6-1-2016

Exploring the Relationship between Facets of Psychopathy and Co-Occurring Psychopathology: Do Gender and Measurement Approach Matter?

Elizabeth Hunt
University of South Florida, bets.hunt@gmail.com

Exploring the Relationship between Facets of Psychopathy and Co-Occurring Psychopathology: Do Gender and Measurement Approach Matter?

by

Elizabeth Hunt

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
Department of Psychology
College of Arts and Sciences
University of South Florida

Major Professor: Marina Bornovalova, Ph.D.
Eva Kimonis, Ph.D.
Mark Goldman, Ph.D.
Tiina Ojanen, Ph.D.
Christopher Patrick, Ph.D.
Vicky Phares, Ph.D.

Date of Approval:
October 8, 2014

Keywords: psychopathic traits, factor interactions, personality, assessment

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Psychopathy is a maladaptive personality disorder associated with a host of negative outcomes, including criminal behavior, psychopathology, and self-harm. Factor 1 (F1) and Factor 2 (F2) psychopathy show differential associations with psychopathology. However, evidence suggests that the statistical *interaction* of F1 and F2 may be more important in understanding associations with psychopathology. Findings regarding the interactive effects of F1 and F2 are mixed, as both potentiating and protective effects have emerged. Moreover, there is only scant research exploring the statistical impact of gender on these interactive effects. Furthermore, approaches to measuring F1 (e.g. clinical interview versus self-report) are based on different conceptualizations of F1, which may influence the strength and direction of the interactive effects. Study 1 aims to explore the influence of F1 and F2 on psychopathology by using both person-centered and variable-centered approaches on a sample of over 1,500 offenders. Study 2 seeks to replicate these findings among 227 drug users and 234 college students. Across analytic methods in Study 1, there were very cases in which F1 influenced the association between F2 and psychopathology, and there were no significant three-way gender interactions. Furthermore, the conceptualization of F1 across psychopathy measures did not impact the interactive effects of F1 and F2. Similar findings emerged in Study 2. These findings suggest that F2 is likely driving the relations between psychopathy and other forms of psychopathology, and that F1 plays less of a role in interacting with F2 than previously believed.

CHAPTER ONE:

INTRODUCTION

Psychopathy is a Major Public Health Problem

Psychopathy is a personality disorder characterized by a grandiose and manipulative interpersonal style, deficient affective experience, an impulsive-irresponsible lifestyle, and antisocial behavior. The prevalence rate in the general population is approximately 1% (Forth, Brown, Hart, & Hare, 1996; Rutherford, Cacciola, Alterman, & McKay, 1996; Hare, 1993, 2003; Nicholls, Ogloff &, Douglas, 2004). However, in prison/offender samples, approximately 15-30% of men and 7.5% to 46.4% of women present with psychopathy (Hare, 1998, 2003; Hare, 2003; Loucks & Zamble, 2000; Salekin, Rogers, & Sewell, 1997; Vitale, Smith, Brinkley, & Newman, 2002; Jackson, Rogers, Neumann, & Lambert, 2002; Warren et al., 2003). Multiple studies indicate that psychopathy is highly associated with criminal behavior; substance misuse; different types of psychopathology; deliberate self-harm; and suicidal behavior (Douglas, Vincent & Edens, 2006; Hicks, Vaidyanathan, & Patrick, 2010; Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003, Verona, 2005). Furthermore, psychopathic offenders commit more violent and nonviolent crimes than non-psychopaths from late adolescence to their late 40's (Harpur & Hare, 1994; Porter, Birt, & Boer, 2001). Psychopathy is also an important risk factor for recidivism, in that psychopaths are five times more likely than non-psychopaths to engage in violent recidivism within 5 years of release (Grann, Langstroem, Tengstroem, & Kullgren, 1999; Salekin et al., 1997; Serin & Amos, 1995). As such, it is important to understand the mechanisms underlying this form of psychopathology.

Psychopathy is a Multidimensional and Heterogeneous Construct

Dating back to the classic work of Harpur, Hare, & Hakstian (1989), traditional theoretical frameworks have conceptualized psychopathy as consisting of two moderately correlated, overarching dimensions. Factor 1 (F1) encompasses interpersonal and affective traits (e.g., callousness, shallow affect,

grandiosity), whereas Factor 2 (F2) captures impulsive-antisocial behavior (e.g. impulsivity, irresponsibility, early behavior problems). Although some authors have identified lower-order facets within these two broad dimensions, the two factor model of psychopathy remains the most widely investigated measurement model for this condition (see Fowles, 2011).

Recent research indicates that the two factors show differential associations with environmental stressors (e.g., childhood trauma), psychopathology, and maladaptive outcomes. For instance, F2 traits typically show strong, positive associations with anxiety, depression, substance abuse symptoms, self-harm, suicidal behavior, borderline personality disorder features, childhood abuse and arrest, whereas F1 shows little to no association or negative associations with these variables (Benning, Patrick, Hicks, Blonigen, & Krueger, 2003; Skeem et al., 2003; Skeem, Johansson, Andershed, Kerr, & Louden, 2007). Moreover, F2 displays stronger positive associations with levels of neuroticism, affective psychopathology, non-planning and impulsive aggression compared with F1 traits (Skeem et al., 2003; Warren et al., 2003).

Heterogeneity of Psychopathy Measurement

Several well-validated measures of psychopathy exist, but the most widely used is the Psychopathy Checklist-Revised (PCL-R; Hare, 1991), which assesses F1 and F2, as well as four facets (interpersonal, affective, lifestyle and antisocial) derived from factor analyses (Hare et al., 1990). The PCL-R involves a relatively time consuming (i.e., 1.5-2.5 hours) semi-structured interview and file review that are used by the interviewer to rate the presence of 20 characteristics.

The Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996) was developed as a self-report measure of psychopathy, and as a more easily administered and less time-consuming alternative to the PCL-R. Nevertheless, the PPI is marked by the standard limitations of self-reports, such as reliance on respondents' insight and honesty, both of which may be particular problems among psychopathic individuals (Lilienfeld, 1994). Most commonly, factor analytic studies report that PPI consists of a three-factor structure: F1 (Fearless Dominance), F2 (Impulsive Antisociality) and Coldheartedness, the last of which does not load appreciably on either factor and is thus treated as a

stand-alone factor (Benning, et al., 2003; Patrick et al., 2006; but see Neumann, Malterer, & Newman, 2008, for an alternative factor structure). Some of the traits measured by the PPI differ from those measured by the PCL-R, with the most noticeable difference being the conceptualization and operationalization of F1. Whereas PCL-R F1 assesses interpersonal and affective traits such as grandiosity, lack of empathy. and callousness (Hare, 1991), PPI-I captures relatively adaptive features of stress immunity, social potency and fearlessness, which are related to such traits as risk taking without fear of consequences, low anxiety, and social dominance (Benning et al., 2003; Miller & Lynam, 2012). Indeed, the PPI and PCL-R were intended to assess psychopathy somewhat differently, as the PPI was designed to measure personality dispositions independent of antisocial behaviors, whereas the PCL-R explicitly incorporates such behaviors (Lilienfeld & Andrews, 1996).

Although the PCL-R and PPI both evidence good psychometric properties (Hare, 1991; Lilienfeld & Andrews, 1996), convergent validity findings are mixed when comparing F1 and F2 across measures – especially for F1. In particular, correlations between PCL-R F1 and PPI-I are consistently low (*r*s range from .15 to .24), whereas those between PCL-R F2 and PPI-II range from moderate to large across studies (*r*s range from .39 to .58; Malterer et al., 2010; Poythress et al., 2010). The low, albeit positive, correlations for F1 suggest that the PCL-R and PPI versions of this dimension are not measuring the same construct. Furthermore, PCL-R F1 and PPI-I show divergent associations with comorbid psychopathology. Specifically, PCL-R F1 tends to show little or no relationship with other psychopathology (Warren et al., 2003), whereas PPI-I tends to show significant negative associations (Benning et al., 2003).

Potential Interactive Effects of F1 and F2

Several studies suggest that the statistical *interaction* of F1 and F2 is important in understanding associations with negative precursors, comorbid psychopathology, and maladaptive outcomes (Blonigen et al., 2010; Hicks & Patrick, 2006; Sprague et al., 2012). Such interaction is potentially consistent with the notion of at least some forms of psychopathology, especially personality disorders, as comprising interpersonally maladaptive configurations (statistical interactions) of two or more personality traits

(Grove & Tellegen, 1991). There are two potential interactive effects: potentiating versus protective. A potentiating effect indicates that high levels of F1 coupled with high levels of F2 increases the risk for negative outcomes. In other words, high levels of F1 would *strengthen* the relationship between F2 and psychopathology and/or maladaptive behaviors. There is some evidence that a potentiating effect may be gender specific. For instance, in a sample of female inpatients at a maximum-security hospital, Coid (1993) found that the combination of F1 and F2 (as indexed by the PCL-R) was associated with emotion dysregulation, intense dysphoria, self-harm and property damage. Likewise, Sprague et al. (2012) found that, across samples (college students, incarcerated women) and measures (PCL-R and PPI), the interaction between F1 and F2 traits significantly predicted borderline personality disorder features. In particular, the association between F2 and borderline traits was stronger when coupled with high F1 scores – but only for females. Finally, Verona, Sprague, and Javdani (2012) showed that, in females, the association between F2 and suicidal ideation/self-harm was enhanced at high levels of F1, whereas in men F2 was associated with suicidal ideation and self-harm regardless of the level of F1. Similar to Sprague et al. (2012), this study used combined scores from the PPI and Self-Report Psychopathy scale for one sample and the PCL:SV for the other.

In contrast, a protective effect indicates that high levels of F1 coupled with high levels of F2 decrease the risk for negative outcomes. In this case, high levels of F1 would *weaken* the relationship between F2 and psychopathology and/or maladaptive behaviors, serving as a protective factor against negative outcomes. In support of this notion, suppressor effects have been found in association with depression and emotional distress among male inmates such that after controlling for PCL-R F1, the relationship between F2 and psychopathology became stronger (Hicks et al., 2006). Similar effects were found for the PPI and PCL-R among male and female offenders for symptoms of both internalizing and externalizing disorders (Blonigen et al., 2010). Although the statistical procedure of analyzing suppressor effects is not equivalent to the methods used in studies exploring potentiating effects (e.g. Sprague et al., 2012; Verona et al., 2012), the fact that F1 weakens the effect of F2 on psychopathology, indicated by a stronger relationship between F2 and psychopathology after accounting for F1, suggests that F1 may have

a protective effect. Furthermore, negative correlations (or, in some cases, a lack of relationship) between F1 and psychopathology, as well as positive correlations between F1 and adaptive characteristics (e.g. intelligence, positive emotionality, academic success, perceived self-efficacy) suggest a protective effect of F1 on F2 (Benning et al., 2003; Hall & Benning, 2006).

These series of studies report that F1 – whether potentiating or protective – affects the relationship between F2 and psychopathology or other maladaptive outcomes. However, it is also important to consider the possibility that F1 is less relevant to such outcomes, in that it may not serve as either a potentiating or protective factor. Indeed, the interactive nature of the two factors of psychopathy in relation to external correlates has been questioned. For instance, a recent meta-analysis (Kennealy, Skeem, Walters, & Camp, 2010) of studies exploring each PCL-R factor and their interaction in predicting violence found that the interaction of these factors did not increase the predictive validity. F2 alone predicted violence better than F1 or their interaction. These effects have been replicated with recidivism (Walters & Duncan, 2005).

Thus, there is a need to further investigate the interaction of F1 and F2 as it is unclear whether F1 has a potentiating or protective effect on F2 in relation to psychopathology. Additionally, the above-discussed studies generally utilized either the PCL-R or the PPI. As such, there is a need to examine if the measurement method of psychopathy - and subsequent conceptualization of F1influences the relationship of the factors to psychopathology. Indeed, conceptualizations of F1 may influence the magnitude of the interaction with F2 in relation to psychopathology and other maladaptive behavior. More importantly, exploring the interactions may also inform two current controversies: a) the utility of F1, particularly Fearless Dominance, and b) if psychopathy is best characterized by an interaction of F1 and F2 traits.

Approaches to Examining F1-F2 Interplay

There are two general approaches to testing interactions between variables. The most common and straightforward approach to examining between factors is regression-based (Bauer & Shanahan, 2007; Lanza et al., 2011), using an interaction term to predict other variables (e.g., psychopathology) after controlling for main effects. This is referred to as a "variable-centered" approach. However, a major

drawback to this approach is an increased likelihood of Type II errors (e.g., low power minimizing the ability to detect interactions; Bauer & Shanahan, 2007; Lanza et al., 2011). An alternative method is a "person-centered" approach (e.g., latent class/profile analysis, cluster analysis, mixture models) that classifies individuals into classes or subgroups based on sets of variables or factor scores (e.g. F1 and F2) (Lanza et al., 2011). A "person-centered" approach may be more informative for exploring the "interplay" of factors, as it allows for a more holistic view of variables and the examination of actual individuals who exhibit particular profiles or combinations of factors relative to individuals exhibiting different profiles. However, a limitation to this approach is the loss of statistical power associated with creating subgroups of individuals. Although each approach has its benefits and drawbacks, it provides different yet complementary information relative to the other.

Six prior studies have utilized a person-centered approach to examining subtypes of psychopathy (e.g., Alterman et al., 1998; Haapasalo & Pulkkinen, 1992; Herve et al., 2000; Hicks, Markon, Patrick, Krueger, & Newman, 2004; Skeem et al., 2007; Vassileva et al., 2005) with inconsistent findings regarding both the number (e.g. two, three, four, or six classes) and topography (e.g., variation in combinations of F1 and F2 and defining characteristics) of the classes. Still, there appears to be one point of consistency across these studies. Generally, two groups typically resemble high F1 individuals and high F2 individuals. The high F1 group is marked by low anxiety and low externalizing symptoms (e.g., substance use, aggression), whereas the high F2 group scores higher on anxiety, substance abuse, and aggression, which is consistent with previous research. Indeed, both Skeem et al. (2007) and Hicks et al. (2004) identified one group with high F1 traits, low anxiety, low impulsivity and aggressiveness, and a second group with high F2 traits and high borderline features, irritability and emotion dysregulation. These findings suggest that F2 plays a significant role in relation to higher levels of psychopathology and maladaptive behaviors, whereas F1 seems to play less of a role as indicated by low associations with psychopathology (e.g. anxiety), impulsivity and aggression. The lack of consistency in classes across these studies may be due to variability in the populations studied (e.g., inmates versus substance users); differing gender proportions; and differences in the measurement of F1. As such, there is a need to extend

previous work using a large, mixed gender sample that includes PPI and PCL-R measures of F1 and utilizes complementary regression-based and person-centered approaches.

