UTILIZATION OF THE PERSONALITY ASSESSMENT INVENTORY-ANTISOCIAL FEATURES SCALE TO ASSESS PSYCHOPATHY IN AN UNDERGRADUATE SAMPLE: CONFIRMING SUBSCALE FIT

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ABSTRACT

The present study examined the factor structure of the Personality Assessment Inventory Antisocial Features scale (PAI-ANT) in a non-forensic sample of 1257 undergraduate students. Five models were tested using confirmatory factor analysis (CFA)-a one factor, Hare's (1980) two factor, Morey's (2007) three factor, Cooke and Michie's (2001) three factor, and Hare's (2003) four factor models. Based on Bentler's (1995) stringent model fit criteria, none of the proposed models appropriately fit the data. Additionally, regression analyses examined the predictive ability of external correlates on the PAI-ANT subscale and total scores, including affect, attachment, emotional intelligence, personality, risky driving, antisocial behavior, and academic achievement. Results indicated that all external correlates significantly predicted variance in the PAI-ANT scores to some degree. Reckless driving proved one of the best predictors, while academic achievement showed minimal ability to explain variance. These findings suggest that there is construct validity among the PAI-ANT scales, and the use of the PAI-ANT embedded within the overall measure may provide additional information about individuals with psychopathic traits.

LIST OF ABBREVIATIONS AND SYMBOLS

a	Cronbach's index of internal consistency
CFI	Confirmatory Fit Index
df	Degrees of freedom: number of values free to vary after certain restrictions have been placed on the data
F	Fisher's *F* ratio: A ratio of two variances
M	Mean: the sum of a set of measurements divided by the number of measurements in the set
p	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
r	Pearson product-moment correlation
RMSEA	Root Mean Square Error Approximation
t	Computed value of *t* test
TLI	Tucker-Lewis Index
<	Less than
=	Equal to

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Chapter 1: Introduction

Psychopathy has been conceptualized in a variety of different ways over the past 200 years, but many believe that Hervey Cleckley provided one of the most detailed descriptions of the psychopath in his 1941 monograph (Cleckley, 1941; 1955). In his monograph, Cleckley outlined sixteen personality characteristics that he considered prototypical of the individual with a psychopathic personality. These sixteen features were as follows: superficial charm and good intelligence; absence of any signs of irrational thoughts (i.e. delusions); lack of nervousness; unreliability, deceit and insincerity; lack of remorse; inadequately motivated antisocial behavior (i.e., commit antisocial acts without an obvious objective); poor judgment; egocentricity and inability to love; deficits in affect; lack of insight; unresponsiveness in general interpersonal relations; fantastic and uninviting behavior with drink and sometimes without; rare suicidality; sex life impersonal, trivial, and poorly integrated; and failure to follow any life plan. Interestingly, Cleckley recognized that psychopathic individuals may be employed in a number of fields, such as business, science, or even psychiatry. Therefore, there may be functional individuals working in various fields that would meet Cleckley's criteria for psychopathy. Since Cleckley's time, there have been a number of changes in the way psychopathy has been conceptualized.

In the mid 1960s, Robins (1966) wrote her classic book on "Deviant Children Grown Up." This book was the result of considerable work and the fortunate find of clinical files of children primarily with disruptive behavior disorders from approximately 20 years prior. This offered Robins the unique opportunity to "follow these youth up" into adulthood and to see how they had adjusted. Robins learned that there was some stability to the antisocial behavior with approximately half of the individuals exhibiting antisocial behavior or related types of problems

in adulthood. With this study, Robins and other prominent researchers (e.g., Cloninger, 1978) concluded that behavioral characteristics might better represent the concept of sociopathy and these behavioral characteristics are the ones now codified in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Text Revision (DSM-IV-TR; APA, 2000).

In reaction to some of the work that was being conducted on the psychopathy concept in the 1970s, Hare (1980) started to carry out research based on global ratings of Cleckley's 16 criteria on a 7 point scale. Hare later created the first widely utilized assessment tool for psychopathy, namely, the Psychopathy Checklist (PCL; Hare, 1991). His conceptualization of psychopathy was based on descriptions of the disorder from both Cleckley (1941; 1955) and Robins' (1966). Hare's measure included a semi-structured interview and rating scale as well as utilized collateral source information (i.e., file review). By doing so, Hare believed that clinicians could make increasingly accurate ratings of personality, affect, and behavior. Thus, this rigorous methodology for assessing psychopathy designed by Hare was designed to alleviate some of the concerns that personality type characteristics could not be accurately measured.

Over the past several decades, the mounting research on the PCL has suggested that it is both a reliable and valid measure of psychopathy. At both the adult and child level, psychopathy has been meaningfully linked to general models of personality (Lynam et al., 2005; Salekin, Leistico, & Lochman, 2005), disinhibition (Patrick, Fowles, & Krueger, 2009), dominant response perseveration (Newman, 1998), fearlessness, sensation seeking (Quay, 1965), substance use and risky behavior as well as antisocial conduct (Patrick, 2006; Salekin, 2010).

In addition to rising interest, the aforementioned research suggests that psychopathy is a viable personality condition with important predictive qualities. As such, the Diagnostic and Statistical Manual, Fifth Edition (DSM-5; American Psychological Association) and

International Classification of Diseases, Eleventh Edition (ICD-11; World Health Organization), are both considering psychopathy as a potential condition to qualify mental illness within their manuals. For instance, at the childhood level, the DSM-5 is considering callousness as a specifier for the Conduct Disorder which is the parallel disorder for antisocial personality disorder in adulthood (Pardini, Frick, & Moffitt, 2010). Similarly, at the adult level, the committee for personality may be considering boldness as a specifier for dissocial disorder (APD). The ICD is also considering psychopathy as a condition that can be assessed alongside other mental conditions (Rutter, 2012). These developments speak to the importance of psychopathy as a potentially informative diagnosis for individuals across the lifespan. Although there is little doubt that psychopathy is an important condition to consider, there have been disagreements about what makes up the disorder and specifically what factors underpin the syndrome.

Factor Structure of Psychopathy

The factor structure for psychopathy began with work on the PCL. In one of the earliest studies on this topic, Harpur, Hare, and Hakstian (1989) conducted a factor analysis of the PCL and found that the measure was underpinned by two broad factors – (1) interpersonal and affective features and (2) social deviance. The first factor, considered by some to be most key to the concept of psychopathy, is based on interpersonal characteristics (e.g., superficial charm and lack of remorse or guilt; see Hare, 2003). On the other hand, the second factor taps the impulsive and antisocial behaviors and characteristics of the individual (e.g., poor behavioral control and impulsivity; see, for example, Harpur, Hakstian, & Hare, 1988).

Later, Hare et al. (1990) showed that this factor structure was also applicable to the revised version of the PCL and the two studies together also showed that the measure had construct validity. In addition, the traditional two factors are moderate to highly correlated (r =

0.5). Therefore, both factors are clearly relevant and representative of psychopathy. Even though the PCL-R appears to have a two factor model, more recent research has suggested that the PCL can also be further parsed into lower level three and four facet models. Cooke and Michie (2001) parsed the construct of psychopathy into three different factors including arrogant and deceitful interpersonal style (ADI), deficient affect experience (DAE), and impulsive or irresponsible behavior style (IIB). Hare's four subfactors of psychopathy still retain the original two factors but then divide each factor into two separate pieces. Factor 1 splits into an interpersonal piece and affective components. Factor 2 has been split into an impulsive lifestyle and antisocial features components (Hare, 2003). Even more recently, Patrick, Fowles, and Krueger (2009) have proposed another three factor structure of psychopathy. These factors are meanness, boldness, and disinhibition. This model may highlight the importance of the three factor model. Other researchers believe that the fourth (antisocial) factor is also highly relevant to psychopathy (see Hare & Neumann, 2010).

There is little doubt that the PCL system has substantially advanced the field of psychopathy. We now know more about the descriptive items for psychopathy, its construct validity, the external correlates that are so closely tied to psychopathy and the predictive capacity of the disorder which provides considerable information regarding what psychopathic individuals may do in the future (Leistico, et al., 2008). Despite a number of positive attributes, there have been some criticisms regarding the PCL. One specific concern is that, while the PCL system is considered by some to be the gold standard for measuring psychopathy, researchers (e.g., Lilienfeld & Fowler, 2006) have argued that it is not always feasible to administer the PCL. It requires a lengthy interview and also suggests the need for collateral sources including file review (school, correctional setting, etc.), which may not always be available. Because of this,

and other concerns, psychopathy researchers began to research other ways in which they could assess the construct aside from interview and rating scales. On the other hand, researchers also began to argue that self-report measures may be, in some cases, a more reasonable method for assessing psychopathy. Although researchers acknowledge that it may be questionable whether or not psychopathic individuals answer honestly on a self-report measure, researchers also recognize that self-report of symptoms might be even better than clinician ratings for a variety of reasons.

