

THE RELATIONSHIP BETWEEN PSYCHOPATHIC TRAITS AND CRIMINAL
SUCCESS, CRIMINAL BEHAVIOR, AND AGGRESSION

A Thesis
by
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Abstract

THE RELATIONSHIP BETWEEN PSYCHOPATHIC TRAITS AND CRIMINAL SUCCESS, CRIMINAL BEHAVIOR, AND AGGRESSION

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Researchers have consistently found a strong relationship between criminal behavior and psychopathic traits. However, researchers have yet to investigate potential differences in psychopathic traits among those who engage in criminal behavior and are apprehended by law enforcement versus those who elude arrest while still committing crimes. Given the characteristics associated with primary and secondary psychopathic traits, this thesis had two aims. The first aim was to obtain a better understanding of the potentially differential relations between the psychopathy dimensions and criminal success. Using a community sample of individuals ($N = 426$), recruited through Amazon's Mechanical Turk (M-Turk) who endorsed a history of involvement in criminal behavior within the past five years, I predicted that primary psychopathic traits (PPT) would result in a decreased number of arrests independent of the number of crimes committed, while secondary psychopathic traits (SPT) would predict an increased number of arrests. The results did not support the hypotheses that PPT or SPT relate to criminal success. Another aim of this study was to examine the potentially differential relationships between the psychopathy variants and

violent crime, non-violent crime, instrumental aggression, and reactive aggression. I predicted that PPT would be positively and significantly related to self-reported violent crime because of the decreased sensitivity to aversive stimuli (i.e., Low Behavioral Inhibition System) associated with PPT, while SPT would be unrelated to violent crime. Based on prior research, I expected both PPT and SPT to positively relate to non-violent crimes. The results provided partial support for these hypotheses. Limitations and future directions are discussed.

Keywords: psychopathy, primary psychopathic traits, secondary psychopathic traits, violent crime, non-violent crime, instrumental aggression, reactive aggression, crime, arrest

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The Relationship Between Psychopathic Traits and Criminal Success, Criminal Behavior,
and Aggression

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Abstract

Researchers have consistently found a strong relationship between criminal behavior and psychopathic traits. However, researchers have yet to investigate potential differences in psychopathic traits among those who engage in criminal behavior and are apprehended by law enforcement versus those who elude arrest while still committing crimes. Given the characteristics associated with primary and secondary psychopathic traits, this thesis had two aims. The first aim was to obtain a better understanding of the potentially differential relations between the psychopathy dimensions and criminal success. Using a community sample of individuals ($N = 426$), recruited through Amazon's Mechanical Turk who endorsed a history of involvement in criminal behavior within the past five years, I predicted that primary psychopathic traits (PPT) would result in a decreased number of arrests independent of the number of crimes committed, while secondary psychopathic traits (SPT) would predict an increased number of arrests. The results did not support the hypotheses that PPT or SPT relate to criminal success. Another aim of this study was to examine the potentially differential relationships between the psychopathy variants and violent crime, non-violent crime, instrumental aggression, and reactive aggression. I predicted that PPT would be positively and significantly related to self-reported violent crime because of the decreased sensitivity to aversive stimuli (i.e., Low Behavioral Inhibition System) associated with PPT, while SPT would be unrelated to violent crime. Based on prior research, I expected both PPT and SPT to positively relate to non-violent crimes. The results provided partial support for these hypotheses. Limitations and future directions are discussed.

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The Relationship Between Psychopathic Traits and Criminal Success, Criminal Behavior,
and Aggression

Numerous studies have been conducted with the goal of identifying factors that influence criminal behavior and arrest rates such as race, age, and sex (Chilton & Datesman, 1987; Steffensmeier, Allan, Harer, & Streifel, 1989; Welch, 2007). Some researchers have investigated the role of criminal competence on arrest rates, particularly one's ability to evade contact with the criminal justice system (Ouellet & Bouchard, 2017). Further, researchers in the fields of psychology and criminology have found a positive correlation between criminal behavior and psychopathic traits in both incarcerated and community samples (Crego & Widiger, 2016; Hicks, Markon, Patrick, Krueger, & Newman, 2004).

In community samples, researchers have identified individuals that are high in psychopathic traits and endorse a history of criminal behavior yet have little to no history of arrest (De Oliveira-Souza, Moll, Ignácio, & Hare, 2008). This finding conflicts with the exposure hypothesis which suggests that the more crimes someone engages in, the more likely they are to be arrested (Ouellet & Bouchard, 2017). It may be that the strength of the exposure hypothesis changes as a function of psychopathic traits. Some researchers have posed that high levels of psychopathic traits may aid individuals in their ability to elude arrest due to their ability to carefully plan their crimes and avoid detection by the criminal justice system (Glenn & Raine, 2009; Yang et al., 2005), but this hypothesis has yet to be investigated.

The purpose of this thesis, overall, was to obtain a deeper understanding of how psychopathic traits may impact criminal behavior and an individual's ability to elude arrest. There were two aims. First, using a community sample of individuals with a self-reported

criminal history, I wanted to know if primary psychopathic traits, defined by low affective characteristics (e.g., lack of remorse, lack of empathy, egocentricity) and a genetic etiology, may enable criminals in their efforts to elude arrest, while secondary psychopathic traits, defined by impulsivity, antisocial behavior, lack of long term goals, and an environmental etiology, hinder a criminal's ability to avoid detection by the criminal justice system (Hare, 2016; Walsh & Wu, 2008; Levenson, Kiehl, & Fitzpatrick, 1995). Second, I hoped to learn if primary and secondary psychopathic traits differentially relate to types of crime and aggression (e.g., violent versus non-violent crime and instrumental versus reactive aggression).

Subtypes of Psychopathy

The now extensive number of studies investigating the concept of psychopathy can be traced back to Hervey Cleckley (1941) who is credited with developing the original definition and conceptualization of psychopathy. Cleckley conducted case studies with 15 patients in a locked psychiatric institution and identified traits that were relatively consistent between the 15 cases, thus developing the criteria for the prototypical psychopath. Using Cleckley's 16 traits, Robert Hare developed the first measure for psychopathy, the Psychopathy Checklist (PCL; Hare, 1980), which has since been revised and is considered the gold standard for assessing for psychopathy in research and forensic settings (PCL-R; Hare, 1991).

Since Cleckley's original study, a variety of labels, definitions, and characteristics have been applied to the construct of psychopathy by researchers resulting in an abundance of mixed opinions about the best factor structure and how psychopathy is best operationalized (Mokros et al., 2015; Pemment, 2013; Walsh & Wu, 2008). A two-factor

model, primary and secondary psychopathy, has received the most support and investigation. Primary psychopathic traits are considered to have a genetic etiology and are characterized by a low behavioral inhibition system (BIS), manipulativeness, callousness, high intelligence, superficial charm, and a grandiose sense of self-worth. Conversely, secondary psychopathic traits are considered to have more of an environmental etiology and are characterized by an overactive behavioral activation system (BAS), high anxiety, impulsivity, frequent antisocial behavior, low intelligence, inability to make long-term goals, need for stimulation, and sexual promiscuity. However, these constructs are not mutually exclusive, as most individuals will have a combination of both primary and secondary psychopathic traits.

Several factors have been found to differentiate the two dimensions. For example, some researchers have found an inverse relationship between primary psychopathic traits and the behavioral inhibition system (BIS), while a positive relationship has been found between secondary psychopathic traits and the behavioral activation system (BAS) (Newman, MacCoon, Vaughn, & Sadeh, 2005; Uzieblo, Verschuere, Van den Bussche, & Crombez, 2010). The BIS and BAS are neurological systems that regulate sensitivity to environmental cues. Specifically, the BIS regulates sensitivity to aversive stimuli such as punishment, while the BAS regulates sensitivity to signals of reward (Gray, 1972). These studies provide evidence that suggests that individuals higher in primary psychopathic traits may be less affected by aversive stimuli than individuals lower in primary psychopathic traits, whereas individuals higher in secondary psychopathic traits may be motivated by reward at a higher rate than those who score lower in secondary psychopathic traits. In relation to criminal behavior, these differences may contribute to an individual's propensity to commit specific criminal acts (e.g. murder versus robbery).

Some researchers have identified differences in executive functioning among the primary and secondary psychopathy dimensions, but the relationships are not yet fully understood. For example, Ross, Benning, and Adams (2007) examined the relationship between the psychopathy dimensions and executive functioning as measured by the Frontal Systems and Behavior Scale (FrSBe), a self-report measure composed of three subscales: Apathy (e.g., “sits around doing nothing”), Disinhibition (e.g., “talks out of turn”), and Executive Dysfunction (e.g., “is disorganized”). Ross et al. (2007) found executive dysfunction to be positively related to secondary psychopathic traits, whereas primary psychopathic traits were negatively related to executive dysfunction. The authors proposed that primary traits may be “a protective factor against executive dysfunction” (Ross et al., 2007, p. 394). Additionally, the authors suggested that the use of offender samples in prior studies may have contributed to the non-significant differential relationships found between the psychopathy dimensions and executive functioning. They explained that psychopathic offenders may more closely correspond with secondary psychopathic traits.

