants (33 women and 7 men). Participant's ages ranged from 18 to 28 year of age ($M = 21.10$, $SD = 2.085$). Twenty-four participants from the sample identified as Caucasian, twelve as African American, three as Latino, and one as Asian American. The sample included three first year students, four sophomores, 20 juniors, 11 seniors, and two 5th year students. Twenty-two participants identified as currently being in a romantic relationship and eighteen identified as not currently being in a romantic relationship. Participants received course credit or extra credit from their professors for their participation in the current study. In addition, participants were also entered into a raffle for a chance to win 1 of 4 \$50.00 gift cards to Wal-Mart.

Apparatus

The *Levenson Self-Report of Psychopathy Scale* (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995) was used to assess trait psychopathy. The LSRP is a self-report measure of psychopathy. It is based on a four point Likert scale ranging from disagree strongly (1) to agree strongly (4) and consists of 19 items. This scale has been commonly used as a tool to evaluate levels of psychopathy and found to be both reliable and valid (Brinkley, Schmitt, Smith, & Newman, 2001; Mchoskey, Worzel, & Szyarto, 1998). The LSRP is designed to measure two different factors of psychopathy: primary psychopathy (e.g., for me, what's right is whatever I can get away with), and secondary psychopathy (e.g., I quickly lose interest in tasks that I start).

A *State Psychopathy Scale Revised* (SPSR; Holtzman, Hackney, & Herd, 2013) was used to assess state levels of psychopathy. When this measure was created there was only one measure of state psychopathy available to the researchers called the *State Psychopathy Scale* (SPS; Holtzman, Hackney, & Allen, 2012) which had several reliability issues (participants scored inconsistently in the previous version of the measure and it lacked inter-item reliability). For this reason a revised state psychopathy scale was developed for the current study. This scale was based off of the original SPS and the LSRP. Augustine and Larsen (2012) found that the mean of state measures are comparable to behavioral trait measures. For this reason, the LSRP was used again in addition to the SPS to develop new and revised questions that applied specifically to participant's level of psychopathy when taking the measure. The SPSR contains 77 questions, as opposed to the 19 in the SPS, ranging from disagree strongly (1) to agree strongly (5). The number of questions on this scale was lengthened from 19 to 77

questions in order to better address the different facets characteristic of individual's high in psychopathy (e.g., emotional callousness, impulsivity, and self-centeredness).

The *Experiences in Close Relationships-Revised* (ECR-R; Fraley, Waller, & Brennan, 2000) was used to assess trait attachment levels. Sibley, Fischer, and Liu, (2005) found this measure of trait attachment to have high convergent and discriminant validity. The ECR-R consisted of 36 items; 18 items measuring attachment avoidance (e.g., I prefer not to show a partner how I feel deep down) and 18 items measuring attachment anxiety (e.g., I'm afraid that I will lose my partner's love). Participants responded to a seven point Likert scale ranging from strongly disagree (1) to strongly agree (7).

The *State Adult Attachment Measure* (SAAM; Gillath, Hart, Nofhle, & Stockdale, 2009) was used to evaluate state measures of attachment. Xu and Shrouf (2013) concluded that the SAAM is a valid measure that was particularly suited to detect differences in day to day levels of attachment. The SAAM was comprised of 21 items that measure state anxious attachment (e.g., I feel a strong need to be unconditionally loved right now), state avoidant attachment (e.g., if someone tried to get close to me, I would try to keep my distance), and state secure attachment (e.g., I feel loved). All subscales were measured using seven questions. Participants responded to a seven point Likert scale ranging from disagree strongly (1) to agree strongly (7).

An *Explicit Secure Prime* was also used and adapted from Bartz and Lydon (2004) and Mikulincer and Shaver (2001, Study 3). The Explicit Secure Prime involved a prompt describing a secure relationship (a relationship where they were emotionally close to the other person, felt comfortable depending on them, and did not worry about

being alone) and asked them questions about the imagined secure relationship. These questions included the name of the person that came closest to the description, what the person looked like, what it was like being with this person, what would the person say to the participant, what would the participant say in return, how the participant felt when he or she was with the person, how the participant would have felt if the person were here with them now, and the thoughts and feelings the participant had regarding themselves in relation to their chosen person.

An *Explicit Neutral Prime* was used and adapted from Bartz and Lydon (2004) and Mikulincer and Shaver (2001, Study 3). The Explicit Neutral Prime involved a prompt asking participants to imagine a trip to the grocery store. Next, participants were asked to answer several questions within the experiment packet. These questions included the name of the store imagined, what the participant was shopping for, when the visit took place, how often the participant visited the grocery store, whether the store was busy with other shoppers at the time of their visit, how satisfied the participant was with his or her purchases, and the thoughts and feelings the participant had regarding themselves in relation to their grocery store visit.

