

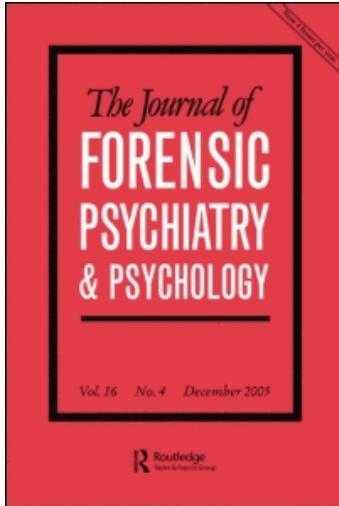
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## RESEARCH ARTICLE

# Psychopathy scores reveal heterogeneity among patients with borderline personality disorder

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The treatment and management of individuals with borderline personality disorder (BPD) in psychiatric and forensic settings can be exceptionally challenging because such individuals usually evidence serious emotional and behavioral difficulties, including self-harm, impulsivity, affect dysregulation, and aggression. Utilizing a sample of 221 psychiatric patients meeting criteria for BPD, the current study systematically examines the underlying heterogeneity in BPD vis-à-vis psychopathy in an attempt to identify meaningful subgroups. We used latent profile analysis, bootstrapping techniques and analysis of variance to items in a scale assessing psychopathy to identify four subtypes of BPD which differed significantly by gender, level of psychopathy, criminal history and other salient characteristics. Findings hold significant implications for treatment and for guiding the refinement of existing evidence-based interventions and community management strategies.

**Keywords:** BPD; psychopathy; latent class analysis; violence; dialectical behavior therapy; evidence-based treatment

## Introduction

Borderline personality disorder (BPD) is a severe and persistent mental disorder characterized by pervasive instability in affects, mood, interpersonal relationships, self-image, and behaviors. The treatment and management of individuals with severe personality disorders, particularly the borderline personality subtype, continues to be a significant challenge for the behavioral health care and criminal justice systems; indeed such disorders create 'a substantial burden of illness for society' (Hyman, 2002, p. 933). Clinically, BPD is quite heterogeneous in terms of the range of emotional and behavioral difficulties expressed, including self-harming behavior, impulsivity, emotion dysregulation, and violence (Leihener et al., 2003).

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Furthermore, individuals sharing the diagnosis of BPD may present very differently (Sanislow et al., 2002).

Existing clinical and research literature has primarily focused on links between BPD characteristics, mood and anxiety symptoms, and self-harm (Gunderson, 2001; Linehan, 1993). Relatively little is known about the prevalence and characteristics of interpersonal aggression and co-morbid conditions such as antisocial personality disorder (ASPD) and psychopathy among individuals with BPD. This is perhaps due to biases in the conceptualization of it as predominantly a female disorder (Adler, Drake, & Teague, 1990) and the clinical underestimation of aggressive psychopathological behavior among female psychiatric patients in general (Newhill, Mulvey, & Lidz, 1995). Co-morbid conditions, however, can significantly impact an individual's response to established treatment of the primary disorder and, thus, must be taken into consideration when designing and delivering services (Reich & Vasile, 1993).

The limited research that does exist has shown that BPD may be associated with elevated levels of psychopathy, a condition characterized by superficial charm, egocentricity, incapacity for empathy, guiltlessness, lack of remorse and shame, lack of insight, and an amassment of externalizing behaviors (Cleckley, 1976; Hare & Neumann, 2008; Millon, Simonsen, Birket-Smith, & Davis, 1998). For instance, Herpertz et al. (2001) noted similarities in forensic patients with BPD and psychopathy in terms of their marked impulsivity and proneness for antisocial behavior. Raine (1993) found significant overlap between BPD and involvement in extreme forms of violence, such as murder. Although his study did not include measures of psychopathy, Raine (1993, p. 277) observed that 'because borderline personality disorder includes features such as unstable and intense interpersonal relationships, impulsivity, intense anger, and affective instability, it could be argued that this personality constellation may make an individual susceptible to interpersonal violence'. Conceptually, this is congruent with a psychopathic profile of an individual with strained interpersonal relationships, impulsivity, anger, and proneness for engaging in interpersonal disputes (DeLisi & Vaughn, 2008; Hare & Neumann, 2008).

