

A LATENT CLASS ANALYSIS OF PSYCHOPATHY SUBTYPES IN A SAMPLE OF  
SEXUAL OFFENDERS

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by

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## ABSTRACT

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Past research has provided evidence for primary and secondary subtypes of psychopathy. Research in this area has focused on broad male offender samples, though some studies have investigated more specific populations such as college students, juvenile offenders, and African American male offenders. No studies have investigated primary and secondary psychopathy in sex offender populations. Psychopathy is an integral construct in sexually violent predator evaluations. Some studies have investigated subtypes of sex offenders and interesting parallels are apparent between these findings and primary and secondary subtypes of psychopathy. Yet, no prior studies have attempted to merge these seemingly parallel lines of research. This study addresses this gap by examining whether there is support for primary and secondary psychopathy among a sample of sex offenders. Specifically, this study used a latent class analysis (LCA) approach to analyze scores on the Psychopathy Checklist-Revised (PCL-R) and Personality Assessment Inventory (PAI) profiles from 487 offenders evaluated for post-release civil commitment. The results of this study describe latent subtypes of psychopathy within this sample, as well as additional latent subtypes with low levels of psychopathy, allowing for comparison with previous sex offender subtype studies.

**KEY WORDS:** Psychopathy, Sexual offender, Latent class analysis, Primary psychopathy, Secondary psychopathy

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## CHAPTER I

### Introduction

Psychopathy is often described as a unitary construct, with people ranging from low to high with respect to their level of psychopathy. Several lines of recent research suggest there are psychopathy subtypes, with specific combinations of traits or features clustering together among identifiable subgroups of people. The subtypes most consistently found in these studies are *primary* and *secondary* psychopathy (Blackburn, 1975; Henderson, 1982; Wales, 1995; Vassileva, Kosson, Abramowitz, & Conrod, 2005; Skeem, Johnansson, Andershed, Kerr, & Loudon, 2007; Swogger & Kosson, 2007; Falkenbach, Stern, & Creevy, 2014). Primary psychopathy is typically characterized by elevated personality and interpersonal features of psychopathy, such as narcissism and hostility, and relatively stable emotional functioning with a low rate of comorbid mental disorders. Secondary psychopathy is typically characterized by high levels of emotional instability and anxiety, and a more frequent rate of co-occurring disorders, such as drug/substance use disorders and post-traumatic stress disorder. Emerging research continues to support the heterogeneous nature of the psychopathic construct in both incarcerated and community samples (Falkenbach, Stern, & Creevy, 2014; Drislane et al., 2014; Mokrose, Hare, Neumann, Santila, & Habermeyer, 2015; Olver, Sewell, Lewis, & Wong, 2015).

Until now, no study has investigated psychopathy subtypes among sexual offenders. Several studies have attempted to identify sex offender subtypes using broad measures of personality and psychopathology, and some findings from these studies seem to parallel those from psychopathy subtyping literature. For example, similar to primary



and secondary psychopathy subtypes, the sex offender subtypes that have emerged from this research literature differ on levels of comorbid personality pathology, such as neurotic, psychopathic, schizoid, and borderline traits, as well as comorbid substance use disorders, dominant and aggressive interpersonal traits, and trauma histories (Kalichman et al., 1989; Shealy et al., 1991; Turner, Henderson, & Miller, 2008; Miller et al., 2009).

Despite these similarities, sex offender subtype research and psychopathy subtype research have yet to be coherently merged. The present study aims to address this gap by using latent class analysis (LCA) with Psychopathy Checklist-Revised (PCL-R; Hare, 2003) scores assigned to 487 sexual offenders undergoing evaluations for civil commitment as sexually violent predators. Many of these offenders ( $n = 368$ ) also completed the Personality Assessment Inventory (PAI; Morey, 1991; 2006) as part of the evaluation process, allowing for an examination of the extent to which offenders falling into different psychopathy subgroups differ on broad-band measures of personality and psychopathology.

### **Psychopathy as Defined by the Psychopathy Checklist – Revised (PCL-R)**

The Psychopathy Checklist –Revised (PCL-R; Hare, 2003), a 20-item clinician-scored measure of psychopathic traits, is the most commonly used instrument for assessing psychopathy and considerable research supports its reliability and validity (Swogger & Kosson, 2007; Hare, 2003). According to Hare (2003), psychopathy can be broadly defined as a clinical syndrome characterized by specific affective, interpersonal, and behavioral traits. In terms of affect, psychopathy is characterized by shallow emotions, lack of remorse, and diminished empathy. In terms of interpersonal functioning, psychopathy is characterized by an inability to form long-lasting relational

bonds, communicating in a glib and grandiose way, and behaving manipulatively, deceitfully, and coldheartedly. Lastly, in terms of behavior, psychopathy is characterized by impulsiveness, sensation-seeking, and violations of social norms – often manifesting as frequent contact with law enforcement.

Several early factor analytic studies of PCL-R item scores identified a two-factor model, consisting of affective/interpersonal traits (Factor 1) and antisocial/deviant lifestyle traits (Factor 2; Harpur, Hare, & Hakstian, 1989). Cooke and Michie (2001) proposed a three-factor model (Affective, Interpersonal, and Behavioral) and argued the two-factor model was insufficient for describing the construct. Later studies using a structural equation modeling approach (SEM) indicated a fourth factor: antisocial behavior (Hare & Newmann, 2010). The most recent PCL-R manual describes four facets, which fall under two factors. The first factor is comprised of devious and arrogant interpersonal style (Interpersonal facet), and impaired affective functioning (Affective facet). The second factor is comprised of impulsive and irresponsible behaviors (Lifestyle facet), and antisocial deviant behaviors (Antisocial facet; Hare, 2003; Kennealy, Hicks & Patrick, 2007). In a recent sample of 52,957 individuals who were administered the PCL-R and/or a self-report measure of psychopathy (SRP, B-Scan 360), researchers found clear support for a four facet structure (Neumann, Hare, & Pardini, 2014).

### **Primary and Secondary Psychopathy Subtypes**

Benjamin Karpman (1941) was the first to suggest psychopathy may not be a unitary construct. He argued there was a primary subtype, described as constitutionally psychopathic, and a secondary subtype, developing as a reaction to environmental causes and characterized by more neurotic and anxious traits (Karpman, 1941; Lee & Salekin,

2010). There have been several attempts to identify empirically supported subtypes of psychopathic offenders. Blackburn (1975) administered the Minnesota Multiphasic Personality Inventory (MMPI) to nonpsychotic patients at a high-security psychiatric hospital in Britain, and found evidence of four distinct profile types, two of which were distinguished as primary and secondary psychopathy, and two unrepresentative of psychopathic personality. Of the primary and secondary subtypes, both groups exhibited high levels of antisocial, narcissistic and histrionic personality traits. However, the secondary subtype was distinguished by additional pathology, such as schizoid, avoidant, dependent, and antisocial traits (Blackburn, 1975; Swogger & Kosson, 2007). Henderson (1982) replicated Blackburn's findings and found the same distinctions between primary and secondary subtypes in a population of violent offenders. Wales (1995) administered the Millon Clinical Multiaxial Inventory (MCMI) and again found parallel group differences, with the secondary subtype exhibiting additional psychopathology in schizoid, avoidant, dependent, and passive aggressive traits.

More recent studies have used the PCL-R in conjunction with other measures of personality and psychopathology to provide more comprehensive descriptions of group differences. Hicks, Markon, Patrick, Krueger & Newmann (2004) conducted a cluster analysis of PCL-R scores and Multidimensional Personality Questionnaire (MPQ—BF; Patrick, Curtin, & Tellegen, 2002) profiles from 202 federal inmates diagnosed as psychopathic and found clusters that mainly differed on levels of symptom severity. The *emotionally stable* group, resembling primary psychopathy, exhibited low scores on stress reaction, high scores on social dominance, the ability to take strategic control, and low avoidance of harm. The *aggressive* group, resembling secondary psychopathy,

exhibited low control, high negative emotionality, elevated aggressiveness, and greater psychological maladjustment. Vassileva, Kosson, Abramowitz, and Conrod (2005) performed a cluster analysis using PCL-R and Interpersonal Measure of Psychopathy (IM-P; Kosson, Steuerwald, Forth & Kirkhart, 1997) scores from 200 male inmates. Among those that scored above 30 on the PCL-R, two clusters emerged consistent with primary and secondary subtypes. The primary subtype exhibited elevated psychopathic personality features and average levels of anxiety. The secondary subtype exhibited elevated anxiety, severe alcohol and drug dependence, and elevated social deviance. In this study, the groups were further distinguished by nature of the offense, with primary psychopaths committing more violent offenses, and secondary psychopaths committing more non-violent offenses.

Skeem, Johansson, Andershed, Kerr, and Loudon (2007) used cluster analysis to examine patterns of PCL-R, Karolinska Scales of Personality (KSP; Gustavsson, Weinryb, Göransson, Pedersen, & Åsberg, 1997) profiles, and Historical, Clinical, Risk Management—20 (HCR-20; Webster, Douglas, Eaves, & Hart, 1997) scores from 123 prison inmates with high levels of psychopathy. Again, these analyses suggested primary and secondary subtypes similar to previous research, with secondary psychopaths distinguished by higher levels of anxiety, as well as borderline personality features, poorer interpersonal functioning, and more symptoms of psychopathology. Swogger and Kosson (2007) used PCL-R and IM-P scores from 258 male inmates in a cluster analysis and obtained similar results. The primary group demonstrated higher scores on interpersonal, affective, and behavioral facets of the PCL-R, and the secondary subtypes

demonstrated higher anxiety scores, and were more likely to have severe drug and alcohol dependence.

Most recently, Olver, Sewell, Lewis, and Wong (2015) found more support for primary and secondary subtypes in a sample of 314 Canadian adult male inmates, 54 of which had an index sexual offense. High scores on all four facets, yet particularly high scores on interpersonal and affective facets, characterized the primary subtype. Exceptionally high scores on the antisocial facets, high scores on the lifestyle and affective facets, and low scores on the interpersonal facet distinguished the secondary subtype.

Regarding special populations, primary and secondary subtypes have also been supported in samples of female prisoners (Hicks, Vaidyanathan, & Patrick, 2012), and African American male prisoners (Swogger, Walsh, & Kosson, 2008). Additionally, a recent study found support for primary and secondary subtypes of psychopathy in a college sample (Falkenbach, Stern, & Creevy, 2014).

### **Additional Psychopathy Subtypes**

Some studies have suggested there are additional psychopathy subtypes beyond primary and secondary. Hervé (2003) conducted a hierarchical cluster analysis of PCL-R scores from 202 federal offenders with scores of 27 or higher and found four subtypes. The first subtype, *classic psychopaths*, exhibited high scores on all facets of the PCL-R. The second subtype, *macho psychopaths*, exhibited comparatively lower scores on interpersonal facets, yet high scores on the affective and lifestyle facets. The third subtype, *manipulative psychopaths*, had high scores on the interpersonal and affective facets, yet relatively low scores on the lifestyle facets. The fourth subtype exhibited some

interpersonal and behavioral tendencies of psychopathy, yet had much lower overall scores, and thus were deemed *pseudopsychopaths*. Of these subtypes, manipulative psychopaths appear representative of primary psychopathy, due to the ratio of interpersonal traits to lifestyle traits, however none seem to align with secondary psychopathy. Blackburn, Logan, Donnelly, and Renwick (2008) also found four subtypes in a sample of 79 male offenders with a PCL-R score of 21 or higher. In addition to primary and secondary subtypes, their analyses suggested two more subtypes. The *controlled* group was described as unaggressive, demonstrated least anxiety, greater socialization, and a later onset of antisocial behavior. The *inhibited* group was also described as controlled, but anxious and withdrawn. The inhibited group was distinguished from the secondary psychopathy group by fewer schizoid, paranoid, and schizotypal traits, as well as a later onset of antisocial behavior.