Past research found that writing effects took effect after 15 to 20 minutes of the task and is stronger when pencil and paper are used instead of a computer (Pennebaker, 1995). Therefore both primes were administered using pen and paper and participants were asked to write for 15 minutes.

A *Manipulation Check* for the explicit secure condition was also used. According to Perdue and Summers (1986) manipulation checks should be used in studies using measurements for latent variables. Latent variables are variables that are abstract and

must be operationally defined. On a scale of 1 to 5 (not at all, very) participants were asked 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. Additionally, participants were asked if they currently have 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, and participants were asked to indicate an estimated age of when the relationship occurred.

For the explicit neutral condition, participants were asked on a scale of 1 to 5 (not at all, very) how vivid was the image. Participants were also given the definition of a secure attachment at this time, and asked if they currently have someone in their life that comes close to matching the provided description. If they answered no, they were asked if they have ever had someone in their life that has come close to the provided description, as well as provided an estimated age of when the relationship occurred.

Catch Questions were also used on each measure in the study. A catch question was added to each measure of the study for each part of the study. There were 12 total catch questions throughout all four parts of the study. These catch questions were designed to alert researchers to participant random responding.

A demographics questionnaire and five informed consents, one for each part of the study, were used. All measures were randomized in the order of questions and order of measures themselves for each participant.

Procedure

Participants completed the current study in two phases, an online phase and an in-person phase. The first phase was designed to establish a baseline for state psychopathy a baseline measure of state attachment, and baseline measures of trait psychopathy and trait attachment. The second phase consisted of participants completing the attachment security of neutral priming task and responding to state and trait measures of psychopathy and attachment, the manipulation checks, and the demographics form

Phase One:

Participants were first asked to complete a series of online electronic surveys on three occasions before coming into a laboratory setting. According to Gosling, Vazire, Srivastava and John, (2004) participants put as much effort into online surveys, as they do in a laboratory setting. Participants were instructed to complete the online electronic surveys in a quiet, well lit place, where they were the only ones in the room. They were also asked to complete online surveys at the same time each day, for three days in a row. SONA, an online participant registration system, directed participants to a link where they completed the Phase One questionnaires online through Qualtrics online survey software. Participants, who were recruited directly from classes, were directed to the link in emails that contained the same information and link as SONA provided.

Participants who signed up on SONA or through classes were given .50 credits for each day that they completed Phase One (days 1, 2, and 3), for a maximum of 1.5 credit units. There was no penalty for not completing a day. Participants' names were never linked to their data. When the participants completed day 1 measures, they received a question on Qualtrics that asked them to type the last 4 digits of their student ID if they wanted to receive the day 2 and day 3 measures. If participants were recruited through

class and not SONA, they were also asked to email the primary researcher upon completion of each part if they wished to continue to the next part of the study.

Participants were then asked to type this number when they responded in days 2 and 3 of Phase One. This allowed the linkage of the data from Phase One day 1, day 2, and day 3, without compromising participant anonymity.

Once a participant clicked on the Qualtrics link, participants read an informed consent page that described the purpose, nature, risks, benefits, confidentiality, administrators' contact information, and ethical parameters of participating in the current study. Students were provided the option of choosing to give their consent by clicking a button indicating consent on Qualtrics. If the student chose to voluntarily participate in the survey and provided informed consent, the participant proceeded with the study.

The first occasion (day one) involved a series of measures that included: the ECR-R, the LSRP, SAAM, and SPS; all measures were presented in random order. On Day 2 and day 3, participants only completed the SAAM and SPS, presented in random order. This was to establish a base line for both the trait attachment and psychopathy scales, as well as a mean baseline for the state attachment and psychopathy scales.

Phase two:

Students were recruited for Phase two via the SONA system or psychology classes. One week after participants completed the third day of Phase one measures, they were invited to participate in the in-person part of the study, either through SONA (where they were able to select a time slot from a list of options) or email (where they were sent a list of open time slots and emailed back the slot they wished to take). Interested participants entered a lab in Brannen Hall and were instructed to sit at a computer.

Participants completed the study individually, using a pen and papers, provided by the researchers, consistent across all participants for the prime, and participants completed the measures on the computer within the Qualtrics program.

Participants were asked to type the last four digits of their student ID so that researchers could link Phase one data with Phase two data. The one week time delay allowed for participants to forget how they responded on the previous measures and to aid in keeping the true purpose of the experiment unknown to them. Participants then read and signed the informed consent. If they agreed to participate, participants were told to complete a visual imagination task, and a series of electronic surveys.