Self-report Measurement of Psychopathy

Self-report psychopathy measures tend to have several strengths, such that it has been argued that the psychopathic individual may be the best source of information about their thoughts, feelings, and behaviors. Self-report measures may also provide a richer opportunity to examine response styles of the individual (Widiger & Frances, 1987). Specifically, a self-report measure may be better able to detect when an individual is malingering or attempting to appear in a more positive light than their true nature. Some psychopathy measures include response style items. Increasingly, researchers have moved toward stand-alone self-report psychopathy scales, but there is a resurgence of examining self-report measures of psychopathy in larger multiphasic tests as well and this could also be seen as an advantage of self-report because it would give information on a variety of disorders (see also Lilienfeld and Fowler, 2006). This could very well help with differential diagnoses as well the consideration of potential comorbidities.

Self-reports also have limitations. It could be argued that individuals may not have sufficient insight into their symptoms or may not know the severity of their symptoms. Also, although there are validity scales it could be argued that psychopathic individuals could "out-

sophisticate" the measure giving only subtle answers to their positive personality thereby beating the positive impression scales. This, however, is a supposition that has not been supported by research.

Specific Self-Report Psychopathy Measures

There are a number of self-report measures of psychopathy. Perhaps the earliest measure was the Psychopathic Deviate (Pd) Scale on the MMPI (Hathaway & McKinley, 1940). This measure was designed to tap the psychopathic personality as defined by clinicians working at that time on psychopathy (e.g., Cleckley, 1941). However, because of the way in which it was designed (using criterion keying), some researchers believe that the measure does not adequately tap psychopathy because it has very heterogeneous content (e.g., items that assess family problems, poor concentration, and marital conflict) and that even of the items that center more squarely on psychopathy, it has been argued that these items do not tap contemporary conceptualizations of psychopathy. In the late 1950s, the California Psychological Inventory (CPI; Gough, 1957, 1987; Gough & Bradley, 1996) Socialization (So) scale was developed and this measure provided a unique self-report scale for psychopathy, The CPI-So captured "sociopathy" by asking less than obvious questions regarding characteristics and interests (e.g. politics) associated with Machiavellianism and other social dominance traits.

Later, Hare developed the Self-Report Psychopathy scale (1985) to validate his Psychopathy Checklist. He also had some interest in using the scale for use with other samples such as community samples. The SRP-II (Hare, Harpur, & Hemphill, 1989) was highly focused on personality. The SRP-II is a 60 item measure that was designed to align more closely with Cleckley's model of psychopathy. Later, the SRP-III (Williams, Paulhaus, & Hare, 2007) was developed to capture the four factor model of psychopathy delineated by Hare.

Another measure that has recently received attention is the Personality Assessment Inventory-Antisocial scale (PAI-ANT; Morey, 2007), which was developed with a contemporary theoretical base. In fact, the PAI manual states that the PAI-ANT is based on the aforementioned models of both Cleckley (1941) and Robins (1966). The PAI-ANT includes the subscales of Egocentricity, Sensation Seeking and Antisocial Behaviors. Each of these factors has been linked to psychopathy, and the items for the scale can be seen in Table 1.

Table 1

Personality Assessment Inventory-Antisocial Scale Factors and Items

Egocentricity
1 Knowledge of inability to pay someone back when taking money
2 Willingness to do many things based on payment
3 Taking advantage of vulnerable people
4 Disliking commitment to a single individual
5 Ability to avoid consequences by talking
6 Disliking long term relationships
7 Individualistic idea to care for self above others
8 No need to keep promises made
Stimulus Seeking scale
1 Finds committing dangerous acts amusing
2 Does many risky acts just for the excitement of it
3 Sometimes demonstrates wild behavior
4 Moving on to new location after becoming bored
5 Finds the concept of "settling down" unappealing
6 Enjoys fast driving
7 Always accepts a dare
8 Avoidance of risks (Reverse)
Antisocial Scale
1 Generally exhibited good behavior in school (Reverse)
2 Damaged another individual's property purposefully
3 Committed illegal acts in past
4 Told a lot of lies in past to protect self from consequences
5 Enjoys testing how much the individual can get away with
6 When younger, the individual had no expulsions or suspensions from school (Reverse)
7 No history of negative encounters with the legal system (Reverse)
8 No history of stealing money or property (Reverse)

The PAI-ANT has reasonable reliability and validity (Morey, 2007), but the scale has not yet received a great deal of independent research outside of the original development of the test and the information presented in the manual. Because the PAI-ANT is a contemporary model of psychopathy that is likely highly used in both forensic and community settings, it is critical to further examine the psychometric properties of this measure. This issue is even more critical when one considers the recent emphasis to include psychopathy as a specifier in the DSM-5 and the ICD-11.

The PAI-ANT: Comparison of Measures

Various studies (e.g. Kucharski, Petitt, Toomey, & Duncan, 2008; Salekin, Rogers, & Sewell, 1997; and Caperton, Edens, & Johnson, 2004) have examined the PAI-ANT's ability to assess psychopathy in forensic populations. The PAI-ANT has been compared to other psychopathic inventories, most frequently to the PCL-R and also has been examined in terms of external correlates. In this section, I will present information on the extent to which the PAI correlates with the PCL but also the scales relation to other critical variables. If information is not available on the PCL, I will then present any other convergent validity with other psychopathy scales (e.g., the PPI). If there exists information on the predictive ability of the PAI, I will also present the correlation coefficients for this critical relation.

A recent study on this topic was conducted by Douglas and colleagues (2007). These authors examined how well the PAI-ANT predicted scores on the PCL-R in 246 adult offenders (mean age = 37.6 years). These researchers found that the Antisocial Behaviors subscale significantly predicted both the total PCL-R score and primarily Factor 2. However, only the Dominance scale of the PAI predicted Factor 1 scores on the PCL-R. In examining the difference between actual PCL-R scores and PCL-R scores predicted by the PAI, they found that

the predicted PCL-R scores were higher than the actual scores. This suggests that the PAI may be most useful in ruling out psychopathy among individuals instead of identifying individuals high in psychopathy.

Similarly, Kucharski and colleagues (2008), in a study with 92 offender participants (mean age = 37.6 years), compared scores on the PCL-R with scores on the PAI-ANT to determine how well the PAI-ANT assesses the construct of psychopathy. Participants in the high psychopathy range had elevated scores on both the PAI-ANT Antisocial Behaviors and Sensation Seeking subscales, as opposed to those with either low or moderate range scores on the PCL-R. While the researchers found that none of the PAI-ANT subscales significantly correlated with Factor 1 of the PCL-R, both the Antisocial Behaviors subscale and the Sensation Seeking behaviors correlated with Factor 2. The Antisocial Behaviors subscale also predicted the total PCL-R score. Lastly, Kucharski and colleagues found a significant difference in years of education, with participants in the high psychopathy range having significantly fewer years of education than those in the low psychopathy range.

Edens and colleagues (2000) conducted two separate studies comparing the PCL-R and PAI-ANT's predictive abilities. Forty-six adult males (mean age of 36.64) in a forensic hospital participated in their first study, while the second study's participants were 55 sex offenders (mean age = 35.22 years) in the Texas Department of Criminal Justice. The researchers yielded results similar to Douglas et al. (2007), whereby the PAI-ANT significantly predicted total scores on both the PCL:SV and the PCL-R. However, it was not found to tap the interpersonal and affective features of psychopathy well. Following up on the latter study, Edens and colleagues (2002) extended the original sample of 55 participants by adding 37 sex offenders (mean age of 37.74). The results did not evidence a large difference from the previous study

(Edens et al., 2000) in the relation between the PAI-ANT and PCL-R (r = 0.41). Additionally, the PAI-ANT did not significantly correlate with physical aggression disciplinary reports, and the PCL-R Factor 1 did not significantly correlate with nonaggressive disciplinary reports. The PAI-ANT demonstrated similar results to the PCL-R when attempting to predict institutional misconduct in the past two years. Otherwise, the results suggest that major misconduct is significantly correlated with the construct of psychopathy, particularly among sex offender populations. Further, the authors noted that the PAI-ANT and the PCL-R may be beneficial in order to predict disciplinary reports in institutionalized sex offender populations.

Salekin, Rogers, and Sewell (1997) examined psychopathy among a female offender sample. They did so with the use of the PCL-R, the PAI-ANT, and the antisocial scale of the Personality Disorder Examination (PDE) in a multi-trait multi-method analysis with 103 participants (mean age = 30.47 years). Once the cutoff *T*-score of the PAI-ANT was raised from 70 to 80, the prevalence of individuals with high psychopathy was nearly the same between the PAI-ANT and the PCL-R. Further, high psychopathy scores on the PCL-R and PAI-ANT generally indicated a high score on the PDE, though the PDE had the highest prevalence rate for psychopathy out of the three measures. The use of the multi-trait multi-method matrix indicated strong support for psychopathy in the female offender sample and demonstrated that the measures were valid when assessing the construct in this sample. The three psychopathy measures were shown to be negatively related to the PAI's WARMTH scale, supporting the notion that psychopathic individuals are deficit in interpersonal closeness. As would be expected, the Aggression scale of the PAI was found to be related to all three measures of psychopathy, including a strong relation between the Aggression scale and the Antisocial Features scale of the

PAI. Thus, with respect to the PAI, this study showed that the PAI-ANT may be a useful measure with respect to indexing psychopathy in females.