Current Study

The aims of the current study were to test if F1 exerts potentiating or protective effects on the relation between F2 and psychopathology and maladaptive behaviors in a large (N > 1,500), mixed gender sample of substance users and prisoners. Given that previous work indicates that the potentiating effects of F1 may only be present among females, we also tested if the effect (in either direction) is gender-specific. In doing so, two complementary approaches were utilized to test the directionality of the interaction effects–an empirically derived "person-centered" approach and the classic regression-based approach. This approach allowed for the examination of consistency of interactive effects. Finally, given the divergent conceptualizations of F1 across the PCL-R and PPI, the effect of measurement of F1 in influencing protective or potentiating effects was examined by comparing the strength of the effects of F1 across measures. Two additional samples (a sample of mixed-gender substance users in residential treatment and a sample of mixed-gender college students) were utilized to replicate findings related to 1) potentiating or protective effects and 2) whether or not the effect (in either direction) was gender specific. Only one analytic approach is used for the latter samples (regression) due to smaller sample sizes. Additionally, because the data for these latter samples were drawn from a larger study with separate primary aims, psychopathy factors were measured solely via the PCL-R-type conceptualization.

CHAPTER TWO:

STUDY 1: OFFENDERS

Methods

Participants, setting, and procedure

The sample came from a de-identified dataset of 1,534 offenders who were court ordered to community residential drug treatment programs or serving prison sentences in Oregon, Utah, Nevada, and Florida. Participants were also recruited from a residential drug treatment program (located within a prison) in Texas. There were 727 individuals from community drug treatment programs (47.4% of the sample) and 807 from prison sites (53.6% of the sample). Overall, participants were primarily male (83.3%) and Caucasian (65.8%). A third (29.6%) had not completed high school, 43.2% had graduated high school or received a GED, and 26.7% had at least some college. The procedure was as follows: participants were given a detailed explanation of the procedures, asked to provide written informed consent, and completed a number of self-report questionnaires and interviews.

Measures

Demographic information

Information was obtained regarding gender, race, education, and data collection site (e.g., substance abuse facility versus prison).

Psychopathy

Two measures of psychopathy were given to participants: the *Hare Psychopathy Checklist – Revised* (PCL-R; Hare, 1991) and the *Psychopathic Personality Inventory* (PPI; Lilienfeld & Andrews, 1996). The PCL-R is a 20-item scale that involves a semi-structured interview and file review. Items are scored on a 3-point scale (0, 1, 2) according to how well it applies to that individual. The PCL-R has four dimensions that map on to the two factors: interpersonal, affective, lifestyle and antisocial. However, only

18 of the 20 items comprise these four dimensions and map on to the two factors. Total scores range from 0-40, where 30 is the standard cut-off score for determining the degree to which an individual meets criteria for psychopathy. The PCL-R has high inter-rater reliability with intraclass correlations ranging from .87 to .95 (Vitale & Newman, 2001; Warren et al., 2003; Hare, 1991). It has also shown good internal consistency (.83-.91) and high concurrent and construct validity (Hare, 1990, 2003; Vitale & Newman, 2001). In the current study, the reliability data were as follows: Total score, α = .82, F1, α = .81, F2, α = .68 and an inter-rater reliability of .88.

The PPI is a self-report measure of psychopathy that assesses internal states and personality traits considered to be central to psychopathy. The scale contains 187 items answered with a 4-point Likert scale (1 = false, 2 = mostly false, 3 = mostly true, 4 = true). The total score can be interpreted as a global index of psychopathy and 8 subscales represent specific traits. The eight subscales are impulsive nonconformity, blame externalization, Machiavellian egocentricity, carefree nonplanfulness, stress immunity, social potency, fearlessness and coldheartedness. Factor analytic studies of the PPI have identified 2 primary factors, PPI-I, fearless dominance (social potency, fearlessness, and stress immunity subscales) and PPI-II, impulsive antisociality (carefree nonplanfulness, impulsive nonconformity, machiavellian egocentricity, and blame externalization subscales; Benning, Patrick, Hicks, Blonigen, & Krueger, 2003; Benning, Patrick, Blonigen, Hicks, & Iacono, 2005; Patrick, Edens, Poythress, Lilienfeld, & Benning, 2006). One other PPI subscale, coldheartedness, does not load appreciably on either factor and is thus defined as a separate factor. The PPI total score has shown high correlations with the PCL-R total scores (Poythress, Edens, & Lilienfeld, 1998, Benning et al., 2003), and the PPI factors have shown overlap with their respective PCL-R factors (Benning et al., 2003). The PPI has high internal consistency (.89-.93), high test-retest reliability (.82-.95) (Lilienfeld & Andrews, 1996), as well as high construct and

convergent validity (Patrick et al., 2006). In the current study, the reliability data were as follows: Total score, α = .91, PPI-I alphas ranged from .80-.86 and PPI-II ranged from .73-.89[1].

Comorbid psychopathology, childhood abuse and re-arrest

Scores from several scales of the *Personality Assessment Inventory* (PAI; Morey, 1991) were used. The PAI is a 344-item self-report questionnaire designed to assess symptoms of psychopathology, personality traits, and other variables of clinical interest (e.g. response style). Individuals rate statements based on how accurately it describes them. Item responses include *very true, slightly true, slightly false* and *vey false.* There are 22 non-overlapping scales: 4 validity, 11 clinical, 5 treatment consideration and 2 interpersonal. The 11 clinical scales include: somatic complaints, anxiety, anxiety-related disorders, depression, mania, paranoia, schizophrenia, borderline features, antisocial features, alcohol problems, and drug problems. Scores from the borderline features scale (BOR) were used for the presence of BPD. Sample items from the BOR scale include "my mood can shift quite suddenly" and "my relationships have been stormy". The BOR scale has demonstrated good internal consistency (.84), test-retest reliability (.73) and construct validity across a variety of samples (Morey, 1991; Trull, 1995). The Depression (DEP), Anxiety (ANX) scales will be used as measures of depression and anxiety. These scales demonstrated good internal consistency in the clinical standardization sample of the PAI (alpha of $\geq$ .93 for both scales). The Alcohol (ALC) and Drug Scales (DRG) of the PAI will be used as measures of substance abuse. These scales demonstrated good internal consistency in the clinical standardization sample of the PAI (alphas of $\geq$ .80 for both scales). Scores from the Suicidal Ideation Scale (SUI) were used to index suicidality and self-harm. Support for the validity of the SUI scale is provided in the instrument's manual (Morey, 1991), which reports moderate to high convergent correlations with other theoretically relevant constructs (e.g. hopelessness, depression; *r* range .29 - .64) and other measures of suicide, such as suicide risk assessments (*r* = .45; Wang et al., 1997) and the SADS (*r* = .63; Rogers, Ustad, & Salekin, 1998).

[1] It should be noted that the Coldheartedness factor of the PPI was not used because it does not align with the parallel comparison of the two psychopathy measures and the exploration of the interactive nature of the psychopathy factors across external correlates.

Childhood abuse was assessed using the *Child Abuse and Trauma Scale* (CATS; Sanders & Giolas, 1991), which is a 38-item self-report measure of physical abuse or punishment, sexual abuse, verbal or psychological abuse, neglect, and a negative home environment. There is a five-point response scale, ranging from never to always, by which individuals rate the frequency with which particular types of events occurred during childhood. Sample items include "Did your parents ridicule you?" and "Did you feel safe living at home?" The CATS has shown high internal consistency and test-retest reliability (Sanders & Becker-Lausen, 1995), with an alpha of .95 for the current study. Finally, as a measure of criminal behavior, state and federal records were searched to obtain arrest records of participants who were released into the community after protocol completion. Dichotomous variables (yes/no) were created to indicate whether each participant had been arrested for any kind of offense within a 1-year period following either enrollment into the drug treatment program or release from prison into the community.

Results

Latent profile analysis[2]

Two series of latent profile models were fit to F1 and F2 PCL-R and PPI scores separately via Mplus version 6.1 (Muthen & Muthen, 2006), obtaining one through five class solutions. A latent profile analysis was chosen as opposed to a latent class analysis because it is more appropriate due to the continuous nature of the variables. The estimation of each model was run with 1500 random sets of start values and 500 final stage optimizations to help ensure that the resulting estimates are based on global rather than local maxima of the likelihood. Model selection was based on interpretability of parameter estimates and comparative data-model fit in terms of information criteria and hypothesis tests. For each model, the Akaike Information Criterion (AIC), sample-size-adjusted Bayesian information criterion (SS–BIC; Sclove, 1987), relative entropy, and Lo-Mendell Rubin test (LMR) were obtained; these are

[2] Classes were also derived using median splits on F1 and F2 scores for the PCL-R and PPI and subsequent analyses were performed. Although the distribution of individuals across classes was more equal, the results of the interactive effects, gender differences and measurement differences told the same story as the current findings.

preferred criteria for selecting the number of classes to retain for latent profile models of data structures (Henson et al., 2007; Jung & Wickrama, 2008; Tofighi & Enders, 2008; Yang, 2006). The AIC and SS-BIC are based on the loglikelihood of a model with penalty terms that account for model complexity. The sample size adjustment helps to reduce penalty terms, leading to better fit when there are a large number of parameters or small sample size. Relative entropy measures uncertainty of classification of subjects into the latent class. Values can range from 0 to 1, with values closer to 1 indicating an adequate level of classification accuracy between observed and predicted class membership. The LMR test compares the model under examination (K) with a model with one less class (K-1). Non-significant values indicate that the number of classes within the model under examination does not have better fit than a model with one less class (Jung & Wickrama, 2008). As such, the best fitting model will have smaller AIC and SS-BIC values, higher entropy values and a significant Lo-Mendell Rubin test. Fit indices were used in conjunction with theory to guide model selection because the best fitting model should not only be statistically significant, but also interpretable, providing a clear and sensible explanation of the data.

Table 1 contains the overall fit statistics for the latent profile analysis. A four-class model was identified as the best fitting model for both the PCL-R and PPI. For the PCL-R, the four-class model stands out as the best fit across most fit indices. Although the five-class model has a lower AIC value, all other indices worsen for the five-class model, suggesting that the four-class best fit the data. Furthermore, a four-class model provides the best interpretation of classes based on psychopathy factors. Results for the PPI were slightly different, as the three-class model had a lower SS-BIC value and the five-class model had a lower AIC value and slightly higher entropy relative to other class solutions. However, the three-class and five-class models had non-significant LMR statistics and were not as interpretable; the other fit indices pointed to the four-class model as the best fitting.

The four classes varied according to the combination of F1 and F2 scores: Class 1) low F1 and low F2 (lowF1-lowF2); Class 2) low F1 and high F2 (lowF1-highF2); Class 3) high F1 and low F2 (highF1-lowF2); and Class 4) high F1 and high F2 (highF1-highF2). Class membership for the PCL-R and PPI are presented in Table 2. Using the PCL-R, most individuals fell in the low F1-high F2 class,

whereas using the PPI most fell into the low F1-low F2 class. However, while the distribution of individuals across classes varied, the PCL-R and PPI formed similar classes based on F1 and F2 scores. Classes were consistent across gender as well. Furthermore, the average conditional probabilities indicated that there was a good fit between each class and to which class individuals were assigned (Table 2).

Next, the best-fitting four-class models of the PCL-R and PPI were used to test whether F1 has a potentiating or protective effect on F2 in relation to psychopathology, childhood abuse and arrests. Correlations between psychopathy factors and outcome variables are shown in Table 3. A series of analyses of covariance (ANCOVA) were conducted for continuous variables (e.g. BPD, anxiety, depression, drug use, alcohol use, suicide, and childhood abuse) and chi-square analyses were used to look at differences across classes for categorical variables (e.g. gender, race, education, and arrest). To control for Type I error rate, a significance level of .01 was used for each ANCOVA chi-square analysis.

Differences across classes

PCL-R. As shown in Table 4, participants in the four classes were compared on several demographic characteristics. Chi-square analyses showed significant associations between class and gender, $X^2(3) = 82.32$, $p < .001$; race $X^2(3) = 40.86$, $p < .001$; education $X^2(6) = 39.56$, $p < .001$; and site $X^2(3) = 52.09$, $p < .001$. There was a higher percentage of men in the classes high on F1 and a higher percentage of Caucasians in the classes low on F1. Furthermore, both classes with high F1 scores had higher rates among prison sites. The low F1-low F2 classes had higher rates of a high school education or equivalent, whereas the high F1-low F2 had higher rates of some college or above. Given that all demographic variables revealed significant differences, they were included as covariates in subsequent analyses. A series of univariate ANCOVAs were conducted to determine if psychopathology, trauma and arrests differed across the four classes. There was a significant effect of class for BPD [$F(3) = 29.62$, $p < .001$, Cohen's $d = .50$], anxiety [$F(3) = 6.90$, $p < .01$, $d = .24$] depression [$F(3) = 5.64$, $p < .01$, $d = .22$], drug use [$F(3) = 21.14$, $p < .001$, $d = .42$], alcohol use [$F(3) = 3.76$, $p < .05$, $d = .18$], suicide [$F(3) = 6.73$, $p < .001$, $d = .24$] and childhood abuse [$F(3) = 16.47$, $p < .001$, $d = .38$]. As shown in Figures 1.1-1.8,

both high F2 classes exhibited higher levels of BPD, anxiety, depression, drug use, alcohol use, suicide and childhood abuse than both low F2 classes. Chi-square analyses showed significant differences between class and re-arrest [$X^2(3) = 14.02$, $p < .01$, $d = .20$], and those in the both high F2 classes were more likely to have been re-arrested than those in both low F2 classes.