A recent study investigated psychopathy subtypes using a person-centered Latent Profile Analysis (LPA) approach (Mokros, Hare, Neumann, Santila, & Habermeyer, 2015; Hare, 2016). In samples of offenders with PCL-R scores of 27 or higher, three variants emerged. Higher education, lower anxiety, lower self-reported criminal tendencies and less aggression distinguished the *manipulative* group, resembling primary psychopathy. Higher average scores on antisocial, aggressive, and self-reported criminal tendencies distinguished the *aggressive* group, resembling secondary psychopathy. A third group, *sociopathy*, was characterized by social deviance but a lack in affective features of psychopathy. When a more stringent cut-score of 30 was used in supplementary analyses, two variants emerged which were comparable to the manipulative and aggressive groups described above.

## **Summary of Psychopathy Subtype Studies**

In summary, the most consistent findings from previous psychopathy subtyping research suggest there are at least two variants of the psychopathy construct: one that is characterized by emotional stability, manipulateness, and general lack of comorbid disorders (primary), and another that is characterized by high levels of anxiety, emotional instability, and many comorbid disorders (secondary). Some studies have suggested the existence of additional subtypes, which may be a result of less stringent PCL-R cut-scores. Of the studies that have found more than two psychopathy subtypes, cut-scores of 21 and 27 were used when defining the samples.

## **Sex Offender Personality and Psychopathology Subtypes**

Of the studies investigating sex offender subtypes, most have examined specific populations of sex offenders, such as offenders against children, internet offenders, and female sex offenders (see Kalichman et al, 1989; Shealy et al., 1991; Turner et al., 2008). For example, Kalichman et al. (1989) analyzed MMPI scores from 120 male rapists, and found evidence for five subgroups differentiated by scale elevations, self-reported cognitive distortions, and rape context. The first subgroup exhibited elevations on the psychopathic deviate (Pd) and mania (Ma) clinical scales, typically committed rape in the context of another crime (such as a burglary), and demonstrated lower levels of sexual deviance. The second subgroup exhibited elevations on depression (D), Pd, Paranoia (Pa), and Schizophrenia (Sc) scales, was characterized as highly antisocial and aggressive, was least likely to know their victims, and was least likely to commit rape in the context of another crime. Subgroup three exhibited elevations on only the Pd scale, low levels of paraphilia, and was likely to commit rape in the context of another crime.

Subgroup four exhibited elevations on F, PD, Sc, and Ma, and demonstrated highly deviant behavior and poor adjustment to incarceration as well as more self-reported thoughts about rape, and higher rates of substance use disorders. This subgroup also exhibited a wide range of deviant personality traits. The fifth subgroup exhibited elevations on D, Pd, Pa, Pt, Sc, and Ma scales, demonstrated the highest level of disturbance, self-reported arousal to thoughts of rape, and a strong tendency toward substance use – seemingly a more severe version of subgroup four. Notably, these groups were differentiated on factors such as substance use disorder, comorbid personality pathology, and aggression. These factors are also present in psychopathy subtype literature (Wales, 1995; Hicks et al., 2004; Vassileva et al., 2005; Skeem et al., 2007; Swogger & Kosson, 2007; Blackburn et al., 2008; Swogger, Walsh, & Kosson, 2008; Mokros et al., 2015). Specifically, the first and second subgroups from Kalichman (1989) are similar in trait presentation to primary and secondary psychopathy. The first subgroup parallels primary psychopathy with high levels of antisocial traits and minimal additional pathology. The second subgroup parallels secondary psychopathy with high levels of antisocial personality and additional high levels of aggressiveness and comorbid personality pathology (schizoid, depression, paranoia).

Shealy et al. (1991) conducted a cluster analysis on the MMPI profiles from a sample of sex offenders with child victims. Again, subgroups were primarily distinguished on symptom severity in affective and sexual disturbance. The first subgroup was least likely to report thought disturbance or affective distress, but exhibited many antisocial and impulsive traits, similar to primary psychopathy. The second subgroup exhibited elevated levels of paranoia, neuroticism, and psychopathic deviate traits, but



relatively low levels of psychological disturbance. Although this subgroup exhibited slightly more comorbid pathology than subgroup one, the third subgroup appeared most similar to secondary psychopathy. The third subgroup exhibited significant elevations on the psychopathic deviate, paranoia, and schizophrenia scales, in addition to secondary elevations on hysteria and post-traumatic stress scales, and exhibited much higher levels of affective and sexual disturbance. The fourth subgroup exhibited elevations on 7 of the 10 clinical scales, exhibiting the highest levels of affective disturbance and high rates of suicide. Unlike subgroup three, psychopathic deviate traits were not prominent in comparison to additional pathology in the fourth subgroup.

Turner, Henderson, and Miller (2008) conducted an LPA on Personality Assessment Inventory (PAI; Morey, 1991) profiles from female sex offenders. Three classes emerged from this analysis. Class 1 exhibited subclinical levels of pathology but elevated substance abuse problems. Class 2 produced at-risk levels on several clinical scales, most prominently the borderline features scale, and exhibited low dominance and high aggression. Class 3 was the most severely disturbed with significant elevations on many scales. In this study, Class 2 appears to parallel secondary psychopathy because of the higher levels of aggression, and additional personality features. Primary psychopathy, however, does not appear consistent with any class in this study. Miller, Turner, and Henderson (2009) used the same methodology with PAI scores from a combined sample of male and female offenders and found four subtypes. The first, *moderate psychopathology*, had moderate elevations on several scales and was mostly comprised of females. The second, *drug and alcohol use*, was comprised of individuals who only exhibited drug and alcohol problems. The third, *extensive psychopathology*, exhibited

significant elevations on depression, schizophrenia, and borderline features and was mostly comprised of women. The fourth, *moderate defensiveness*, exhibited significant positive impression management, and low psychopathology, and was mostly comprised of males. Of these classes, only extensive psychopathology exhibited high scores on the antisocial scale of the PAI. Due to the level of comorbid pathology, including high levels of anxiety, the extensive psychopathology subgroup appears similar to secondary psychopathy. None of the remaining classes appeared consistent with primary psychopathy.

### **Personality Assessment Inventory (PAI) Scores and Psychopathy Subtypes**

The PAI (Morey, 1991) is a 344-item self-report personality inventory. The PAI is comprised of 22 total scales: 11 clinical scales, 4 validity scales, 5 treatment consideration scales, and 2 interpersonal scales. Although the PAI was not designed specifically for forensic use, it is commonly used in forensic contexts due to its shorter length and lower reading level, compared to the MMPI (Turner, Henderson & Miller, 2008).

Several scales on the PAI provide useful information in a forensic context, such as the Antisocial Features (ANT) and Aggression (AGG) scales. Several other scales are particularly relevant in distinguishing subtypes of psychopathy. Past research suggests primary psychopathy would be defined by elevations on ANT-E (Egocentricity), AGG, and Dominance (DOM), as well as low levels of Anxiety, (ANX), Anxiety-related Disorders (ARD), Drug use (DRG), Alcohol use (ALC), and Warmth (WRW). Conversely, secondary psychopathy would be defined by high levels on the ANT-S (Stimulus seeking), BOR-A (affective instability), ANX, AGG, ARD, DRG and ALC

scales, and low levels of WRW as well as lower levels of DOM compared to primary psychopathy.

### **Current Study**

The current study aims to extend past literature regarding psychopathy subtypes to address whether these variants can be identified among a sample of contact sexual offenders. I used a latent class analysis (LCA) to identify the number of latent classes in a sample of 487 sexual offenders in Texas. The LCA framework allowed me to find common variance shared among PCL-R item and PAI scale scores, apart from measurement error. Thus, this framework allowed me to investigate how latent subtypes of psychopathy relate to personality pathology as measured by the PAI. The LCA model estimates class-specific statistics (means, variances, & covariances) and determines latent classes by minimizing within-class variances and maximizing between-class variances. This approach differs from cluster analyses in that it assesses class membership probabilistically through a top-down approach. Mplus (Muthén & Muthén, 1998-2007) was used for model analyses. Due to the ordinal nature of PCL-R, the weighted least squares (mean and variance adjusted) procedure (WLSMV) was used for assessing model fit and parameter estimates (Muthén & Muthén, 1998-2007).

On the basis of past subtyping literature, I hypothesized two classes would emerge from the group of offenders with high PCL-R scores, resembling primary and secondary psychopathy. In terms of the PAI, I expected primary psychopathy to be distinguished by high levels of ANT, AGG, and DOM, and low levels of ANX, BOR, WRM, DRG, ALC, and ARD. Comparatively, I expected secondary psychopathy to be distinguished by high levels of ANT, BOR, ANX, ARD, AGG, DRG, and ALC, and

lower levels of DOM, as well as low levels of WRW. Regarding analyses of the full sample of offenders, including those with lower PCL-R scores, I hypothesized four additional classes to emerge from the remaining sample. These classes and descriptions are detailed in table 1.

Table 1

## Summary of psychopathy subtype findings and possible correlates on the PAI

Psychopathy subtype	Traits	Expected PAI findings
Primary	High overall total PCL-R score, low levels of anxiety, high levels of narcissistic and antisocial personality traits. Relatively stable emotionality.	Low ANX, ARD, BOR, DRG, ALC & WRW High ANT (particularly ANT-E) AGG & DOM
Secondary	High overall total PCL-R score, high levels of anxiety, higher rate of drug and alcohol problems, higher rate of trauma history, high levels of emotional instability.	High ANT, AGG, ANX, BOR-A, ARD, DRG & ALC. Low WRW, and lower DOM than primary.
Tertiary	Lower overall PCL-R (<30), high levels of social deviance, low levels of affective psychopathic traits (Herve, 2003; Mokros et al., 2015).	High ANT-A but low ANT-E Low WRW.
Controlled	Low levels of anxiety, high levels of interpersonal traits, low levels of aggression, high levels of intelligence (Blackburn et al., 2008).	High ANX, ARD, ANT-E Low WRW, AGG
Inhibited	High levels of anxiety and introversion, high rates of trauma history, lower levels of additional personality pathology (Blackburn et al., 2008; Swogger, Walsh, & Kosson, 2008).	High ANX, SCZ-S, ANT Low DRG, ALC
Non-psychopathic criminal	High levels of drug and alcohol use disorders. Low scores on the PCL-R (Vassileva et al., 2005; Swogger & Kosson, 2007; Swogger, Walsh, & Kosson, 2008).	High DRG & ALC, ANT-A Low ANT-E and ANT-S

## CHAPTER II

### Method

#### Data Collection Strategies and SVP Evaluators

We began data collection by reviewing sexually violent predator (SVP) civil commitment evaluation reports in correctional files for offenders evaluated for commitment in Texas between 1999 (first Texas SVP evaluation) and 2011. According to Texas statute, SVP evaluators are required to assess for psychopathy (Texas Health & Safety Code §841.023). All evaluators in this dataset administered the PCL-R to assess for psychopathy.