One-hundred twenty male maximum security federal prisoners (mean age = 33 years) participated in a study (Walters, 2007) to compare the ANT and AGG scales of the PAI with the Lifestyle Criminality Screening Form (LCSF; Walters, White, & Denney, 1991) in their ability to predict incident reports, both aggressive and nonaggressive. The PAI-AGG scale was effective in predicting both nonaggressive and total incident reports, whereas the PAI-ANT scale and the LCSF were not. Once the incident reports were dichotomized, the PAI-ANT demonstrated significant receiver operating characteristic (ROC) results to predict both total and nonaggressive incident reports. The PAI-ANT and LCSF were not significant predictors of institutional adjustment in offender populations.

The purpose of Edens, Poythress, and Watkins' (2001) study was to compare the Psychopathic Personality Inventory to the PAI among 60 male offenders (mean age = 32.8 years). All participants received uniform directions when completing the PPI; however, the inmates were broken into two groups. One was asked to complete the PAI as they normally would and the other asked to malinger on the test (i.e., fake symptoms of serious mental illness). To no surprise, the PPI was more strongly correlated with the Antisocial Features and Aggression subscales of the PAI. The Social Potency scale of the PPI and the Dominance scale of the PAI were found to be correlated as well.

In a substance abuse offender sample (N=753; mean age = 33.50 years), Hopwood and colleagues (2008) sought to determine the test validity of the PAI based on previous results from forensic samples. PAI-ANT was elevated along with the PAI-BOR. In addition, the Antisocial Behaviors subscale of the PAI-ANT was effective in predicting rule violations at the substance

abuse treatment facility. However, the PAI-ANT was unable to successfully differentiate between participants who did and did not have past criminal assault in their records.

Some studies focused even more squarely on the predictive ability of the PAI and used retrospective and prospective designs. For instance, Buffington-Vollum and colleagues (2002) compared the PAI-ANT and the PCL-R in their ability to predict major institutional misbehavior. The participants utilized were 58 incarcerated male sex offenders (mean age = 35.22 years). Neither measure was successful at significantly predicting acts of physical aggression; however, both the PAI-ANT and the PCL-R were significantly correlated with verbal aggression and nonaggressive misbehavior. There was slightly better classification accuracy for the PAI-ANT over the PCL-R. When considering prediction of institutional misconduct, the criterion-validity of the PAI-ANT was supported in this study.

Examining 91 male inmates (mean age = 39.11 years), Walters and Duncan (2005) sought to determine if release outcome could be predicted by the PAI-ANT and the PAI-AGG, as well as all PCL-R scores (total, Factor 1, and Factor 2). These 91 participants had already been released from custody at the time of the study, following the administration of the PCL-R and the PAI-ANT and PAI-AGG. Both the PAI-ANT and PAI-AGG were comparable to Factor 2 of the PCL-R in predicting recidivism after controlling for several demographic variables. These three measures outperformed the PCL-R Total Score and Factor 1 Score.

The ability of the PAI to predict post-release arrests was studied in 1,412 offenders (mean age = 42.84 years; Boccaccini, Murry, Hawes, Simpler, & Johnson, 2010). Several scales of the PAI were utilized: the Antisocial Scale (ANT), Dominance Scale (DOM), the Violence Potential Index (VPI), and the Aggression Scale (AGG). The PAI-AGG demonstrated the best predictive utility. The other three PAI subscales were also found to be significant predictors of recidivism

with the exception of sexual recidivism. Further results indicated that the PAI was fairly successful at predicting the likelihood that a sex offender may commit a registry violation. However, none of the PAI scales were very effective at predicting either sexually violent recidivism alone or the combination of violent or sexually violent recidivism.

The PAI was used by Caperton and colleagues (2004) to determine proneness to institutional misconduct in incarcerated individuals who were enrolled in a sex offender treatment program. One hundred thirty seven inmates (mean age = 36.99 years) were included in the study, and all of the data were archival in nature as part of an assessment battery administered upon arrival in the prison. Three different groupings of infractions were examined: physical aggression, verbal aggression/defiant acts, and nonaggressive infractions. Also taken into account were treatment noncompliance and any sexual delinquencies. The researchers found that only the Antisocial Features scale of the PAI predicted a variety of infractions, both general and major (those infractions that did not occur often, but were obviously bad); this scale did not predict treatment noncompliance or sexual delinquency. The PAI-ANT is comparable to the PCL-R in correlations between the measure and institutional misconduct, based on the results of this particular study.

Although the majority of studies have examined the PAI-ANT scale's ability to predict negative legal outcomes, such as recidivism and institutional infractions, one study (Douglas, Lilienfeld, Skeem, Poythress, Edens, & Patrick, 2008) examined the PAI-ANT's ability to predict suicide-related behavior (SRB) among people with Antisocial Personality Disorder (ASPD) and psychopathy. Douglas and colleagues (2008) hypothesized that participants with ASPD would display higher levels of SRB than those with psychopathy. Negative emotionality and low constraint were both included as mediators. Six hundred eighty two male offenders

(mean age = 31.2 years) were included in the study, some of which were in a residential treatment facility for substance use. Douglas and colleagues did find that ASPD was significantly related to suicide-related behavior. The PAI-ANT was found to be only weakly correlated with SRB; it was, however, more moderately related to suicidal ideation, particularly the composite of the antisocial behaviors and sensation seeking subscales. This suggests that clinicians should use caution when assuming a lower probability of suicide among people with higher levels of psychopathy. Salekin and colleagues' (1997) examination of psychopathy within female offender populations was taken a step further by looking at recidivism in relation to this construct (Salekin et al., 1998). Recidivism data were collected one year after the assessments had been administered to the sample. In the sample of 78 female offenders (mean age of 30.57), the Egocentricity subscale of the PAI-ANT and the Verbal Aggression subscale of the PAI-AGG were the two best predictors of recidivism for that measure, alongside Factor 1 of the PCL-R. Results indicated that female offenders are at a lower risk for recidivating than male offenders, suggesting that the construct of psychopathy may, in turn, not be an adequate predictor of recidivism in females.

More positive results were found when Skopp, Edens, and Ruiz (2007) investigated institutional misconduct in a female offender population. General infractions, more covert infractions, and more overt aggressive infractions were included in the comparison of the PAI scales; the scales of most interest to the researchers were the Antisocial Features, Dominance, Borderline, Aggression, Violence Potential Index, and the Positive Impression Management scales. In 113 female offenders (mean age = 34.63 years) who had been incarcerated for a year or more, the PAI-ANT was the best predictor of institutional misconduct over and above the other scales of the PAI. This finding held true when criminal background variables were included as

covariates in the analyses, suggesting that the PAI-ANT predicts institutional misconduct beyond a history of violence.

Finally Salekin (2008) examined psychopathy as assessed by the PAI in 130 children and adolescents who referred to court assessment unit (mean age = 14.86 years). The PAI-ANT was found to predict both general and violent recidivism across gender. Salekin further pointed out that the PAI-ANT appeared to assess a different construct of psychopathy; out of all the psychopathy measures included in the study, the PAI-ANT was the single measure that predicted general offending with all measures entered into the regression equation. Table 2 presents specific information that allows for the reader to look at the aforementioned studies at a glance in order to compare outcomes. Specifically, Table 2 presents information on the study authors, sample size and setting so that these studies can easily be examined across one another.

Table 2

Summation of PAI Studies

Authors	Year	Sample	Sample Size	Mean Sample Age	Findings
Benning	2005	Undergraduate	326	22.00	APSD-CU Traits and PPI Fearless Dominance related to Antisocial and Egocentricity subscales of PAI-ANT to same degree; significant correlations between all PAI-ANT subscales and APSD Impulsive-Conduct problems, SRP-II F2, and PPI Impulsive-Antisociality
Boccaccini, et al.	2010	Sex offenders	1412	42.84	PAI-ANT significant predictor of recidivism (except sexual)
Buffington-Vollum, et al.	2002	Incarcerated male sex offenders	58	35.22	PAI-ANT and PCL-R correlated with verbal aggression and nonverbal mis-behavior; PAI-ANT had better classification accuracy
Caperton, et al.	2004	Inmates	137	36.99	PAI-ANT predicted variety of infractions (general and major) but not treatment noncompliance or sexual delinquency

(Continued)

Table 2 (Continued)

Douglas, et al.	2007	Adult offenders	281/85	34.72/38.30	PAI-ANT AB subscale predicted total PCL-R score and primarily Factor 2
Douglas, et al.	2008	Adult male offenders	682	31.2	PAI-ANT weakly correlated with SRB, moderately with suicidal ideation, particularly composite of AB and SS subscales
Edens, et al.	2000	Male forensic hospital patients/ sex offenders	46/55	36.64/35.22	PAI-ANT predicted total PCL:SV and PCL-R scores, but did not effectively measure interpersonal and affective features of psychopathy
Edens, et al.	2001	Male offenders	89	32.8	PPI more strongly correlated with PAI-AGG and PAI-ANT than other PAI scales
Edens, et al.	2002	Male sex offenders	92	37.74	PAI-ANT correlated with total PCL-R score, did not with physical aggression disciplinary reports; similar to PCL-R in ability to predict institutional misconduct in past 2 years
Hopwood, et al.	2008	Court-mandated patients at substance treatment facility	753	33.50	PAI-ANT AB subscale effective at predicting rule violations at facility; PAI-ANT unable to differentiate between those who did and did not have past criminal records
Kucharski, et al.	2008	Male criminal defendants	92	37.6	High psychopathy had higher PAI-ANT AB and SS scores; none of PAI-ANT subscales correlated with PCL-R F1; PAI-ANT AB and SS significantly correlated with F2; AB predicted total PCL-R score
Salekin	2008	Children and adolescents assessed at court assessment unit	130	14.86	PAI-ANT predicted general and violent recidivism across gender; it was the only measure used that predicted general offending with all measures entered into regression equation
Salekin, Rogers, & Sewell	1997	Female offenders	103	30.47	Once cutoff score was raised on PAI-ANT from 70 to 80, prevalence of high psychopathy nearly the same between PAI-ANT and PCL-R; strong support for psychopathy in female offenders