Participants were asked to complete a visual imagination task. The experimenter instructed participants to read the prompt for their visualization task carefully, but the experimenter did not know whether the participant had been randomly assigned to receive a secure attachment priming folder or a neutral attachment priming folder.

For the control and experimental conditions, the experimenter read,

“Now I am going to hand out the visualization task. The visualization task will consist of a prompt followed by a series of open-ended questions that will aid in visualizing the prompt. You will be given 15 minutes to answer the questions. If you finish before then, then go back and add more detail to some of your answers. Please let me know if you have any questions during the task. I will alert you so you know when your time is up.”

Next, the participants were asked to answer several questions that involved writing about a secure attachment (or a grocery store) for 15 minutes.

After the completion of the visual imagination task participants in all conditions received the SPS and SAAM, in random order, on Qualtrics. Upon completion of the state measures, participants took the trait measure of attachment and psychopathy (the ECR-R and LSRP). Participants also received one of two manipulation checks that corresponded to the priming condition they were assigned.

Next the participants in all conditions were asked to complete demographic information. Finally, participants were thanked for their participation. Additionally, they were instructed that if they wished to be debriefed they could provide their name and email address on a separate sheet of paper, which was not stored with their experiment material or consent form. Participants were fully debriefed at the conclusion of the data collection period. This was to ensure potential participants were not made aware of the priming procedures. Participants were also asked to not talk about the study to other students who might have participated, in order to ensure the scientific integrity of the data.

CHAPTER 3

RESULTS

Data analysis decisions and preliminary analyses check

Twenty-seven of the sixty-seven participants that participated in all four parts of the current study were eliminated from data analysis. Participants were eliminated if they missed more than 3 (25%) of the 12 catch questions. This criterion left researchers with 40 participants in the sample. A missing data analysis indicated that there was no missing data after the removal of participants who showed evidence of random responding. Recent analyses of the factor structure of the LSRP (Salekin, Chen, Sellbom, Lester, & MacDougall, 2014) indicate support for both a two factor model (primary and secondary psychopathy) and a three factor model (callous, egocentricity, and antisocial behavior) model, but better construct validity of the two factor model. Salekin et al. also found support for the construct validity of the total score. We therefore decided to conduct analyses with the LSRP with both the total score as well as the score for primary psychopathy and secondary psychopathy. Analyzing the LSRP in this manner allowed us to assess the relationships between the LSRP total score and the SPS total score, as well as assess the intercorrelations between primary and secondary psychopathy and attachment dimensions that have been observed in previous research. Preliminary analyses revealed acceptable internal reliability levels for all measures used in this study (See Table 1 for Cronbach's Alphas).

Table 1

Cronbach's Alpha levels of Measures of State and Trait Psychopathy and Attachment in Time 1, 2, 3, and 4

	Cronbach's Alpha Time 1	Cronbach's Alpha Time 2	Cronbach's Alpha Time 3	Cronbach's Alpha Time 4
SAAM Secure	.89	.87	.75	.83
SAAM Anxiety	.88	.89	.90	.87
SAAM Avoidance	.82	.79	.77	.80
SPS	.95	.97	.97	.97
ECR-R	.91	-	-	.93
ECR-R Anxiety	.92	-	-	.93
ECR-R Avoidance	.93	-	-	.95
LSRP	.86	-	-	.88
LSRP Primary Psychopathy (LSRP-P)	.83	-	-	.85
LSRP Secondary Psychopathy (LSRP-S)	.68	-	-	.73

The intercorrelations between the measures at time 1, time 2, and time 3 were assessed with Pearson's Correlation Coefficient (r) and are reported in tables 2, 3, and 4.

Table 2*Inter-correlations among Measures of State and Trait Psychopathy and Attachment Time 1*

Variables	1	2	3	4	5	6	7	8
1. SPS	--	--	--	--	--	--	--	--
2. LSRP	.65**	--	--	--	--	--	--	--
3. LSRP-P	.69**	.96**	--	--	--	--	--	--
4. LSRP-S	.43**	.83**	.63**	--	--	--	--	--
5.SAAM	.20	.40*	.39*	.30	--	--	--	--
Avoidance								
6. SAAM	-.04	.11	.08	.14	.06	--	--	--
Anxiety								
7. SAAM	-.05	-.12	-.12	-.09	-.30	-.13	--	--
Secure								
8. ECR-R	.30	.36**	.41**	.17	.54**	-.12	-.23	--
Avoidance								
9. ECR-R	.22	.29	.24	.32*	.17	-.58*	-.34*	.11
Anxiety								

Note: *Correlation is significant at the .05 level. ** Correlation is significant at the .01 level.