Alternatively, after an extensive review of the literature, Maes and Brazil (2013) suggested that the available studies that examine the relationship between executive functioning and psychopathic traits do not provide sufficient evidence to fully support an association between executive functioning and psychopathic traits. However, when using four subscales from the Delis-Kaplan Executive Function System that specifically assessed working memory, inhibition, planning, and rule learning, Baskin-Sommers et al. (2015), found that the relationships between the psychopathy dimensions and executive functioning differed based on the psychopathy measure being used. This suggests that the inconsistencies

in how the construct of psychopathy is defined among the various psychopathy measures have a significant impact on the findings in psychopathy research.

Another important distinction that has been highlighted by several researchers is a difference in education level and intelligence amongst those who differ in their level of primary and secondary psychopathic traits (Benning, Patrick, Hicks, Blonigen, & Krueger, 2003; Harpur, Hare, & Hakstian, 1989; Patrick, Zempolich, & Levenston, 1997).

Specifically, Benning et al. (2003) found that primary traits, as measured by the Psychopathic Personality Inventory (PPI), were positively related to verbal intelligence and level of education. Additionally, they found that secondary traits were negatively correlated with verbal intelligence and level of education. A more recent study conducted by Benning et al. (2017) also indicated a positive linear relationship between level of education and primary psychopathic traits and a negative linear relationship between secondary psychopathic traits and level of education. Understanding how executive functioning, intelligence, and education level may relate to and differentiate between the primary and secondary psychopathy dimensions may provide insight into an individual's ability to elude arrest while still engaging in criminal behavior.

Psychopathy and Criminal Behavior

A multitude of research has been conducted since Cleckley's original 16-traits and many correlates of psychopathy have been generated using criminal and community samples. Many studies have confirmed a strong correlation between psychopathic traits and criminal behavior (Campbell, Porter, & Santor, 2004; Hare, 1980; Hare, 2016; Mandracchia, Gonzalez, Patterson, & Smith, 2015; McCuish, Corrado, Hart, & DeLisi, 2015; Riser & Kosson, 2013). While many researchers are now examining psychopathic traits within

community samples, rather than offender samples, many continue to investigate criminality as an important correlate of psychopathy (e.g., Colins, Andershed, & Pardini, 2015; Declercq, Carter, & Neumann, 2015; Eisenbarth & Centifanti, 2018; Hicks et al., 2004).

Within community samples, there have been conflicting results between studies using males versus female samples with regard to the relationship between psychopathic traits and criminal behavior. For example, Declercq et al. (2015) found that all four factors of the Self-Report Psychopathy-Short Form (SRP-SF; i.e., interpersonal, affective, lifestyle, and antisocial) were significantly and positively correlated with self-reported criminal behavior in a female community sample. Of note, the strongest correlating factor with criminal behavior was the affective subscale, suggesting that, out of the various traits assessed by the SRP, callousness and lack of guilt (all primary traits) may be the most predictive of criminal behavior in females. Conversely, in a disproportionately male community sample (79 females and 260 males) of young adults, secondary psychopathic traits more strongly related to delinquent behavior compared to primary psychopathic traits when using the Psychopathic Personality Inventory- Revised (PPI-R) (Eisenbarth & Centifanti, 2018).

While the majority of psychopathy research has been conducted using all male samples, some researchers using female samples have found results that contradict findings from all-male studies. These differences have been mostly inconsistent, suggesting that gender differences may exist for the psychopathy dimensions in how they relate to criminal behavior. Due to the inconsistencies between studies when examining all-female samples, the nature of these gender differences is unclear. However, it may be helpful for researchers to explore potential gender differences in future studies in order to develop a clearer understanding of these relationships.

Undetected Criminal Behavior. While numerous studies have found a strong link between criminal behavior and psychopathic traits within both criminal and community samples, few researchers have examined the rate of undetected criminal behavior among individuals high in psychopathic traits. Declercq et al. (2015) stated that one limitation of their study was the absence of a questionnaire regarding arrest history to identify the rate of undetected criminal behavior within their sample. A useful approach to understanding how psychopathic traits may influence an individual's ability to avoid contact with the criminal justice system may be to examine the differences between those who have an extensive criminal history and little to no history of arrest from those with a criminal history and an established arrest record. Some researchers refer to psychopaths who have a criminal history, but no arrest record, as "successful psychopaths" (Hall & Benning, 2006).

While a relationship between criminal success and psychopathic traits has been proposed by many researchers, few studies have actually been conducted to examine these relationships. Using the PCL-Screening Version (PCL-SV), De Oliveira-Souza et al. (2008) examined psychopathic traits and criminal behavior in a sample of 50 outpatients recruited from a civil psychiatric facility that had little to no history of arrest. Although half of the patients in their sample had little to no contact with the criminal justice system, the majority of them engaged in frequent antisocial behaviors that caused distress to others (De Oliveira-Souza et al., 2008). These behaviors ranged from minor infractions (e.g., truancy or lying) to criminal and aggressive behavior. This study provides support for the hypothesis that psychopathic traits may relate to criminal success.

Several reasons exist for why someone may elude contact with the criminal justice system while still engaging in criminal behavior. An important variable to consider is the

idea that the more crimes someone engages in, the more likely they are to be detected by the criminal justice system. Within criminological research, this idea is known as the “exposure hypothesis.” Another theory proposed within the literature asserts that more competent criminals are better at avoiding detection by the criminal justice system. Ouellet and Bouchard (2017) tested the exposure hypothesis and the competence hypothesis in a sample of 262 male inmates who had all engaged in “lucrative criminal activities,” but were eventually arrested. Ouellet and Bouchard (2017) were interested in understanding whether or not more competent criminals were more successful at delaying their inevitable arrest as opposed to less competent criminals regardless of their frequency of engagement in criminal acts. Criminal competence was measured by the average pay-off per crime committed. Risk of arrest was defined by an individual being criminally active in a given month and free to commit crime (not incapacitated or institutionalized).

Ouellet and Bouchard (2017) found that the relationship between crime frequency (exposure hypothesis) and arrest weakens as a function of criminal competence and skill level. Given that researchers have demonstrated higher levels of education and better executive functioning abilities, specifically with regard to organization and planning, in relation to primary psychopathic traits, it seems likely that criminal competence is higher in the presence of primary psychopathic traits. Conversely, given the positive association between secondary psychopathic traits and poor organizational skills, difficulty making long-term goals, impulsivity, and lower education level, criminal competence is likely lower in the presence of secondary psychopathic traits. This study provides evidence that supports the hypothesis that individuals higher in primary traits may be better at eluding arrest because of their higher level of criminal competence. However, to my knowledge, there are no studies

that have examined the potentially differential relations between arrest frequency and the psychopathy dimensions.

Psychopathy and Types of Crime. Many researchers have found a difference in crime types committed by individuals who differ in levels of primary and secondary psychopathic traits. For example, in a study conducted by Porter, Birt, and Boer (2001) using all male offenders, primary and secondary psychopathic traits were both positively correlated with the number of committed nonviolent crimes. Additionally, they found that primary traits, but not secondary traits, were correlated with the number of committed violent crimes. However, when excluding sexually violent crimes, secondary traits, but not primary traits, were significantly correlated with violent crime, suggesting that primary psychopathic traits may be related to sexual violence more so than secondary psychopathic traits.

While most researchers have found a significant positive relationship between primary psychopathic traits and violent crime (e.g., Drislane et al., 2014; Porter et al., 2001; Swogger & Kosson, 2007; Vassileva, Kosson, Abramowitz, & Conrod, 2005), some have found a significant positive relationship between secondary psychopathic traits and violent crime (Hicks, Vaidyanathan, & Patrick, 2010). However, Hicks et. al. (2010) were using all female offenders for their sample, while the other cited authors used all male offenders, which suggests that gender may be a differentiating factor when evaluating the relationships between crime types and the psychopathy dimensions. Interestingly, Hicks et al. (2010) also found that, when using self-report measures instead of official reports, there were no differences between primary and secondary traits with regard to engagement in violent and nonviolent crimes. Together, these mixed findings suggest that more research is needed to

understand how the psychopathy dimensions relate to violent and non-violent crime and how gender may differentiate these relationships.