(Continued)

Table 2 (Continued)

Salekin, Trobst, & Krioukova	2001	University students	326	22.02	Possible that greater than or equal to 5% of studied university population may be psychopathic, mostly male
Salekin, et al.	1998	Female offenders	78	30.57	PAI-ANT E and PAI-AGG VA two best predictors for recidivism, alongside PCL-R F1; female offenders at lower risk for recidivating than males
Skopp, Edens, & Ruiz	2007	Female offenders	113	34.63	PAI-ANT best predictor of institutional misconduct over and above other PAI scales and beyond history of violence
Walters	2007	Male max. security federal prisoners	120	33	PAI-ANT not effective in predicting nonaggressive and total incident reports; once reports dichotomized, significant ROC results to predict both; not significant predictor of institutional adjustment
Walters & Duncan	2005	Male inmates	91	39.11	PAI-ANT and PAI-AGG comparable to PCL-R F2 in predicting recidivism controlling for demographics; three mentioned above more effective than PCL-R total and F1 scores

The above mentioned findings highlight to varying degrees that the PAI-ANT correlates with the total PCL-R total score and other closely related psychopathy scales. The PAI-ANT also appears to have predictive merit as it has been shown to predict verbal aggression, aggressive and non-aggressive infractions and recidivism, albeit not across all studies. Nonetheless, the measure appears to have a reasonable degree of construct and predictive validity. Despite the validity data that is amassing for this measure, there is virtually no information on the scale's utility in non-forensic settings. This is a significant drawback for two reasons. First, the measure is frequently used in the community as it offers a succinct way of measuring quite a broad band of psychopathology. Without studies on its structure and construct validity, it is difficult to know the meaning of the scale. Second, because the disorder is supposedly linked to negative outcomes as has been underscored above, it is important to examine this supposition in a community

sample. Below, I briefly discuss two studies that have been conducted with the PAI in an undergraduate sample before discussing, more broadly, the importance of studying psychopathy in the community. I follow these two brief sections, with the specific aims of the current study.

Community Studies with the PAI

Only two studies were found evaluating the use of the PAI-ANT in a community sample. One study (Salekin, Trobst, & Krioukova, 2001) examined psychopathy in 326 undergraduate students (mean age = 22.02 years) with results suggesting that it is possible that 5% or more of the studied university population might be considered psychopathic. However, the majority of those scoring high in psychopathy were male. Even with this in mind, use of the self-report measures suggests that any gender discrepancies were due to self-reported symptomatology and were thus not due to any bias of the investigator.

The primary focus of the second community study which was based on the same sample (Benning, Patrick, Salekin, & Leistico, 2005) was to compare the correlations between the factors contained in the Psychopathic Personality Inventory (PPI), the Self-Report Psychopathy-II (SRP-II), and the Antisocial Process Screening Device (APSD) and investigate how they relate to the construct of psychopathy. The authors also compared the correlations of the PAI-ANT's three subscales with the previously mentioned instruments. Utilizing an undergraduate student sample of 326 (mean age = 22.00 years), the researchers found that both the APSD Callous Unemotional Traits and PPI Fearless Dominance were related to two of the subscales (Antisocial behavior and Egocentricity) of the PAI-ANT to nearly the same degree. Significant correlations existed between all three subscales of the PAI-ANT and APSD Impulsive-Conduct problems, SRP-II Factor 2, and PPI Impulsive Antisociality. Despite only having two studies on this topic,

it is an important issue as mentioned in the opening pages of this document, especially given that psychopathy is being considered for inclusion in both the DSM-5 and the ICD 11.

Psychopathic Individuals in the Community

While psychopaths are often thought of as criminals by the general public, this is not always the case. According to Cleckley (1941), there are some who do not engage in the typical serious antisocial behaviors that are traditionally associated with psychopathy. These psychopaths have received a number of different labels. One such label has been successful psychopathy, meaning that they are able to evade substantial consequences for their psychopathic characteristics. This would suggest that there are successful psychopaths interspersed in the community unbeknownst to most as they are not detected by the legal system. Alternately, these individuals' crimes may not rise to the level of incarceration. The reality is that we do not know a great deal about psychopathy in the community because it is a relatively understudied topic. To fully capture the concept of psychopathy, it is necessary to examine the construct in as many environments possible – including the community. As noted in Cleckley's original conceptualization of psychopathy, the syndrome did not require the inclusion of explicit antisocial and criminal behaviors. Therefore, by only studying psychopathy within offender populations, researchers could miss the opportunity to gather a more global understanding of the disorder.

Proposed Study

The current study sought to examine psychopathy in a community sample using the PAI-ANT scale. Specifically, the purpose is to examine the factor structure of the PAI-ANT as well as the construct validity of the PAI-ANT utilizing commonly linked external variables (e.g. risky driving behavior). A paucity of community studies on psychopathy has used the PAI-ANT;

therefore, this study provides a unique opportunity to provide an increment in knowledge in this area. When administered within the context of the entire PAI, the Antisocial Features scale could provide further information regarding psychopathic characteristics and tendencies. As mentioned, work is being done in DSM-5 to conceptualize Antisocial Personality Disorder as an Antisocial/Psychopathic type of personality disorder (American Psychiatric Association, 2011). This future inclusion in the DSM further emphasizes the need to have effective means for evaluating psychopathic traits outside of forensic populations.

The present study has seven hypotheses and some exploratory questions. It is hypothesized that 1) risky driving behavior will correlate positively with the Sensation Seeking subscale of the PAI-ANT; 2) Agreeableness, as measured by the IASR-B5, will negatively correlate with both the Egocentricity and Antisocial Behaviors subscales of the PAI-ANT; 3) the Big Five factor of Conscientiousness will negatively correlate with the Antisocial Behaviors subscale of the PAI-ANT; 4) Attachment, as measured by the MAQ, will negatively correlate with the Egocentricity subscale of the PAI-ANT ; 5) Emotional intelligence, as measured by the EQi, will negatively correlate with the Antisocial Behaviors subscale of the PAI-ANT; 6) Reported antisocial behavior will negatively correlate with the Antisocial Behaviors subscale of the PAI-ANT; and 7) Affect as measured by the TOSCA-3, will negatively correlate with the Egocentricity subscale score of the PAI-ANT. The relationship between the PAI-ANT scales and academic achievement as measured by grade point average (GPA) will be explored in this study.

The rationale for the above mentioned hypotheses are relatively straightforward. First, Cleckley (1944/1955) described people with psychopathic traits as failing to follow any life plan, supporting the negative relation to Conscientiousness. Further, he had recorded that such individuals demonstrate unresponsiveness to interpersonal relationships and engage in antisocial

behavior.. Psychopathic individuals are described as having shallow emotions (Cleckley, 1944/1955). He also proposed that psychopathic individuals demonstrated high intelligence. Lastly, he described psychopathic individuals as being egocentric and deficient in affect. These descriptions pertain to hypotheses 5 and 7.

Second, Frodi and colleagues (2001) found results suggesting that, in the psychopathic criminal offenders participating in their study, the majority were dismissive of attachment. Bowlby's (1982) attachment theory posits that interactions early on between a child and their parent (or other primary caregiver) are the first bonding moments that the child will experience. If they fail to properly bond with their caregiver, it places the child at risk for developing the idea that people are not worthy of their trust and may not learn empathy. Not learning such appropriate feelings toward people in the world around them then may lead to callousness in the child. These theories about attachment align most closely with hypothesis 4.

Finally, there have been numerous theories that psychopathic individuals are either erratic with their behavior and or antisocial (Hare, 2003). Such antisocial behaviors could include actions such as risky driving, academic misconduct and the like. Therefore, such evidence provides support for hypotheses 1, 2, 3, and 6.

Chapter 2: Method

Participants

Data were collected from 1257 (378 males, 869 females) undergraduate introductory psychology students from a subject pool at a large southeastern university. As presented in Table 1, the participants ranged in age from 17 to 51 years old (M = 19.32, SD = 2.31). Males comprised 30.1% of the sample, with females comprising the other 69.1% (0.8% missing data). The majority of the sample was Caucasian (81.5%). All participants reviewed an informed consent form which explained risks and benefits that may occur from participation in the study. No known risks or benefits were expected to occur from participation. It further explained that participation was voluntary, and that the person would receive extra credit for their introductory psychology course would be awarded if they chose to complete the study. All questionnaires were completed in one session that lasted approximately 2-3 hours. The demographic profile of the study participants is presented in Table 3.