Table 3*Inter-correlations among Measures of State Psychopathy and Attachment Time 2*

Variables	1	2	3	4
1. SPS	--	--	--	--
2.SAAM Avoidance	.30	--	--	--
3. SAAM Anxiety	.14	-.02	--	--
4. SAAM Secure	-.17	-.16	.01	--

Note: *Correlation is significant at the .05 level. ** Correlation is significant at the .01 level.

Table 4*Inter-correlations among Measures of State Psychopathy and Attachment Time 3*

Variables	1	2	3	4
1. SPS	--	--	--	--
2.SAAM Avoidance	.18	--	--	--
3. SAAM Anxiety	.06	.19	--	--
4. SAAM Secure	-.3	-.57**	-.14	--

Note: *Correlation is significant at the .05 level. ** Correlation is significant at the .01 level.

A one-way between subjects MANOVA was conducted, as a manipulation check, to examine whether the attachment prime had an effect on feelings of badness, love, closeness, goodness, happiness, trust, and warmth. Results revealed an overall relationship between the secure attachment prime and feelings, Wilk's Lambda = .37, $F(7,31) = 7.68, p = .01$. Post hoc univariate ANOVAs revealed that participants in the secure prime condition ($M = 4.46, SD = 1.02$) scored higher on feelings of love compared to the neutral prime condition ($M = 2.87, SD = 1.46$), $F(1, 37) = 16.12, p = .01$. Post hoc

univariate ANOVAs also revealed that participants in the secure prime condition ($M = 4.46, SD = .88$) scored higher on feelings of closeness compared to the neutral prime condition ($M = 2.87, SD = 1.60$), $F(1, 37) = 16.12, p = .01$. Post hoc univariate ANOVAs revealed that participants in the secure prime condition ($M = 4.21, SD = .72$) scored higher on feelings of goodness compared to the neutral prime condition ($M = 3.13, SD = .833$), $F(1, 37) = 18.20, p = .01$. Post hoc univariate ANOVAs revealed that participants in the secure prime condition ($M = 4.00, SD = .88$) scored higher on feelings of happiness compared to the neutral prime condition ($M = 2.47, SD = .833$), $F(1, 37) = 28.95, p = .01$. Post hoc univariate ANOVAs revealed that participants in the secure prime condition ($M = 4.13, SD = .68$) scored higher on feelings of trust compared to the neutral prime condition ($M = 2.60, SD = 1.24$), $F(1, 37) = 24.65, p = .01$. Post hoc univariate ANOVAs revealed that participants in the secure prime condition ($M = 3.96, SD = .86$) scored higher on feelings of warmth compared to the neutral prime condition ($M = 1.87, SD = .99$), $F(1, 37) = 48.69, p = .01$. However, participants did not score statistically different on levels of badness in the secure prime condition ($M = 1.96, SD = 1.00$) compared to the neutral prime condition ($M = 2.07, SD = 1.39$), $F(1, 37) = .08, p = .78$.

Preliminary analyses were also conducted on the manipulation check questions related to vividness and depth of the visualization. The scale for these questions ranged from 1 (not at all) to 5 (very well). Scores indicated that participants were able to visualize the person effectively and feel the emotions during the visualization task that the person made them feel (see table 5).

Table 5*Manipulation Check Question Mean and Standard Deviations*

	M	SD
Ease of visualization	4.92	.28
Level of closeness	4.83	.38
Felt like the way the person makes you feel	4.33	.70

Hypothesis 1

Bivariate correlations were conducted to examine the relationships between state and trait levels of psychopathy. State psychopathy levels were found to be highly correlated between times 1, 2, and 3 (see Table 6). State psychopathy levels and the mean of state psychopathy levels were also found to be strongly correlated. State psychopathy levels for each part of the study and mean of state psychopathy for times 1, 2, and 3 were also found to be moderately correlated with secondary trait psychopathy and strongly correlated with primary psychopathy (see Table 6). This supports hypothesis 1. The state psychopathy baseline (SPS Part 1; mean of time 1, 2, and 3) was highly correlated with trait psychopathy.

Table 6*Inter-correlations among Measures of State and Trait Psychopathy*

Variables	1	2	3	4	5	6	M	SD
1. SPS	--	--	--	--	--	--	2.09	.48
Time 1								
2. SPS	.86**	--	--	--	--	--	2.04	.55