The evaluations were conducted by a total of 21 individual evaluators. Of these, 14 reported only total PCL-R scores, and seven reported item scores in addition to facet, factor, and total scores. We obtained additional item scores by contacting evaluators who had conducted SVP evaluations, asking them to review their files, and anonymously enter PCL-R item and PAI scale score data into an electronic database. We received item and scale score data from seven evaluators who did not provide item scores in their original reports. Thus, there was no redundancy in the PCL-R item score data from the two different data collection methods. Overall, the data used in this study come from SVP evaluations conducted by 14 evaluators, the seven who originally reported item scores in their evaluations, and the seven who responded to our request for deidentified item scores.

#### Offenders

There were 487 offenders scored on the PCL-R. The mean age among the offenders was 44.70 ( $SD = 11.39$ ). Offenders were identified as white ( $n = 243, 49.9\%$ ),

black ( $n = 151$ , 31.1%), Hispanic (86, 17.6%), or from another ethnic background (7, 1.4%). We do not have detailed information related to the type or severity of the offenders' offenses. However, per Texas Statute, each offender must have had a history of two or more qualifying sexual offenses to be considered for civil commitment. Sexual offenses that may qualify a person as a SVP under Texas statute are the following: § 21.11(a)(1): Indecency With a Child (sexual contact); § 22.011: Sexual Assault; § 22.021: Aggravated Sexual Assault; § 20.04(a)(4): Aggravated Kidnapping (with intent to sexually abuse or violate); § 30.02: Burglary (with intent to commit a sexual offense mentioned above); A murder that is determined beyond a reasonable doubt to have been based on sexually motivated conduct; Attempt, conspiracy, or solicitation to commit any offense mentioned above; Offenses under prior state law with elements substantially like those mentioned above; And, offenses under other state law, federal law, or the Uniform Code of Military Justice with elements substantially like those mentioned above (Texas Health & Safety Code (THSC), § Chapter 184).

### **Measures**

**PCL-R.** The PCL-R (Hare, 2003) is a 20-item clinician-scored measure of psychopathic traits scored on the basis offender records and (typically) a semi-structured interview. The evaluator assigns scores to the interviewee on a variety of psychopathic traits, ranging from 0 to 2 (0 = Not present, 1 = Possibly present, 2 = Definitely present). Reliability of the PCL-R is strong within research contexts. The PCL-R Manual (Hare, 2003) reports interrater reliability values for a single evaluator ( $ICC_1$ ) from .86 for male inmates to .88 for male forensic psychiatric patients. Recent research has suggested reduced reliability within the context of actual practice (Miller, Rufino, Boccaccini,

Murrie, & Jackson, 2011; Rufino, Boccaccini, Hawes, & Murrie, 2012; Murrie, Boccaccini Turner Meeks, Woods, & Tussey, 2009). In total, we obtained PCL-R scores for 487 offenders. The sample size for each PCL-R item score varies somewhat because of missing data.

Previous psychopathy subtype research has varied in determining PCL-R cut-scores to define the samples used in analyses. Some studies have used a cut-off score of 30 (Hicks, Vaidyanathan, & Patrick, 2012), while others have used cut-scores of 27 (Herve, 2003; Mokros et al., 2015), 25 (Olver, Sewell, Lewis & Wong, 2015), or 21 (Blackburn, Logan, Donnelly, & Renwick, 2008). Several studies conducted cluster analyses on a broad general offender sample (no cut-score), and described groups that displayed high PCL-R scores as psychopathy subtypes (Blackburn & Coid, 1999; Vassileva, Kosson, Abromowitz & Conrod, 2005; Swogger & Kosson, 2007; Swogger Walsh, & Kosson, 2008; Falkenbach, Stern, & Creevy, 2014). Initial analyses will be conducted with a cut-score in order to investigate the present of primary and secondary psychopathy in a sample of offenders with a score of 25 or higher on the PCL-R. Within this sample, there are 135 offenders with a PCL-R  $\geq$  25. Since this is the first study to investigate psychopathy subtypes within a sex offender population, subsequent analyses will include the entire sample in order to describe all offender subtypes, allowing for comparisons to previous sex-offender subtype research.

**PAI.** The PAI is a 344-item self-report inventory of personality and psychopathology. As mentioned earlier, The PAI is comprised of 22 total scales: 11 clinical scales, 4 validity scales, 5 treatment consideration scales, and 2 interpersonal scales. Due to role of comorbidity in distinguishing between psychopathy subtypes and

sex offender subtypes in previous literature, all clinical and interpersonal scales of the PAI will be used in analyses. Of particular interest to the model are the Anxiety, Anxiety-related disorders, Aggression, and Antisocial scales, as these relate to distinguishing features of secondary psychopathy as noted by several previous studies (Wales, 1995; Hicks et al., 2004; Vassileva et al., 2005; Skeem et al., 2007; Swogger & Kosson, 2007; Blackburn et al., 2008; Swogger, Walsh, & Kosson, 2008; Mokros et al., 2015). We obtained PAI scores from 369 offenders. Using a Latent Class Analysis approach, these missing values will be considered missing at random (MAR), and all offenders will be included in analyses, rather than eliminated via a list-wise deletion process common in cluster analyses.

### **Data Analysis**

Using both the PCL-R item data and PAI scale scores allows analyses to characterize groups based on response patterns for indicators on both measures. Using both the PCL-R and the PAI as indicators for model analyses, a mixed model approach is necessary. Thus, data analysis can be described as both a Latent Profile or Latent Class Analysis because both categorical (PCL-R) and continuous (PAI) variables are used. Latent Class Analysis (LCA), a variant of latent profile analysis using categorical indicator variables, is a statistical method of sorting individuals into similar groups (latent classes) based on a set of observed (manifest) categorical variables as measures of an underlying (latent) categorical variable. LCA is useful when studying populations with heterogeneous characteristics, as demonstrated in Miller, Turner, & Henderson (2009) and Mokros et al. (2015). Unlike cluster analyses, LCA sorts data through maximum likelihood (ML) estimation, and thus is a probabilistic model-based alternative to cluster



analysis. LCA also has the advantage of accounting for measurement error in the indicator variables in defining latent classes.

For comparative and comprehensive purposes, analyses were structured to begin with a one-class model, and add additional classes to subsequent models, similar in structure to the procedure followed by Miller et al. (2009). To determine the number of classes in these data, multiple models (1-class, 2-class, 3-class...) were compared using the fit indices of these models such as the Bayesian Information Criterion (BIC), entropy of the classes, and the Lo-Mendell-Ruben adjusted Likelihood Ratio Test (L-M-R LRT).

Due to the variability of PCL-R cut-scores used in previous studies, I used three different cut-scores for separate model estimations (25, 27, & 30). The resulting models revealed similar results in terms of number of classes and profiles of each class. Since these results were similar, the model with the lowest cut-score ( $\geq 25$ ) was used for subsequent analyses due to its larger sample size, and thus stronger psychometric properties.

## CHAPTER III

### Results

#### Descriptive Statistics

Table 2 provides the means and standard deviations for the PCL-R total scores of the full sample, and samples of offenders scoring at or above 25, 27, and 30 on the PCL-R. Table 3 provides the means and standard deviations of PAI scale scores of these four samples. As mentioned previously, PCL-R total scores were available for 487 offenders, and PAI scales scores were available for 369 (75.8%) offenders. There were 135 (27.8%) offenders with a PCL-R total score of 25 or higher, 83 (17.0%) offenders with a score of 27 or higher, and 48 (9.9%) offenders with a score of 30 or higher.

Table 2

PCL-R total score means and standard deviations

Measure	Full Sample ( <i>N</i> = 487)	Cut-score 25 ( <i>n</i> = 135)	Cut-score 27 ( <i>n</i> = 83)	Cut-score 30 ( <i>n</i> = 48)
PCL-R	19.63 (7.31)	28.60 (2.89)	30.08 (2.41)	31.81 (1.91)

Table 3

## PAI scale means and deviations

Scale	Full Sample ( <i>N</i> = 368)	Cut-score 25 ( <i>n</i> = 95)	Cut-score 27 ( <i>n</i> = 64)	Cut-score 30 ( <i>n</i> = 32)
NIM	52.20 (12.01)	54.81 (12.66)	55.31 (12.71)	53.13 (9.96)
PIM	51.13 (10.48)	48.26 (10.11)	47.61 (10.97)	49.19 (11.96)
Somatic Complaints	51.99 (10.50)	53.89 (10.98)	54.14 (10.97)	51.78 (8.70)
Anxiety	50.44 (10.52)	52.38 (10.54)	52.44 (11.01)	51.47 (10.28)
Anxiety-Related Disorders	53.15 (11.46)	54.84 (11.25)	55.53 (11.50)	54.31 (10.77)
Depression	52.62 (10.45)	54.62 (10.79)	54.28 (11.25)	53.19 (10.27)
Mania	47.92 (10.47)	49.61 (9.67)	49.34 (10.01)	47.78 (8.82)
Paranoia	53.46 (10.77)	56.81 (11.20)	56.58 (11.41)	53.91 (10.42)
Schizophrenia	49.16 (11.35)	51.88 (11.25)	52.05 (11.84)	50.63 (11.91)
Borderline features	53.53 (10.65)	56.91 (10.41)	57.36 (11.25)	55.06 (11.88)
Antisocial features	56.87 (8.92)	60.24 (8.67)	60.38 (9.24)	58.69 (9.60)
Alcohol problems	56.92 (14.64)	57.41 (14.39)	56.11 (13.50)	55.19 (14.98)
Drug problems	58.74 (14.47)	59.64 (14.88)	60.00 (15.61)	56.69 (16.35)
Aggression	48.34 (9.78)	50.56 (9.89)	50.20 (11.11)	48.66 (11.86)
Suicide	51.17 (12.27)	52.53 (12.61)	52.31 (13.78)	52.44 (14.32)
Stress	53.71 (10.05)	55.22 (9.63)	54.98 (9.16)	52.41 (8.16)
Non support	51.98 (11.82)	55.49 (12.34)	55.97 (12.72)	52.31 (12.74)
Treatment rejection	43.38 (9.33)	42.69 (8.37)	43.31 (8.52)	43.63 (9.66)
Dominance	51.45 (37.11)	50.08 (9.35)	50.61 (9.86)	51.03 (10.37)
Warmth	49.25 (10.01)	47.94 (9.68)	48.67 (9.42)	50.84 (8.75)

Note: NIM = Negative impression management; PIM = Positive impression management

### **Comparing Latent Class Enumeration Results using Different PCL-R Cut-scores**

I ran separate sets of LCAs using only subsamples of offenders scoring at or above a specific PCL-R cut score. I used three different PCL-R cut-scores: 25, 27, and 30. While a sample with a stricter cut-score (e.g. 30) is more likely to provide better construct validity (offenders are more likely to be deemed "true psychopaths"), a sample with a less strict cut-score (e.g. 25), is larger in size and therefore provides more data for more robust results. I ran separate LCAs for each cut-score to see if a cut-score made a difference in the optimal number of classes of resulting models.