Table 3

Participant Demographics (N=1257)

Variable Name	Mean	Percentage
Age	19.32 (*SD*=2.31)	
Gender		
Male		30.1%
Female		69.1%
Unknown		0.8%
Race		
Caucasian		81.5%
African American		10.9%
Hispanic		1.4%
Asian		1.4%
Indian		0.3%
Other		1.9%
Unknown		2.5%

Measures

Personality Assessment Inventory-Antisocial Scale (PAI-ANT; Morey, 2007). The PAI is a multi-scale self-report inventory consisting of 344 items. One scale on the test is the Antisocial scale. The Antisocial scale consists of 24 items and has 3 subscales. The Antisocial scale has a contemporary theoretical base and follows the work of Cleckley (1941), focusing on both personality and behavioral aspects of psychopathy. The PAI-ANT consists of three subscales tapping egocentricity, sensation seeking and antisocial behaviors. The scale addresses other characteristics such as adventuresomeness and poor empathy, as well as antisocial items. Each subscale contains eight items and the items for the antisocial scale are embedded within the broader 344 items. This measure is written at a fourth-grade reading level, making it more comprehendible to its respondents. The PAI-ANT scale has reasonably good internal consistency with Cronbach alphas of .84-.86. Test-retest reliability for the ANT scale is .89 over a 4 week period. The scale has also been shown to be valid (Morey, 2007).

Interpersonal Adjectives Scale Revised—Big Five (IASR-B5; Trapnell and Wiggins, 1991). The IASR-B5 assesses personality through the use of a 124 adjective list. The subject rates how well each adjective applies to them on an 8-point scale (1 being *extremely inaccurate* to 8 being *extremely accurate).* Originally the scale contained 64 items; later, however, an additional 60 items broadened the scale to assess Conscientiousness, Openness to Experience, and Neuroticism. The reliability of the measure indicates a Cronbach (α) of between .76 and .87. While antisocial aspects of personality are captured by the PAI-ANT, the IASR-B5 encompasses a more inclusive range of personality characteristics.

Test of Self-Conscious Affect-3rd Edition (TOSCA-3; Tangney, Dearing, Wagner, & Gramzow, 2000). The Test of Self-Conscious Affect is a scenario-based measure that has the

ability to measure pride, detachment, proneness to shame, and guilt externalization. The test consists of 16 items on a 5-point scale where the subject is asked to rate how likely they would respond to various scenarios in different ways (1 being *not likely* and 5 being *very likely).*

Emotional Quotient Inventory (EQ-I; Bar-On, 1997). The EQ-I is a 133-item self-report questionnaire that measures emotional intelligence. It consists of five different scales: Interpersonal, Intrapersonal, Stress Management, Adaptability, and a General Mood scale. Each of these is composed of various subscales for a total of 15 subscales. The EQ-I evidences good reliability, with the subscale internal consistency coefficients ranging from .70 to .89 (Bar-On, 1997).

Measure of Attachment Qualities (MAQ; Carver, 1997). The MAQ is a 14-item self-report questionnaire that assesses four different attachment styles. The subject is asked to respond based on their own attachment styles on a 4-point scale, 1 being *disagree a lot* and 4 being *agree a lot*. The four attachment styles assessed for include ambivalence-merger, ambivalence-worry, avoidance, and security.

Risky Driving. Risky driving was measured by 77 items combining the RoadSafe Auckland Annual Driving Survey (RoadSafe Auckland, 2000) and the *Year 10* (i.e. 9th grade) student driving survey outlined by Harré, Brandt, and Dawe (2000). The instrument measures driving attitudes and behaviors, including items related to drinking and driving, wearing a seatbelt, and speeding, to name a few. In addition to reporting their attitudes about driving, participants were also asked to indicate their own driving behaviors in these areas. While the questionnaire also included items regarding the participants' driving experience, driving education, and opinions about the safety of their local roads, these items were not included. For the purposes of this study, only the risky driving attitude and behavior items were included in the

calculation of the total Risk Driving score. Item scores were summed to create an overall total scale score; higher scale scores indicate riskier driving attitudes and behaviors.

Antisocial Behaviors. Previous antisocial behavior was measured using six "yes-or-no" questions. Participants indicated whether they had ever been 1) accused of academic misconduct, 2) in trouble with the law, 3) arrested off campus, 4) arrested on campus, 5) in a jail or detention center, or 6) in prison. Additionally, for every item endorsed, participants were asked to report the number of times and the reason(s) (i.e., offense(s) committed) they had been in that specific situation (i.e. why they were in jail). Participants that reported being detained in jail, detention or prison were asked to note their length of detainment. Mullins-Nelson, Salekin, and Leistico (2006) employed these same questions and noted positive correlations with psychopathy between 0.33 and 0.40 for males, and between 0.02 and 0.19 for females.

Current Academic Achievement. Current academic achievement is defined as the participants' current grade point average. The inclusion of this variable serves the purpose of providing an indirect approximation of intelligence since an intelligence test has not been included in this study.

Data Analysis

Basic descriptive statistics were utilized to discuss the characteristics of the data. Structural equation modeling was utilized in order to perform confirmatory factor analyses to determine if the three factors of the PAI hold true in an undergraduate sample, as well as testing a 1 factor model, as well as the 2, 3, and 4 factor structures of psychopathy based on Hare's (1980; 2003) and Cooke and Michie's (2001) work. The data was analyzed for the total sample as well as each gender independently. Model fit was evaluated using chi-square statistic, Confirmatory Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of

Approximation (RMSEA). CFI and TLI values of .90-.95 and RMSEA values of .05-.08 are indicative of acceptable fit.

Correlational analyses were used to look at the simple relations between study variables. Linear regression analyses were utilized to determine the relation between additional variables thought to be related to psychopathy, more specifically certain personality characteristics, emotional intelligence, attachment styles, risky driving behavior, and antisocial behavior. Such analyses were also used to explore the relationship between academic achievement (as measured by grade point average) and psychopathy. Assumptions of the regression, such as normal distribution and a lack of heteroscedacity were evaluated to determine the generalizability of the data to other samples. Due to the number of regression analyses evaluated in this study, a Cronbach alpha of .01 was required for significant to control for familywise error.

Depending on the conceptual basis for the relationship between a particular variable and the dependent variable, in some cases stepwise procedures were used, while others were evaluated using forced entry. For example, because research has shown that Conscientiousness and Agreeableness are negatively associated with psychopathy, when performing the regression analysis of the IASR-B5 facets onto the PAI-ANT total score, Conscientiousness and Agreeableness were entered first into the model, followed by the other three facets.

Chapter 3: Results

Descriptive Statistics

The descriptive statistics for each measure are presented in Table 4. As can be seen, there appears to be a reasonable amount of dispersion for each of the study variables.

Table 4

Descriptive statistics for self-report measures

Scale	Mean	SD	N
PAI-Ant Total Score[a]	21.11	11.30	1245
PAI-E Egocentricity	5.48	3.80	1244
PAI-S Sensation Seeking	8.15	4.72	1242
PAI- A Antisocial	7.52	5.21	1239
IASR-B5[b] Neuroticism	38.56	10.22	1236
IASR-B5 Conscientiousness	38.29	10.56	1236
IASR-B5 Openness	37.44	10.65	1236
IASR-B5 Extraversion	40.15	11.62	1231
IASR-B5 Agreeableness	38.19	9.92	1231
MAQ[c] Avoidance	9.35	3.26	1253
MAQ Ambivalence-Worry	7.18	2.61	1253
MAQ Ambivalence-Merger	5.91	2.17	1253
MAQ Security	10.70	1.59	1253
EQ-i[d] Total Score	424.08	58.23	1066
EQ-i Emotional Self-Awareness	29.03	5.37	1040
EQ-i Assertiveness	24.36	4.61	1042
EQ-i Self-Regard	33.00	7.03	1034
EQ-i Self-Actualization	35.07	5.807	1040
EQ-i Independence	23.77	4.73	1051
EQ-i Empathy	31.58	5.12	1032
EQ-i Interpersonal Relationship	41.73	5.81	1028
EQ-i Social Responsibility	40.24	6.49	1024
EQ-i Stress Tolerance	30.70	5.87	1041
EQ-i Impulse Control	31.66	6.46	1043
TOSCA[e] Shame	45.77	9.44	1253
TOSCA Detachment	31.91	5.96	1253
TOSCA Guilt	61.91	9.03	1253
TOSCA Externalization of Blame	39.02	8.31	1253
TOSCA Alpha Pride	19.51	3.52	1253
TOSCA Beta Pride	19.95	3.24	1253

(Continued)

Table 4 (Continued)

Risky Driving Questionnaire Total Score	118.12	23.61	949
Grade Point Average (GPA)	3.12	0.55	1144
Antisocial Behavior Total Score	.73	1.68	1196

[a]Personality Assessment Inventory Total Score (i.e., total of items included in the three factor model); [b]Interpersonal Adjective Scales-Big Five Version; [c]Measure of Attachment Qualities; [d]Emotional Quotient Inventory; [e]Test of Self-Conscious Affect-Version 3.