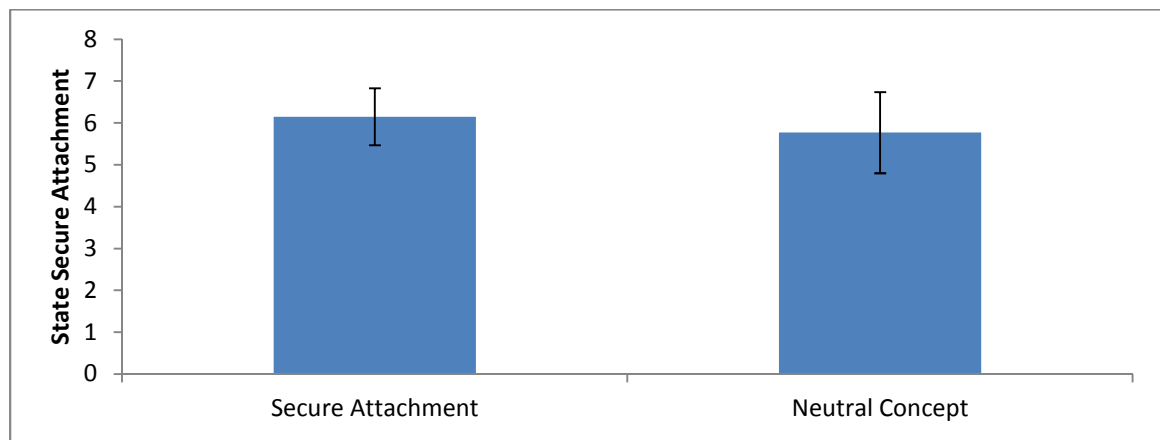
Time 2								
3. SPS	.85**	.96**	--	--	--	--	2.03	.57
Time 3								
4. SPS Part	.93**	.98**	.98**	--	--	--	2.06	.52
1								
5. LSRP	.65**	.63**	.63**	.66**	--	--	1.86	.46
6. LSRP-P	.69**	.63**	.63**	.67**	.96**	--	1.77	.45
7. LSRP-S	.43**	.47**	.47**	.48**	.83**	.63**	2.11	.64

Note: *Correlation is significant at the .05 level. ** Correlation is significant at the .01 level.

Hypothesis 2

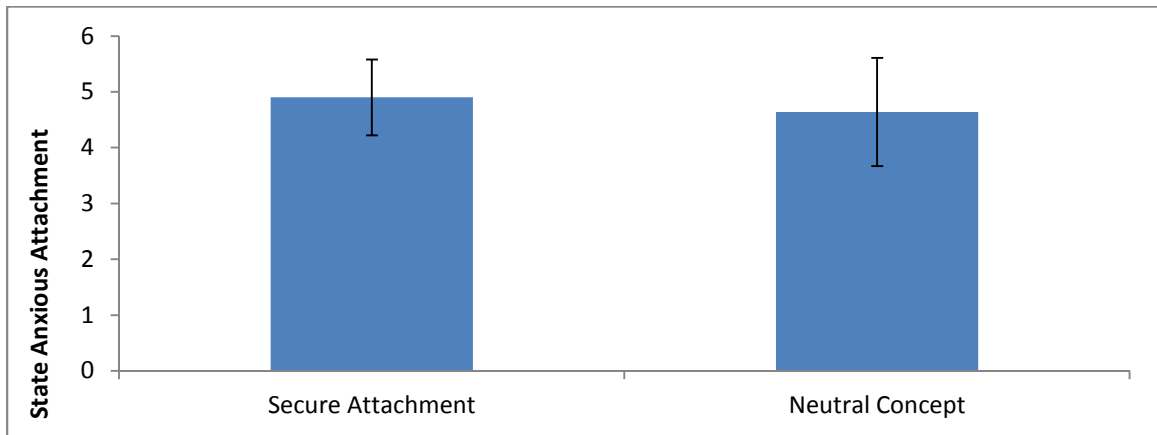
A one-way between subjects MANOVA was conducted to examine whether the attachment prime had an effect on state levels of secure, anxious, and avoidant attachment. Results indicated that the secure attachment primed group ($M = 6.15$, $SD = 0.68$) did not significantly differ from the control group ($M = 5.77$, $SD = 0.97$) on state levels of secure attachment, $F(1,38) = 2.21$, $p = .15$ (see figure 1).

Figure 1. Mean Levels of State Secure Attachment.