To determine the presence of potentiating or protective effects of F1, the critical comparison lies between the high F2 classes with high versus low F1 to isolate the effects of F1 on high levels of F2. Post-hoc comparisons (Figures 1.1-1.8) indicated that the low F1-high F2 and high F1-high F2 classes were significantly different for levels of anxiety, but not other types of psychopathology or re-arrest. The low F1-high F2 class had higher levels of anxiety than the high F1-high F2 class, suggesting a potential protective effect of F1[3]. A second series of ANCOVAs were conducted to determine the presence of gender differences. There was no overall effect of gender on the associations across all four classes with the outcome variables: BPD [F(3) = .18, p = .913, $d = 0$], anxiety [F(3) = 77, $p = .510$, $d = .09$], depression [F(3) = 1.2, p = .320, $d = .09$], drug use [F(3) = .17, p = .920, $d = 0$], alcohol use [F(3) = .25, p = .247, $d = .06$], suicide [F(3) = 1.41, p = .238, $d = .11$], childhood abuse [F(3) = 1.58, p = .193, $d = .11$], and re-arrest [Wald's $X^2(1) = 3.42$, p = .064, Exp(B) = 1.37 (.98-1.9)]. Additionally, comparisons of the low F1-high F2 and high F1-high F2 classes revealed no significant effect of gender for: BPD [$F(1) = .02$, $p = .877$, $d = 0$], anxiety [$F(1) = .31$, $p = .575$, $d = 0$], depression $F(1) = .10$, $p = .758$, $d = 0$], drug use [$F(1) = .22$, $p = .641$, $d = 0$], alcohol use [$F(1) = .14$, $p = .708$, $d = 0$], suicide [$F(1) = .79$, $p = .373$, $d = .06$], childhood abuse [$F(1) = .43$, $p = .511$, $d = 0$] and re-arrest [Wald's $X^2(1) = 2.43$, $p = .119$, Exp(B) = 1.47 (.91-2.39)].

PPI. As shown in Table 4, participants in the four classes were compared on several demographic characteristics. Chi-square analyses showed significant differences between class and gender, $X^2(3) = 12.09$, $p < .01$; race $X^2(3) = 13.14$, $p < .01$; education $X^2(6) = 39.91$, $p < .001$; and site $X^2(3) = 36.77$, $p < .001$. Consistent with the predominantly male and Caucasian composition of the general sample, the proportion of men and Caucasians was also high across classes. Furthermore, only high F1-low F2 had

[3] Individual post-hoc comparisons across all possible class comparisons are included in the Appendix.

higher rates among prison sites. The low F1-low F2 classes had higher rates of a high school education or equivalent, whereas the high F1-low F2 had higher rates of some college or above compared with other classes. All demographic variables were included as covariates in subsequent analyses since they differed significantly across classes.[4] A series of univariate ANCOVAs were conducted to determine if psychopathology, childhood abuse and re-arrests differed across the four classes. There was a significant effect of class for BPD [$F(3) = 187.66$, $p < .001$, $d = 1.25$], anxiety [$F(3) = 89.74$, $p < .001$, $d = .86$], depression [$F(3) = 105.22$, $p < .001$, $d = .93$], drug use [$F(3) = 44.29$, $p < .001$, $d = .61$], alcohol use [$F(3) = 10.16$, $p < .001$, $d = .29$], suicide [$F(3) = 44.61$, $p < .001$, $d = .61$], and childhood abuse [$F(3) = 34.26$, $p < .001$, $d = .54$]. As shown in Figures 1.1-1.7, both high F2 classes had higher levels of BPD, anxiety, depression, drug use, alcohol use, suicide and childhood abuse than both low F2 classes. Chi-square analyses showed no significant difference between class and re-arrest [$X^2(3) = .127$, $p = .988$, $d = .02$] 1-year post-release.

As indicated above, the low F1-high F2 and high F1-high F2 classes were compared to determine potentiating or protective effects of F1, because these classes allow for isolation of the effects of high and low levels of F1 on high levels of F2. Post-hoc comparisons (Figures 1.1-1.8) indicated that the low F1-high F2 and high F1-high F2 classes were significantly different for levels of anxiety and depression, but no other types of psychopathology. The lowF1-high F2 class had higher levels of anxiety and depression than the high F1-high F2 class, suggesting a potential protective effect of F1. A second series of ANCOVAs was conducted to determine the presence of gender differences. There was a significant overall effect of gender on suicide across the four classes [$F(3) = 4.49$, $p < .01$, $d = .19$], but not for BPD [$F(3) = 1.35$, $p = .257$, $d = .11$], anxiety [$F(3) = .32$, $p = .813$, $d = .06$], depression [$F(3) = .81$, $p = .490$, $d = .09$], drug use [$F(3) = .89$, $p = .448$, $d = .09$], alcohol use [$F(3) = 2.57$, $p = .053$, $d = .14$] childhood abuse [$F(3) = 1.58$, $p = .193$, $d = .11$] and re-arrest [Wald's $X^2(1) = 1.55$, $p = .213$, Exp(B) = 1.29 (.87-

[4] To ensure that including education as a covariate was not controlling for traits associated with PPI-I (e.g. fearless dominance) the analyses were re-run without education as a covariate and results showed no change in the effects that emerged – however in most cases, the PCL-R effects were weaker and the PPI effects were stronger.

1.9)]. Comparisons of the two high F2 classes revealed no significant effect of gender for: BPD [$F(1) = .17$, $p = .684$, $d = .09$], anxiety [$F(1) = .33$, $p = .567$, $d = .14$], depression [$F(1) = .30$, $p = .587$, $d = .13$], drug use [$F(1) = 1.12$, $p = .293$, d = .25], alcohol use [$F(1) = 1.33$, $p = .254$, $d = .27$], suicide [$F(1) = 5.43$, $p = .023$, $d = .54$], childhood abuse [$F(1) = 2.99$, $p = .088$, d = .41], and re-arrest [Wald's $X^2(1) = .07$, $p = .797$, Exp(B) = 1.22 (.26-5.7)].

Differences across measurement

In order to determine if the measurement of F1 impacted associations between F2 and psychopathology, a formal comparison of regression weights was used. In this approach, the low F1-high F2 and high F1-high F2 classes from the PCL-R were selected and regressed onto psychopathology. This same procedure was repeated for the PPI classes. The unstandardized beta weights and standard errors from the PCL-R regressions and from the PPI regressions were compared using a critical value table. Critical z values of +/- 2.58 are used for $p < .01$. As previously noted, a significance level of .01 was used to control for Type I error rate. Results indicated a significant difference for depression (z = 3.35) such that PPI-I exerted a stronger protective effect than PCL-R F1. However, there were no significant differences for BPD (z = .89), anxiety (z = 2.39), drug use (z = .90), alcohol use (z = .99), suicide (z = 1.07), childhood abuse (z = -.19), or arrest (z = .02)[5]. Thus, PCL-R F1 and PPI-I are having the same effect on F2 in relation to psychopathology, however PPI evidenced stronger effects with these outcomes.

Regression-based approach

A series of linear and logistic regressions for the PCL-R and PPI were conducted separately with F1, F2 and the interaction of F1 and F2 to examine independent and interactive effects of each factor and gender in predicting psychopathology and maladaptive behaviors. Covariates (gender, education, race, site), F1 and F2 were entered into the first step, followed by the 2-way interaction of F1xF2 in the second step, and the 2-way interaction of each factor with gender (F1xgender, F2xgender) as well as the three-way interaction of F1xF2xgender in the third step.

[5] The z-values for every possible combination of class comparisons are included in the Appendix.

For the PCL-R, there were main effects for F1 and F2, with F1 exhibiting a negative relationship and F2 exhibiting a positive relationship with psychopathology (see Table 5). Notably, however, PCL-R F1 only showed significant associations with anxiety, depression, drug use, alcohol use and childhood abuse. The two-way F1xF2 interaction and three-way interaction of F1xF2xgender were not significant, suggesting no effect of F1 and no gender differences. For the PPI, there were main effects for F1 and F2, with F1 exhibiting a negative relationship and F2 exhibiting a positive relationship with psychopathology (see Table 5). The F1xF2 interaction was significant for depression and suicide (B = -.09 and B = -.07 respectively, ps < .01). Further examination of the interaction effects showed a protective effect of F1. Furthermore, the three-way interaction of F1xF2xgender was significant for suicide (B = -.17, p < .01), in which the interaction was significant for males, but not females.[6] Finally, unstandardized beta weights and standard errors from the interaction terms of the PCL-R and PPI were transformed to z-values and compared using a critical value table to determine if differences exist across measurement. A critical value of +/- 2.58 was used for p < .01, a conservative significance level to control for Type I error. A significant difference emerged for depression (z = 4.29) and suicide (z = 2.70), but not for BPD (z = -.72), anxiety, (z = 2.29), drug use (z = .84), alcohol use (z = .36), childhood abuse (z = -1.79) and arrest (z = -.37). Thus, there is little evidence for a significant difference across measures, although the PPI demonstrated stronger effects with psychopathology.

[6] The full regression models are available in the Appendix.

CHAPTER THREE:

STUDY 2: DRUG USERS

Methods

Participants, setting and procedure

The drug user sample consisted of 227 individuals receiving substance abuse treatment in a residential treatment facility. The treatment facility consists of three residential treatment facilities (1 female, two male) with 57-80 beds per facility (total beds of 205). Treatment consists of a broad residential drug and alcohol rehabilitation program and treatment duration is typically 6 months. During the program, participants are offered group therapy, educational programs, Bible study, literacy education, medical screening, help with anger management, and relapse prevention. Drug testing is implemented throughout treatment, and a positive screen is grounds for dismissal. Participants were given a detailed explanation of the procedures and asked to provide written informed consent. Participants were also asked to complete a number of self-report questionnaires and structured interviews. Overall, about half the population was male (46.4%) and half female (53.6%) and primarily Caucasian (68.3%). Participants ranged in age from 18-53 (M = 30.04, SD = 8.40). About three-fourths of the sample was single (74.6%), 12% were living with a partner, 8% were married but separated and 5.4% were married. Approximately 31.3% of the participants had not completed high school, 57.8% had graduated high school or received a GED, and 10.9% had completed at least some college. The majority of the sample was unemployed at the time (59%), however 13.5 % were employed part time and 22.7% were employed full time. The other participants reported either being a student or home-maker (4.8%). Most participants had an income in the range of $29,999 or below (61.1%), about a quarter reported an income between $30,000 and $59,999 (22.7%), and the remaining reported an income between $60,000 and $99,999 (16.2%).

Measures

Demographic information

Information was obtained regarding gender, age, race, education, marital status, income, and employment status.

Psychopathy

The *Multidimensional Personality Questionnaire – Brief Form* (MPQ-BF; Patrick, Curtin, & Tellegen, 2002) is a 155-item scale comprised of 11 subscales, which tap three higher order dimensions of personality, including positive emotionality, negative emotionality, and constraint. The 11 primary scales include well-being, social potency, achievement, social closeness, stress reaction, alienation, aggression, self-control, harm avoidance, traditionalism, and absorption. The 11 primary trait scales have 12 items each, a 14-item unlikely virtues scale and 9 additional primary scale items. All items are true or false statements. The 11 primary scales had high internal consistency, with alphas ranging from .82 to .92 (M = .86). The MPQ-BF has shown strong reliability when compared with the original MPQ (Tellegen, 1982), with coefficients ranging from .75-.84 (Patrick et al., 2002). A regression-based approach was used to estimate PPI Factor 1 and Factor 2 from the MPQ-BF. Previous research supports the regression-estimated approach for calculating estimated PPI scores as reliable and valid (Benning, et al., 2003; Benning et al., 2005; Blonigen et al., 2005; Walton, Roberts, Krueger, Blonigen, & Hicks, 2008).

Comorbid psychopathology and trauma

Symptom counts from several modules of the *Mini-International Neuropsychiatric Interview (*M.I.N.I.; Sheehan et al., 1998*)* were used, including major depressive disorder, generalized anxiety disorder, drug dependence and alcohol dependence. The M.I.N.I is a short semi-structured diagnostic interview that assesses for current and lifetime DSM-IV and ICD-10 disorders, such as mood disorders (depression, anxiety), substance abuse, psychosis and other related psychopathology. Current symptom counts were used for this study and inter-rater reliability was good, with alphas ranging from .96-.97 across modules.

The *Minnesota Borderline Personality Disorder Scale (*MBPD; Bornovalova, Hicks, Patrick, Iacono, & McGue, 2011) was used to measure BPD traits[7]. The MBPD is a 19-item scale developed using items from the Multidimensional Personality Questionnaire (MPQ, Patrick *et al.* 2002), a well-validated omnibus measure of normal personality. MBPD scores correlate strongly with interview based diagnoses of BPD and scores on the Borderline Features scale of the PAI (*r*'s range from .60-.89; Bornovalova et al., 2011; Bornovalova et al., 2012; Rojas, Cummings, Bornovalova, Hopwood, & Klump, 2013). Furthermore, these studies provide evidence for the reliability and validity of the MBPD scale (Bornovalova *et al.* 2013; Rojas *et al.* 2013). In the current sample, internal consistency was good (α = .77).

Childhood abuse was assessed using the *Childhood Trauma Questionnaire – Short Form* (CTQ-SF; Bernstein et al., 2003). The emotional, physical, and sexual abuse subscales of the CTQ-SF were administered. This 28-item measure assesses childhood maltreatment experiences (abuse and neglect) using a 5-point Likert scale ranging from 1 (never true) to 5 (very often true). The CTQ-SF has good sensitivity (.78 –.86) and satisfactory specificity (.61–.76) (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997). Sample items include "I didn't have enough to eat", "I had the perfect childhood", and "I felt that someone in my family hated me". In the current sample, internal consistency was good (α = .70).