Researchers have also identified aggression as a distinguishing characteristic among the psychopathy dimensions (e.g., Cornell et al., 1996). For example, Falkenbach, Poythress, and Creevy (2008) used two independent raters to code self-reported aggressive behaviors as instrumental, “aggression used to attain a particular goal,” or reactive, “an angry reaction to frustration or provocation intended to cause harm,” in relation to male college students’ scores on the Levenson’s Self-Report Psychopathy scale (p. 824). They found that primary psychopathic traits were associated with a combined use of instrumental and reactive aggression, whereas secondary psychopathic traits were related to reactive aggression. The impulsive nature associated with reactive aggression and secondary psychopathic traits may be a precursor for engagement in specific types of crime.

Further, Cornell et al. (1996) explained that violent offenders in their sample with a history of only instrumental aggression were a smaller group of inmates in comparison to the number of inmates in the reactive aggression group, suggesting that instrumental aggression may be associated with “a more pathological development in the ability to use aggression for goal-directed purposes” (p. 788). Due to the positive relationship found between primary psychopathic traits and instrumental aggression, primary traits may be associated with criminal behavior that is “goal-directed.” Of note, in an all-female college sample, Falkenbach, Barese, Balash, Reinhard, and Hughs (2015) found no differences between the psychopathy dimensions in relation to reactive and instrumental aggression. Therefore, it may be necessary to explore the relationship between psychopathic traits and instrumental

versus reactive aggression separately for males and females in order to parse out possible gender differences.

These studies provide evidence that suggest primary and secondary psychopathic traits have differential effects on the type of criminal behavior and aggression displayed by offenders and community members, although the findings are not wholly consistent. Additionally, the studies using all female participants indicate that gender differences may exist for the relationship between the psychopathy dimensions and crime types, instrumental aggression, and reactive aggression. The lack of consistent research warrants the need for further studies examining these relationships.

Current Study

One major gap in the literature includes a lack of distinction between psychopaths who are caught engaging in criminal behavior and those who elude law enforcement though still committing crime. Some studies mention this distinction, but, to my knowledge, there are no studies specifically examining this difference (Declercq et al., 2015; De Oliveira-Souza et al., 2008; Forth, Brown, Hart, & Hare, 1996; Hall & Benning, 2006; Hicks et al., 2010). Another gap within the literature is a lack of consistent findings regarding the differential relationships between the psychopathy dimensions and different types of crime and aggression (i.e., violent versus non-violent crime and instrumental versus reactive aggression). The current study aimed to fill these gaps by exploring the influence of the psychopathy dimensions on criminal success in addition to how primary and secondary psychopathic traits differentially relate to types of crime and aggression. Parsing out these differences may facilitate law enforcement's understanding of individuals engaging in lawless behavior who are typically harder to identify and apprehend.

Given the positive correlation between education level and executive functioning in relation to primary psychopathic traits and the positive relationship between level of education and criminal competence, I predicted that as scores on the primary psychopathy subscale of the PPI-R increased, the strength of the relationship between crime frequency and arrest history would weaken, or become less significant. Second, given the impulsivity, lower education level, lower executive functioning, lower inhibition, and reactive aggressive tendencies associated with individuals higher in secondary psychopathic traits, I predicted that, as scores on the secondary psychopathy subscale increased, the relationship between crime frequency and number of arrests would strengthen. In order to evaluate the independent influence of primary and secondary traits on criminal success, it was important to account for any extraneous influences on the relationship between crime frequency and number of arrests. To do this, I tested the relationship between race, age, and the dependent variable to decide if they needed to be controlled.

With regard to how primary and secondary psychopathic traits relate to crime types, I hypothesized that primary psychopathic traits would be positively and significantly related to self-reported violent crime because of the decreased sensitivity to aversive stimuli (i.e., Low BIS) associated with primary traits, while secondary traits would be unrelated to violent crime. Based on prior research, I expected both primary and secondary psychopathic trait to positively relate to non-violent crimes. With regard to aggression, I hypothesized that primary psychopathy scores, as measured by the PPI-R, would be positively and significantly related to reactive aggression and instrumental aggression, while secondary psychopathy scores would be positively and significantly related to reactive aggression but negatively related to instrumental aggression.

As noted previously in the introduction, much of the prior research examining psychopathic traits has used all male samples. Due to the lack of consistent research using female participants and the inconsistent results among studies that did use female participants, no gender differences could be assumed, so hypotheses were made for the overall sample. However, to address the inconsistent findings regarding gender differences in prior research, each analysis was also conducted separately for males and females. The same hypotheses for the overall sample were also assumed when running the analyses for male participants, while exploratory analyses were conducted for females.

Method

Participants

In order to obtain a medium overall model effect size at the .05 level with 80% power, a G*Power analysis suggested a sample size of 176 participants. However, my pilot study suggested that approximately 30-50% of the sample would be lost due to failed validity checks. Further, the power analysis did not indicate how many participants are necessary to obtain significance at the predictor level. To compensate for this probable loss of participants and power, I collected data from 426 participants recruited through Amazon's Mechanical Turk. Participants were required to be in the United States to participate in the study.

Inclusion criteria were based on endorsement of previous engagement in criminal activity within the past five years, which was defined as any lawless act with the exclusion of these common crimes: traffic violations, underage drinking, marijuana use, underage smoking, and illegal downloading. Individuals who reported no history of criminal activity were excluded from the study ($n = 50$). Additionally, participants were excluded from analyses if they endorsed less than two counts of these common crimes, (i.e., jay-walking,

speeding, illegal downloading; $n = 45$), because they were used as an indicator of valid responding. They were included to check whether or not participants were being honest and attending appropriately to item content.

In addition to the exclusions listed above, 141 participants were removed from the data set for incompleteness, and 28 were excluded for not completing the PPI-R. Within the remaining sample of 162 participants, 54.3% identified as male ($n = 88$) and 45.7% identified as female ($n = 74$). Participants' ages ranged from 21-68 years old with an average age of 37.52 years old ($SD = 9.94$) for males and 34.86 years old ($SD = 10.85$) for females. With regard to race, 83.1% of the males in the sample identified as White ($n = 69$), 12% identified as Black ($n = 10$), 4.8% identified as other ($n = 4$) with five participants not responding. For females, 90.9% identified as White ($n = 60$), 7.6% identified as Black ($n = 5$) with one participant identifying as "other" and eight participants not responding. With regard to ethnicity, 5.7% ($n = 5$) of the males in the sample identified as Hispanic and 4.5% ($n = 4$) identified as Latino. For females, 9.5% ($n = 7$) identified as Hispanic and 5.4% ($n = 4$) identified as Latino.

Regarding male participants' highest level of education, only one participant reported having less than a high school degree, 9.1% reported having a high school diploma or equivalent ($n = 8$), 13.6% reported some college without a degree ($n = 12$), 18.2% reported having an associate degree ($n = 16$), 42% reported having a bachelor's degree ($n = 37$), 10.2% reported having a master's degree ($n = 9$), and 5.7% reported having a doctoral or professional degree ($n = 5$). For females, only one participant reported having less than a high school degree, 14.9% reported having a high school diploma or equivalent ($n = 11$), 29.7% reported some college without a degree ($n = 22$), 16.2% reported having an associate

degree ($n = 12$), 24.3% reported having a bachelor's degree ($n = 18$), 12.2% reported having a master's degree ($n = 9$), and one participant reported having a doctoral degree.

Measures

Psychopathic Personality Inventory - Revised (PPI-R). The PPI-R is a 154-item self-report measure designed to measure psychopathic traits in adults using eight subscales (i.e., Machiavellian Egocentricity, Social Potency, Fearlessness, Coldheartedness, Impulsive Nonconformity, Carefree Nonplanfulness, Blame Externalization, Stress Immunity), seven of which load onto two higher order factors (i.e., fearless dominance, which represents primary traits, and impulsive antisociality, which represents secondary traits). The measure also includes four validity scales: Virtuous Responding, Deviant Responding, and two inconsistent responding scales. Items are scored on a four-point Likert scale (i.e., False, Mostly False, Mostly True, True).

The measure has demonstrated strong internal reliability and validity. Content validity was established using the Recaptured Item Technique created by Meehl et al. (1971) (Lilienfeld & Widows, 2005). Further, a study conducted by Uzieblo et al. (2010) found the PPI-R to have strong external validity. Specifically, Uzieblo et al. (2010) found a significant positive relationship between the primary subscale on the PPI-R and measures of social skills and a negative relationship between the primary subscale and measures of emotional reactivity, which is consistent with the characteristics associated with primary psychopathy. Further, consistent with the definition of secondary psychopathy, Uzieblo et al. (2010) found a significant positive relationship between the secondary subscale on the PPI-R and measures of anxiety and antisocial behavior and a negative association between the secondary subscale

and measures of distress tolerance, socio-economic status, and social skills. Coefficient alphas for the total and subscale scores have ranged from .78 to .92. (Lilienfeld & Widows, 2005).