The procedure for each sample began with a one-class model, with each successive model including one additional class. The optimal number of classes was decided based on the convergence of model-fit criteria, such as the Bayesian Information Criterion (BIC; Schwartz, 1978), entropy, the Lo-Mendell-Rubin Likelihood Ratio Test (L-M-R LRT), and the bootstrap LRT. These statistics are reported in Tables 1, 2, and 3. A model with lower BIC, higher entropy, and significant L-M-R LRT and bootstrap LRT tests indicates better fit. All models described were estimated using Mplus, Version 7 (Muthen & Muthen, 1998-2008), which uses the Expectation-Maximization (EM) algorithm under the assumption that data are missing at random (MAR) to compute maximum likelihood estimates of the model parameters (Muthen & Shedden, 1999). Mplus also provides probabilities of latent class membership for each individual in the dataset. These class probabilities were used to determine average PAI subscale elevations for the latent classes resulting from latent class-enumeration.

**Latent class enumeration for cut-score 25 sample.** The results displayed in Table 4 indicate the two-class model had smaller BIC and similar entropy when

compared to both the one-class and three-class models. According to Nylund-Gibson and Masyn (2016), the BIC is the best indicator of the correct number of latent classes, when compared to other fit indices. The L-M-R LRT compares the model to a model with one-less class. Although the L-M-R LRT was not significant for the two-class or three-class models, this is not entirely surprising given that many similarities are to be expected among a sample of offenders with high PCL-R scores, and thus many shared traits. Additionally, the two-class model was consistent with previous research. The three-class model demonstrated a higher BIC as well as non-significant L-M-R LRT and bootstrap LRT tests, indicating an additional class did not strengthen the model.

Table 4

Latent class enumeration using a cut-score of 25 ( $n=135$ )

Model	Log likelihood	Number of parameters	BIC	Entropy	L-M-R LRT (p)	Bootstrap LRT (p)	N(%) of smallest class
1-class	-9374.94	80	19142.31				
2-class	-9052.80	141	18387.60	.86	642.15 (.78)	644.29 (.00)	38 (28.15)
3-class	-5919.21	202	18908.01	.91	187.83 (.59)	188.45 (.00)	17 (12.59)

**Latent class enumeration for cut-score 27 sample.** The results displayed in Table 5 indicate similar results using a more stringent cut-score of 27. The two-class model had smaller BIC and similar entropy when compared to both the one-class and three-class models. Again, the L-M-R LRT was not significant for the two-class or three-class models, but was larger for the two-class model. Not only did the three-class model demonstrate a higher BIC as well as non-significant L-M-R LRT and bootstrap LRT

tests, but the model did not converge, indicating an additional class did not strengthen the model.

Table 5

Latent class enumeration using a cut-score of 27 ( $n=83$ )

Model	Log likelihood	Number of parameters	BIC	Entropy	L-M-R LRT (p)	Bootstrap LRT (p)	N(%) of smallest class
1-class	-6233.44	77	12813.37				
2-class	-6006.39	135	12620.26	.879	452.37 (.18)	454.10 (.00)	27 (30.00)
3-class*	-5913.06	193	12694.58	.927	185.96 (.82)	186.67 (.00)	9 (10.00)

\* Log-likelihood not replicated with high number of random starts (1000, 100).

**Latent class enumeration for cut-score 30 sample.** The results displayed in Table 6 indicate similar results using the most stringent cut-score of 30. Similar to the results discussed above, results for the two-class model indicated better fit than both the one-class and three-class models. Similar to the results using a cut-score of 27, the three-class model did not converge.

Table 6

Latent class enumeration using a cut-score of 30 ( $n = 48$ )

Model	Log likelihood	Number of parameters	BIC	Entropy	L-M-R LRT (p)	Bootstrap LRT (p)	N(%) of smallest class
1-class	-3064.23	72	6407.19				
2-class	-2916.21	125	6316.31	.940	294.61 (.70)	296.05 (.00)	12 (25.00)
3-class*	-1863.91	178	6404.36	.971	116.55 (.78)	117.12 (.00)	9 (18.75)

\* Log-likelihood not replicated with high number of random starts (1000, 100).

Given the similar results of latent class enumeration using varying cut-scores, subsequent analyses used the largest sample ( $n = 135$ ), with PCL-R total scores of 25 or higher. Larger samples, beneficial to most statistical analyses, are particularly important to LCA and other structural equation modeling techniques, because there is a greater risk that the types of estimates used in these approaches, such as standard errors for latent variable effects, are inaccurate when small samples are used (Kline, 2016).

### **Description of the Two-Class LCA Model Using a PCL-R Total Score of 25 or Higher**

**PCL-R profiles of latent classes.** The profiles of offenders' PCL-R item scores are difficult to visually depict because items are scored categorically (*not present, somewhat present, or present*). Table 7 shows these results for each class as categorical. Figure 1 depicts the within class proportions of 'present' ratings for each item. The items in Figure 1 are grouped according to the four facets of the PCL-R. Primary (Class 1) was characterized by higher ratings of Facet 1 items including *glibness/superficial charm, grandiose sense of self-worth, conning/manipulative, and pathological lying* when compared to Secondary (Class 2). Secondary was characterized by higher ratings of Facet 4 items, including *early behavioral problems* (50.2% v. 38.2% present ratings), *poor behavioral control* (70.0% v. 62.3% present ratings), and *juvenile delinquency* (56.2% v. 47.5% present ratings) when compared to the primary subtype.

Table 7

Proportion values for PCL-R items of offender with a PCL-R total score of 25 or higher

*(n = 135)*

Item	Class 1: <i>Primary</i> ( <i>n = 97; 72.9%</i> )	Class 2: <i>Secondary</i> ( <i>n = 38; 28.1%</i> )
<i>Glibness/Superficial Charm</i>		
Not Present	.03	.38
Somewhat Present	.49	.44
Present	.48	.18
<i>Grandiose Sense of Self-Worth</i>		
Not Present	.08	.30
Somewhat Present	.39	.52
Present	.54	.19
<i>Need for Stimulation Proneness to Boredom</i>		
Not Present	.10	.02
Somewhat Present	.40	.45
Present	.50	.53
<i>Pathological Lying</i>		
Not Present	.04	.00
Somewhat Present	.32	.55
Present	.64	.45
<i>Conning/Manipulative</i>		
Not Present	.02	.09
Somewhat Present	.34	.44
Present	.65	.47
<i>Lack or Remorse or Guilt</i>		
Not Present	.01	.00
Somewhat Present	.19	.17
Present	.80	.83
<i>Shallow Affect</i>		
Not Present	.02	.07
Somewhat Present	.48	.57
Present	.50	.36
<i>Callous/Lack of Empathy</i>		
Not Present	.02	.00
Somewhat Present	.35	.39
Present	.63	.61
<i>Parasitic Lifestyle</i>		
Not Present	.26	.03
Somewhat Present	.59	.44
Present	.14	.25

(continued)



Item	Class 1: <i>Primary</i> ( <i>n</i> = 97; 72.9%)	Class 2: <i>Secondary</i> ( <i>n</i> = 38; 28.1%)
<i>Poor Behavioral Control</i>		
Not Present	.13	.05
Somewhat Present	.25	.23
Present	.62	.72
<i>Promiscuous Sexual Behavior</i>		
Not Present	.00	.03
Somewhat Present	.14	.12
Present	.86	.86
<i>Early Behavioral Problems</i>		
Not Present	.28	.16
Somewhat Present	.34	.34
Present	.38	.50
<i>Lack of Realistic Long Term Goals</i>		
Not Present	.27	.19
Somewhat Present	.48	.60
Present	.25	.21
<i>Impulsivity</i>		
Not Present	.04	.03
Somewhat Present	.27	.27
Present	.69	.70
<i>Irresponsibility</i>		
Not Present	.01	.00
Somewhat Present	.34	.41
Present	.65	.59
<i>Failure to Accept Responsibility</i>		
Not Present	.01	.00
Somewhat Present	.23	.12
Present	.76	.88
<i>Many Short-term Marital Relationships</i>		
Not Present	.55	.46
Somewhat Present	.14	.27
Present	.31	.28
<i>Juvenile Delinquency</i>		
Not Present	.24	.14
Somewhat Present	.28	.30
Present	.48	.56
<i>Revocation of Conditional Release</i>		
Not Present	.01	.08
Somewhat Present	.01	.08
Present	.82	.83
<i>Criminal Versatility</i>		
Not Present	.19	.13
Somewhat Present	.37	.41
Present	.44	.46

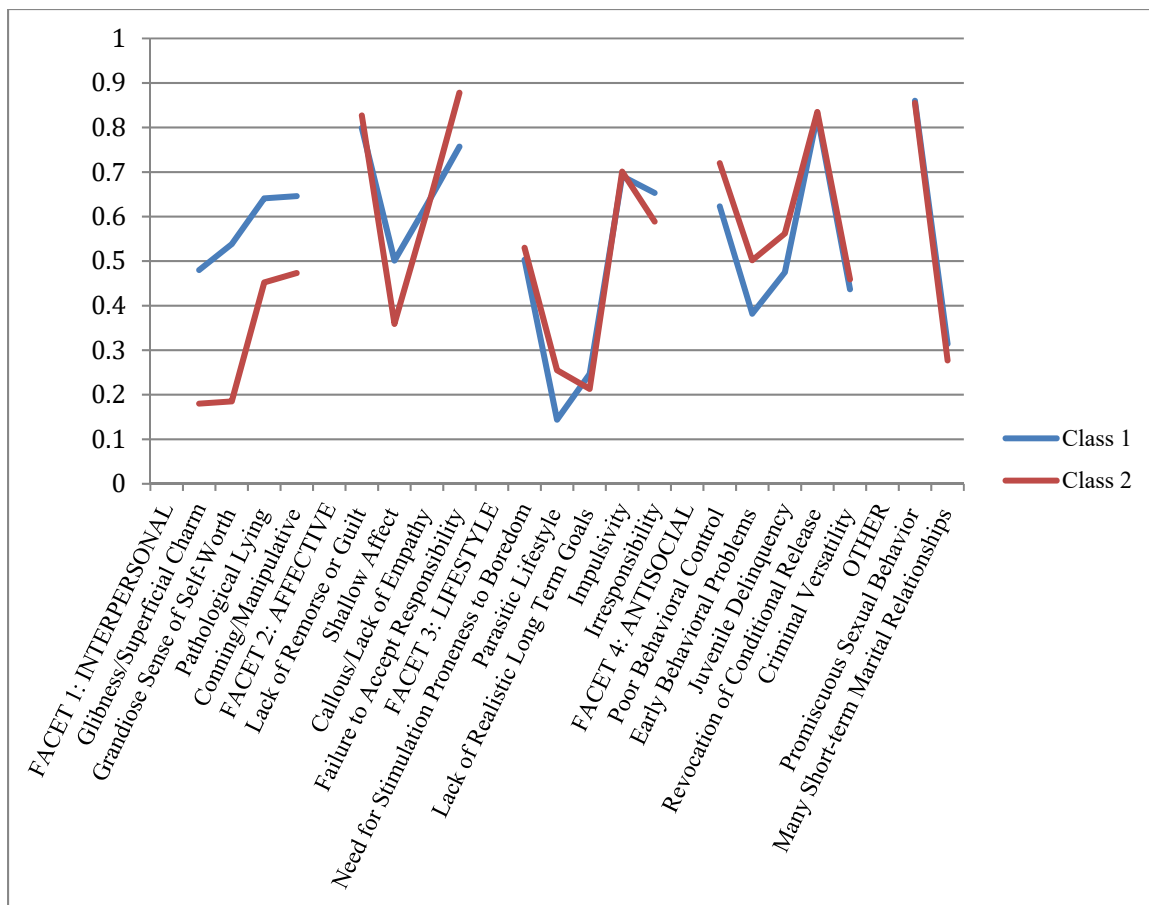


Figure 1: Profile plot of within-class proportions of 'present' ratings on PCL-R items