Confirmatory Factor Analyses

Confirmatory factor analyses were run using SPSS Amos in order to determine the best fitting model for the PAI-ANT scale, more specifically examining the fit of a one factor, Hare's two and four factors, Morey's three factor, and Cooke and Michie's 3 factor models. Model fit was evaluated using the chi-square statistic, the Tucker Lewis Index, Confirmatory Fit Index, and the Root Mean Square Error of Approximation. The fit indices for the models are presented in Table 4. RMSEA values of .05 to .08 are considered acceptable fit, as well as CFI and TLI scores of .9 to .95. None of the models tested appeared to be an appropriate fit based on the CFI and TLI test statistics. However, Morey's three factor model for the total sample resulted in an acceptable RMSEA (χ^2 = 2172.33, *df* = 249, $p < .01$, TLI = .717, CFI = .765, RMSEA = .078 [.075-.081]). In addition, Cooke and Michie's three factor model for the total sample has an acceptable fit based on the RMSEA (χ^2 = 2126.18, *df* = 249, $p < .01$, TLI = .724, CFI = .771, RMSEA = .077 [.074-.081]). Finally, for the total sample, Hare's four factor model also demonstrates an acceptable RMSEA (χ^2 = 1957.73, *df* = 246, $p < .01$, TLI = .745, CFI = .791, RMSEA = .074 [.071-.078]).

Confirmatory factor analyses were also utilized to evaluate the model fit for males and females. For males, the CFA demonstrated similar results to those of the total sample. Morey's three factor model shows an acceptable RMSEA (χ^2 = 807.63, *df* = 249, $p < .01$, TLI = .662, CFI

= .720, RMSEA = .077 [.071-.083]). Cooke and Michie's model also demonstrated acceptable fit based on the RMSEA (χ^2 = 856.15, *df* = 249, *p* < .01, TLI = .633, CFI = .695, RMSEA = .080 [.075-.086]). While the RMSEA value itself suggests appropriate fit, the 90% confidence interval upper limit exceeds the maximum appropriate value for it. This is true for both of the three factor models proposed. However, Hare's four factor model may be more appropriate for the male sample, based on the RMSEA (χ^2 = 731.28, *df* = 246, *p* < .01, TLI = .703, CFI = .756, RMSEA = .072 [.066-.078]); both the lower and upper limit of the confidence interval fall within the acceptable range of values for model fit.

Only two models demonstrated somewhat appropriate fit for the female sample. Cooke and Michie's model resulted in an acceptable RMSEA (χ^2 = 1550.960, *df* = 249, *p* < .01, TLI = .731, CFI = .777, RMSEA = .078 [.074-.081]). Lastly, Hare's four factor model demonstrates an RMSEA acceptable for model fit (χ^2 = 1511.53, *df* = 246, *p* < .01, TLI = .735, CFI = .783, RMSEA = .077 [.073-.081]). See Table 5 for the fit statistics for each model.

Table 5

Confirmatory Factor Analysis Model Fit Indices

	χ^2	(*df*)	CFI	TLI	RMSEA
Total Sample					
1 Factor	3198.37	(252)	.572	.641	.096
2 Factor	2915.395	(251)	.612	.675	.092
3 Factor (Morey)	2172.331	(249)	.717	.765	.078
3 Factor (Cooke & Michie)	2126.177	(249)	.724	.771	.077
4 Factor	1957.728	(246)	.745	.791	.074
Males					
1 Factor	1166.144	(252)	.454	.541	.098
2 Factor	1071.446	(251)	.508	.588	.093
3 Factor (Morey)	807.631	(249)	.662	.720	.077
3 Factor (Cooke & Michie)	856.152	(249)	.633	.695	.080
4 Factor	731.283	(246)	.703	.756	.072

(Continued)

Table 5 (Continued)

Female					
1 Factor	2339.557	(252)	.574	.642	.098
2 Factor	2152.264	(251)	.610	.674	.093
3 Factor (Morey)	1666.444	(249)	.707	.757	.081
3 Factor (Cooke & Michie)	1550.960	(249)	.731	.777	.078
4 Factor	1511.525	(246)	.735	.783	.077

Regression Analyses

Multiple linear regression analyses were conducted in order to determine whether external correlates could predict scores on the PAI-ANT total and factor scores. In order to control for family-wise error due to the number of analyses run, an α of .01 was used to determine significance. All assumptions were met for the regression analyses. The five domains of the IASR-B5 accounted for 25% of the variance in PAI-ANT Stimulus Seeking scores, $F(5, 212) = 81.85$, $p < .01$. A stepwise linear regression was utilized to determine the amount of variance in the Antisocial Behaviors subscale accounted for by the IASR-B5. Due to the evidence that agreeableness and conscientiousness are negatively associated with psychopathy, both scales were entered first, followed by the remaining three. Results suggested that 29% of the variance in PAI-ANT Antisocial Behaviors scores could be accounted for by the best fitting model that solely took agreeableness into account as a predictor, $F(1, 1212) = 283.09$, $p < .01$. The model including both agreeableness and conscientiousness only added 9% of the variance accounted for, and a third model including conscientiousness, agreeableness, and openness increased the variance accounted for by less than 1%. Stepwise regression as also used when examining the influence of the IASR-B5 on Egocentricity subscale scores. Again, the best fitting model only included agreeableness as a predictor, predicting 19% of the variance in PAI-ANT Egocentricity scores, $F(1, 1217) = 289.00$, $p < .01$. Finally, a stepwise regression examined the

influence of the IASR-B5 on the PAI-ANT total score, entering agreeableness and conscientiousness first. Similar to the previous results, the agreeableness subscale best accounted for the variance in the total PAI-ANT score, explaining 26% of the variance, $F(1, 1218) = 421.52$, $p < .01$.

Forced entry procedures were used to determine the influence of the MAQ on the three PAI-ANT subscales scores and total score. The MAQ accounted for 4% of the variance in PAI-ANT Stimulus Seeking scores, $F(4, 1234) = 11.60$, $p < .01$. The measure explained 5% of the variance in PAI-ANT Antisocial Behaviors scores in the sample, $F(4, 1231) = 17.42$, $p < .01$.It accounted for 11% of the variance in PAI-ANT Egocentricity scales, $F(4, 1236) = 37.11$, $p < .01$. Lastly, the MAQ explained 8% of the variance in PAI-ANT total scores, $F(4, 1237) = 27.74$, $p < .01$.

Forced entry procedures were used for the regression to determine the influence of the EQi subscale and total scores on the PAI-ANT subscale and total scores. The EQi accounted for 18% of the variance in PAI-ANT Stimulus Seeking scores, $F(7, 1047) = 33.76$, $p < .01$.It also accounted for 23% of the variance in PAI-ANT Antisocial Behaviors scores, $F(7, 1044) = 45.35$, $p < .01$. When predicting scores on the PAI-ANT Egocentricity subscale, the EQi explained 20% of the variance in PAI-ANT Egocentricity scores, $F(7, 1048) = 36.88$, $p < .01$. Finally, a stepwise regression was utilized in order to determine the influence of the EQi on the PAI-ANT total score, with particular interest in the EQi total score's increment in explained variance. Surprisingly, the best fitting model contained the Impulse Control subscale score alone, accounting for 24% of the variance in PAI-ANT Total scores, $F(1, 1055) = 333.91$, $p < .01$.

The TOSCA predictor variables were all entered simultaneously for all PAI-ANT subscale and total scores. The measure accounted for 11% of the variance in PAI-ANT Stimulus

Seeking scores, F(5, 1232) = 29.52, $p < .01$. The TOSCA explained 17% of the variance in PAI-ANT Antisocial Behaviors scores, F(5, 1229) = 49.04, $p < .01$. Eighteen percent of the variance in PAI-ANT Egocentricity scores was explained by the affect measure, F(5, 1234) = 52.74, $p < .01$. Finally, 21% of the variance in PAI-ANT Total scores was predicted by the TOSCA, F(5, 1235) = 67.43, $p < .01$.

Risky driving accounted for 26% of the variance on the PAI-ANT Stimulus Seeking subscale, F(1, 947) = 335.16, $p < .01$. Additionally, it counts for 26% of the PAI-ANT Antisocial Behaviors subscale, F(1, 963) = 324.57, $p < .01$. Risky driving accounts for less of the variance in the PAI-ANT Egocentricity, 16%, F(1, 948) = 185.26, $p < .01$. The PAI-ANT total score was best predicted by the risky driving variable, with 34% of its variance explained by it, F(1, 949) = 491.54, $p < .01$.

The student's GPA accounted for 3% of the variance in PAI-ANT Stimulus Seeking scores in a forced entry regression, F(1, 1129) = 28.89, $p < .01$. Also using forced entry, 4% of the variance in PAI-ANT Antisocial Behaviors scores was explained by GPA, F(1, 1127) = 42.83, $p < .01$. GPA was not a significant predictor of PAI-ANT Egocentricity scores, F(1, 1130) = 5.63, $p = .02$. Lastly, 3% of the variance in PAI-ANT Total scores was explained by the student's GPA, F(1, 1131) = 36.97, $p < .01$.