Criminal Behavior Questionnaire (CBQ). To understand each participant's criminal history, they answered a modified self-report questionnaire that asked about criminal activity in the past five years. This measure was modified to include a wider variety of criminal behavior by combining two previously established measures, the Criminal Behavior Measure (Boisvert, Vaske, Wright, & Knopik, 2012) and the Adult Crime Measure (Jung, Herrenkohl, Klika, Lee, & Brown, 2015). Our modified measure, the Criminal Behavior Questionnaire, includes 36 items that assess a variety of criminal acts in the past five years. The participant is asked how many times, on a scale from zero to six or more, they have engaged in each crime in the past five years and how many times they were arrested for each crime in the past five years. If a participant endorsed being arrested for a crime, they were then asked whether or not they plead guilty or were found guilty/not guilty.

Two scales were created to represent how many violent and non-violent crimes each person committed. Crimes were labeled as “violent” if there was physical harm or potential harm to a person and if the crime involved a firearm or other weapon (e.g., “brandished a weapon to take money or items from someone,” “hit someone,” “tried to have sexual relations with someone against their will”). Crimes were labeled as “non-violent” if the crime did not involve harm or intended harm to a person (e.g., “purposely damaged or destroyed property of your employer,” “used someone’s credit card without their permission,” “paid for sexual favors”; See Appendix B).

Moral Attitudes Toward Aggression Questionnaire (CAMA). The CAMA was originally developed by Lagerspetz and Westman (1980) and later revised by Ramirez and Fulgado (1985) and Ramirez (1991, 1993). The CAMA is a 64-item self-report scale that was designed to measure attitudes towards interpersonal aggression using eight different situations and eight different aggressive acts. The CAMA was measured on a dichotomous scale with a response of one indicating that the aggressive act is never justified in the given situation and a response of two meaning that the aggressive act is justified in the given situation. The aggressive acts varied in quality and intensity in combination with a variety of instrumental and hostile situations that the aggressive acts may be conducted in. Situations considered instrumental were: self-defense, to protect another person, to obtain sexual resources, to preserve self-esteem or reputation, and to protect one's property. Situations that were considered reactive included when communication breaks down, when angry, and as a punishment. Aggressive acts were: to be ironical, to threaten, to stop somebody from doing something, to use torture, to shout angrily, to hit another person, to get furious, and to kill another person. The CAMA has been well-validated in a variety of cross-cultural studies and has been translated into multiple languages (Ramirez, 1991, 1993). For this study, the CAMA was used to measure endorsement levels of instrumental and reactive aggression (See Appendix C).

Procedures

Approval from the Institutional Review Board was received prior to data collection. All participants provided informed consent before completing the study (Appendix A). For confidentiality purposes, and because of the sensitive information being obtained, any identifying information was kept separately from the rest of the data and deleted as soon as

payment was granted. All self-report measures were input into Qualtrics and then linked to Amazon's Mechanical Turk. The study was advertised on Amazon's Mechanical Turk and explained that participants would be asked questions related to personality traits and criminal behavior. The advertisement also clearly stated that, in order to participate in the study, they must have a history of criminal behavior. The questionnaires took approximately 45 minutes to an hour to complete. Each participant was awarded \$1.00 whether they completed the study or not. Analyses were conducted at data completion, when data was obtained from 426 participants.

Participants responded to a variety of demographics questions that asked about their sex, gender, level of education, age, and race/ethnicity. Further, participants completed self-report measures of psychopathic traits, criminal behavior, executive functioning, and aggression. These measures included the Psychopathic Personality Inventory (PPI), the Criminal Behavior Questionnaire (CBQ), and the Moral Attitudes Toward Aggression Questionnaire (CAMA). I also included a measure of social support, Multidimensional Scale of Perceived Social Support (MSPSS), and a measure of executive functioning, the Barkley Deficits in Executive Functioning Scale (B-DEFS), but these scales were not evaluated for the current study.

Results

Descriptive Analyses

Means and standard deviations were calculated for each of the scales and subscales. On the PPI-R, eleven outliers were identified using the Tukey's Hinges formula and were excluded from data analyses due to their significant influence on the distribution of the data. After removing the outliers, scores on the primary psychopathic traits scale ranged from 63

to 149 ($M = 106.56$, $SD = 15.90$) with higher scores representing a higher report of psychopathic traits. Uzieblo et al. (2010) found a comparable mean and standard deviation ($M = 109.17$, $SD = 19.84$). Using the Kolmogorov-Smirnov (KS) test of normality, the assumption of normality was violated for the primary psychopathic traits scale, $D(151) = 0.148$, $p < .001$; however, skewness = $-.63$ ($SE = .20$) and kurtosis = $-.41$ ($SE = .39$) were acceptable.

Scores on the secondary psychopathic traits scale ranged from 80 to 229 ($M = 153.89$, $SD = 26.22$), with higher scores representing a higher report of psychopathic traits. The mean and standard deviation for secondary psychopathic traits in the current study were somewhat higher than those reported in the Uzieblo et al. (2010) study ($M = 135.16$, $SD = 21.01$). The mean and standard deviation for the assumption of normality was also violated for the secondary psychopathic traits scale, $D(151) = 0.08$, $p = .015$; however, skewness = $-.38$ ($SE = .20$) and kurtosis = $.05$ ($SE = .39$) were acceptable. Cronbach's alphas for the primary and secondary psychopathic traits scales were .88 and .93, respectively.

Frequency of arrests ranged from 0 to 154 arrests ($M = 24.89$, $SD = 44.99$). Checks of normality revealed a nonnormal distribution, due to the high number participants that reported no arrests ($n = 58$) compared to those with one or more arrests ($n = 93$). The Kolmogorov-Smirnov test of normality was significant, $D(151) = 0.38$, $p < .001$; skewness = 1.60 ($SE = .20$) and kurtosis = $.95$ ($SE = .39$) were also concerning. To account for the skewed distribution, the arrest frequency variable was converted into a dichotomous variable with one group representing zero arrests ($n = 58$) and another representing one or

more arrests ($n = 93$). After making this change, this variable no longer represented frequency of arrests and, instead, represented endorsement of at least one arrest in the past five years.

Crime frequency ranged from 3 to 167 counts of criminal behavior ($M = 45.01$, $SD = 44.05$). The Kolmogorov-Smirnov test of normality was also significant for the crime frequency variable, $D(151) = 0.24$, $p < .001$. This variable also had a concerning skewness of 1.30 ($SE = .20$), while the kurtosis of .37 ($SE = .39$) was not concerning. To account for the non-normal distribution, non-parametric correlations were conducted for the correlational analyses and when evaluating the multicollinearity between crime frequency and psychopathic traits. However, for the binary logistic regression analyses, this variable was not altered because it satisfied the assumptions for binary logistic regression, which is explained in the following section. Cronbach's alpha for this variable was .98.

With regard to violent crimes, the KS test of normality was significant, violating the assumption of normality, $D(151) = 0.29$, $p < .001$. Further, the skewness of 1.43 ($SE = .20$) was concerning, while the kurtosis of .61 ($SE = .39$) was acceptable. Frequency of engagement in violent crimes ranged from 0 to 58 ($M = 11.44$, $SD = 16.89$). The KS test was also significant for the non-violent crimes variable, $D(151) = 0.21$, $p < .001$. The skew for non-violent crimes was concerning as well, skewness = 1.30 ($SE = .20$), with an acceptable kurtosis value of .37 ($SE = .39$). Frequency of engagement in non-violent crimes ranged from 2 to 112 ($M = 34.38$, $SD = 29.25$). To account for these violations of normality, non-parametric statistics were used for analyses that included these variables. Cronbach's alphas for violent and non-violent crime were .96 and .94, respectively.

Scores for instrumental aggression, as measured by the CAMA, ranged from 0 to 35 ($M = 18.03$, $SD = 7.07$) with higher scores representing a higher frequency of justified instrumentally aggressive acts. According to the Kolmogorov-Smirnov test of normality, the assumption of normality was violated, $D(151) = 0.08$, $p = .011$; however, skewness = $-.55$ ($SE = .20$) and kurtosis = $.27$ ($SE = .39$) were acceptable. Scores for reactive aggression, also measured by the CAMA, ranged from 0 to 24 ($M = 8.46$, $SD = 5.32$) with higher scores representing a higher frequency of justified reactive aggressive acts. The assumption of normality was violated for this variable as well, $D(151) = 0.09$, $p = .002$; however, skewness = $.16$ ($SE = .20$) and kurtosis = $-.44$ ($SE = .39$) were acceptable. Cronbach's alphas for instrumental and reactive aggression were both $.87$.