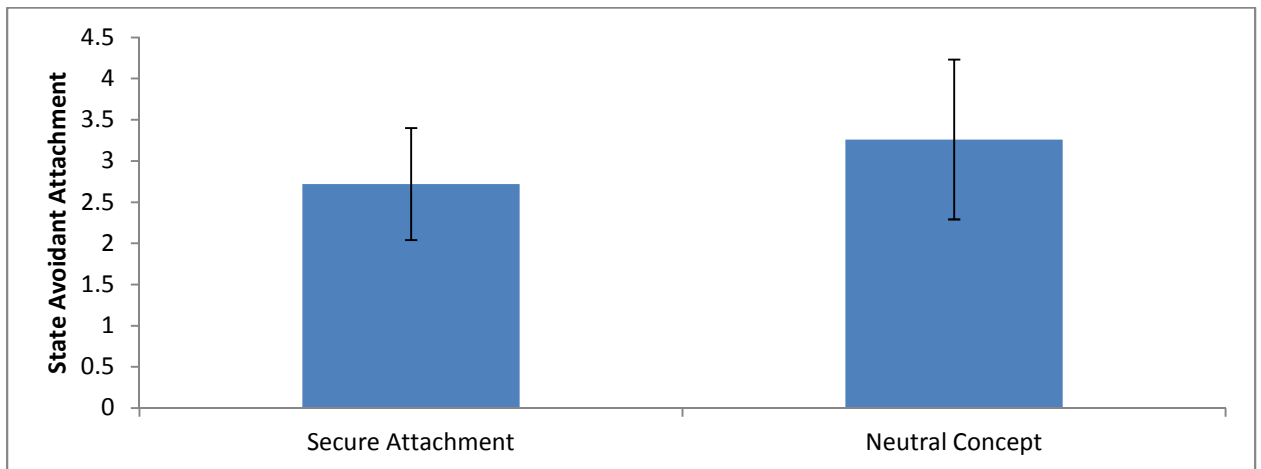
Results also indicated that the secure attachment primed group ($M = 4.90$, $SD = 1.25$) did not significantly differ from the control group ($M = 4.64$, $SD = 1.40$) on state levels of anxious attachment, $F(1,38) = .37$, $p = .55$ (see figure 2).

Figure 2. Mean Levels of State Anxious Attachment.



Finally, results indicated that the secure attachment primed group ($M = 2.72$, $SD = 1.17$) did not significantly differ from the control group ($M = 3.26$, $SD = 1.16$) on state levels of avoidant attachment, $F(1,38) = 2.04$, $p = .16$ (see figure 3).

Figure 3. Mean Levels of State Avoidant Attachment.

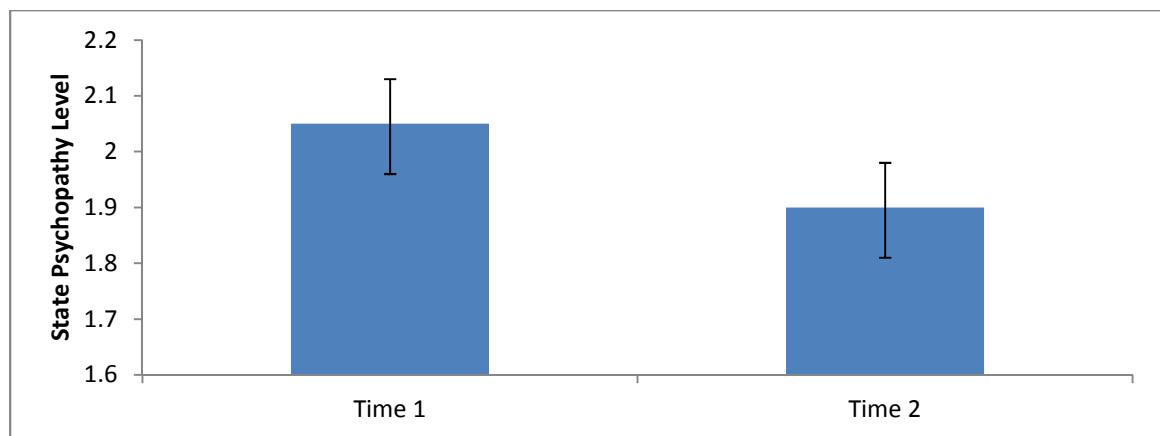


This means that hypothesis 2 was not supported. Secure attachment priming did not have a significant effect on state secure, anxious, or avoidant attachment levels.