**PAI profiles of latent classes.** Class-specific means and variances for the PAI scores of the two latent classes are shown in Table 8 and graphed in Figure 2. Model results of LCAs are based on fixed variances across classes, thus only one variance is shown for each scale in Table 8. The values in Table 8 represent the average PAI scale scores for each latent class. Class proportions are identified in the top of Table 8. Based on previous literature, I expected to find two latent subtypes resembling primary and secondary psychopathy, one distinguished by an elevated average Antisocial features and Dominance scale scores (primary), and another with many additional average scale elevations, particularly Anxiety, Anxiety-related disorders, and Borderline scales (secondary). The primary group reported less psychopathology than the secondary group

across the PAI. Primary was characterized by slight elevations on the Antisocial features, Drug problems, and Alcohol problems scales, and fairly low or average scores on most other clinical indices. Secondary was characterized by high Negative impression management, as well as elevations on several clinical scales: Somatic complaints, Anxiety, Anxiety-related disorders, Depression, Paranoia, Schizophrenia, Borderline features, Antisocial features, Alcohol problems, Drug problems, Aggression, Suicide, Stress, and Nonsupport. The PAI scales with the highest average means for the secondary group were Borderline features ( $M = 68.90$ ), Depression ( $M = 67.50$ ), Antisocial features ( $M = 66.91$ ), and Anxiety-related disorders ( $M = 66.79$ ). Secondary also demonstrated lower scores of Dominance and Warmth when compared to the primary group.

Consistent with previous research, Class 1 shows similar traits to primary psychopathy, demonstrating high Antisocial features and minimal comorbid pathology. Although Class 1 showed elevated scores of Alcohol and Drug problems, these elevations were lower than those of Class 2. Class 2 shows similar traits to secondary psychopathy, demonstrating high levels of comorbid pathology and notably including Anxiety, and Drug and Alcohol problems.

Table 8

Class means, variances, and proportions of most likely class membership for two-class model

Scale	Class 1: <i>Primary</i> ( <i>n</i> = 97; 72%)	Class 2: <i>Secondary</i> ( <i>n</i> = 38; 28%)	Variance
NIM	49.01	69.87	71.10
PIM	51.22	40.59	78.52
Somatic Complaints (SOM)	49.98	64.06	79.45
Anxiety (ANX)	47.82	64.22	55.89
Anxiety-Related Disorders (ARD)	50.24	66.79	70.34
Depression (DEP)	49.66	67.50	51.29
Mania (MAN)	48.73	51.91	90.42
Paranoia (PAR)	53.08	66.49	88.00
Schizophrenia (SCZ)	46.94	64.73	61.66
Borderline Featured (BOR)	52.28	68.90	51.82
Antisocial Featured (ANT)	57.67	66.91	57.25
Alcohol Problems (ALC)	56.26	60.43	201.51
Drug Problems (DRG)	58.29	63.16	214.44
Aggression (AGG)	48.04	57.10	80.37

(continued)

Scale	Class 1: <i>Primary</i> ( <i>n</i> = 97; 72%)	Class 2: <i>Secondary</i> ( <i>n</i> = 38; 28%)	Variance
Suicidal Ideation (SUI)	48.34	63.40	111.80
Stress (STR)	52.08	63.36	66.31
Non-support (NON)	51.09	66.93	100.43
Treatment Rejection (RXR)	44.69	37.52	59.04
Dominance (DOM)	50.93	47.90	84.75
Warmth (WRM)	50.40	41.55	77.14

Note. Class-specific means, variances, and proportions derived from final model fixing variances across class and excluding covariates following the recommendation of Nylund and Masyn (2008).

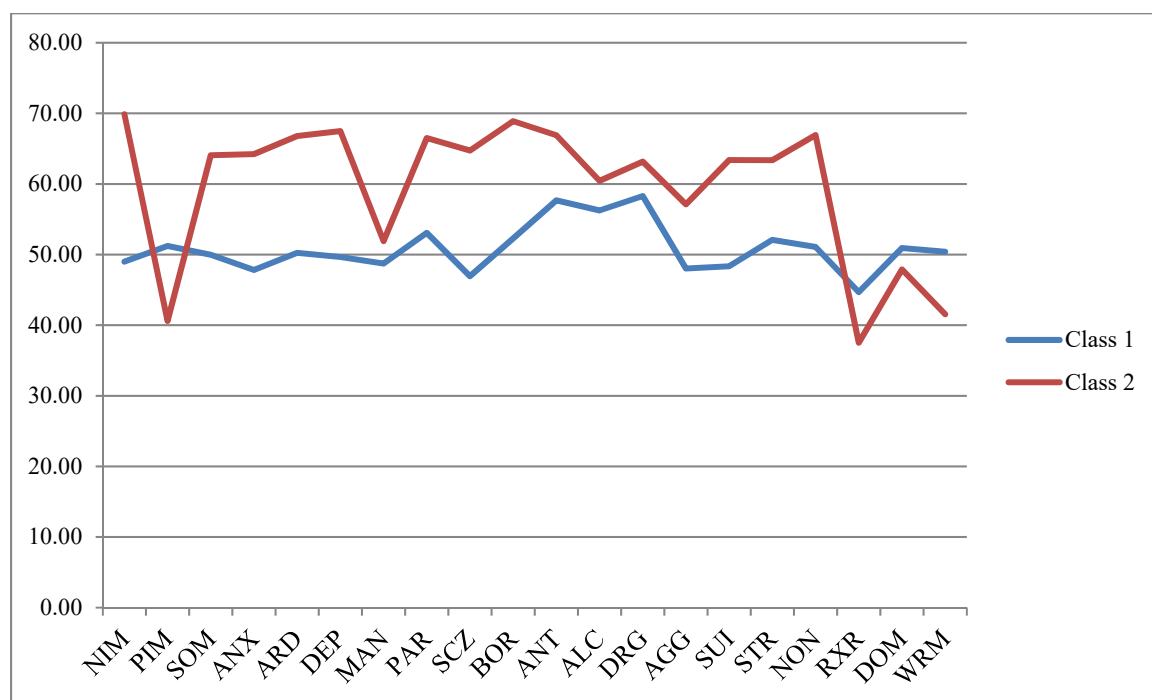


Figure 2: Profile plot of offenders' mean PAI scale scores (*n* = 135)

**Class differences on relevant PAI subscales.** Using latent class probabilities to determine likely class membership for each individual, I measured average elevations of relevant PAI subscales for Primary (Class 1) and Secondary (Class 2). These averages are provided in Table 9 and visually depicted in Figure 3. Unsurprisingly, Secondary exhibited higher average elevations across subscales. Interestingly, the secondary group exhibited a very high average elevation of the Traumatic Stress subscales of the Anxiety-related disorders scale ( $M = 75.15$ ;  $SD = 13.7$ ). This is consistent with the earliest theories of psychopathy subtypes, which suggested secondary psychopathy was characterized as a development of psychopathic traits as a reaction to environmental stressors. Another interesting component of the subscale results is that the primary group exhibited average elevation of only one Antisocial subscale (Antisocial behaviors;  $M = 68.35$ ;  $SD = 8.47$ ), but not others. The finding that the primary group did not demonstrate elevated Stimulus seeking (ANT-S) is consistent with previous research. However, based on past research, I expected the primary group to demonstrate elevated Egocentricity (ANT-E), a scale that focuses on lack of empathy or remorse and an exploitative approach to interpersonal relationships. However, these traits were also measured by the PCL-R and in those results, the primary group indeed showed elevated levels of *callous/lack of empathy*.

Table 9

Subscale means and standard deviations for each latent class

Subscale	Class 1: <i>Primary</i> ( <i>n</i> = 97; 72%)	Class 2: <i>Secondary</i> ( <i>n</i> = 38; 28%)
ANX-C: Cognitive	48.11 (6.32)	63.19 (11.79)
ANX-A: Affective	47.03 (6.74)	62.61 (11.76)
ANX-P: Physiological	49.09 (7.27)	63.19 (11.15)
ARD-O: Obsessive-compulsive	48.81 (7.97)	52.27 (10.94)
ARD-P: Phobias	48.12 (9.05)	58.00 (9.15)
ARD-T: Traumatic Stress	53.21 (8.57)	75.15 (13.70)
BOR-A: Affective instability	48.17 (7.31)	63.62 (10.16)
BOR-I: Identity problems	50.91 (9.24)	67.31 (7.97)
BOR-N: Negative relationships	56.28 (9.90)	70.15 (11.98)
BOR-S: Self-harm	52.09 (8.86)	58.54 (12.35)
ANT-A: Antisocial Behaviors	68.35 (8.47)	73.00 (8.44)
ANT-E: Egocentricity	48.83 (8.71)	57.77 (11.93)
ANT-S: Stimulus-seeking	48.19 (6.23)	57.65 (10.86)
AGG-A: Aggressive attitude	48.48 (8.63)	57.96 (11.24)
AGG-V: Verbal aggression	45.84 (8.36)	49.85 (10.89)
AGG-P: Physical aggression	51.20 (8.02)	60.62 (13.19)

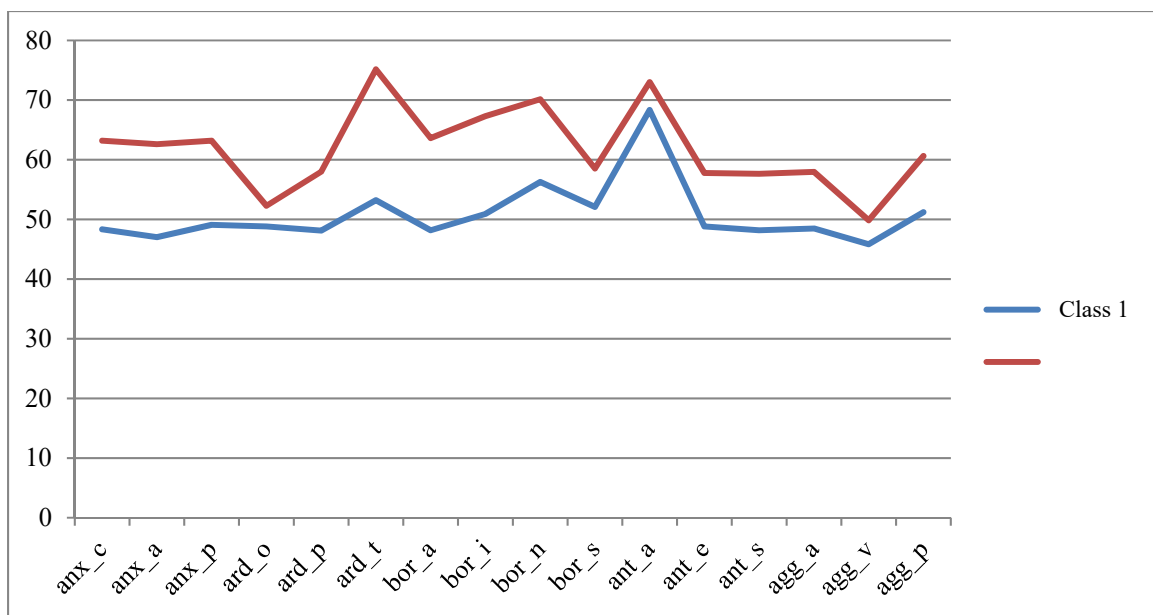


Figure 3: Profile plot of offenders' mean PAI subscale scores ( $N = 135$ ).