Psychopathic Traits and Criminal Success

The purpose of the following analyses was to test the hypothesis that primary and secondary psychopathic traits were moderators of the exposure hypothesis which suggests that the more crimes someone engages in, the more likely they are to be apprehended by law enforcement. I hypothesized that as primary psychopathic traits increased, the relationship between crime frequency and the presence of an arrest would decrease. Further, I hypothesized that the relationship between crime frequency and the presence of an arrest would strengthen as a function of secondary psychopathic traits. Due to the lack of consistent findings regarding gender differences, the analyses were conducted for the overall sample and separately for males and females. The same hypotheses stated for the overall sample were assumed for the analyses using male participants. Exploratory analyses were conducted for females. I used binary logistic regression to test these hypotheses.

First, I tested for whether demographic variables—age and race—needed to be controlled. An independent-samples *t*-test resulted in a mean difference of 2.65 (95% CI [−.81, 6.12]) indicating that participants' age was not significantly different when comparing those with no arrests to those with one or more arrests, $t(148) = 1.52, p = .13, d = .25$. A chi-squared test of independence indicated that there was no significant association between race (white or non-white) and the presence of an arrest, $\chi^2(1) = .21, p = .65, \phi = -.04$. Therefore, neither age nor race were included as a control variable.

Given the significant relationship between primary and secondary psychopathic traits that has been established in prior research, I conducted a correlational analysis for primary and secondary psychopathic traits to determine if these variables needed to be controlled. As suggested by prior research, primary and secondary psychopathic traits were significantly related to each other, $r = .18, p = .03$. Therefore, for the overall sample, when analyzing the potentially moderating effects of primary psychopathic traits, secondary psychopathic traits were controlled for, while primary psychopathic traits were controlled for when analyzing the potentially moderating effects of secondary psychopathic traits. When evaluating this relationship separately for males and females, there was no significant correlation between primary and secondary psychopathic traits for males, $r = .02, p = .84$, while there was a significant relationship between the psychopathy dimensions for females, $r = .31, p = .01$. Therefore, I did not control for primary or secondary psychopathic traits when analyzing the data separately for males.

Next, I evaluated the assumptions of binary logistic regression. Due to the significant skew mentioned earlier concerning the crime frequency variable, non-parametric correlation

analyses were used to assess for multicollinearity. First, I assessed for the presence of multicollinearity among the predictor variables and found that both primary ($\tau_b = .16$, $p = .005$) and secondary psychopathic traits ($\tau_b = .35$, $p < .001$) were significantly related to self-reported frequency of crimes. However, the correlation coefficients were not high enough to be concerning. Then, I assessed for multicollinearity for males and females separately. For males, primary psychopathic traits were unrelated to crime frequency ($\tau_b = .07$, $p = .39$), while secondary psychopathic traits were significantly correlated with crime frequency ($\tau_b = .33$, $p < .001$). For females, primary ($\tau_b = .18$, $p = .03$) and secondary ($\tau_b = .37$, $p < .001$) psychopathic traits were significantly related to crime frequency. However, the correlation coefficients were not concerning. The means for crime frequency, primary psychopathic traits, and secondary psychopathic traits were all centered using PROCESS (Hayes, 2013).

To test the assumption of linearity of the logit, which assumes a linear relationship between the logit of the outcome and each of the predictor variables, I created interaction terms by multiplying each predictor variable by the log of each predictor variable (Field, 2014). Next, I included the new interaction terms and each predictor variable in a binary logistic regression with the binary arrest variable as the outcome. The p -value for each predictor and each of the interaction terms was greater than .05, satisfying the assumption of linearity of the logit.

I conducted each binary logistic regression using the PROCESS (model one) extension on SPSS (Hayes, 2013) to analyze the direct and moderating effects of primary and secondary psychopathic traits on the relationship between crime frequency and arrest. The first model investigated primary psychopathic traits as the moderator and the second model

investigated secondary psychopathic traits as the moderator. A chi-square goodness of fit test was calculated and indicated that the model fit the data well for model one,

$\chi^2(4, N = 151) = 40.78, p < .001$, and model two, $\chi^2(4, N = 151) = 41.15, p < .001$.

As illustrated in Table 1, for the first model, primary psychopathic traits did not interact with crime frequency in the prediction of the presence of an arrest after controlling for secondary psychopathic traits. There was, however, a main effect for crime frequency when controlling for primary and secondary psychopathic traits, $b = .03, p = .005$. There was also a significant main effect for secondary psychopathic traits after controlling for primary psychopathic traits and crime frequency, $b = .02, p = .008$. For model two, there was no significant interaction between secondary psychopathic traits and crime frequency. Similar to model one, however, there was a main effect for crime frequency ($b = .02, p = .04$) and secondary psychopathic traits ($b = .03, p = .03$) when controlling for the other variables. In sum, for models one and two, the exposure hypothesis was supported. The moderation hypotheses, however, were not supported in the present study.

Next, I ran a binary logistic regression assessing for the independent moderating effects of primary and secondary psychopathic traits separately for males and females, resulting in four different models, with models one and two representing male participants (Table 2) and models three and four representing female participants (Table 3). The first model included primary psychopathic traits as the moderator variable. A chi-square goodness of fit test was calculated and indicated that the model fit the data well, $\chi^2(3, N = 83) = 14.36, p = .003$. While the interaction was not significant, there was a main effect for crime frequency when controlling for primary psychopathic traits, indicating further support for the exposure hypothesis. Model two included secondary psychopathic traits as the moderator and

the chi-square goodness of fit test indicated good model fit, $\chi^2(4, N = 83) = 17.48, p < .001$. Secondary psychopathic traits did not significantly interact with crime frequency to predict the presence of an arrest. There were also no significant main effects in model two.

The remaining two models were exploratory analyses conducted using female participants. Model three included primary psychopathic traits as the moderator variable while controlling for secondary psychopathic traits. The chi-square goodness of fit test suggested good model fit, $\chi^2(4, N = 68) = 20.37, p < .001$. The interaction between primary psychopathic traits and crime frequency was not significant. There were also no significant main effects in model three. Model four assessed the potentially moderating effects of secondary psychopathic traits on the relationship between crime frequency and the presence of an arrest while controlling for primary psychopathic traits. The model also did not result in a significant interaction or any significant main effects.

Crime Types and Aggression

I ran bivariate correlations to assess the relationship between primary and secondary psychopathic traits and instrumental versus reactive aggression in addition to the relationship between primary and secondary psychopathic traits and violent and non-violent crime. Due to violations of normality, parametric statistics could not be used for the violent and non-violent crime variables. Kendall's tau-b was calculated, instead, due to the small sample size and large number of participants with the same number of self-reported violent and non-violent crimes.

The results suggested partial support for the hypotheses. When analyzing the sample as a whole, Kendall's tau-b correlations indicated a significant relationship between primary psychopathic traits and violent crime ($\tau_b = .16, p = .007$) and non-violent crime ($\tau_b = .15,$

$p = .008$), which was consistent with hypotheses. Secondary psychopathic traits were also significantly related to violent crime ($\tau_b = .35, p < .001$) which was inconsistent with hypotheses. Further, secondary psychopathic traits were significantly and positively related to non-violent crime ($\tau_b = .35, p < .001$) which was consistent with hypotheses.

With regards to aggression, contrary to hypotheses, primary psychopathic traits were not significantly related to instrumental aggression ($r = .04, p = .63$) or reactive aggression ($r = .08, p = .34$). Consistent with hypotheses, Pearson correlational analysis revealed a significant linear relationship between secondary psychopathic traits and reactive aggression ($r = .26, p = .001$). Secondary psychopathic traits were also significantly related to instrumental aggression ($r = .21, p = .008$), which was unexpected.

When analyzing the data separately for males and females (Table 4), for males, there were no significant relationships between primary psychopathic traits and violent or non-violent crime, which was inconsistent with hypotheses. Providing partial support for hypotheses, for males, results indicated a significant positive relationship between secondary psychopathic traits and both violent and non-violent crime. For females, primary psychopathic traits were only significantly related to non-violent crime, while secondary psychopathic traits were positively and significantly related to both violent and non-violent crime. Contrary to hypotheses, there were no significant relationships between the psychopathy dimensions and instrumental or reactive aggression for males. For females, however, there was a positive significant relationship between secondary psychopathic traits and both types of aggression.