The self-harm subscale from the borderline features scale of the *Personality Assessment Inventory* (PAI-BOR; Morey, 1991) was used as a measure of self-harm behavior. The PAI-BOR is a 24-item self-report questionnaire designed to assess symptoms of borderline personality disorder. Individuals rate statements based on how accurately it describes them. Item responses include *very true, slightly true, slightly false* and *very false.* Sample items from the BOR scale include "When I'm upset, I typically do something to hurt myself." and "my relationships have been stormy". The BOR scale has demonstrated good internal consistency (.84), test-retest reliability (.73) and construct validity across a variety of samples (Morey, 1991; Trull, 1995). In the current sample, internal consistency was good (α = .86)

[7] Item overlap was a concern since both the PPI and MBPD are estimated from the MPQ. Analyses were conducted with the borderline features scale of the PAI, which does not have item overlap with the MPQ and the results did not change.

Results

Correlations between psychopathy factors and outcome variables are shown in Table 6. Since the sample size for Study 2 was under 300, a latent profile analysis was not conducted. When sample sizes are below 300, model fit indices can result in an overestimation of the number of classes (Nylund et al., 2007). Thus, only the regression based approach was utilized for this sample to explore the interaction of F1 and F2. Similar to Study 1, a series of linear regressions for the PPI were conducted separately with F1, F2 and the interaction of F1 and F2 to examine independent and interactive effects of each factor and gender in predicting psychopathology and maladaptive behaviors. To determine covariates, correlations were conducted to examine significant relationships between F1, F2 and demographic variables. F1 was significantly correlated with gender (r = .30, p < .01), race (r = .18, p < .01), income (r = .31, p < .01) and employment status (r = .15, p < .01), but not age (r =-.05), marital status (r =-.01), or education (r =.03). F2 was significantly correlated with age (r = -.15, p < .01), marital status (r = -.14, p < .01), education (r = -.20, p < .01), and income (r = -.18, p < .01), but not gender (r = -.07), race (r =-.01), or employment status (r =-.02). Thus, all demographic variables were included as covariates. Covariates (age, gender, race, marital status, education, income and employment status), F1 and F2 were entered into the first step, followed by the 2-way interaction of F1xF2 in the second step, and the 2-way interaction of each factor with gender (F1xgender, F2xgender) as well as the three-way interaction of F1xF2xgender in the third step. Results indicated main effects for F1 and F2, with F1 exhibiting a negative relationship and F2 exhibiting a positive relationship with BPD, anxiety symptoms, depression symptoms, and self-harm (see Table 7). There were no main effects for F1 and F2 on drug dependence symptoms, alcohol dependence symptoms or childhood abuse. The two-way F1xF2 interaction and three-way interaction of F1xF2xgender were not significant in any of the above models.

CHAPTER FOUR:

STUDY 3: COLLEGE STUDENTS

Methods

Participants, setting and procedure

The college sample consisted of 233 students from a large university recruited through the psychology department research pool. Participants were given a detailed explanation of the procedures and asked to provide written informed consent. Participants were also asked to complete a number of self-report questionnaires and structured interviews. Overall, majority of the sample was female (72.5%) and Caucasian (50.2%). Participants ranged in age from 18-52 (M = 20.28, SD = 4.09). Approximately 37.1 % of the participants were freshman, 24.1% were sophomores, 30.1% were juniors, 8.3% were seniors and 0.4% were non-degree seeking. About one-third of the participants reported an income between $60,000-$99,999 (31.4%), followed by 25.5% in the range of $30,000-$59,000; 23.8% in the range of $29,999 and below and 19.3% in the range of $100,000 and above.

Measures

The measures are the same as those reported in Study 2. In the current sample, inter-rater reliability on the *MINI* was good, with alphas ranging from .85-91 across modules. Internal consistency was good for the *MBPD* (α = .75), *CTQ* (α = .51), and *PAI-BOR* (α = .71).

Results

Correlations between psychopathy factors and outcome variables are shown in Table 8. As in the study of substance users, only the regression based approach was utilized for this sample to explore the interaction of F1 and F2. A series of linear logistic regressions for the PPI were conducted separately with F1, F2 and their interaction to examine independent and interactive effects of each factor and gender in predicting psychopathology, and trauma. To determine covariates, correlations were conducted to

examine significant relationships between F1, F2 and demographic variables. F1 was significantly correlated with gender (r = .23, p < .01), but not age (r = .09), race (r = .04), income (r = .08), or education (r =.13). F2 was not significantly correlated with age (r = -.06), gender (r =.12), race (r =.04), education (r =.01) or income (r = -.12). Thus, only gender was included as a covariate. Covariates (gender), F1 and F2 were entered into the first step, followed by the F1xF2 interaction in the second step, and the 2-way interaction of each factor with gender (F1xgender, F2xgender) as well as the three-way interaction of F1xF2xgender in the third step. Results indicated main effects for F1 and F2, with F1 exhibiting a negative relationship and F2 exhibiting a positive relationship with BPD, depression symptoms, anxiety symptoms, and self-harm (see Table 9). F2 also exhibited a positive relationship with alcohol dependence symptoms, and childhood abuse, however F1 did not. There were no main effects of F1 and F2 on drug dependence symptoms. The two-way F1xF2 interaction and three-way interaction of F1xF2xgender were not significant in any of the above models.

CHAPTER FIVE:

DISCUSSION

The purpose of the current study was to examine (1) whether F1 of psychopathy interacts statistically with F2 to affect its relationship (i.e., protective or potentiating effect) with psychopathology and other maladaptive behaviors, (2) whether the protective or potentiating effect (if present) is gender-specific, (3) whether the measurement of F1 influences the nature of the effect, and (4) the consistency of the interaction effects through the use of both a person centered and regression based approach. Findings from Study 1 indicated a four-class solution as the best fitting model for both the PCL-R and PPI, with classes consisting of low F1-low F2, low F1-high F2, high F1-low F2 and high F1-high F2. The PCL-R and PPI classes with high F2 (low F1-high F2 and high F1-high F2) scored higher on measures of BPD, anxiety, depression, drug use, alcohol use, suicide, childhood abuse and re-arrests than the classes with low F2 scores. F2 also showed strong positive associations with each outcome, whereas F1 had a negative association (in the case of the PPI) or no association (in the case of the PCL-R).

Potentiating v. Protective Effects

Across analytic methods in Study 1 and in the results from Study 2 and 3, there were few cases for which the level of F1 influenced the association of F2 and psychopathology, childhood abuse, and re-arrest in either a protective or potentiating direction. There were several exceptions that emerged in Study 1: a protective effect of F1 was found for anxiety for PCL-R and anxiety, depression and suicide for the PPI, meaning that for individuals scoring high on Factor 2 across measures, the risk for these maladaptive outcomes was lower when they also scored high on Factor 1. Nevertheless, it is unclear how much credence to accord to these findings since in all other cases, F1 did not have a protective or potentiating effect; these effects stand in contrast to findings supporting potentiating effects (Coid et al., 1993; Sprague et al., 2012; Verona et al., 2012). Our contrasting findings may be due to the fact that

covariates were controlled for in the regression analysis, a latent profile analysis was used and there were a small number of individuals in critical class comparisons. Furthermore, the PPI was used in isolation, whereas previous studies exploring potentiating effects used a combined score of the PPI with another psychopathy measure. Additionally, these studies used a screening version of the PCL-R as opposed to the original measure. There were no effects for gender except for suicide on the PPI in Study 1, in which the interactive effect was significant for males, not females. These findings also differ from previous work suggesting the presence of gender effects that are specific to females (Coid et al., 1993; Sprague et al., 2012; Verona et al., 2012). This contrasting finding could be due to the sample for Study 1 consisting primarily of males. Despite these differences, across most analyses, the effect does not appear to be gender specific. As such, it is likely that F2 is driving the relationship between measures of psychopathy and psychopathology and other maladaptive outcomes, with a limited role, if any, for F1. This interpretation is consistent with reports indicating that F2 alone exhibits a stronger association and is a better predictor than F1 or their combined effect in relation to psychopathology and other external correlates (e.g. recidivism, violence; Kennealy et al., 2010; Walters & Duncan, 2005).

Measurement

Across measurement methods in Study 1, several notable findings emerged. First, the PCL-R and the PPI appear to still be functioning in similar ways in relation to psychopathology and other maladaptive behaviors. This conclusion is further qualified by formal comparisons showing that significant differences did not emerge between measures in the majority of cases. This study is the first to show that there are minimal differences between PCL-R and PPI in their external correlates, despite previous concerns regarding their divergent conceptualizations of F1.

Although there was little difference between the two measures in their correlates, the LPA models were different in the sample size composition, and the PPI showed a significantly stronger protective effect in the case of depression and (in the regression-based models), suicide. Likewise, although a protective effect emerged for anxiety on *both* the PCL-R and PPI, the effect was larger for the PPI than the PCL-R. Although the issue of method variance cannot be ruled out, these results are consistent with

the nature of PCL-R F1 versus the PPI-I (Benning et al., 2003; Skeem et al., 2007; Warren et al., 2003). That is, PPI-I, which represents fearless dominance, is a largely adaptive trait that consistently shows negative correlations with distress-related psychopathology (Benning et al., 2003; Patrick et al., 2006).

Therefore, in this context, F1 may serve as a protective factor against some forms of psychological disturbance. This result is consistent with the fact that only 3% of the sample was found to be high F1 - low F2 on the PPI. In general, it would be expected that people in this group would be less prone than other people to being incarcerated. Further support comes from the fact that individuals with high F1 in this sample were more likely to have higher education levels. In contrast, PCL-R F1, largely comprising a lack of empathy, callousness, and grandiosity, is more maladaptive and is often uncorrelated or only weakly correlated with psychopathology (Warren et al., 2003). The potential protective role of PPI-I may bear important implications for treatment approaches, especially among a population consistently linked with poor treatment response due to traits traditionally associated with F1 (e.g., callousness, lack of empathy) (see Salekin et al., 2010 for review). As such, an important distinction may be the adaptive value of traits associated with PPI-I and their relation to risk of psychopathology and other maladaptive behaviors associated with F2.

On a broader note, the findings of the current study bring in the issue of the utility of F1 in conceptualizing psychopathy, given increasing evidence for its limited clinical relevance. Indeed, a combination of F1 and F2 traits are typically used to identify psychopathy, as evidenced by the use of a total score on measures of psychopathy. However, F1 consistently shows a lack of association with external correlates and fails to add any incremental value to F2, which is already well captured by ASPD, in the case of the PCL-R (Kennealy et al., 2010; Walters & Duncan, 2005). Thus, it raises the question of whether or not F1 is psychopathological in nature or should be considered as a component of psychopathy. Furthermore, PPI-I, tends to show stronger associations with correlates considered to be orthogonal to psychopathy (e.g. psychological distress) as opposed to those that are presumed central to psychopathy (e.g. aggression, empathy, antisocial behavior) which are in contrast to those evidenced by the PCL-R and other measures of psychopathy (Blonigen et al., 2010; Marcus, Fulton & Edens, 2013;

Miller & Lynam, 2012). Differential associations are also true for dimensions of personality, as PPI-I tends to be negatively correlated with Neuroticism, positively associated with Extraversion and uncorrelated with Agreeableness, whereas PCL-R F1 shows null to weak correlations with negative and positive emotionality and is negatively correlated with Agreeableness (Miller & Lynam, 2012). And, the degree of overlap between F1 and F2 varies significantly depending on the conceptualization and measure used. Specifically, the PCL-R factors are typically correlated whereas the PPI factors are not correlated, making it unclear what the two factors share and highlighting the continued controversy of the utility of F1 in conceptualizations of psychopathy. Furthermore, PPI-I subscales often cross-load onto PPI-II, raising questions about the optimal factor solution (Neumann et al., 2008).

Strengths, Limitations and Future Directions

The current study was marked by several strengths. The first was the comparison of two analytic approaches to examining interactive effects. Although both approaches have been used to explore psychopathy, they have not been used in tandem, nor has latent profile analysis been used to explore the statistical influence of F1 on associations for F2. Additionally, this is one of the first studies to examine F1 in particular and its effect on F2 across measurement methods, placing careful emphasis on exploring differences in measurement between the PCL-R and PPI. Third, the study allowed for tests of effects across multiple, very diverse samples that included both men and women to explore potential gender differences in interactive effects.

Despite these strengths, there were several limitations. The sample for Study 1 was fairly homogenous, as it was composed of primarily Caucasian male offenders and included a relatively small proportion – albeit a large number (>250) – of females compared with males. Second, several of the psychopathy groups created in Study 1 had a small amount of individuals, which may have affected the ability to detect interactions. Third, the slightly stronger effects for the PPI may have been due to method variance, as the PAI and PPI are both self-report measures. However, potential effects of method variance are contrasted by the fact that overall, the findings were consistent across measure, with theories of psychopathy, and with findings from previous research. Fourth, the samples used for Study 2 and Study 3

were fairly small and did not allow for a comparison of analytic approaches to examining interactive effects. Fifth, although the two factor structure of psychopathy has empirical support, there is continued debate concerning the factor structure of psychopathy. For instance, alternative three-facet (Cooke & Michie, 2001) and four-facet models of psychopathy (Neumann *et al.* 2013) have been proposed. In further work in large samples, it may be helpful to examine statistical interactions among these facets in exploratory analyses, although doing so in this sample (e.g., by comparing all pair-wise combinations or facets or all facets in conjunction) would have risked substantial increases in Type I error given the enormous number of analyses.