Antisocial behaviors were relatively successful at explaining variance in the PAI-ANT. To start, it explained 6% of the variance in the PAI-ANT Stimulus Seeking subscale, F(1, 1178) = 72.89, $p < .01$. Antisocial behaviors accounted for 21% of the variance in the PAI-ANT Antisocial Behaviors subscale, F (1, 1175) = 303.24, $p < .01$. Three percent of the variance in the PAI-ANT Egocentricity subscale was accounted for by antisocial behaviors, F(1, 1179) = 34.03, $p < .01$. Finally, 14% of the PAI-ANT total score's variance was accounted for by

antisocial behaviors, F(1, 1180) = 183.78, $p < .01$. See Table 6 for correlations among the PAI and external correlates, and Table 7 for the regression coefficients and t-tests for each measure.

Table 6

Correlations between total and factor scores of the PAI-ANT for the total sample and measures of relevant external correlates

Scale	PAI-ANT SS[a]	PAI-ANT A[b]	PAI-ANT E[c]	PAI-ANT Total[d]
PAI-ANT SS	--	--	--	--
PAI-ANT A	**.56****	--	--	--
PAI-ANT E	**.50****	**.46****	--	—
PAI-ANT T	**.85****	**.85****	**.76****	
IASR-B5 N[e]	-.10**	-.01	-.01	-.05
IASR-B5 C[f]	**-.33****	**-.35****	-.20**	**-.37****
IASR-B5 O[g]	.09**	.06*	-.01	.06*
IASR-B5 E[h]	-.09**	-.19**	-.15**	-.18**
IASR-B5 A[i]	**-.38****	**-.44****	**-.44****	**-.51****
MAQ-A[j]	.13**	.13**	.29**	.21**
MAQ-AW[k]	.07*	.15**	.13**	.14**
MAQ-AM[l]	.12**	.17**	.15**	.18**
MAQ-S[m]	-.13**	-.12**	-.20**	-.17**
EQ-i Total[n]	-.20**	**-.32****	-.25	**-.31****
EQ-i ES[o]	-.16**	-.21**	-.25**	-.25**
EQ-i A[p]	.02	-.04	-.04	-.03
EQ-i SR[q]	-.04	-.14**	-.07*	-.10**
EQ-i SA[r]	-.16**	-.23**	-.21**	-.24**
EQ-i I[s]	-.01	-.06	-.05	-.05
EQ-i E[t]	-.16**	-.27**	-.27**	-.28**
EQ-i IR[u]	-.09**	-.21**	-.17**	-.19**
EQ-i SoR[v]	**-.30****	**-.42****	**-.40****	**-.46****
EQ-i ST[w]	.01	-.12**	-.02	-.06
EQ-i IC[x]	**-.38****	**-.46****	**-.36****	**-.49****
TOSCA-S[y]	-.13**	-.17**	-.08**	-.16**
TOSCA-D[z]	**.22****	.23**	.27**	.29**
TOSCA-G[aa]	-.26**	**-.35****	**-.32****	**-.38****
TOSCA-E[bb]	.16**	.19**	.27**	.25**
TOSCA-AP[cc]	-.00	-.01	.03	.01
TOSCA-BP[dd]	.01	.02	.03	.02
RD[ee]	**.51****	**.50****	**.39****	**.58****
GPA[ff]	-.16**	-.19**	-.07*	-.18**
ASB[gg]	.23**	**.43****	.17**	**.35****

(Continued)

Table 6 (Continued)

Note. Correlations greater or equal to 0.30 are shown in boldface.
[a]Personality Assessment Inventory-Antisocial Features Stimulus Seeking subscale; [b]Personality Assessment Inventory-Antisocial Features Antisocial Behavior subscale; [c]Personality Assessment Inventory-Antisocial Features Egocentricity subscale; [d]Personality Asessment Inventory-Antisocial Features Total score; [e]Revised Interpersonal Adjective Scales-Big Five Version Neuroticism scale; [f]Revised Interpersonal Adjective Scales-Big Five Version Conscientiousness scale; [g]Revised Interpersonal Adjective Scales-Big Five Version Openness scale; [h]Revised Interpersonal Adjective Scales-Big Five Version Extraversion scale; [i]Revised Interpersonal Adjective Scales-Big Five Version Agreeableness scale; [j]Measure of Attachment Qualities Avoidance scale; [k]Measure of Attachment Qualities Ambivalence-Worry scale; [l]Measure of Attachment Qualities Ambivalence-Merger scale; [m]Measure of Attachment Qualities Security scale; [n]Emotional Quotient Inventory Total Score; [o]Emotional Quotient Inventory Emotional Self-Awareness subscale; [p]Emotional Quotient Inventory Assertiveness subscale; [q]Emotional Quotient Inventory Self-Regard subscale; [r]Emotional Quotient Inventory Self-Actualization subscale; [s]Emotional Quotient Inventory Independence subscale; [t]Emotional Quotient Inventory Empathy subscale; [u]Emotional Quotient Inventory Interpersonal Relationship subscale; [v]Emotional Quotient Inventory Social Responsibility subscale; [w]Emotional Quotient Inventory Stress Tolerance subscale; [x]Emotional Quotient Inventory Impulse Control subscale; [y]Test of Self-Conscious Affect-Version 3 Shame scale; [z]Test of Self-Conscious Affect-Version 3 Detachment scale; [aa]Test of Self-Conscious Affect-Version 3 Guilt scale; [bb]Test of Self-Conscious Affect-Version 3 Externalization of Blame scale; [cc]Test of Self-Conscious Affect-Version 3 Alpha Pride scale; [dd]Test of Self-Conscious Affect Beta Pride scale; [ee]Risky Driving Questionnaire Total Score; [ff]Grade Point Average; [hh]Antisocial Behavior Total Score.
**$p < .05$. **$p < .01$.

Table 7

Multiple linear regression analyses predicting external correlate scale scores with PAI-ANT factor scores

	PAI-ANT SS		PAI-ANT AB		PAI-ANT E		Full Model	
DV	β	*t*	β	*t*	β	*t*	β	*t*
IASR-B5 N	-0.03	-2.91**	0.03	1.01	0.03	1.13	-0.01	-0.30
IASR-B5 C	-0.15	-12.27**	-0.31	-12.42**	-0.15	-5.82**	-0.31	-13.42**
IASR-B5 A	-1.60	-13.12**	-0.23	-16.83**	-0.17	-17.00**	-0.58	-20.53**
IASR-B5 E	0.02	1.97	-0.13	-4.94**	-0.08	-3.14**	-0.10	-4.00**
IASR-B5 O	0.05	3.75**	0.03	1.05	-0.04	-1.47	0.02	0.95
MAQ Av	0.10	2.24*	0.08	1.53	0.25	6.94**	0.43	4.04**
MAQ AW	0.01	0.12	0.18	2.83**	0.08	1.81	0.27	1.99*
MAQ AM	0.25	3.62**	0.29	3.83**	0.18	3.25**	0.72	4.42**
MAQ S	-0.30	-3.23**	-0.37	-3.58**	-0.29	-4.01**	-0.93	-4.29**
EQ-i T	-0.56	-4.85**	-0.46	-4.12**	-0.23	-2.01*	-0.00	-0.03

(Continued)

Table 7 (Continued)

EQ-i ESA	-0.11	-3.40**	-0.08	-2.21*	-0.15	-5.40**	-0.08	-2.95**
EQ-i As	0.04	1.03	0.07	1.59	0.04	1.22	0.07	2.43*
EQ-i SR	0.04	1.32	0.01	0.49	0.06	2.59**	0.08	2.65**
EQ-i SA	-0.08	-1.85	-0.04	-0.87	-0.05	-1.16	-0.03	-1.08
EQ-i Ind	0.02	0.50	0.05	1.30	-0.02	-0.53	0.10	3.63**
EQ-i Emp	-0.02	-0.69	-0.12	-3.68**	-0.10	-4.41**	-0.12	-4.08**
EQ-i IR	0.12	2.56*	0.05	0.97	0.12	2.58**	0.00	-0.12
EQ-i Soc	-0.43	-7.54**	-0.48	-8.71**	-0.46	-8.21**	-0.28	-9.15**
EQ-i ST	0.13	4.24**	0.04	1.13	0.10	4.07**	0.15	-5.19**
EQ-i IC	-0.30	12.87**	-0.34	-13.57**	-0.19	-10.19**	-0.84	-18.27**
TOSCA S	-0.01	-0.74	-0.02	0.91	0.02	1.34	-0.01	-0.14
TOSCA D	0.16	4.34**	0.10	3.48**	0.09	4.58**	0.31	5.29**
TOSCA G	-0.12	-7.03**	-0.19	-10.32**	-0.13	-9.98**	-0.45	-11.57**
TOSCA E	0.04	1.95	0.06	2.97**	0.06	4.33**	0.16	3.65**
TOSCA AP	-0.06	-1.37	-0.09	-2.11*	-0.02	-0.37	-0.07	-1.72
TOSCA BP	0.04	0.93	0.11	2.33*	0.07	1.96*	0.22	2.25
RD	-0.10	18.06**	-0.11	17.63**	0.06	13.06**	0.28	21.55**
GPA	-1.35	-5.38**	-1.80	-6.55**	-0.48	-2.37*	-3.62	-6.08**
ASB	0.66	8.28**	1.32	16.14**	0.38	5.82**	2.37	12.91**

Chapter 4: Discussion

Psychopathy is rising in its importance in the field of psychology and psychiatry as can be seen by its consideration for inclusion in the DSM-5 at both the child and adult levels (Pardini, Frick, & Moffitt, 2010). Moreover, the ICD-11 is considering the inclusion of psychopathy in its newest manual. These inclusions suggest the importance of the psychopathy concept not only in forensic samples but also in community samples. Although psychopathy has been found to be a valuable concept in adult forensic populations when primarily using the PCL, self-report measures, although originally thought to be potentially of use in community samples, have also been found to be of some utility with forensic populations. One such measure is the PAI-ANT scale.