Discussion

The purpose of the current study was two-fold. The first aim was to examine primary and secondary psychopathic traits as potential moderators of the exposure hypothesis, which asserts that the more crimes one engages in, the more likely they are to be apprehended by law enforcement. Another aim of this study was to examine the differential relationships between the psychopathy dimensions and crime types, instrumental aggression, and reactive aggression. Hypotheses were developed a priori for the overall sample. Additionally, with the purpose of contributing more data to the psychopathy literature regarding gender differences, exploratory analyses were also conducted by examining male and female participants separately.

Psychopathy and Criminal Success

Prior research has demonstrated a significant relationship between the psychopathy dimensions and criminal behavior (Crego & Widiger, 2016; Hicks et al., 2004). De Oliveira-Souza et al. (2008) identified individuals that are high in psychopathic traits with a history of criminal behavior but little to no history of arrest. Further, criminal competence has been shown to be related to one's ability to elude detection by the criminal justice system (Ouellet & Bouchard, 2017). Prior to the current study, researchers have yet to examine the potential influence of primary and secondary psychopathic traits on criminal success.

Due to the non-normal distribution of the data for number of arrests, the arrest variable was converted into a dichotomous variable representing either no arrests or at least one arrest. Overall, the results of the current study did not support the hypotheses that primary and secondary psychopathic traits moderate the relationship between crime frequency and the presence of an arrest. However, there were main effects for crime

frequency in the prediction of arrest when analyzing the sample as a whole, suggesting that the exposure hypothesis was upheld even after controlling for primary and secondary psychopathic traits. Further, secondary psychopathic traits were predictive of having at least one arrest even after controlling for primary psychopathic traits and crime frequency, while primary psychopathic traits were not predictive of having been arrested. These findings suggest that, independent of how many crimes someone engages in, the likelihood of being arrested at least once increases as the number of secondary psychopathic traits increase, while primary psychopathic traits have no influence on being arrested.

One reason for this difference may be that the impulsive nature and executive dysfunction (Ross, Benning, & Adams, 2007) associated with secondary psychopathy affects criminal competence, leading to an increased likelihood of arrest independent of frequency of engagement in criminal behavior. Conversely, primary psychopathy is associated with a higher level of education and manipulateness which may increase criminal competence and improve one's ability to elude arrest. Therefore, a reasonable explanation for the non-significant interactions could be, simply, that psychopathic traits do not actually moderate the relationship between frequency of engagement in criminal behavior and arrest. Instead, these results may suggest that secondary psychopathic traits relate to arrest independent of how many crimes someone has engaged in.

Another potential explanation for the lack of support for the moderation hypotheses may be the use of a dichotomous arrest variable in place of a continuous arrest variable. The expectation that primary psychopathic traits would prevent someone with a history of criminal behavior from ever being arrested is an unrealistic hypothesis. A more likely hypothesis would be the expectation that primary psychopathic traits would affect the

frequency of arrests. Simply put, the transformation from continuous to a dichotomous variable eliminated the ability to detect differences between participants with a varying number of arrests, which reduced the power of the study. Power was also limited in this study by the large number of participants that were excluded for either incompleteness, problems with validity, or not reporting criminal behavior in the past five years other than the validity items. Altogether, 275 participants were excluded from analyses reducing the sample size from 426 to 151, which likely had a meaningful impact on the power of the study.

With regard to gender differences, crime frequency was a significant predictor of arrest for males when controlling for primary and secondary psychopathic traits. This was not the case for females, suggesting that there may, in fact, be meaningful differences between males and females in relation to the exposure hypothesis. However, to my knowledge, there are no studies examining gender differences for the exposure hypothesis. A potential explanation could be that females receive more leniency from law enforcement than males (Visher, 1983). However, a follow-up study conducted by Clemons (2015) resulted in findings that directly contradict Visher's finding of chivalry toward females engaging in criminal behavior. Therefore, it is unclear as to why the exposure hypothesis was upheld for males, but not females for the current study.

Psychopathic Traits and Types of Criminal/Antisocial Behavior

Prior research has suggested that primary and secondary psychopathic traits may differentially relate to types of crime (e.g., violent versus non-violent crimes). The majority of prior research suggests that both primary and secondary psychopathic traits positively relate to non-violent crime, while only primary psychopathic traits relate to violent crimes (e.g., Drislane et al., 2014; Swogger & Kosson, 2007; Vassileva et al., 2005). In the present

study, primary and secondary psychopathic traits were significantly and positively correlated with non-violent crime, which was consistent with hypotheses and prior research (Porter et al., 2001). Also consistent with hypotheses, primary psychopathic traits were positively related to violent crime.

However, secondary psychopathic traits were also related to violent crime, which was unexpected. While inconsistent with hypotheses for the current study, Porter et al. (2001) found a positive relationship between secondary psychopathic traits and violent crime after excluding sexually violent crimes. The current study did not make a distinction between sexually violent crimes and non-sexual violent crimes. These results do not support the idea that the psychopathy dimensions can be differentiated by crime types, at least not when analyzing male and female participants simultaneously.

When analyzing the data separately for males and females, there were some notable differences. For males, primary psychopathic traits did not significantly relate to violent or non-violent crime, while secondary psychopathic traits significantly related to both violent and non-violent crimes. These results were unexpected, as my hypotheses were based off of prior research that mostly used all male samples, and therefore, the hypotheses made for the overall sample and for males were the same. Of note, my hypotheses were also based off of research using offender samples, while the current study used a community sample, which could be one explanation for why the results of the current study were inconsistent with the findings from prior studies. Another reason may be due to a reduction in power that resulted after splitting the sample by gender. This notion is supported by the fact that a significant effect was found when analyzing the sample as a whole, but not when analyzing the sample separately for males and females. Therefore, it is possible that there are meaningful

relationships between primary psychopathic traits and crime types that were not detected due to an insufficient sample size.

Prior research examining the relationships between psychopathic traits and crime types using female participants is limited, therefore exploratory analyses were conducted to examine these relationships. For females, the relationship between primary psychopathic traits and violent crime was not significant, which was consistent with the results for male participants. Contrary to what was found for male participants, for females, there was a significant positive relationship between primary psychopathic traits and non-violent crime. Further, a significant relationship was found between secondary psychopathic traits and violent crime for females, which supported the findings by Hicks et al. (2010).

These results suggest that primary and secondary psychopathic traits may manifest differently for males and females with regard to non-violent crime. More research is needed to better understand these relationships since the present study contradicted gender differences found in prior studies (e.g., Hicks et al., 2010). Specifically, Hicks et al. (2010), using an all-female sample, found a significant positive relationship between secondary psychopathic traits and violent crime which was inconsistent with research using all male samples that suggested primary, rather than secondary psychopathic traits, were significantly related to violent crime.

Prior research has suggested that primary and secondary psychopathic traits may differentially relate to instrumental and reactive aggression. For example, Falkenbach et al. (2008) found that primary psychopathic traits were associated with a combined use of instrumental and reactive aggression, whereas secondary psychopathic traits were related to reactive aggression. When examining the relation between the psychopathy dimensions and

aggression for the current study, the results did not indicate a significant relationship between primary psychopathic traits and instrumental or reactive aggression which was inconsistent with hypotheses and previous literature. With regard to secondary psychopathic traits, our hypothesis that secondary traits would significantly relate to reactive aggression was supported. However, there was also a significant relationship between secondary psychopathic traits and instrumental aggression which was unexpected and inconsistent with prior research.

When analyzing the data separately for males and females, there were no significant relationships between the psychopathy dimensions and instrumental or reactive aggression for males, which was unexpected. One explanation for the lack of significance may be the use of a community sample, as prior studies examining these relationships used college students or offenders (e.g., Cornell et al., 1996; Falkenbach et al., 2008). Another possible reason for why these results were inconsistent with prior research could be the different methods for measuring instrumental and reactive aggression. For example, Falkenbach et al. (2008) had two independent raters code aggressive acts committed by participants in the study as instrumental or reactive, while the current study used a self-report measure, the CAMA, that measured attitudes towards interpersonal aggression by having participants indicate whether or not different aggressive acts were justified in a variety of scenarios. There may be an important difference between what someone would endorse as “justified” compared to the aggressive acts they actually engage in.

Exploratory analyses conducted for female participants revealed a significant positive relationship between secondary psychopathic traits and instrumental and reactive aggression, which was inconsistent with a prior study by Falkenbach et al. (2015) who found no

significant relationships between the psychopathy variants and instrumental or reactive aggression. Similar to the results found for males, for females, primary psychopathic traits were unrelated to both instrumental and reactive aggression.