**Summary of results using a PCL-R total score of 25 or higher.** The results of PCL-R item data and PAI data in these analyses are similar to previous psychopathy literature, which suggests primary psychopathy is defined primarily by elevated personality and interpersonal features, and secondary psychopathy is defined by behavioral features and high levels of emotional instability and comorbid psychopathy. In this sample, latent classes were very similar across many PCL-R items, but the items that differentiated the classes were consistent with previous theories of psychopathy typology.

### Full Sample Results

The results displayed in Table 10 indicate a five-class model best fits the PCL-R item data when no cut-score is used ( $N = 487$ ). The five-class model had a lower BIC value when compared to the four or six-class models. Although the L-M-R LRT is not significant, entropy for the model is fair, suggesting the five-class model best fits the data when compared to other models in this enumeration.



Table 10

Latent class enumeration using the full sample ( $N = 489$ )

Model	Log likelihood	Number of parameters	BIC	Entropy	L-M-R LRT (p)	Bootstrap LRT (p)	N(%) of smallest class
1-class	-37587.99	80	75671.36				
2-class	-3618.52	141	73150.17	.90	2891.27 (.00)	2898.93 (.00)	150 (30.68)
3-class	-35577.33	202	72405.51	.90	1119.43 (.00)	1122.40 (.00)	99 (20.24)
4-class	-35292.04	263	72212.66	.88	569.07 (.46)	570.58 (.00)	92 (18.81)
5-class	-35070.39	324	72147.11	.88	441.11 (.53)	443.29 (.00)	30 (6.14)
6-class	-34917.56	385	72219.17	.88	304.87 (.77)	305.68 (.00)	26 (5.32)

**PCL-R profiles of full-sample latent classes.** The results displayed in Table 11 show the proportion values of PCL-R item categories for each item across the five classes. Similar to the results using a PCL-R cut-score, the '*present*' ratings were used to visually depict the comparison of latent classes (Figure 4).

Table 11

Proportion values of item categories for each latent class

Item	Class 1 ( $n = 136$ ; 28%)	Class 2 ( $n = 112$ ; 23%)	Class 3 ( $n = 95$ ; 19%)	Class 4 ( $n = 116$ ; 24%)	Class 5 ( $n = 30$ ; 6%)
<i>Glibness/Superficial Charm</i>					
Not Present	.10	.51	.41	.68	.83
Somewhat Present	.47	.33	.44	.29	.11
Present	.43	.16	.15	.03	.07
<i>Grandiose Sense of Self-Worth</i>					
Not Present	.10	.48	.51	.77	.70
Somewhat Present	.46	.36	.33	.17	.30
Present	.45	.16	.15	.05	.00

(continued)

Item	Class 1 (n = 136; 28%)	Class 2 (n = 112; 23%)	Class 3 (n = 95; 19%)	Class 4 (n = 116; 24%)	Class 5 (n = 30; 6%)
<i>Need for Stimulation</i>					
<i>Proneness to Boredom</i>					
Not Present	.09	.64	.18	.56	.29
Somewhat Present	.48	.32	.53	.30	.31
Present	.43	.04	.29	.12	.41
<i>Pathological Lying</i>					
Not Present	.03	.50	.22	.53	.36
Somewhat Present	.42	.40	.55	.42	.52
Present	.55	.10	.23	.05	.12
<i>Conning/Manipulative</i>					
Not Present	.04	.41	.25	.63	.39
Somewhat Present	.37	.44	.48	.26	.41
Present	.59	.15	.27	.11	.21
<i>Lack or Remorse or Guilt</i>					
Not Present	.01	.14	.05	.24	.13
Somewhat Present	.27	.44	.41	.55	.20
Present	.72	.42	.55	.21	.67
<i>Shallow Affect</i>					
Not Present	.05	.40	.15	.48	.33
Somewhat Present	.48	.45	.60	.46	.32
Present	.47	.15	.25	.07	.36
<i>Callous/Lack of Empathy</i>					
Not Present	.02	.38	.10	.39	.13
Somewhat Present	.38	.38	.50	.50	.22
Present	.59	.23	.40	.11	.65
<i>Parasitic Lifestyle</i>					
Not Present	.35	.81	.45	.72	.40
Somewhat Present	.53	.15	.36	.20	.43
Present	.12	.04	.19	.08	.18
<i>Poor Behavioral Control</i>					
Not Present	.14	.61	.23	.38	.18
Somewhat Present	.30	.27	.29	.44	.37
Present	.56	.11	.49	.18	.45
<i>Promiscuous Sexual Behavior</i>					
Not Present	.01	.18	.03	.20	.12
Somewhat Present	.16	.26	.15	.29	.21
Present	.83	.56	.82	.59	.67
<i>Early Behavioral Problems</i>					
Not Present	.34	.78	.41	.63	.33
Somewhat Present	.37	.14	.30	.22	.25
Present	.29	.08	.30	.15	.42

(continued)

Item	Class 1 (n = 136; 28%)	Class 2 (n = 112; 23%)	Class 3 (n = 95; 19%)	Class 4 (n = 116; 24%)	Class 5 (n = 30; 6%)
<i>Lack of Realistic Long Term Goals</i>					
Not Present	.34	.72	.47	.71	.23
Somewhat Present	.47	.22	.41	.22	.40
Present	.19	.05	.12	.07	.33
<i>Impulsivity</i>					
Not Present	.06	.40	.08	.26	.03
Somewhat Present	.25	.49	.51	.53	.24
Present	.69	.11	.41	.21	.73
<i>Irresponsibility</i>					
Not Present	.03	.35	.07	.36	.09
Somewhat Present	.41	.45	.42	.40	.54
Present	.56	.20	.51	.24	.37
<i>Failure to Accept Responsibility</i>					
Not Present	.01	.12	.14	.21	.12
Somewhat Present	.28	.44	.20	.51	.26
Present	.72	.45	.66	.28	.63
<i>Many Short-term Marital Relationships</i>					
Not Present	.62	.70	.65	.68	.71
Somewhat Present	.14	.11	.19	.18	.25
Present	.25	.19	.17	.14	.05
<i>Juvenile Delinquency</i>					
Not Present	.32	.68	.35	.58	.39
Somewhat Present	.26	.15	.32	.17	.23
Present	.41	.17	.33	.25	.38
<i>Revocation of Conditional Release</i>					
Not Present	.16	.42	.18	.26	.15
Somewhat Present	.07	.07	.10	.08	.00
Present	.77	.51	.72	.66	.85
<i>Criminal Versatility</i>					
Not Present	.26	.63	.32	.50	.65
Somewhat Present	.39	.26	.44	.29	.21
Present	.36	.12	.24	.21	.14

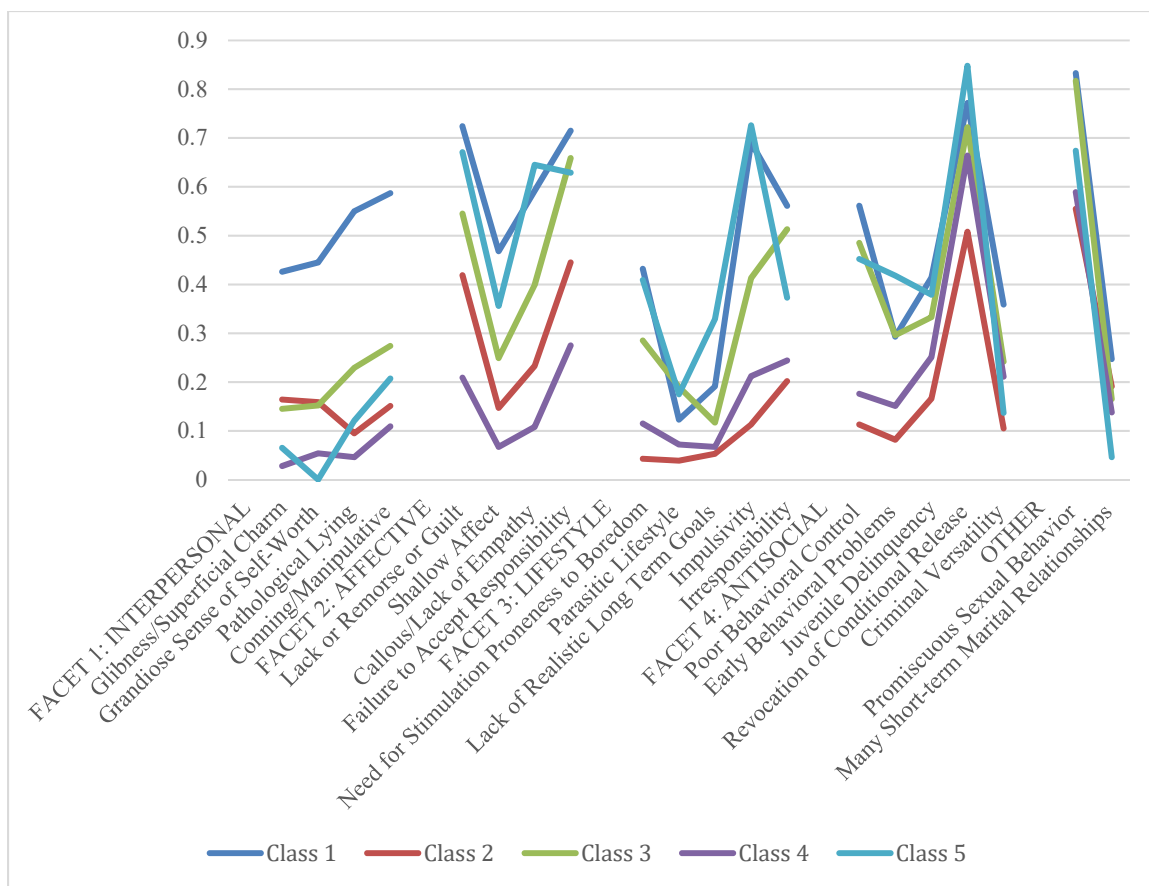


Figure 4: Profile plot of within-class proportions of 'present' ratings on PCL-R items

**PAI profiles of full-sample latent classes.** Class-specific means and variances for the PAI scores of the two latent classes are shown in Table 12 and graphed in Figure 5. Class 1 was not characterized by any scale averages in the clinically significant range. However the Antisocial ( $M = 56.70$ ) and the Drug problems ( $M = 57.83$ ) scales were higher in comparison to other scales on the profile. Class 2 was characterized by slightly elevated Positive impression management ( $M = 58.94$ ), with average scores across other scales. This is strikingly similar to a class described by Miller et al. (2009) as the *moderate defensiveness*. Class 3 was characterized by mild elevations on Somatic complaints ( $M = 60.07$ ), Anxiety ( $M = 60.94$ ), Anxiety-related disorders ( $M = 64.74$ )

Depression ( $M = 63.29$ ), Paranoia ( $M = 61.94$ ), Schizophrenia ( $M = 61.01$ ), Borderline features ( $M = 65.63$ ), Antisocial features ( $M = 65.72$ ), Alcohol problems ( $M = 65.45$ ), and Drug problems ( $M = 67.57$ ) scales. Class 4 was characterized by slight elevations of the Drug problems ( $M = 59.99$ ) and Alcohol problems ( $M = 59.32$ ) scales. Class 5 was characterized by elevated Negative impression management ( $M = 83.96$ ), and mild to moderate elevations on nearly all scales. The highest elevations of Class 5 were Depression ( $M = 75.15$ ), and Schizophrenia ( $M = 77.13$ ). This class also had a marked average elevation on Suicidal Ideation ( $M = 80.40$ ), a treatment consideration scale.