Although the PAI-ANT scale has considerable construct validity as presented in the manual, and is gaining construct validity with forensic samples, it has not been well validated with the community samples. As the psychopathy diagnosis gains acceptance it will be critical for self-report inventories to demonstrate structural, construct and predictive validity in community samples as well. Because the PAI-ANT purports to be a contemporary measure of psychopathy, examining its structure and construct validity appears to be critical given that the measure is commercially available.

The current study sought to examine the factor structure and the construct validity of the PAI-ANT in a sample of university undergraduate students. Specifically, 1229 undergraduate students completed the PAI-ANT and several other measures thought to be relevant to the construct of psychopathy. These measures included measures of attachment, emotional intelligence and affect. The battery of tests also included a measure of antisocial behavior and

risky driving. The findings generally did not support the factor structure for the PAI-ANT when using the CFI fit statistics. The PAI-ANT did however, demonstrate construct validity.

The PAI-ANT Three Factor Structure

For this particular undergraduate sample, it does not appear that any of the models are an appropriate fit for the PAI-ANT (Morey, 2003) using the stringent criteria put forth by Bentler (1995). Specifically, when testing the Morey three factor model the fit statistics did not show adequate fit. Three other models were tested including Hare's 2 factor model, a model loosely based on Cooke and Michie's 3 factor model and a four factor model loosely based on Hares four factor model. None of these models fit the data well either, although it might be argued, surprisingly, that the four factor model fit the data best. It should be noted here though that fitting the PAI-ANT data to traditional models of psychopathy is not an easy task, since, the PAI-ANT does not include many affective items. That is, models containing an affective component, a critical piece of the psychopathy construct, were quite difficult to analyze using Morey's scale due a lack of items on empathy.

Given the general lack of a fit to the data and that no model emerged as being superior to the other, the Morey three factor model was used to test the construct validity of the three factor scale. It should be noted that research has begun to show that the fit criteria set forth by Bentler (1995) and others is overly stringent. That is, most personality scales do not meet the stringent standards; this raises questions about the utility of these fit criteria. Research by Hopwood and Donnellan (2010) suggests that, even if CFA of a measure does not demonstrate close model fit, a well-established measure should not necessarily been discounted as a viable measure for the targeted construct. This is because the measure may demonstrate construct validity. In the current study, we tested whether the measure could be linked to important external constructs

including empathy, emotional intelligence, dangerous driving, and antisocial behavior. Each of these topics is discussed below.

They also recommend that researchers using CFA reference previous publications on the same measure that has used CFA in the past to determine if the model fit is consistent. However, if in fact none of the models are appropriate for use of the PAI-ANT scale in a non-forensic sample, the opportunity to aggregate items and/or scores from the PAI-ANT and other subscales (e.g. Aggression subscale) exists. The assessment of multiple personality domains is an advantage of the PAI that could possibly allow for a more thorough depiction of psychopathy.

PAI Psychopathy and Personality

Overall, results demonstrated that Agreeableness had the largest impact on PAI-ANT scores, particularly on the Antisocial Behaviors and Egocentricity subscale and total scores. As would be expected based on the extant literature on the Five Factor Model and psychopathy, both Agreeableness and Conscientiousness were significantly negatively correlated with all PAI scores. Oftentimes psychopathic individuals are considered to be somewhat impulsive and do not demonstrate prosocial relationships with others.

PAI Psychopathy and Affect

Compared to other measures included in the study, the TOSCA-3 fared moderately well in predicting scores on the PAI-ANT. The measure of affect predicted anywhere from 11% (Stimulus Seeking) to 21% (Total score) for the PAI-ANT. The predictive ability was further supported by the significant correlations of the Shame, Detachment, Guilt, and Externalization of Blame subscales of the TOSCA-3 with all PAI-ANT subscale and total scores. Positive relationships were demonstrated by the Detachment and Externalization of Blame subscales of the TOSCA-3 with the PAI-ANT scales. These findings are in line with previous descriptions of

psychopathy, particularly their low levels of prosocial relationships and their manipulative nature.

PAI Psychopathy and Attachment

Variance of PAI-ANT scores was significantly accounted for by attachment as measured by the MAQ. The MAQ's Avoidance, Ambivalence-Worry, and Ambivalence-Merger scales all demonstrated significant positive relationships with all PAI-ANT scores. The Security scale, on the other hand, was shown to have a significant negative relationship with the PAI-ANT scores. These results suggest that individuals with higher levels of psychopathic traits are more likely to experience negative attachment styles than positive. Psychopathic individuals have been described as egocentric, and items in the PAI-ANT Egocentricity subscale includes items about avoiding long-term relationships in addition to working toward goals for oneself regardless of the

PAI Psychopathy and Emotional Intelligence

The PAI-ANT appeared to be fairly well linked to emotional intelligence based on correlation and regression scores. More specifically, it accounted for between 18% and 24% of the variance in PAI-ANT subscale and total scores. As would be expected based on descriptions of psychopathy, the majority of EQi total and subscale scores are negatively correlated with the PAI-ANT scores. The negative correlations of the EQi Total score with the PAI-ANT scores may suggest that individuals with psychopathic traits are less able to detect emotion when engaging in impulsive and risky behaviors, thus not recognize negative emotions of others.

PAI Psychopathy, Antisocial Behavior and Risky Driving

The PAI-ANT appeared to be connected to antisocial behavior in the current study. This is an important finding because it shows that the PAI may have predictive utility for behaviors

that are thought to be relevant to psychopathy. Risky driving demonstrated possibly the best predictive ability of all correlates include in the study. However, antisocial behavior was significantly correlated to all PAI-ANT scores. It also significantly predicted variance for all subscales, though it accounted for quite low variance for the Stimulus Seeking and Egocentricity subscales. It is reasonable that it accounted for more variance in the Antisocial Behaviors subscale, and therefore also explaining more variance for the Total score.

PAI Psychopathy and Academic Achievement

The relationship between psychopathy and intelligence has mixed finds among empirical studies. Cleckley, in his 1944 hallmark work, described psychopathic individuals as being intelligent, and would need to be in order to con or manipulate others. However, some research has suggested that the association of psychopathy and intelligence may not be well founded (e.g., Solomon, 1939; Wechsler, 1944). In the case of this study, grade point average had little predictive ability for the PAI-ANT, accounting for no more than 4% of the variance among the scores. With regard to the correlations, GPA had small but significant negative correlations with all PAI-ANT scores. This would provide mild support for previous research findings of no association between intelligence and psychopathy.

Study Limitations

While the current study provides useful information, there are several limitations of this study that need to be taken into account when viewing the findings. First, the current study is based on a university sample and as such may not represent people in the community more broadly and such a sample may demonstrate lower levels of psychopathic traits than in a forensic sample. Still more people are entering into University than ever before showing perhaps an increasing representation of community members. Second, all measures included in the study

were self-report and single source, assuming that the participants report honestly and have insight into their thoughts and behaviors, as well as personality traits. Third, the study was cross-sectional and thus could not truly discuss the prediction of negative outcomes prospectively. Lastly, for some of the variables, this study may present an issue of tautology. Because there is some item overlap between PAI-ANT subscales and the risky driving and antisocial scales the correlations may be inflated. With regard to the PAI-ANT in comparison with risky driving, for instance, some of the specific items of the PAI-ANT refer to driving behavior, increasing the likelihood of the explained variance by driving behavior. Similarly, the PAI-ANT and Antisocial scale would have some overlap. Future research should use a broader sampling of the community, multiple measures of psychopathy and examine these relations, prospectively.

Future Directions

These data provide support for the PAI-ANT as a self-report measure of psychopathic traits. The PAI, in its entirety, may provide more expansive descriptions of psychopathic individuals. Additionally, this measure affords the opportunity to measure psychopathic traits in non-forensic samples and could be clinically useful with the impending releases of the DSM-5 and ICD-11 which will potentially include psychopathy as a diagnosis. Future research should consider the administration of the entire PAI in undergraduate students in comparison with other acceptable measures of psychopathy, such as the APSD or PPI. To expand on the current study even further, research should examine the utility of the PAI for assessing psychopathy in a sample drawing from the more general community.

Conclusion

Despite some limitations to the current study, it did elucidate some important findings. First, the current study showed that the structure of psychopathy of the PAI-ANT may not be

straight forward. However, it was noted that the stringent criteria for fitting data may hamper what is known about the factor structure of this measure, Second, the external correlates showed that there is generally some construct validity for this measure. Third, the PAI-ANT appeared to be linked with more negative outcomes in school including lower GPAs. In summation, the study presented provides support for negative (or lack of positive) qualities and behaviors associated with psychopathy, including personality characteristics, attachment qualities, affect, emotional intelligence, risky driving, antisocial behavior, and academic achievement.

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