A consistent finding throughout these results was that secondary psychopathic traits consistently predicted significant outcomes. Further, the effect sizes for secondary psychopathic traits were consistently larger than those for primary psychopathic traits in relation to crime types, instrumental aggression, and reactive aggression. This suggests that, for individuals within the community, secondary psychopathic traits may be more predictive of criminal behavior, arrests, and antisocial behavior than primary psychopathic traits. These results may support an evolutionary perspective of psychopathy posed within the literature that suggests a functional component to psychopathic traits (Glenn & Raine, 2009; Glenn, Kurzban, & Raine, 2011). However, few studies have actually examined differences between primary and secondary psychopathic traits with regard to functionality.

Limitations and Future Directions

This study was limited by a number of factors. First, the results may have been affected by the willingness of participants to report an accurate history of undetected criminal behavior. Because of the nature of the study, some participants may have tried to present themselves in a favorable light or protect sensitive information. Further, given the characteristics of primary psychopathy such as manipulateness and high intellectual functioning, individuals higher in primary psychopathic traits may have purposefully provided false information in an effort to receive the monetary reward for completing the study while not endangering themselves by revealing their criminal acts. However, the PPI-R has been examined with regard to the relationship between primary and secondary

psychopathic traits and social desirability and the idea that higher scorers on the primary subscale may “fake good” was not supported (Ray et al., 2013). Ray et al. (2013) conducted a meta-analysis of studies using either the Psychopathic Personality Inventory, the PPI-R, or the Levenson’s Self-Report Psychopathy scale and examined the relationship between the scores on the psychopathy measures and response styles. Specifically, Ray et al. (2013) found no association between primary psychopathic traits, as measured by the PPI-R, and social desirability and a negative relationship was identified between secondary psychopathic traits and social desirability. This provides evidence for the validity of the PPI-R.

Inaccurate reports of criminal behavior could have also occurred due to poor memory, especially since participants were asked to recall five years’ worth of criminal behavior. Of note, there was an error in the directions of the study that was identified and corrected mid-study. Specifically, the directions stated that the subsequent questions were in reference to the past 12-months, whereas the actual questions asked about criminal behavior in the past five years. Another limitation was the use of self-report as the sole measure of psychopathic traits, criminal behavior, and arrest history, as self-report measures do not always yield the most reliable results. For example, Hicks et al. (2010) found no differences between primary and secondary traits with regard to engagement in violent and nonviolent crimes when using self-report measures, but identified significant differences when using official reports. However, as mentioned in the introduction, official reports do not capture data on undetected criminal behavior, which is central to understanding those who are able to evade detection by the criminal justice system while still engaging in criminal behavior.

Further, as mentioned previously, the current study was also limited by a reduction in power due to a large number of participants being excluded from analyses. According to

Gelman (2018), the standard error for an interaction is twice as large as the standard error for main effects, suggesting that an a priori power analysis would result in a significant underestimate of needed sample size to detect a significant interaction. Specifically, Gelman (2018) suggests that a sample size of 16 times that required to detect significance for main effects is required to accurately estimate an interaction. I collected data from 426 participants, but was only able to analyze data from 151 participants due to incompleteness, failed validity checks, and absence of reported criminal behavior other than the validity check items. The power of the study was also limited by transforming arrest frequency to a dichotomous variable, which eliminated the ability to detect differences among participants with regard to varying number of arrests.

Future research should continue to investigate the influence of the psychopathy dimensions and other variables on criminal success. A larger sample size would address the problem of low power with the present study. In order to enhance the reliability and validity of the study, it may also be helpful to include corroborating information on criminal history for future research such as official records and self-report by friends and family. Also, to more reliably assess the nature of an aggressive act, it may be beneficial to interview participants about their crimes and specifically ask about motive. As mentioned already, the CAMA may not be representative of participants' actual history of engagement in instrumental and reactive aggressive acts. Additionally, based on prior research, it may be enlightening if crime types in future studies are examined more specifically, such as separately measuring sexually violent and non-sexual violent crimes.

The current study contributed to the psychopathy literature by collecting data from both males and females and providing further evidence that gender differences should be

considered when conducting research on psychopathic traits. Specifically, more research is needed on psychopathic traits for females in incarcerated and community samples. Due to the inconsistent results in prior studies, relationships identified using male participants should not be assumed to apply for female participants. Prior studies that examined relations between psychopathy and crime should be replicated using large samples of male and female participants. Similarly, studies using female participants should be replicated to compare results in a variety of populations (e.g., incarcerated, inpatient, community). Also, given the differing results among studies using different measures of psychopathy, when possible, researchers should use multiple measures of psychopathy.

While not all of the hypotheses for the current study were supported, the results contribute to the currently limited research on gender differences regarding psychopathy and criminal success. Given the differences found when examining the data separately for males and females, these results support the notion that psychopathic traits may differentially influence females and males. This study also contributed to the limited research on the exposure hypothesis. Understanding what factors may influence an individual's ability to elude arrest while still engaging in criminal behavior will enhance researchers' understanding of criminal success. Future research should aim to identify external factors that may influence criminal success.

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Table 1.
Summary of results from binary logistic regression for variables predicting arrest.

	Whole Sample											
	Primary Traits as Moderator						Secondary Traits as Moderator					
	<i>b</i>	<i>SE</i>	Wald <i>x</i> ²	<i>p</i>	95% Confidence Interval		<i>b</i>	<i>SE</i>	Wald <i>x</i> ²	<i>p</i>	95% Confidence Interval	
					Lower Bound	Upper Bound					Lower Bound	Upper Bound
Constant	-2.55	1.34	-1.91	.06	-5.17	.07	.79	1.23	.64	.52	-1.62	3.20
Crime Frequency	.03	.01	2.83	.004	.01	.05	.02	.01	2.05	.04	.001	.04
Primary Traits	-.01	.03	-.55	.58	-.06	.04	-.001	.01	-.10	.92	-.02	.02
Secondary Traits	.02	.01	2.63	.01	.01	.04	.03	.02	2.13	.03	.003	.06
Crime X Primary Traits	-.0005	.001	-.55	.58	-.06	.04						
Crime X Secondary Traits							.0004	.001	.81	.42	-.001	.001
McFadden Pseudo R ²				.20						.20		
<i>x</i> ²				40.78						41.15		

Note: These results are for variables predicting arrest when 0 = no arrests and 1 = one or more arrests. *N* = 151

Table 2.
Summary of results for males from binary logistic regression for variables predicting arrest.

	Males											
	Primary Traits as Moderator						Secondary Traits as Moderator					
	<i>b</i>	<i>SE</i>	Wald <i>x</i> ²	<i>p</i>	95% Confidence Interval		<i>b</i>	<i>SE</i>	Wald <i>x</i> ²	<i>p</i>	95% Confidence Interval	
Lower Bound					Upper Bound	Lower Bound					Upper Bound	
Constant	1.23	.35	3.52	.004	.54	1.92	1.11	.39	2.86	.004	.35	1.87
Crime Frequency	.03	.01	2.67	.01	.01	.05	.02	.01	1.32	.19	-.01	.04
Primary Traits	-.03	.04	-.67	.50	-.11	.05						
Secondary Traits							.04	.02	1.65	.10	-.01	.08
Crime X Primary Traits	-.0002	.001	-.12	.90	-.003	.003						
Crime X Secondary Traits							.0004	.001	.66	.51	-.001	.002
McFadden Pseudo R ²				.14						.18		
<i>x</i> ²				14.36						17.48		

Note: These results are for variables predicting arrest when 0 = no arrests and 1 = one or more arrests. *n* = 83

Table 3.
Summary of results for females from binary logistic regression for variables predicting arrest.