Indeed, analyses using a different factor structure/conceptualization might produce different results. For instance, the three-facet model parses traits associated with F1 and validation studies have shown that the Deficient Affective factor (Factor 2 in the three-facet model) correlates with criminal behavior and social detachment, whereas the interpersonal characteristics (Arrogant Deceitful Interpersonal Style factor) are associated with indices of adaptive functioning (e.g. positive emotionality, low stress reactivity) that are more closely related to a potential protective role (Cooke & Michie, 2001; Hall, Benning, & Patrick, 2004). Thus, the lack of association in the current study for F1 may be due to the fact that the two factor model groups all F1 traits together, muddling the effects of the more fine-grained parsing. As such, choosing the two factor model of psychopathy in this case may have resulted in Type II error. However, it is also possible that the deficient affective component of F1 (Deficient Affective factor of three-facet model) is questionable in terms of its utility in conceptualizing psychopathy given limited clinical relevance in this model as well as the two factor model.

Future directions may include the examination of other components of F1 that may influence F2. For instance, it may be worthwhile to examine if the "coldheartedness" component of the PPI (which indexes lack of sentimentality, lack of reactivity to others' distress, and lack of guilt and empathy), or the allied notion of "meanness", which includes arrogance, aggressive competitiveness, and predatory aggression, and has recently been proposed to be a part of psychopathy (Patrick, Fowles, & Krueger, 2009) exert protective or potentiating effects on psychopathology. Furthermore, examination of the other

models of psychopathy (e.g. three and four-facet models) may help to further parse the construct of psychopathy and inform the role of F1 traits in associations with external correlates. Next, exploration of other well-validated self-report psychopathy measures may provide further insights into potentiating or protective effects across varying conceptualizations of psychopathy. Finally, F1 and F2 appear to be heterogeneous combinations of traits drawn from extant models of normal personality, such as the influential five factor model. In particular, PCL-R F1 largely reflects low agreeableness whereas PPI-I reflects low neuroticism/negative emotionality. For example, in a review of the literature, Lilienfeld, Smith, Watts, Berg, and Latzman (in press) found that PPI-I, reflecting fearless dominance or boldness, was strongly negatively associated with neuroticism from the perspective of the Big Five model of personality and negative emotionality from the perspective of the Big Three model of personality. In contrast, F2 of both measures largely reflects low agreeableness and low conscientiousness, with a modest contribution from high neuroticism/negative emotionality (Lynam & Derefinko, 2006). It is possible that statistical interactions could emerge at the level of these ostensibly more homogeneous dimensions. Answers to these and other unresearched questions have the potential to inform prevention and intervention efforts for a particularly difficult and severe population.

REFERENCES

Alterman, A., McDermott, P. A., Cacciola, J., Rutherford, M., Boardman, C. R., McKay, J., & Cook, T. G. (1998). A typology of antisociality in methadone patients. *Journal of Abnormal Psychology, 107*, 412-422.

Bauer, D.J., & Shanahan, M.J. (2007). Modeling complex interactions: Person centered and variable-centered approaches. In T.D. Little, J.A. Bovaird, & N.A. Card (Eds.), *Modeling contextual effects in longitudinal studies* (pp. 255-283). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Benning, S. D., Patrick, C. J., Blonigen, D. M., Hicks, B. M., & Iacono, W. G. (2005). Estimating facets of psychopathy from normal personality traits: A step toward community-epidemiological investigations. *Assessment, 12*, 3-18.

Benning, S. D., Patrick, C. J., Hicks, B. M., Blonigen, D. M., & Krueger, R. F. (2003). Factor structure of the psychopathic personality inventory: Validity and implications for clinical assessment. *Psychological Assessment, 15*, 340-350.

Bernstein, D. P., Ahluvalia, T., Pogge, D., & Handelsman, L. (1997). Validity of the childhood trauma questionnaire in an adolescent psychiatric population. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 340-348.

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., & al., e. (2003). Development and validation of a brief screening version of the childhood trauma questionnaire. *Child Abuse & Neglect, 27*, 169-190.

Blonigen, D. M., Hicks, B. M., Krueger, R. F., Patrick, C. J., & Iacono, W. G. (2005). Psychopathic personality traits: Heritability and genetic overlap with internalizing and externalizing psychopathology. *Psychological Medicine, 35*, 637-648.

Blonigen, D. M., Patrick, C. J., Douglas, K. S., Poythress, N., Skeem, J. L., Lilienfeld, S. O., & Edens, J. F. (2010). Multimethod assessment of psychopathy in relation to factors of internalizing and externalizing from the personality assessment inventory: The impact of method variance and suppressor effects. *Psychological Assessment, 22*, 96-107.

Coid, J. W. (1993). An affective syndrome in psychopaths with borderline personality disorder? *The British Journal of Psychiatry, 162*, 641-650.

Douglas, K. S., Vincent, G. M., & Edens, J. F. (2006). Risk for criminal recidivism: The role of psychopathy. In C. J. Patrick (Ed.), *Handbook of Psychopathy* (pp. 533-554). New York: Guilford Press.

Edens, J. F., Buffington-Vollum, J. K., Colwell, K. W., Johnson, D. W., & Johnson, J. K. (2002). Psychopathy and institutional misbehavior among incarcerated sex offenders: A comparison of the psychopathy checklist–revised and the personality assessment inventory. *International Journal of Forensic Mental Health, 1*, 49-58.

Edens, J. F., Marcus, D. K., Lilienfeld, S. O., & Poythress, N. (2006). Psychopathic, not psychopath: Taxometric evidence for the dimensional structure of psychopathy. *Journal of Abnormal Psychology, 115*, 131-144.

Edens, J. F., Marcus, D. K., & Ruiz, M. A. (2008). Taxometric analyses of borderline personality features in a large-scale male and female offender sample. *Journal of Abnormal Psychology, 117*, 705-711.

Forth, A. E., Brown, S. L., Hart, S. D., & Hare, R. D. (1996). The assessment of psychopathy in male and female noncriminals: Reliability and validity. *Personality and Individual Differences, 20*, 531-543.

Grann, M., Langstroem, N., Tengstroem, A., & Kullgren, G. (1999). Psychopathy (PCL-R) predicts violent recidivism among criminal offenders with personality disorders in Sweden. *Law and Human Behavior, 23*, 205-217.

Haapasalo, J., & Pulkkinen, L. (1992). The Psychopathy Checklist and nonviolent offender groups. *Criminal Behavior and Mental Health, 2,* 315-328.

Hall, J.R., & Benning, S.D. (2006). The "successful" psychopath: Adaptive and subclinical manifestations of psychopathy in the genderal population. In C.J. Patrick (Ed.) *Handbook of psychopathy* (pp. 459-478). New York: Guilford Press.

Hall, J. R., Bernat, E. M., & Patrick, C. J. (2007). Externalizing psychopathology and the error-related negativity. *Psychological Science, 18*, 326-333.

Hare, R. D. (1991). *The Hare Psychopathy Checklist-Revised*. Toronto: Multi-Health Systems.

Hare, R. D. (1993). *Without Conscience: The Disturbing World of the Psychopaths Among Us*. New York: Pocket Books.

Hare, R. D. (1998). The hare PCL-R: Some issues concerning its use and misuse. *Legal and Criminological Psychology, 3*, 99-119.

Hare, R. D. (2003). *Manual for the Hare Psychopathy Checklist-Revised*. Toronto, Ontario, Canada: Multi-Health Systems.

Hare, R. D., Harpur, T. J., Hakstian, A. R., Forth, A. E., Hart, S. D., & Newman, J. P. (1990). The revised psychopathy checklist: Reliability and factor structure. *Psychological Assessment, 2*, 338-341.

Harpur, T. J., & Hare, R. D. (1994). Assessment of psychopathy as a function of age. *Journal of Abnormal Psychology, 103*, 604-609.

Harpur, T. J., Hare, R. D., & Hakstian, A. R. (1989). Two-factor conceptualization of psychopathy: Construct validity and assessment implications. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, *1*(1), 6-17.

Henson, J. M., Reise, S. P., & Kim, K. H. (2007). Detecting mixtures from structural model differences using latent variable mixture modeling: A comparison of relative model fit statistics. *Structural Equation Modeling: A multidisciplinary Journal, 14*, 202-226.

Herve, H., Yong Hui Ling, J., & Hare, R.D. (2000, March). *Criminal psychopathy and its subtypes.* Paper presented at the American Psychology-Law Society conference, New Orleans.

Hicks, B. M., Markon, K. E., Patrick, C. J., Krueger, R. F., & Newman, J. P. (2004). Identifying psychopathy subtypes on the basis of personality structure. *Psychological Assessment, 16*, 276-288.

Hicks, B.M., & Patrick, C.J. (2006). Psychopathy and negative emotionality: Analyses of suppressor effects reveal distinct relations with emotional distress, fearfulness, and anger hostility. *Journal of Abnormal Psychology, 115*, 276-287.

Hicks, B. M., Vaidyanathan, U., & Patrick, C. J. (2010). Validating female psychopathy subtypes: differences in personality, antisocial and violent behavior, substance abuse, trauma, and mental health. *Personality Disorders, 1*, 38-57.

Jacobo, M.C., Blais, M.A., Baity, M.R., & Harley, R. (2007). Concurrent validity of the personality assessment inventory borderline sclaes in patients seeking dialectical behavior therapy. *Journal of Personality Assessment, 88,* 74-80.

Jung, T., & Wickrama, K. A. S. (2008). An introduction to latent class growth analysis and growth mixture modeling. *Social and Personality Psychology Compass, 2*, 302-317.

Kennealy, P.J., Skeem, J.L., Walters, G.D., & Camp, J. (2010). Do core interpersonal and affective traits of PCL-R psychopathy interact with antisocial behavior and disinhibition to predict violence? *Psychological Assessment, 22*, 569-580.

Lanza, S.T., Rhoades, B.L., Greenberg, M.T., & Cox, M. (2011). Modeling multiple risks during infancy to predict quality of the caregiving environment: Contributions of a person-centered approach. *Infant Behavior & Development, 34,* 390-406.

Lilienfeld, S. O. (1994). Conceptual problems in the assessment of psychopathy. *Clinical Psychology Review, 14*, 17-38.

Lilienfeld, S. O., & Andrews, B. P. (1996). Development and preliminary validation of a self-report measure of psychopathic personality traits in noncriminal populations. *Journal of Personality Assessment, 66*, 488-524.

Lilienfeld, S. O., Watts, A. L., Smith, S. F., Berg, J. M., & Latzman, R. D. (in press). Psychopathy deconstructed and reconstructed: Identifying and assembling the personality building blocks of Cleckley's chimera. *Journal of Personality*.

Loucks, A. D., & Zamble, E. (2000). Predictors of criminal behavior and prison misconduct in serious female offenders. *Empirical and Applied Criminal Justice Review, 1*, 1-47.

Lynam, D. R., & Derefinko, K. J. (2006). Psychopathy and personality. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 133-155). New York: Guilford.

Malterer, M.B., Lilienfeld, S.O., & Neumann, C.S. (2010). Concurrent validity of the psychopathic personality inventory with offender and community samples. *Assessment, 17,* 3-15.

Marcus, D. K., John, S. L., & Edens, J. F. (2004). A taxometric analysis of psychopathic personality. *Journal of Abnormal Psychology, 113*, 626-635.

Miller, J.D. & Lynam, D.R. (2012). An examination of the psychopathic personality inventory's nomological network: A meta-analytic review. *Personality Disorders: Theory, Research, and Treatment, 3*, 305-326.

Morey, L. C. (1991). *Personality Assessment Inventory: Professional manual*. Odessa, FL: Psychological Assessment Resources.

Muthen, L. K., & Muthen, B. O. (1998-2010). MPlus. Los Angeles, CA: Muthen & Muthen.

Neumann, C.S., Malterer, M.B., & Newman, J.P. (2008). Factor structure of the psychopathic personality inventory (PPI): Findings from a large incarcerated sample. *Psychological Assessment, 20,* 169-174.

Nicholls, T. L., Ogloff, J. R. P., & Douglas, K. S. (2004). Assessing risk for violence among male and female civil psychiatric patients: The HCR-20, PCL:SV, and VSC. *Behavioral Sciences and the Law, 22*, 127-158.

Nylund, K. L., Asparouhov, T., & Muthen, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A monte carlo simulation study. *Structural Equation Modeling: A multidisciplinary Journal, 14*, 535-569.

Patrick, C. J., Curtin, J. J., & Tellegen, A. (2002). Development and validation of a brief form of the multidimensional personality questionnaire. *Psychological Assessment, 14*, 150-163.

Patrick, C. J., Edens, J. F., Poythress, N., Lilienfeld, S. O., & Benning, S. D. (2006). Construc validity of the psychopathic personality inventory two-factor model with offenders. *Psychological Assessment, 18*, 204-208.

Patrick, C.J., Fowles, D.C., & Krueger, R.F. (2009). Triarchic conceptualizations of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology, 21,* 913-938.

Poythress, N., Edens, J. F., & Lilienfeld, S. O. (1998). Criterion related validity of the psychopathic personality inventory in a prison sample. *Psychological Assessment, 10*, 426-430.

Poythress, N., Skeem, J. L., & Lilienfeld, S. O. (2006). Associations among early abuse, dissociation, and psychopathy in an offender sample. *Journal of Abnormal Psychology, 115*, 288-297.

Poythress, N.G., Lilienfeld, S.O., Skeem, J.L., Douglas, K.S., Edens, J.F., Epstein, M., & Patrick, C.J. (2010). Using the PCL-R to help estimate the validity of two self report measures of psychopathy with offenders. *Assessment, 17,* 206-219.

Salekin, R. T., Rogers, R., & Sewell, K. W. (1997). Construct validity of psychopathy in a female offender sample: A multitrait-multimethod evaluation. *Journal of Abnormal Psychology, 106*, 576-585.

Salekin, R.T., Worley, C., & Grimes, R.D. (2010). Treatment of psychopathy: A review and brief introduction to the mental model approach for psychopathy. *Behavioral Sciences and the Law, 28,* 235-266.

Sanders, B., & Becker-Lausen, E. (1995). The measurement of psychological maltreatment: Early data on the child abuse and trauma scale. *Child Abuse & Neglect, 19*, 315-323.

Sanders, B., & Giolas, M. H. (1991). Dissociation and childhood trauma in psychologically disturbed adolescents. *American Journal of Psychiatry, 148*, 50-54.