Hypothesis 3

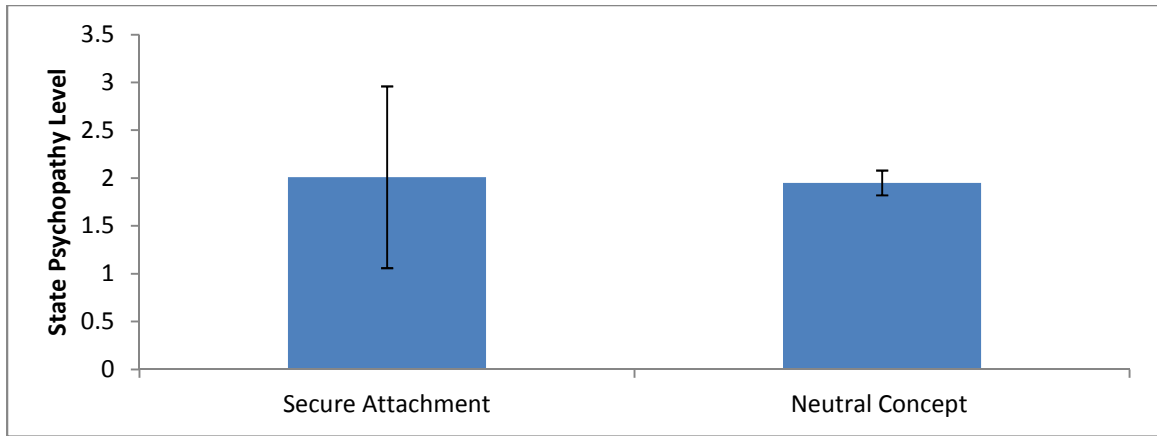
A mixed-factor Analysis of Variance (ANOVA) was conducted to examine the interaction between secure attachment priming and state psychopathy levels between time 1 and time 4. The analysis revealed that there was an effect of time $F(1,38) = 10.14, p < .01$ such that participants scored statistically higher in state psychopathy during time 1 ($M = 2.05, SEM = .08$) compared to time 4 ($M = 1.90, SEM = .09$; see figure 4).

Figure 4. Mean Levels of State Psychopathy Across Time.



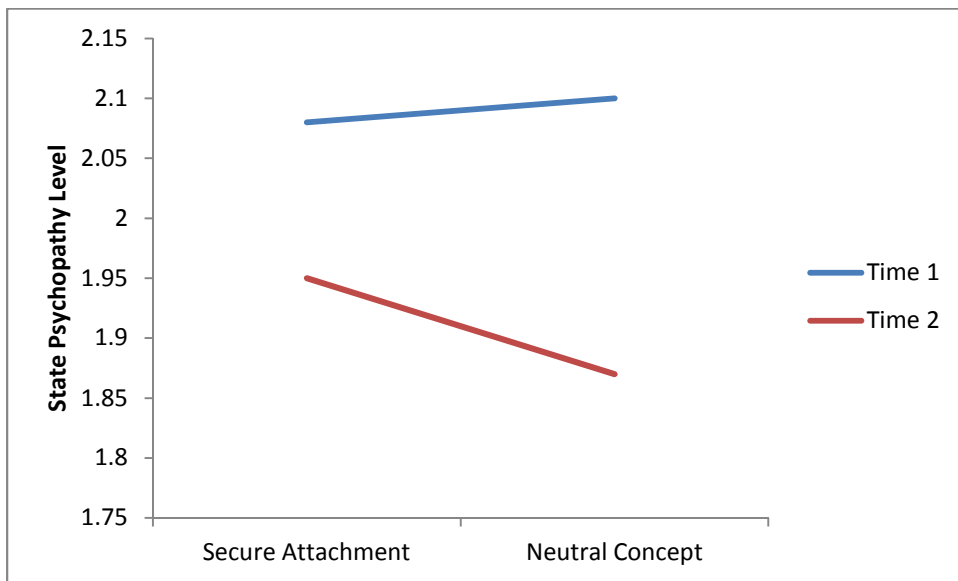
However, there was no effect of condition $F(1,38) = .11, p = .74$ such that participants in the secure attachment priming group ($M = 2.01, SEM = 1.95$) reported similar levels of state psychopathy as participants in the control group ($M = 1.95, SEM = 0.13$; see figure 5).

Figure 5. Mean Levels of State Psychopathy Across Conditions.



There was no significant interaction effect between time and condition $F(1,38) = 0.41, p = .56$ (see figure 6).

Figure 6. Mean Levels of State Psychopathy by Time and Condition.



CHAPTER 4

DISCUSSION

The purpose of the current study was to assess whether secure attachment priming could reduce levels of state psychopathy. It was hypothesized that there would be a moderate correlation between the trait and mean of state levels of psychopathy. Results supported this hypothesis. This finding supports Augustine and Larsen's (2012) finding that state measure of personality are related to trait measure of the same personality characteristic. Specifically, these results indicate that state measures of psychopathy measure a similar yet distinct, concept of psychopathy compared to trait measures of psychopathy. It was also hypothesized that the priming of attachment security would increase levels of state attachment. However, results did not support this hypothesis. The prime did not have a significant effect on participants' state attachment levels. This means that the secure attachment prime did not affect state levels of attachment. It was also hypothesized that priming secure attachment would affect the expression of self-reported psychopathic states. The results did not support this hypothesis. This finding may be due to the fact that the secure attachment prime did not affect state levels of secure attachment. If the attachment prime had increased state security, then the attachment prime may have decreased state psychopathy.