	Females											
	Primary Traits as						Secondary Traits					
	<i>b</i>	<i>SE</i>	Wald <i>x</i> ²	<i>p</i>	95% Confidence Interval		<i>b</i>	<i>SE</i>	Wald <i>x</i> ²	<i>p</i>	95% Confidence Interval	
Lower Bound					Upper Bound	Lower Bound					Upper Bound	
Constant	-2.99	1.98	-1.51	.13	-6.87	.88	-.01	1.80	-.004	1.00	-3.54	3.52
Crime Frequency	.03	.02	1.53	.13	-.01	.07	.01	.02	.53	.53	-.03	.06
Primary Traits	-.002	.03	-.08	.94	-.06	.06	-.001	.02	-.07	.95	-.04	.03
Secondary Traits	.02	.01	1.71	.09	-.003	.05	.04	.02	1.67	.09	-.01	.09
Crime X Primary Traits	-.0002	.002	-.13	.89	-.003	.003						
Crime X Secondary Traits							.001	.001	.97	.33	-.001	.003
McFadden Pseudo R ²			.22						.23			
<i>x</i> ²			20.37						21.41			

Note: These results are for variables predicting arrest when 0 = no arrests and 1 = one or more arrests. *n* = 68

Table 4.
Correlations for Psychopathy Dimensions and Crime Types, Instrumental Aggression, and Reactive Aggression

	Overall Sample	
	Primary Psychopathic Traits	Secondary Psychopathic Traits
Violent Crime	.16 (.007)	.35 ($p < .001$)
Non-violent Crime	.15 (.008)	.35 ($p < .001$)
Instrumental Aggression	.04 (.63)	.21 (.008)
Reactive Aggression	.08 (.34)	.26 (.001)

Note. Kendall's Tau_b Correlation coefficients are displayed for instrumental and reactive aggression and Pearson Correlation Coefficients are displayed for instrumental and reactive aggression. p -values are reported in parentheses. $n = 151$

Table 5.
Correlations for Psychopathy Dimensions and Crime Types, Instrumental Aggression, and Reactive Aggression

	Males		Females	
	Primary Psychopathic Traits	Secondary Psychopathic Traits	Primary Psychopathic Traits	Secondary Psychopathic Traits
Violent Crime	.08 (.31)	.36 ($p < .001$)	.11 (.21)	.35 ($p < .001$)
Non-violent Crime	.06 (.46)	.33 ($p < .001$)	.19 (.02)	.36 ($p < .001$)
Instrumental Aggression	.04 (.69)	.02 (.85)	.01 (.93)	.43 ($p < .001$)
Reactive Aggression	.11 (.32)	.19 (.09)	-.03 (.83)	.34 (.004)

Note. Kendall's Tau_b Correlation coefficients are displayed for instrumental and reactive aggression and Pearson Correlation Coefficients are displayed for instrumental and reactive aggression. Significance values are reported in parentheses. $n_{\text{males}} = 83$ $n_{\text{females}} = 68$

Appendix A

Information to Consider about this Research**Personality and Criminal Behavior: Pilot Study**

Principal Investigator: Jamie Byas

Department: Psychology

Contact Information: byasjt@appstate.edu

Faculty Advisor: Dr. Twila Wingrove

You are being invited to take part in a research study about criminal behavior and personality traits. If you take part in this study, you will be one of about 500 people to do so. By doing this study we hope to learn about personality traits in relation to criminal behavior.

The research procedures will be conducted online via Amazon Mechanical Turk.

You will be asked to answer a variety of questions about your personality, your history of criminal behavior, and your history of arrest(s).

You cannot volunteer for this study if are under 18 years of age. Also, do not participate in this study if you have never engaged in any criminal behavior. This study is only for individuals who have a history of criminal behavior within the past five years. If you participate, but have no history of criminal behavior within the past five years, then you will not be paid. Criminal behavior includes engagement in criminal acts regardless of whether or not you have been arrested. For the purpose of this study, criminal behavior is defined as any lawless acts, with the exclusion of traffic violations, underage drinking or nicotine use, marijuana use, and pirating.

You will be asked to divulge personal information regarding past criminal activity and arrest record. The answers you provide will not be traced back to you. You will be given a code to use to receive payment for participating in the study. We will not ask for any identifying information during any point of the study. The information you provide will be used for research purposes only.

There may be no personal benefit from your participation. However, your participation will contribute to a greater understanding of personality traits and their relationship to criminal behavior.

We will pay you \$1.00 for the time you volunteer (approximately 30-45 minutes) while being in this study. You will be paid in full for your participation whether or not you complete the study. However, we will not pay individuals who do not endorse a history of criminal behavior within the past five years.

This study is anonymous. That means that no one, not even members of the research team, will know that the information you gave came from you. The information you provide will be kept indefinitely, but will not be able to be traced back to you.

The people conducting this study will be available to answer any questions concerning this

research, now or in the future. You may contact the Principal Investigator at byasjt@appstate.edu. If you have questions about your rights as someone taking part in research, contact the Appalachian Institutional Review Board Administrator at 828-262-2692 (days), through email at irb@appstate.edu or at Appalachian State University, Office of Research and Sponsored Programs, IRB Administrator, Boone, NC 28608.

Your participation in this research is completely voluntary. If you choose not to volunteer, there will be no penalty and you will not lose any benefits or rights you would normally have. If you decide to take part in the study you still have the right to decide at any time that you no longer want to continue. There will be no penalty and no loss of benefits or rights if you decide at any time to stop participating in the study.

This research project has been approved by the Institutional Review Board (IRB) at Appalachian State University. This study was approved on: 03/15/2018 This approval will expire on 03/14/2019, unless the IRB renews the approval of this research.

Please be aware that any work performed on Amazon MTurk can potentially be linked to information about you on your Amazon public profile page, depending on the settings you have for your Amazon profile. We will not be accessing any personally identifiable information about you that you may have put on your Amazon public profile page. We will store your mTurk worker ID separately from the other information you provide to us.

- I understand that this study is only for individuals with a history of criminal behavior.**
- I understand that I will not be paid if I participate without indicating any history of criminal behavior.**
- I understand the information described above and that I can only participate if I have a history of criminal behavior and am at least 18 years of age.**
- I agree to all the terms mentioned above.**

Appendix B

Criminal Behavior Questionnaire

The following questions ask about criminal activity in the **past five years**. Please answer each question based on your history.

	In the past 5 years, how many times have you...?							How many times were you arrested for this crime in the past 5 years?							If you were arrested for this crime, please indicate whether you were ever found or plead guilty/not guilty.			
	0	1	2	3	4	5	6 +	0	1	2	3	4	5	6 +	Found Guilty	Plead Guilty	Found Not Guilty	N/A
Purposely damaged or destroyed property of your parents or family members?																		
Purposely damage or destroy property of your employer?																		
Purposely damaged or destroyed property that did not belong to you, that was not your family's or employer's property?																		

Set a fire or tried to set a fire?																				
Broken or tried to break into a building or vehicle to steal something or to look around?																				
Stolen or tried to steal items worth more than US \$50.00?																				
Driven a vehicle without the owner's permission?																				
Stolen or tried to steal a vehicle?																				
Drove over the speed limit?																				
Used checks illegally or used fake or counterfeit currency to purchase something?																				

Knowingly bought, sold, or held stolen goods?																				
Stolen money or other items from your parents or family?																				
Stolen money, goods, or property from your employer?																				
Used someone's credit card without their permission?																				
Snatched someone's purse or wallet or picked someone's pocket?																				
Embezzled money from your place of work?																				
Forced or strong-armed someone into giving you money or items?*																				
Jaywalked?																				

Hurt someone so badly that they required medical care?*																				
Brandished a weapon to take money or items from someone? *																				
Illegally downloaded movies or programs from the internet?																				
Shot or stabbed someone?*																				
Received payment for sexual favors?																				
Paid for sexual favors?																				
Illegally carried a hidden weapon? *																				
Sold marijuana or hashish?																				
Sold hard drugs?																				

<p>Engaged in any criminal activity not already asked about? If so, please list those in the text box.</p> <div data-bbox="157 467 367 597" style="border: 1px solid black; height: 80px; width: 100%;"></div>																			
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Note: Crimes coded as violent have been marked with an asterisk.

Appendix C
C.A.M.A.
(Questionnaire on Moral Attitudes toward Aggression)
© J. Martin Ramirez (1985)

Introduction

Aggression has proven to be a serious problem in society today. In this research we try to investigate how people relate to different types of aggressive acts. It is only natural that we all get angry in certain situations. Sometimes we would even feel it wrong not to get angry.

Below we present six situations in which some aggressive act might occur. We mention eight possible aggressive acts. We ask you to estimate if in your opinion each act is usually justified or not in each situation.

List of situations:

1. IN SELF-DEFENSE
2. TO PROTECT ANOTHER PERSON
3. WHEN COMMUNICATION BREAKS DOWN
4. WHEN ANGRY
5. TO PROTECT ONE'S PROPERTY
6. AS A PUNISHMENT
7. TO OBTAIN SEXUAL RESOURCES
8. TO PRESERVE SELF-ESTEEM OR REPUTATION

List of aggressive acts

1. TO BE IRONICAL
2. TO THREATEN
3. TO STOP SOMEBODY FROM DOING SOMETHING
4. TO USE TORTURE
5. TO SHOUT ANGRILY
6. TO HIT ANOTHER PERSON
7. TO GET FURIOUS
8. TO KILL ANOTHER PERSON

Vita

Jamie Taylor Byas was born in 1993 in Mobile, Alabama. Jamie is the daughter of James Byas. She attended the University of South Alabama from August 2011 to December 2014 and earned her Bachelor of Arts degree in psychology with a minor in sociology. In the fall of 2016, she began her studies at Appalachian State University in pursuit of a Master of Arts in Clinical Psychology and was awarded this degree in May 2019.