Sclove, L. (1987). Application of model-selection criteria to some problems in multivariate analysis. *Psychometrika, 52,* 333-343.

Skeem, J. L., Johansson, P., Andershed, H., Kerr, M., & Louden, J. E. (2007). Two subtypes of psychopathic violent offenders that parallel primary and secondary variants. *Journal of Abnormal Psychology, 116*, 395-409.

Skeem, J. L., Poythress, N., Edens, J. F., Lilienfeld, S. O., & Cale, E. M. (2003). Psychopathic personality or personalities? Exploring potential variants of psychopathy and their implications for risk assessment. *Aggression and Violent Behavior, 8*, 513-546.

Sprague, J., Javdani, S., Sadeh, N., Newman, J. P., & Verona, E. (2012). Borderline personality disorder as a female phenotypic expression of psychopathy? *Personality Disorders: Theory, Research, and Treatment, 3,* 127-139.

Tellegen, A. (1982). *Brief manual for the Multidimensional Personality Questionnaire*. Minneapolis, MN: University of Minnesota Press.

Tofighi, D., & Enders, C. K. (2007). Identifying the correct number of classs in a growth mixture model. In G. R. Hancock (Ed.), *Mixture models in latent variable research* (pp. 317-341). Greenwich, CT: Information Age.

Trull, T. J. (1995). Borderline personality disorder features in nonclinical young adults: Identification and validation. *Psychological Assessment, 7*, 33-41.

Vassileva, J., Kosson, D. S., Abramowitz, C., & Conrod, P. (2005). Psychopathy versus psychopaths in classifying criminal offenders. *Legal and Criminological Psychology, 10*, 27-43.

Verona, E. (2005). Moderating effects of rumination and gender on context-specific aggression. *Aggressive Behavior, 31*, 420-436.

Verona, E., Sprague, J., & Javdani, S. (2012). Gender and factor-level interactions in psychopathy. *Personality Disorders: Theory, Research, and Treatment, 3*, 247-262.

Vitale, J. E., & Newman, J. P. (2001). Using the psychopathy checklist-revised with female samples: Reliability, validity, and implications for clinical utility. *Clinical Psychology: Science and Practice, 8*, 117-132.

Vitale, J. E., Smith, S. S., Brinkley, C. A., & Newman, J. P. (2002). The reliability and validity of the psychopathy checklist-revised in a sample of female offenders. *Criminal Justice and Behavior, 29*, 202-231.

Walters, G.D., & Duncan, S.A. (2005). Use of the PCL-R and PAI to predict release outcome in inmates undergoing forensic evaluation. *Journal of Forensic Psychiatry and Psychology, 16*, 459-476.

Walton, K. E., Roberts, B. W., Krueger, R. F., Blonigen, D. M., & Hicks, B. M. (2008). Capturing abnormal personality with normal personality inventories: An item response theory approach. *Journal of Personality, 76*, 1623-1648.

Wang, E. W., Rogers, R., Giles, G. L., Diamond, P. M., Herrington-Wang, L. E., & Taylor, E. L. (1997). A pilot study of the personality assessment inventory (PAI) in corrections: Assessment of malingering, suicide risk, and aggression in male inmates. *Behavioral Sciences and the Law*(15), 469-482.

Warren, J. I., Burnette, M. L., South, S. C., Chauhan, P., Bale, R., Friend, R., & Van Patten, I. (2003). Psychopathy in women: Structural modeling and comorbidity. *International Journal of Law and Psychiatry, 26*, 223-242.

Yang, C. C. (2006). Evaluating latent class analysis models in qualitative phenotype identification. *Computational Statistics & Data Analysis, 50*, 1090-1104.

APPENDIX A:

TABLES

Table 1

Fit Results for Latent Profile Analysis for PCL-R and PPI

	1 class	2 class	3 class	4 class	5 class
PCL-R					
AIC	8227.33	7794.27	7671.18	7637.29	7632.56
SS-BIC	8235.75	7809.00	7692.23	7664.66	7666.24
Entropy	--	0.66	0.68	0.72	0.64
LMR	--	419.84 (p = .00)	123.44 (p = .00)	38.14 (p = .00)	10.26 (p = .21)
PPI					
AIC	8386.25	8383.20	8378.34	8374.44	8371.33
SS-BIC	8394.74	8398.05	8399.55	8402.02	8405.27
Entropy	--	0.27	0.60	0.66	0.67
LMR	--	8.65 (p = .04)	10.39 (p = .26)	9.46 (p = .02)	8.72 (p = .09)

Note. PCL-R = Psychopathy Checklist-Revised; PPI = Psychopathic Personality Inventory; AIC = Akaike Information Criterion; SS-BIC = sample size adjusted BIC; LMR = Lo-Mendell Rubin likelihood ratio test.

Table 2

Class Membership for PCL-R and PPI

	Low F1-Low F2				
	N(%)		M (SD)		CP
PCL-R		F1	F2	Total Score	
Male	192 (15.7)	-1.14 (.49)	-1.40 (.60)	-1.46 (.47)	0.86
Female	91 (39.6)	-1.30 (.50)	-1.34 (.56)	-1.49 (.48)	0.88
Total	283 (19.5)	-1.20 (.50)	-1.38 (.59)	-1.47 (.47)	0.86
PPI					
Male	873 (70.4)	-0.01 (.93)	0.31 (.59)	0.27 (.70)	0.83
Female	165 (69.6)	-0.41 (.87)	0.20 (.58)	-0.10 (.71)	0.85
Total	1,038 (70.3)	-0.07 (.93)	0.29 (.59)	0.21 (.71)	0.73
	Low F1-High F2				
	N(%)		M (SD)		CP
PCL-R		F1	F2	Total Score	
Male	523 (40.9)	-0.37 (.49)	0.16 (.64)	-0.12 (.46)	0.81
Female	95 (41.3)	-0.50 (.52)	0.10 (.57)	-0.17 (.44)	0.76
Total	618 (42.5)	-0.39 (.50)	0.15 (.63)	-0.13 (.46)	0.81
PPI					
Male	15 (1.2)	-1.90 (.63)	1.75 (.27)	0.44 (.54)	0.78
Female	10 (4.2)	-1.85 (.65)	1.81 (.53)	0.40 (.75)	0.74
Total	25 (1.7)	-1.88 (.63)	1.77 (.38)	0.42 (.62)	0.79
	High F1-Low F2				
	N(%)		M (SD)		CP
PCL-R		F1	F2	Total Score	
Male	42 (3.4)	0.87 (.47)	-1.40 (.45)	-0.28 (.47)	0.72
Female	4 (1.7)	0.51 (.31)	-1.55 (.60)	-0.54 (.17)	0.71
Total	46 (3.2)	0.84 (.47)	-1.4 (.46)	-0.31 (.45)	0.72
PPI					
Male	300 (24.2)	0.33 (.99)	-1.30 (.48)	-0.94 (.74)	0.62
Female	56 (23.6)	-0.45 (1)	-1.35 (.49)	-1.45 (.69)	0.89
Total	356 (24.1)	0.21 (1.03)	-1.31 (.48)	-1.02 (.75)	0.82
	High F1-High F2				
	N(%)		M (SD)		CP
PCL-R		F1	F2	Total Score	
Male	466 (38.1)	1.07 (.46)	0.72 (.62)	1.01 (.46)	0.88
Female	40 (17.4)	1.04 (.44)	0.66 (.69)	0.99 (.54)	0.87
Total	506 (34.8)	1.07 (.46)	0.71 (.63)	1.01 (.46)	0.88
PPI					
Male	52 (4.1)	0.81 (.94)	2.05 (.37)	2.27 (.55)	0.65
Female	6 (2.3)	0.71 (.55)	2.30 (.42)	2.40 (.37)	0.77
Total	58 (3.9)	0.80 (.90)	2.08 (.38)	2.28 (.53)	0.81

Note. PCL-R = Psychopathy Checklist-Revised; PPI = Psychopathic Personality Inventory; F1 = Factor 1; F2 = Factor 2; CP = conditional probabilities.

Table 3

Offenders: Correlations between Psychopathy Factors and External Correlates

	1	2	3	4	5	6	7	8	9	10	11	12
1. PCL-R F-1		0.57**	0.16*	0.36**	0.16*	-0.02	0.05	-0.11	-0.11	0.10	0.07	-0.01
2. PCL-R F2	0.46**		0.08	0.50**	0.36**	0.18**	0.20**	0.16*	0.09	0.26*	0.30**	0.09
3. PPI-I	0.23**	0.14**		0.01	-0.31**	-0.34**	-0.38**	-0.24**	-0.13*	-0.10	-0.01	-0.01
4. PPI-II	0.14**	0.38**	-.09*		0.66**	0.50**	0.52**	0.29**	0.13*	0.44**	0.29**	-0.16
5. BPD	0.01	0.27**	-0.26**	0.67**		0.75**	0.73**	0.35**	0.26**	0.56**	0.37**	-0.07
6. Anxiety	-0.10**	0.08**	-0.46**	0.48**	0.74**		0.80**	0.24**	0.17**	0.52**	0.23**	-0.07
7. Depression	-0.05	0.11**	-0.43**	0.51**	0.72**	0.77**		0.21**	0.15*	0.56**	0.23**	-0.11
8. Drug Use	-0.09**	0.17**	-0.09**	0.42**	0.54**	0.38**	0.35**		0.43**	0.24**	0.09	0.00
9. Alcohol Use	-0.09**	0.06*	-0.14**	0.21**	0.34**	0.28**	0.20**	0.43**		0.18**	0.10	0.04
10. Suicide	-0.00	0.11**	-0.22**	0.36**	0.54**	0.51**	0.63**	0.30**	0.20**		0.28**	0.14
11. Abuse	0.05	0.27**	-0.10**	0.34**	0.44**	0.36**	0.35**	0.25**	0.14**	0.34**		0.09
12. Re-arrest	0.10*	0.15**	0.06	0.01	0.02	-0.03	-0.02	-0.05*	-0.09*	-0.04	-0.00	

Note. Female correlations above the diagonal, male correlations below the diagonal.
* $p < .05$, ** $p < .01$

Table 4

Offenders: Demographic Variables and Group Differences Between Classes for the PCL-R and PPI

PCL-R	LowF1 Low F2	Low F1 High F2	High F1 Low F2	High F1 High F2	Statistics
Gender (% Male)	67.8	84.6	91.3	92.1	χ^2 (3) = 82.32, p < .001
Race (% Caucasian)	74.1	71.1	54.3	55.8	χ^2 (3) = 40.86, p < .001
Education					χ^2 (6) = 39.56, p < .001
less than HS	19.4	27.2	13.0	25.9	
HS or equivalent	44.2	48.9	26.1	43.7	
some college and above	36.4	23.9	60.9	30.4	
Site					χ^2 (3) = 52.09, p < .001
prison	39.9	47.2	67.4	63.2	
substance abuse	60.1	52.8	32.6	36.8	
PPI					
Gender (% Male)	84.1	60	84.2	89.7	χ^2 (3) = 12.09, p < .01
Race (% Caucasian)	66.5	75	60.8	83.9	χ^2 (3) = 13.14, p < .01
Education					χ^2 (6) = 39.91, p < .001
less than HS	26.3	24	20.2	36.2	
HS or equivalent	47.6	36	37.9	48.3	
some college and above	26.1	40	41.9	15.5	
Site					χ^2 (3) = 36.77, p < .001
prison	48.7	44	65.7	37.9	
substance abuse	51.3	56	34.3	62.1	

Note. PCL-R = Psychopathy Checklist-Revised; PPI = Psychopathic Personality Inventory; F1 = Factor 1; F2 = Factor 2.

Table 5

Offenders: Regression Analysis of PCL-R and PPI Factors and Gender in Predicting Outcomes

Model	BPD	Anxiety	Depression	Drug Use	Alcohol Use	Suicide	Abuse	Arrest
PCL-R								
Step 1								
Gender	-0.17*	-0.16*	-0.13*	-0.12*	0.05	-0.08*	-0.19*	0.21
Education	-0.04	-0.07	-0.03	0.04	0.07*	0.04	0.06	-0.20
Race	0.06	0.04	0.06	0.26*	0.06	0.07*	0.10*	-0.62*
Site	0.23*	0.18*	0.12*	0.41*	0.25*	0.10*	0.02	-0.11
F1	-0.07	-0.11*	-0.08*	-0.10*	-0.11*	-0.04	-0.09*	-0.01
F2	0.33*	0.15*	0.17*	0.28*	0.16*	0.18*	0.33*	0.06*
Step 2								
F1xF2	-0.28	-0.23	-0.19	-0.13	-0.11	-0.17	-0.18	-0.01
Step 3								
F1xF2xGender	0.31	0.42	0.58	0.13	0.25	0.47	0.25	0.01
PPI								
Step 1								
Gender	-0.11*	-0.11*	-0.07*	-0.09*	0.07*	-0.04	-0.15*	0.23
Education	0.00	-0.01	0.03	0.03	0.06	0.07*	0.04	-0.27*
Race	0.02	0.03	0.04	0.24*	0.07*	0.05	0.08*	-0.61*
Site	0.10*	0.09*	0.01	0.36*	0.23*	0.03	-0.06	-0.12
F1	-0.21*	-0.42*	-0.39*	-0.05	-0.13*	-0.18*	-0.07*	0.17
F2	0.63*	0.42*	0.48*	0.30*	0.15*	0.36*	0.33*	-0.03
Step 2								
F1xF2	0.01	-0.05	-0.09*	-0.02	-0.01	-0.07*	0.04	0.04
Step 3								
F1xF2xGender	0.05	-0.06	-0.02	-0.07	-0.08	-0.17*	-0.08	0.14

Note. Cell values represent standardized regression weights; PCL-R = Psychopathy Checklist-Revised; PPI = Psychopathic Personality Inventory; BPD = Borderline Personality Disorder; F1 = Factor 1, F2 = Factor 2.
* $p < .01$.