Table 12

Class means, variances, and proportions of most likely class membership for the five-class model

Scale	Class 1 ( $n = 136$ ; 28%)	Class 2 ( $n = 112$ ; 23%)	Class 3 ( $n = 95$ ; 19%)	Class 4 ( $n = 116$ ; 24%)	Class 5 ( $n = 30$ ; 6%)	Variance
NIM	48.52	45.23	62.33	48.81	83.96	51.60
PIM	51.63	58.94	42.48	52.27	35.38	66.96
SOM	49.37	46.73	60.07	51.09	66.75	77.87
ANX	47.62	41.62	60.94	49.40	74.78	36.23
ARD	50.58	44.87	64.74	51.48	72.98	65.41
DEP	49.19	44.10	63.29	52.22	75.15	39.95
MAN	47.57	43.01	55.11	45.88	57.96	86.95
PAR	52.50	44.21	61.94	53.32	73.26	59.34

(continued)

Scale	Class 1 ( <i>n</i> = 136; 28%)	Class 2 ( <i>n</i> = 112; 23%)	Class 3 ( <i>n</i> = 95; 19%)	Class 4 ( <i>n</i> = 116; 24%)	Class 5 ( <i>n</i> = 30; 6%)	Variance
SCZ	45.71	40.08	61.01	47.39	77.13	36.73
BOR	51.73	42.94	65.63	52.95	73.38	35.82
ANT	56.70	49.92	65.72	55.47	67.58	46.28
ALC	55.07	49.43	65.45	59.32	61.43	183.37
DRG	57.83	50.27	67.57	59.99	68.28	173.27
AGG	47.92	40.08	56.32	48.78	59.70	59.65
SUI	47.55	44.78	59.39	49.03	80.40	76.25
STR	52.05	46.41	62.66	53.18	68.00	60.64
NON	49.61	43.54	63.02	51.18	69.82	80.89
RXR	44.12	49.98	36.29	43.01	34.34	62.15
DOM	51.37	52.78	47.48	48.29	40.72	77.85
WRM	50.41	56.15	43.22	48.39	35.80	70.91

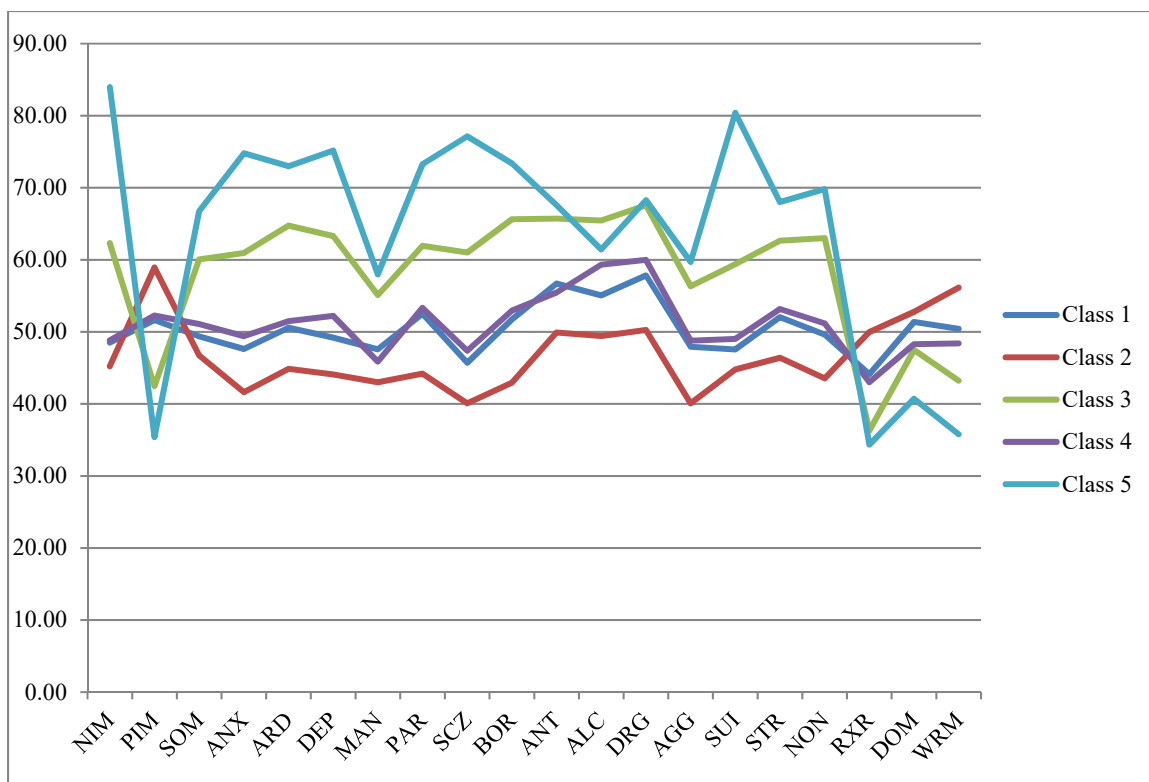


Figure 5: Profiles of PAI scale means for each latent class

**Summary of LCA results using the full sample.** When these results are consolidated with the PCL-R results, the five latent classes of the entire sample can be described as thus:

Class 1 was characterized by some antisocial traits and problems associated with drug use as measured by the PAI, as well personality and interpersonal traits of psychopathy as measured by PCL-R. Compared to the other classes, this class demonstrated higher average probabilities for the presence of *glibness/superficial charm*, *grandiose sense of self worth*, *need for stimulation/proneness to boredom*, *pathological lying*, *conning/manipulative*, *shallow affect*, *lack of empathy*, and *failure to accept responsibility*.

Class 2 was characterized by elevated levels of defensiveness and average levels of additional psychopathology as measured by the PAI. When compared to other classes, Class 2 also demonstrated higher levels of Warmth, Dominance, and Treatment Rejection. Class 2 was likely to exhibit the traits *lack of remorse*, *promiscuous sexual behavior*, and *failure to accept responsibility*. Compared to other classes, Class 2 was the least likely to exhibit *parasitic lifestyle*, *early behavioral problems*, *juvenile delinquency*, and *revocation of conditional release*.

Class 3 was characterized by mild elevations of several clinical scales on the PAI, including Antisocial features, Borderline features, Anxiety, Depression, and Schizophrenia. Class 3 was likely to exhibit the traits *lack of remorse*, *poor behavioral control*, *promiscuous sexual behavior*, *impulsivity*, *irresponsibility*, *failure to accept responsibility*, and *revocation of conditional release*.

Class 4 was characterized by slight elevations of the Drug problems and Alcohol problems scales on the PAI, and low probabilities of the presence of most psychopathic traits as measured by the PCL-R, except *promiscuous sexual behavior* and *revocation of conditional release*.

Class 5 was characterized by elevated Negative impression management and moderate elevations on nearly all scales of the PAI. In regard to psychopathic traits, Class 5 was likely to exhibit *lack of remorse/guilt*, *callous lack of empathy*, *poor behavioral control*, *promiscuous sexual behavior*, *impulsivity*, *failure to accept responsibility*, and *revocation of conditional release*. When compared to other classes, Class 5 was least likely to exhibit *glibness/superficial charm*, *many short-term marital relationships*, and *criminal versatility*.



## CHAPTER IV

### Discussion

I used an LCA approach to investigate the presence of psychopathy subtypes within a population of adult male sex offenders who received high ( $\geq 25$ ) ratings on the PCL-R, using PCL-R item scores and PAI scale scores in model analyses. This is the first study to investigate the presence of psychopathy subtypes within a sex offender population, and the results suggest primary and secondary psychopathy subtypes exist within a sex offender population. This is also the first study to use both the PAI and PCL-R in analyses. The inclusion of PAI data allowed for more detailed descriptions of latent classes and results imply the PAI provides strong evidence in differentiating latent subtypes of psychopathy. Although the inclusion of PAI data was a new addition to previous psychopathy subtype literature, the PAI profiles of the primary and secondary subtypes were consistent with expectations based on past literature using general offender samples. Similar to the findings of several previous studies, two subtypes emerged: one characterized by interpersonal and personality traits of psychopathy and few comorbid psychopathologies, and another characterized by behavioral traits and high rates of comorbid psychopathologies such as anxiety and depression. The results suggest that an offender with high scores on the PCL-R and low elevations across PAI scales may best be described as a primary psychopath, and an offender with high scores on the PCL-R and elevated psychopathology on the PAI may best be described as a secondary psychopath. Thus, PAI profiles may provide strong evidence when differentiating primary from secondary psychopathy in a population of offenders with high PCL-R scores.

A strength of this study is the availability of PCL-R item data for analyses, rather than just facet or factor scores more commonly reported in SVP evaluations. By using item ratings in this study, results suggest that particular items, rather than overall facets, differentiate primary and secondary psychopathy subtypes in this sample. For example, previous literature has suggested that primary psychopathy is defined by interpersonal and personality trait elevations (defined by Facets 1 & 2 of the PCL-R). In the sample used for this study, the primary subtype was differentiated by certain items on these facets (glibness/superficial charm & grandiose sense of self worth), but not others (e.g. callous lack of empathy, shallow affect). However, this sample may be more homogenous than those used in previous research simply due to the fact that all offenders were convicted of sex offenses and evaluated in the same geographical region of the United States.

I also investigated latent profiles of offenders using the entire sample in order to compare to previous sex offender subtype research. Some findings were consistent to those of Miller et al. (2009). Specifically, Class 2, Class 4, and Class 5 of this study exhibited very similar PAI profile averages to Class 1 (*moderate defensiveness*), Class 2 (*drug and alcohol problems*) and Class 4 (*extensive psychopathology*) described by Miller and colleagues. The results of this study expand on previous sex offender subtypes studies through the inclusion of PCL-R item data. For example, although Class 1 and Class 4 of this study exhibited similar average PAI scale elevations, the PCL-R item probabilities differentiated the classes. Class 1 exhibited high levels of interpersonal and personality psychopathic traits, whereas Class 4 generally exhibited low levels of psychopathic traits. This differentiation of classes by the PCL-R, rather than the PAI,

could be one reason why this study found five latent classes, rather than four as found by Miller et al. (2009). This suggests levels of psychopathic traits may differentiate otherwise similar subtypes of sexual offenders.