There was an unexpected main effect of time on levels of state psychopathy, with participants reporting higher levels of state psychopathy online than in the laboratory. It is unclear why there was a significant difference between time one and time four state psychopathy levels. One explanation might be that there was a demand characteristic effect when participants completed the study in lab that was not present when they

completed time one of the study online. Participants might have changed the way they responded to questionnaires because they were in the laboratory with a researcher present as opposed to taking the questionnaires by themselves online.

Limitations

There were several limitations that could have affected the results of the current study. One limitation was the low sample size. Despite attempting to gather more participants than collected in Allen et al.'s (in preparation) study, the current study only ended up with valid data from 40 participants. It is possible that the security priming procedure did increase state attachment, but the statistical tests were underpowered. It is also possible that the results might have been affected by an unequal representation of genders (33 females compared to only 7 males). Kessler et al. (1994) found that psychopathy was more prevalent in males than females. This inequity in gender representation could have not only affected the overall levels of psychopathy present in the sample but also the effects of the secure attachment prime on psychopathy. In support of this interpretation, an examination of the mean levels of state attachment for the security priming group and the control group in comparison to the means reported by Gillath et al. (2009) reveal similar means and standard deviations. Overall, the high levels of secure attachment in the current study might also have created a ceiling effect that prevented the security priming technique from affecting state attachment. Participants in both the control and security priming conditions scored well above the midpoint of the state security measure.

Another potential limitation of the current study is that it is currently unknown how long any effects of a security priming procedure will last. It is possible that the

secure prime had an effect on participants, increasing state attachment, but that the effect wore off before participants could complete the measures. One solution to this potential problem of short term primes is the broaden and build approach (Mikulincer & Shaver, 2007). The broaden and build approach involves participants experiencing multiple psychological and/or behavioral occasions where stability and growth on a personal level occur (Mikulincer & Shaver, 2007). The idea behind this technique is that multiple exposures to a priming condition increase the likelihood that participants will incorporate the effects of the prime into their relationship schemas (i.e., feeling less threatened, using more positive coping strategies, and trusting their partner in a deeper level). Multiple exposures should increase the accessibility of cognitive and behavioral patterns so that participants will perceive their relationships through a lens of someone who is high in secure attachment. The more the behavioral pattern is activated, the more secure participants should become.

The broaden and build technique is one that shows great promise in the area of attachment priming research (Mikulincer & Shaver, 2007). Rowe and Carnelley (2003) found that participants primed with security, through a 10 minute writing task where participants wrote about the positive and negative aspects of past relationships, showed benefits to how they perceived their relationships, in the short term. This is an important result that was relatively inexpensive to achieve compared to other cognitive therapeutic techniques. Further research must still be conducted in order to entirely map the effectiveness of the broaden and build technique and how it might work with other short, yet potent priming techniques (e.g., Rowe and Carnelley's priming technique), but it has the potential to become an effective way of extending the benefits of secure attachment

priming (Mikulincer & Shaver, 2007), and may prove effective in decreasing levels of psychopathy.

The last limitation of the current study is that it was conducted on a college sample. Participants in this sample can be assumed to be high functioning individuals that might be more aware of the true purpose of the study and measures compared to a more representative sample of the population. This awareness and high level of function could have caused participants to answer differently or in a more socially desirable way than would a less aware sample of participants. Some support for this limitation might be found in the fact that time one (online) and time four (in lab) scores of psychopathy significantly differed with each other, indicating that demand characteristics might be present.

Implications and Future Directions

One implication of the current study is that state measures of psychopathy, while correlated with trait measures of psychopathy, do assess a different construct of psychopathy. More research needs to be conducted in order to determine what exactly state measures of psychopathy account for compared to trait measures of psychopathy. While secure attachment priming did not significantly reduce state levels of psychopathy, in this study, more research is also needed to determine if secure attachment can reduce psychopathy levels. Future research should attempt to collect more participants that are not already high in secure attachment levels. Future research should also try to develop an effective secure attachment prime, as one of the major weaknesses of the current study was that the secure attachment prime group did not differ significantly from the neutral prime group. Once an effective secure attachment prime is found future research might

investigate longitudinal effects of secure attachment priming on both state and trait levels of psychopathy. Research should also be conducted to examine whether attachment style does determine people's psychopathy level or whether psychopathy levels might actually be a factor in determining attachment style.

Conclusion

In summary, the current study investigated secure attachment priming's effect on state psychopathy. However, no support was found for this hypothesis. While the main purpose of the current study was not supported, the current study was able to find initial evidence that state psychopathy is a distinct construct, highly correlated with trait psychopathy. More research must still be conducted in order to understand the elements that make up state psychopathy. Even though an effect of secure attachment priming was not found, further research is still needed to investigate the role of attachment in levels of psychopathy.

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