Table 6

Drug Users: Correlations between Psychopathy Factors and External Correlates

	1	2	3	4	5	6	7	8	9
1. PPI-I		0.13	-0.22*	-0.31**	-0.31*	-0.01	-0.06	-0.17	-0.06
2. PPI-II	-0.06		0.67**	0.32**	0.15	0.03	0.06	0.51**	-0.06
3. BPD	-0.37**	0.51**		0.50**	0.44**	0.00	0.12	0.46**	0.04
4. Anxiety	-0.39**	0.10	0.47**		0.53**	0.17	0.00	0.30**	-0.17
5. Depression	-0.27**	0.25**	0.40**	0.45**		0.20*	0.21*	0.19*	0.02
6. Drug	-0.05	0.09	015	0.18	0.18		0.17	-0.03	-0.08
7. Alcohol	-0.29**	0.07	0.20*	0.26**	0.03	0.15		0.05	0.11
8. Self-Harm	-0.23*	0.30**	0.44**	0.32**	0.17	0.19	0.15		-0.07
9. Childhood Abuse	0.05	0.24*	0.24*	0.25*	0.28**	-0.14	0.05	0.16	

Note. * $p < .05$, ** $p < .0$; Female correlations above the diagonal, male correlations below the diagonal.

Table 7

Drug Users: Regression Analysis of PPI Factors and Gender in Predicting Outcomes

Model	BPD	Anxiety	Depression	Drug	Alcohol	Self-Harm	Abuse
PPI							
Step 1							
Age	0.00	0.08	0.09	-0.06	0.17	0.03	0.00
Gender	-0.00	-0.08	0.07	-0.09	-0.02	0.04	-0.05
Race	-0.06	-0.02	0.02	-0.08	0.01	-0.05	-0.01
Marital Status	0.02	-0.01	0.04	0.03	-0.09	0.07	0.11
Education	0.01	0.08	0.04	0.12	0.12	0.08	-0.06
Income	-0.10	-0.03	-0.09	-0.12	-0.04	0.02	-0.08
Employment	0.02	-0.03	0.04	-0.12	0.11	-0.09	0.25
F1	-0.31*	-0.36*	-0.25*	-0.09	-0.18	-0.21*	-0.07
F2	0.59*	0.24*	0.25*	0.07	0.12	0.43*	-0.05
Step 2							
F1xF2	0.07	0.03	0.12	-0.04	-0.08	-0.04	0.07
Step 3							
F1xF2xGender	0.08	0.19	0.11	0.10	-0.13	-0.05	0.04

Note. *p < .01. Cell values represent standardized regression weights; PPI = Psychopathic Personality Inventory; BPD = Borderline Personality Disorder; F1 = Factor 1, F2 = Factor 2.

Table 8

C*ollege Students: Correlations between Psychopathy Factors and External Correlates*

	1	2	3	4	5	6	7	8	9
1. PPI-I		-0.03	-0.45**	-0.41**	-0.22**	-0.14	-0.09	-0.15	-0.01
2. PPI-II	0.10		0.57**	0.36**	0.19*	0.13	0.19*	0.43**	0.16*
3. BPD	-0.46**	0.40**		0.42**	0.30**	0.14	0.15	0.38**	0.17*
4. Anxiety	-0.42**	0.17	0.25*		0.31**	0.01	0.16*	0.23**	0.18*
5. Depression	-0.21**	0.20**	0.28**	0.30**		0.14*	0.02	0.21**	0.12
6. Drug	0.12	0.11	-0.05	0.11	0.02		0.27**	0.27**	0.17*
7. Alcohol	0.19	0.25*	0.01	0.05	0.04	0.36**		0.25**	-0.03
8. Self-Harm	-0.27	0.41*	0.55**	0.21	0.26*	-0.19	0.02		0.17*
9. Childhood Abuse	-0.09	0.24	0.19	0.08	.023	0.05	-0.03	0.06	

Note. * $p < .05$, ** $p < .0$; Female correlations above the diagonal, male correlations below the diagonal.

Table 9

College Students: Regression Analysis of PPI Factors and Gender in Predicting Outcomes

Model	BPD	Anxiety	Depression	Drug	Alcohol	Self-Harm	Abuse
PPI							
Step 1							
Gender	0.03	-0.14	0.02	0.13	0.18	0.08	-0.00
F1	-0.47*	-0.42*	-0.23*	-0.04	0.00	-0.17*	-0.03
F2	0.52*	0.31*	0.21*	0.12	0.21*	0.43*	0.19*
Step 2							
F1xF2	-0.02	0.02	-0.13	0.08	0.02	0.04	0.01
Step 3							
F1xF2xGender	-0.04	-0.14	0.02	0.03	0.17	-0.03	-0.13

Note. *p < .01. Cell values represent standardized regression weights; PPI = Psychopathic Personality Inventory; BPD = Borderline Personality Disorder; F1 = Factor 1, F2 = Factor 2.