### **Implications for Developmental Theories**

Early theories (see Karpman, 1941) of primary and secondary psychopathy proposed the primary subtype was constitutionally psychopathic, whereas the secondary subtype developed psychopathic traits as a reaction to environmental and life stressors (see Karpman, 1941). Consistent with this developmental theory, the secondary subtype in this study demonstrated elevated Traumatic stress as measured by the PAI. If primary and secondary psychopathy are differentiated by separate developmental pathways, as past theorists have suggested and as this finding seems to support, this may necessitate different approaches to treatment and intervention. Rather than approaching treatment and invention similarly for all patients with high levels of psychopathy, it may be important for treatment providers to consider the *type* of psychopathy exhibited by their client.

### **Implications for Practice**

Due to the lack of data related to recidivism or other outcomes, no definitive conclusions about risk or rehabilitation can be drawn from the present study. However, certain variables in the data provide information related to implications for success or failure in treatment or community corrections. The primary subtype exhibited higher average elevations of Treatment rejection compared to the secondary subtype on the PAI, but both subtypes exhibited nearly identical probabilities (.83 and .82) of a 'present' rating for *revocation of conditional release*. This may suggest neither subtype fares well

in community corrections but the secondary subtype may be a better candidate for therapy/treatment and possibly rehabilitation. The finding that secondary psychopaths may be better candidates for treatment is consistent with past literature suggesting primary psychopaths exhibit a higher risk for violent recidivism, based on the strong association between Factor 1 scores and violent recidivism (Vassileva, Kosson, Abromowitz, & Conrod, 2005). Considering these implications along with implications of developmental theories, secondary psychopathy may have a higher rate of treatment success or rehabilitation. Further, there may be more of a possibility for early intervention if secondary psychopathy is influenced by early life stressors. The field would certainly benefit from studies investigating the differences in developmental trajectories and outcomes between primary and secondary subtypes of psychopathy.

### **Limitations**

Data used in this study were gathered from psychologists in the state of Texas, who reviewed and reported data from previous sexually violent predator evaluations in their records. There are significant limitations to this type of data collection. Firstly, there is no way to evaluate interrater reliability, or check for human coding errors. Secondly, the data collected were from a limited number of evaluators within the state of Texas, limiting the generalizability of these findings. The number of observations that did not include PAI scores also limits these findings. Although addressing missing data is a strength of the SEM approach, as discussed earlier, the inclusion of PAI data for all observations in this sample would either strengthen or change the findings of this study.

The clinical implications of this study are limited due to the nature of the data set. Although some theories can be posed in regard to the results of the PAI treatment

implication scales and the *revocation of conditional release* item on the PCL-R, it is not possible to make definitive statements about how these latent classes differ in regard to treatment response, rehabilitation, or recidivism. Although follow-up data on these offenders such as re-arrest rates would be ideal, it was simply not available. The field would benefit from future studies investigating the criminal and clinical outcomes of these latent subtypes.

### **Conclusions**

The findings of this study are consistent with earlier studies examining primary and secondary psychopathy, as well as studies examining latent subtypes of sex offenders. This study merges these two previously separate lines of research and provides new implications: 1.) That previous findings of four-class models within general sex offender samples may be differentiated into five-classes when measures of psychopathy are used, 2.) That scale elevations on the PAI may differentiate primary and secondary subtypes of psychopathy in a sample of offenders with high PCL-R scores and, 3.) That, similar to findings using general offender samples, analyses using sex offender samples demonstrate psychopathy is a heterogeneous construct defined by a primary and secondary subtypes.

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 Designed and facilitated the Sex Offender Sanctions Group of 2012  
 Facilitated a victim empathy class for non-sex-offender probationers

*Population:* Adult males serving probation sentences in Denver Colorado

*Supervisor:* Jaimee Zeyzus, M.A.

**June 2010 – August 2010**      **Cherry Creek Psychology**  
*Denver, Colorado*

*Title:* Intern/Office Clerk

*Duties:* Transferred records into electronic filing system  
Gained experience in observing competency to stand trial and disability evaluations

*Supervisor:* Maxamillian Wachtel, Ph.D.

**January 2010 –** **Decision Analysis** (Trial Consultation)  
**May 2010** *Los Angeles, California*

*Title:* Intern

*Duties:* Compiled literature reviews of relevant research  
Data entry of mock trial studies  
Observed mock trial research

*Supervisor:* Richard Gabriel

### **SUPERVISORY EXPERIENCE**

**May 2016 –** Sam Houston State University  
**August 2016** *Huntsville Texas*

*Title:* Peer Supervisor

*Duties:* Supervised a first-year doctoral student during their practicum course  
Provided written and oral feedback on foundational therapy techniques

*Supervisees:* First-year doctoral students

*Supervisor:* Mary Alice Conroy, Ph.D.

### **RESEARCH**

**August 2013 –** **Sexually Violent Predator Policy and Assessment Laboratory**  
**Present** *Sam Houston State University*  
*Huntsville, Texas*

*Duties:* Research design, implementation, and data collection  
Data analysis using SPSS and MPlus  
One first author publication  
Two first author paper presentations  
Two first author poster presentations, one co-author presentation

*Dissertation:* Latent Class Analysis of Psychopathy Subtypes in a Sex Offender

## Population

*Thesis:* Evaluators' Integration of Multiple Assessment Instruments and other Clinical Data in Sex Offender Risk Evaluations

*Supervisor:* Marcus Boccaccini, Ph.D.

**August 2012 –  
May 2013**      **University of Denver Graduate School of Professional  
Psychology**  
*Denver, Colorado*

*Duties:* Research design, implementation, and data collection  
Data analysis using SPSS  
One First author publication  
One co-author paper  
One co-author paper presentation

*Supervisor:* William N. Gowensmith, Ph.D.

**May 2012-May  
2011**      **Thinking Laboratory**  
*Occidental College*  
*Eagle Rock, CA*

*Duties:* Survey administration, data collection  
Data analysis using SPSS  
One co-author publication  
One co-author poster presentation

*Supervisor:* Andrew Shtulman, Ph.D.

## **PUBLICATIONS**

**McCallum, K. E.,** Boccaccini, M. T., & Bryson, C. N. (2017). The influence of risk assessment instrument scores on evaluators' risk opinions and sexual offender containment recommendations. *Criminal Justice and Behavior, Advanced online publication*, 1-23. doi:10.1177/0093854817707232

Gowensmith, W. N., Sessarego, S., McKee, M., Horkott, S., **McCallum, K.**, Maclean, N. (In Press). Diagnostic field reliability in forensic mental health evaluations. *Psychological Assessment*.

**McCallum, K. E.,** MacLean, N., & Gowensmith, W.N. (2015). The impact of defendant ethnicity on the psycholegal opinions of forensic mental health evaluators. *International Journal of Law and Psychiatry*, 39, 6-12. doi:10.1016/j.ijlp.2015.01.015



Shtulman, A., & **McCallum, K.** (2014). Cognitive reflection predicts science understanding. Proceedings of the 36th Annual Conference of the Cognitive Science Society, 2937-2942.

**McCallum, K.** & Nassab, N. (2012). A graduate student's guide to attending conferences. *Colorado Psychologist, XL(5)*, 6-7.

### **CONFERENCE PRESENTATIONS**

**McCallum, K.,** & Boccaccini, M. T. (2016, August). Examining the relationship of the PCL-R to past treatment success and evaluator opinions of treatment amenability in sex offender risk evaluations. Poster presented at the annual meeting of the American Psychological Association, Denver, CO.

**McCallum, K.,** & Boccaccini, M. T. (2016, March). Do evaluators consider the combination of sexual deviance and psychopathy as a separate risk factor in sex offender risk assessments? Paper presented at the meeting of the American Psychology-Law Society, Atlanta, GA.

**McCallum, K.,** & Boccaccini, M. T. (2016, March). Clinical judgment may be more influential in sex offender risk assessments, despite the use of actuarial measures. Poster presented at the meeting of the American Psychology-Law Society, Atlanta, GA.

Pennington, C. R., Marshall, K. K., Bryson, C. N., **McCallum, K. E.,** Ridge, B. E., Cheiffetz, R. T., Stanford-Galloway, P., & Schmidt, A. T. (2016, February). The role of executive functions in externally-valid decision-making processes. Poster presented at the International Neuropsychological Society annual meeting, Boston, MA.

Ridge, B. E., Pennington, C. R., Bryson, C. N., **McCallum, K. E.,** Marshall, K. K., & Schmidt, A. T. (2016, February). Connecting the dots: Relating executive dysfunction to the externalizing spectrum of psychopathology. Poster presented at the 44th Annual Meeting of the International Neuropsychological Society, Boston, MA.

Gonzales Jr., E., Varela, J. G., Damnjanovic, T., **McCallum, K.,** & Bate, B. P. (2015). Suicidality in a community corrections sample: Expanding the interpersonal theory of suicide with violent criminal perpetration and victimization. Poster presented at the meeting of the American Psychology-Law Society, San Diego, CA.

Pennington, C. R., Schmidt, A. T., Ridge, B. E., **McCallum, K. E.,** Bryson, C. N., Marshall, K. K., Cheiffetz, R. T. (2015). Personality traits influence processing speed performance in a neurologically intact sample. Poster presented at the meeting of the International Neuropsychological Society, Denver, CO.

**McCallum, K., & Boccaccini, M. T.** (2015, March). Integration of actuarial measures in sex offender risk assessment. Paper presented at the meeting of the American Psychology-Law Society, San Diego, CA.

Chevalier, C., **McCallum, K.**, Bryson, C., & Boccaccini, M. T. (March, 2014). Risk instrument use and integration in sexually violent predator evaluations. Poster presented at the meeting of the American Psychology-Law Society, New Orleans, LA.

**McCallum, K.**, Boccaccini, M. T., & Bryson, C. (2014, March). When and how often are evaluator recommendations inconsistent with results of actuarial measures in risk assessments? Poster presented at the meeting of the American Psychology-Law Society, New Orleans, LA.

Nassab, N., **McCallum, K. E.**, & Gowensmith, W. N. (2013, March). Reliability of diagnoses in forensic evaluation. Paper presentation at the annual meeting of the American Psychology-Law Society, Portland, OR.

Purta, M., **McCallum, K. E.**, Nassab, N., & Gowensmith, W. N. (2013, March). Consistency of violence risk prediction across professional disciplines. Paper presentation at the annual meeting of the American Psychology-Law Society, Portland, OR.

Gowensmith, W. N., **McCallum, K.** & Nassab, N. (2012, August). Does a defendant's ethnicity impact the psycholegal opinion of a forensic expert witness? Paper presentation at the 120th meeting of the American Psychological Association, Orlando, FL.

### **PROFESSIONAL MEMBERSHIPS**

**2012-Present** American Psychological Association, Student Affiliate

**2012-Present** American Psychology-Law Society (APA Division 41)

### **HONORS, AWARDS, & SCHOLARSHIPS**

**2012-2013** Dean's Scholarship  
*University of Denver, Graduate School of Professional Psychology*

**2008-2011** Trustee Scholarship  
*Occidental College*

**2008-2011** PsiChi Honor Society  
*Occidental College*