APPENDIX B

FIGURES

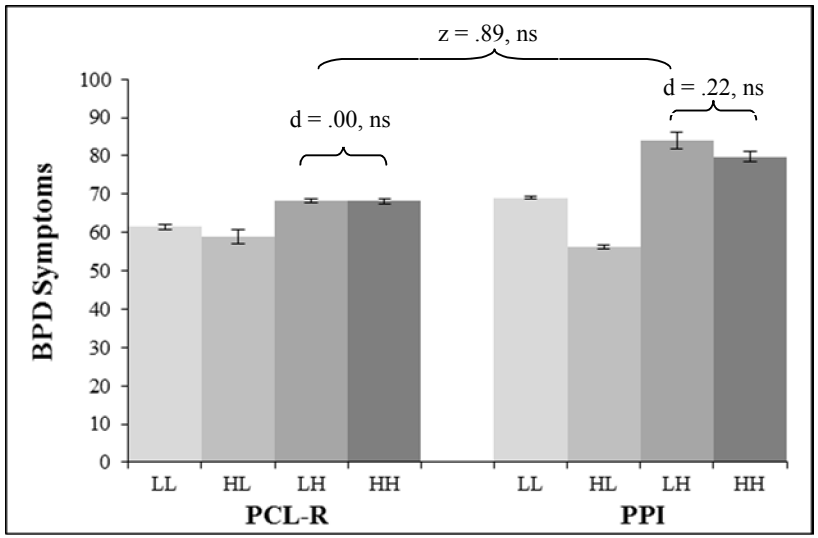

Figure 1.1. Borderline personality symptoms across psychopathy measures

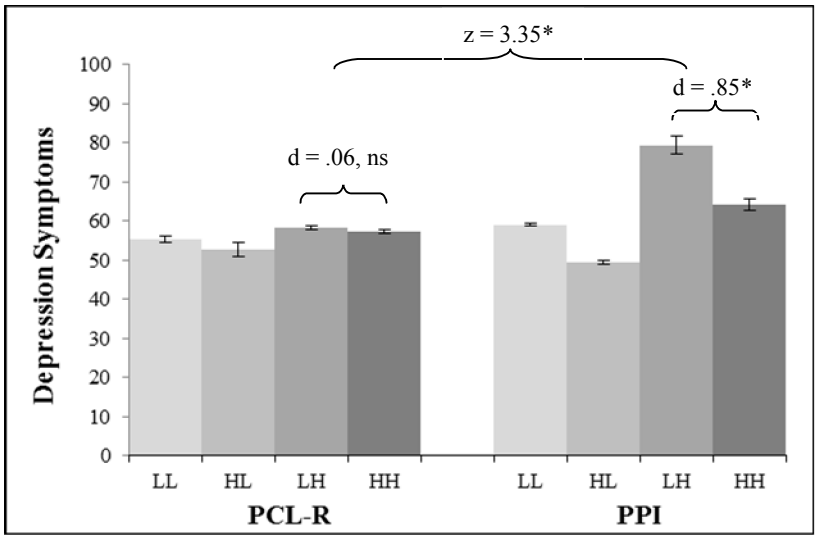

Figure 1.2. Depression symptoms across psychopathy measures

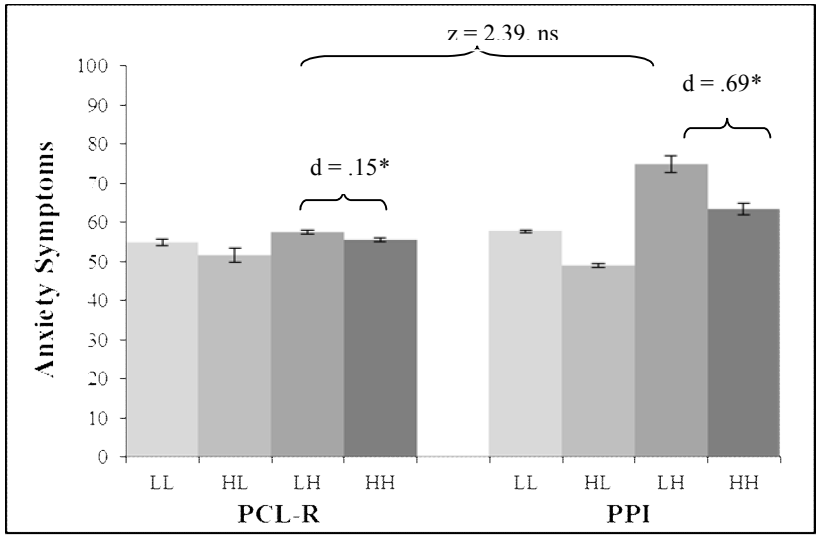

Figure 1.3. Anxiety symptoms across psychopathy measures

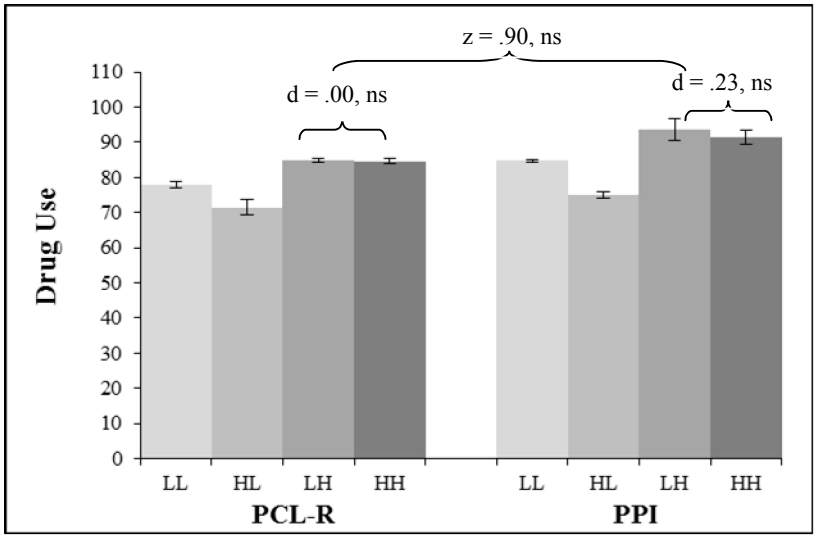

Figure 1.4. Drug use across psychopathy measures

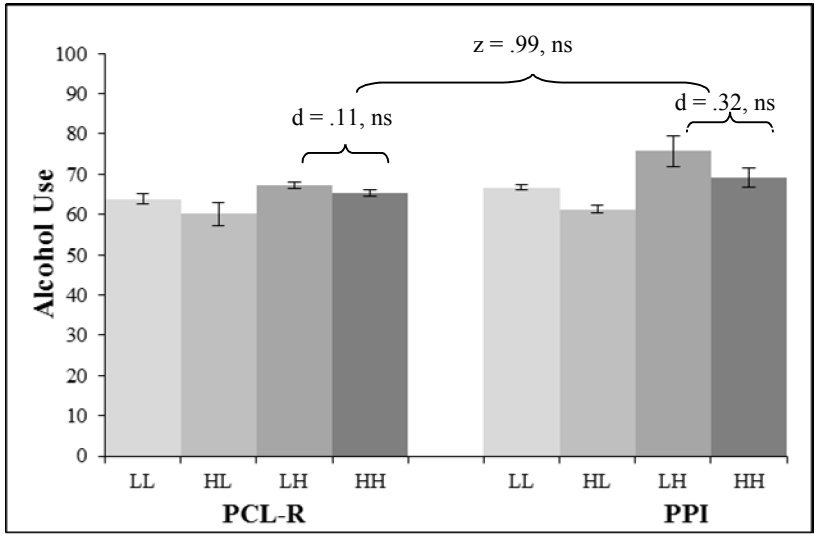

Figure 1.5. Alcohol use across psychopathy measures

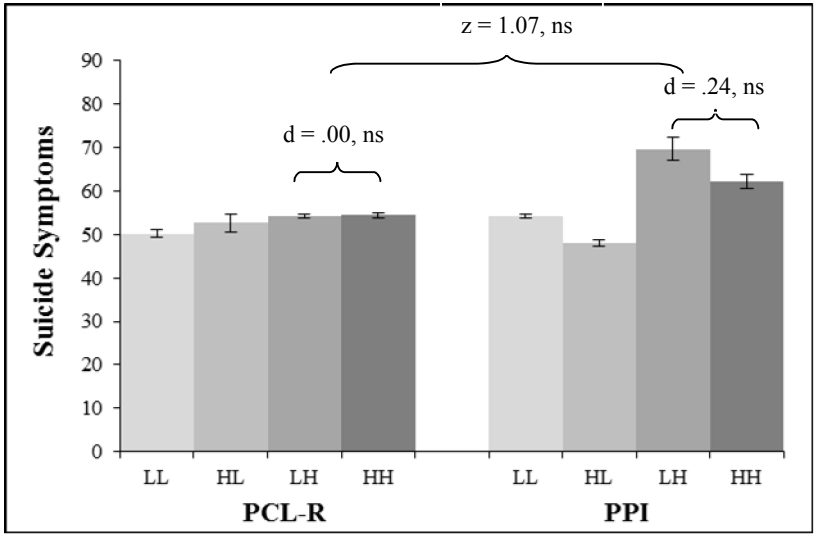

Figure 1.6. Suicide symptoms across psychopathy measures

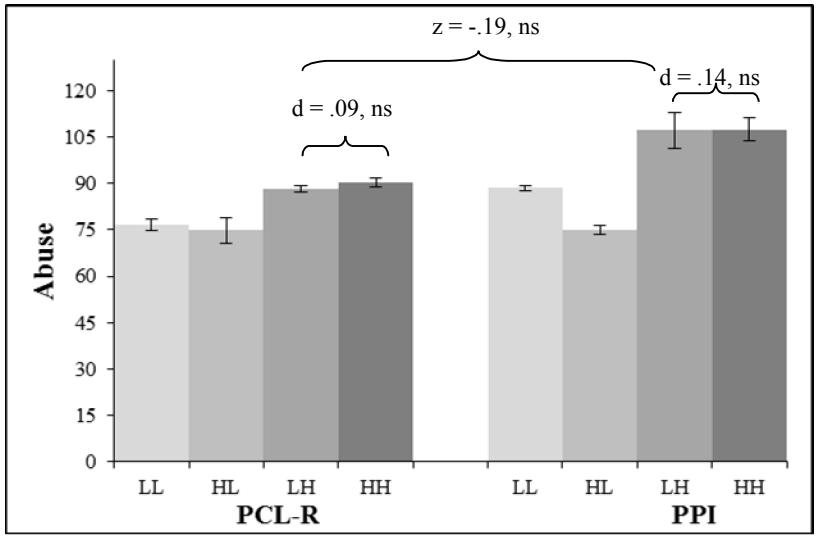

Figure 1.7. Abuse across psychopathy measures

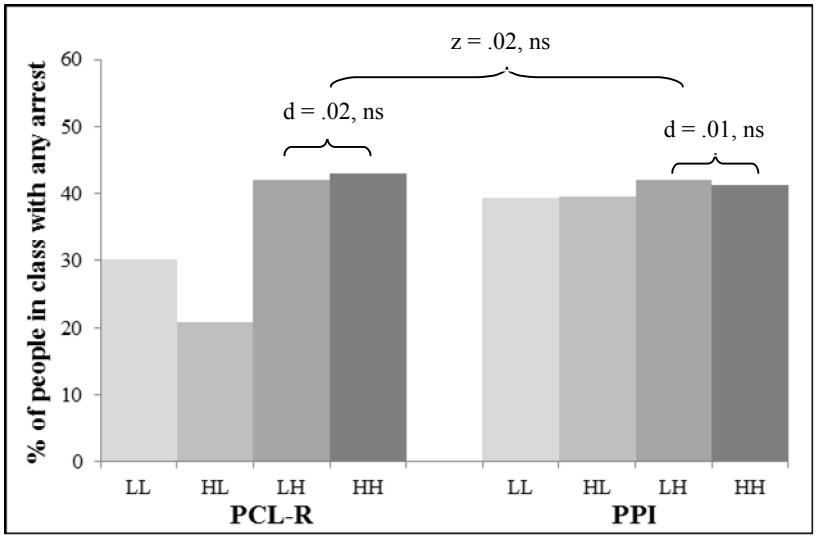

Figure 1.8. Percentage of people with arrest across psychopathy measures

Note. Figures 1.1-1.8 depict Psychopathy Checklist-Revised (PCL-R) and Psychopathic Personality Inventory (PPI) with mean levels of BPD, anxiety, depression, drug use, alcohol use, suicide, childhood abuse, and percent of people with any arrest one year post-release. Cohen's *d* is shown for individual contrasts between classes with high Factor 2. The critical *z* –value is also shown for measurement contrasts between classes with high Factor 2. Abbreviations are as follows: LL, Low F1-Low F2; HL, High F1-Low F2; LH, Low F1-High F2; HH, High F1-High F2.

APPENDIX C

SUPPLEMENTAL TABLES

Table S1

Offenders: Individual Class Comparisons Across All Classes

Class Comparisons	BPD	Anxiety	Depression	Drug Use	Alcohol Use	Suicide	Abuse	Arrest
PCL-R								
LL - LH	0.54*	0.21*	0.22*	0.42*	0.18*	0.29*	0.38*	0.23*
LL - HL	0.20	0.25	0.20	0.26	0.13	0.09	0.14	0.13
LL - HH	0.49*	0.06	0.14	0.36*	0.06	0.27*	0.41*	0.26*
LH - HL	0.42*	0.25*	0.22*	0.47*	0.21*	0.06	0.26*	0.19
LH - HH	0.00	0.16*	0.06	0.00	0.11	0.00	0.09	0.02
HL - HH	0.41*	0.18	0.20	0.42*	0.14	0.06	0.29*	0.22
PPI								
LL - LH	0.42*	0.46*	0.52*	0.18*	0.16	0.35*	0.20*	0.02
LL - HL	1.07*	0.71*	0.76*	0.55*	0.26*	0.44*	0.41*	0.00
LL - HH	0.45*	0.23*	0.19*	0.20*	0.06	0.26*	0.29*	0.02
LH - HL	1.50*	1.44*	1.80*	0.54*	0.37*	1.25*	0.63*	0.03
LH - HH	0.22	0.69*	0.85*	0.23	0.32	0.24	0.14	0.01
HL - HH	1.70*	0.97*	1.08*	0.64*	0.26*	0.99*	0.85*	0.03

Note. Cohen's *d* is shown for individual contrasts between classes. PCL = Psychopathy Checklist Revised; PPI = Psychopathic Personality Inventory; BPD = Borderline Personality Disorder; LL = Low F1-Low F2; HL = High F1-Low F2; LH = Low F1-High F2; HH = High F1-High F2. * $p < .01$.

Table S2

Offenders: Individual Class Comparisons with Gender as Moderator

Class Comparisons	BPD	Anxiety	Depression	Drug Use	Alcohol Use	Suicide	Abuse	Arrest
PCL-R								
LL - LH	0.06	0.06	0.09	0.00	0.00	0.14	0.14	1.38 (.60-3.15)
LL - HL	0.00	0.13	0.11	0.00	0.00	0.00	0.00	--
LL - HH	0.00	0.00	0.06	0.06	0.06	0.06	0.06	1.47 (1.03-2.08)
LH - HL	0.00	0.11	0.11	0.00	0.00	0.06	0.00	--
LH - HH	0.00	0.00	0.00	0.00	0.00	0.06	0.00	1.47 (.912.39)
HL - HH	0.00	0.09	0.09	0.00	0.06	0.00	0.00	--
PPI								
LL - LH	0.06	0.00	0.00	0.00	0.00	0.00	0.00	2.33 (.29-19.11)
LL - HL	0.00	0.00	0.06	0.09	0.13	0.06	0.00	1.19 (.75-1.87)
LL - HH	0.06	0.06	0.09	0.06	0.11	0.20*	0.13	1.57 (.72-3.44)
LH - HL	0.17	0.00	0.00	0.06	0.06	0.17	0.00	0.79 (.08-7.62)
LH - HH	0.09	0.14	0.13	0.25	0.27	0.55	0.42	1.22 (.26-5.70)
HL - HH	0.06	0.06	0.09	0.00	0.11	0.39*	0.22	2.74 (.22-33.90)

Note. Cohen's *d* is shown for individual contrasts between classes, except for Arrest which represents Exp(B) and 95% confidence interval.

Table S3

Offenders: Measurement Comparisons Across All Classes

Class Comparisons	BPD	Anxiety	Depression	Drug Use	Alcohol Use	Suicide	Trauma	Arrest
LL - LH	-.341*	-5.84*	-6.75*	-0.53	-1.33	-3.99*	-1.06	-0.15
LL - HL	4.65*	2.13	-6.47*	1.24	0.52	3.94*	1.59	-1.11
LL - HH	-2.37*	-2.90*	-1.75	-0.06	-0.49	-1.93	-1.46	0.67
LH - HL	6.84*	7.52*	9.29*	0.92	1.06	6.97*	2.49*	-1.00
LH - HH	0.89	2.39	3.35*	0.90	0.99	1.07	-0.19	0.02
HL - HH	-6.33*	-4.70*	-4.64*	-0.95	-0.69	-5.17*	-3.25*	1.23

Note. The critical *z* –value is also shown for measurement contrasts between classes. Critical z values of +/- 2.58 are used for $p < .01$.

Table S4

Full Regression Analysis of PCL-R Factors and Gender in Predicting Psychopathology and Maladaptive Outcomes

Model	BPD	Anxiety	Depression	Drug Use	Alcohol	Suicide	Abuse	Arrest
PCL-R								
Step 1								
Gender	-0.17*	-0.16*	-0.13*	-0.12*	0.05	-0.08*	-0.19*	0.21
Education	-0.04	-0.07*	-0.03	0.04	0.07*	0.04	0.06	-0.20
Race	0.06	0.04	0.06	0.26*	0.06	0.07*	0.10*	-0.62*
Site	0.23*	0.18*	0.12*	0.41*	0.25*	0.10*	0.02	-0.11
F1	-0.07	-0.11*	-0.08*	-0.10*	-0.11*	-0.04	-0.09*	-0.01
F2	0.33*	0.15*	0.17*	0.28*	0.16*	0.18*	0.33*	0.06*
Step 2								
Gender	-0.17*	-0.17*	-0.13*	-0.12*	0.05	-0.08*	-0.19*	0.19
Education	-0.04	-0.07*	-0.03	0.04	0.07*	0.04	0.06	-0.20
Race	0.06	0.04	0.06	0.26*	0.06	0.07*	0.10*	-0.62
Site	0.23*	0.17*	0.11*	0.41*	0.25*	0.10*	0.02	-0.12
F1	0.13	0.04	0.05	-0.01	-0.03	0.08	0.04	0.05
F2	0.45*	0.24*	0.25*	0.33*	0.21*	0.25*	0.40*	0.09
F1xF2	-0.28	-0.23	-0.19	-0.13	-0.11	-0.17	-0.18	-0.01
Step 3								
Gender	-0.02	0.07	0.14	-0.10	0.16	0.19	-0.01	-0.01
Education	-0.04	-0.07*	-0.03	0.04	0.07*	0.05	0.06	-0.22
Race	0.06	0.04	0.06	0.26*	0.06	0.07	0.09*	-0.62*
Site	0.23*	0.18*	0.12*	0.41*	0.25*	0.10*	0.02	-0.13
F1	0.34	0.22	0.37	0.02	0.04	0.31	0.06	0.09
F2	0.52*	0.43*	0.43*	0.38*	0.32*	0.44*	0.59*	0.12
F1xF2	-0.49	-0.52	-0.60	-0.24	-0.29	-0.50	-0.35	-0.01
F1xGender	-0.32	-0.28	-0.48	-0.03	-0.11	-0.37	-0.07	-0.03
F2xGender	-0.17	-0.37	-0.36	-0.07	-0.22	-0.38	-0.35	-0.03
F1xF2xGender	0.31	0.42	0.58	0.13	0.25	0.47	0.25	0.01

Note. *p < .01. Cell values represent standardized regression weights; PCL-R = Psychopathy Checklist-Revised; PPI = Psychopathic Personality Inventory; BPD = Borderline Personality Disorder; F1 = Factor 1, F2 = Factor 2.

Table S5

Full Regression Analysis of PPI Factors and Gender in Predicting Psychopathology and Maladaptive Outcomes

Model	BPD	Anxiety	Depression	Drug Use	Alcohol	Suicide	Abuse	Arrest
PPI								
Step 1								
Gender	-0.11*	-0.11*	-0.07*	-0.09*	0.07*	-0.04	-0.15*	0.23
Education	0.00	-0.01	0.03	0.03	0.06	0.07*	0.04	-0.27*
Race	0.02	0.03	0.04	0.24*	0.07*	0.05	0.08*	-0.61*
Site	0.10*	0.09*	0.01	0.36*	0.23*	0.03	-0.06	-0.12
F1	-0.21*	-0.42*	-0.39*	-0.05	-0.13*	-0.18*	-0.07*	0.17
F2	0.63*	0.42*	0.48*	0.30*	0.15*	0.36*	0.33*	-0.03
Step 2								
Gender	-0.11*	-0.11*	-0.07*	-0.09*	0.07	-0.04	-0.15*	0.23
Education	0.00	-0.01	0.03	0.03	0.06	0.07*	0.04	-0.27*
Race	0.02	0.04	0.04	0.24*	0.07*	0.0	0.08*	-0.62*
Site	0.10*	0.10*	0.01	0.36*	0.23*	0.03	-0.06	-0.12
F1	-0.22*	-0.41*	-0.39*	-0.05	-0.13*	-0.17*	-0.07*	0.16
F2	0.63*	0.43*	0.48*	0.30*	0.15*	0.36*	0.32*	-0.03
F1xF2	0.01	-0.05	-0.09*	-0.02	-0.01	-0.07*	0.04	0.04
Step 3								
Gender	-0.09*	-0.10*	-0.07*	-0.08*	0.08*	-0.05	-0.15*	0.25
Education	0.00	-0.01	0.03	0.03	0.06	0.07*	0.04	-0.28*
Race	0.01	0.04	0.04	0.25*	0.07*	0.06	0.08*	-0.63*
Site	0.10*	0.09*	0.01	0.35*	0.22*	0.03	-0.06	-0.14
F1	-0.32*	-0.49*	-0.44*	-0.07	-0.23*	-0.11	-0.06	0.07
F2	0.63*	0.52*	0.52*	0.24*	0.15	0.46*	0.42*	-0.46
F1xF2	-0.03	0.01	-0.07	0.04	0.06	0.10	0.13	-0.15
F1xGender	0.11	0.08	0.05	0.02	0.11	-0.07	-0.02	0.13
F2xGender	-0.01	-0.09	-0.03	0.07	0.01	-0.09	-0.10	0.51
F1xF2xGender	0.05	-0.06	-0.02	-0.07	-0.08	-0.17*	-0.08	0.14

Note. *p < .01. Cell values represent standardized regression weights; PCL-R = Psychopathy Checklist-Revised; PPI = Psychopathic Personality Inventory; BPD = Borderline Personality Disorder; F1 = Factor 1, F2 = Factor 2.