Because, similar to those with borderline personality, individuals presenting with characteristics of psychopathy are collectively quite heterogeneous, numerous attempts have been made to identify meaningful homogenous subgroups within the disorder (Poythress & Skeem, 2006; Thomas-Peter, 1992). Modern approaches to the clinical understanding of psychopathy began with Cleckley's (1941/1976) conceptualization, which came to be known as the 'primary psychopath'. Cleckley's contemporary, psychiatrist Karpman (1941), identified another form of psychopathy which he termed the 'secondary psychopath'. The empirical study and

classification of 'psychopathic offenders' has been led by the work of Blackburn (1971, 1975, 1998). Blackburn's early work classified such offenders as falling into four groups. Two of the groups consisted of offenders with 'overcontrolled' personalities, which he labeled the 'controlled' type and the 'inhibited' type. The other two groups were classified as 'undercontrolled' personality offenders (Blackburn, 1971). Further study of the two 'undercontrolled' groups, led to a classification of one group as 'primary psychopaths' and the second group as 'secondary psychopaths', a refinement of Cleckley and Karpman's work, with the primary difference being the degree of withdrawal (Blackburn, 1975). The 'primary psychopath' is extraverted, impulsive, aggressive, confident, dominant, and low to average in anxiety, whereas the secondary psychopath is impulsive, aggressive, socially anxious, moody, more submissive, and low in self-esteem (Blackburn, 1998). Blackburn (1998) argues that secondary psychopaths are 'predominantly borderline personalities' although he stops short of saying the two conditions are synonymous. However, it is important to note that Blackburn's work has employed samples of personality disordered incarcerated offenders, not civil or non-forensic psychiatric populations, such as the sample in the study reported here. Skeem, Poythress, Edens, Lilienfeld, & Cale (2003) suggest that secondary psychopathy includes borderline personality traits and narcissism and that such traits may be useful in distinguishing between subtypes of psychopathy but do not suggest that they are the same disorder.

### *Current focus*

The current study systematically investigates the nature of the underlying heterogeneity in BPD vis-à-vis psychopathy in an attempt to provide a better understanding of subgroups of individuals that meet criteria for BPD but evince differences in terms of other psychiatric symptoms and antisocial behaviors. Specifically, we employed a longitudinal, multi-site sample of 221 subjects meeting DSM-III-R diagnostic criteria for BPD and utilized latent profile analysis (LPA) of items in a scale assessing psychopathy, bootstrapping techniques, and analysis of variance to identify latent classes describing specific subgroups of individuals with BPD. Previous research has shown that different subtypes of individuals with BPD evidence different treatment outcomes (Digre, Reece, Johnson, & Thomas, 2009). Extending this line of investigation further, we believe a better understanding of BPD subgroups and how they are related to psychopathy could assist in developing modifications of existing evidence-based therapies to better target differential client needs in psychiatric and forensic services both in institutions and community settings.

## **Methods**

### ***Participants***

This research was conducted using a subsample of individuals diagnosed with BPD from the MacArthur Violence Risk Assessment Study (see Monahan et al., 2001). The overall sampling frame for the MacArthur Violence Risk Assessment Study comprised psychiatric patients recruited from inpatient units in three cities (Pittsburgh, Pennsylvania; Kansas City, Missouri; and Worcester, Massachusetts). Participants were included if they were between the ages of 18 and 40 years, spoke English as a primary language, had been hospitalized for less than 21 days, and carried a medical chart diagnosis of schizophrenia, schizophreniform disorder, schizoaffective disorder, major depression, dysthymia, bipolar disorder, brief reactive psychosis, delusional disorder, alcohol or other drug abuse or dependence, or a personality disorder. A total of 1695 patients met the inclusion criteria and were recruited, 1136 (71%) of whom agreed to participate. Approximately half (57%) of the participants were male, and a majority were Caucasian (69%) or African American (29%), with ages ranging between 18 and 40 years ( $M = 30.00$ ,  $SD = 6.00$ ). Participants were diagnostically heterogeneous and evaluated using the DSM-III-R checklist (Janca & Helzer, 1990), with 40% diagnosed with a depressive disorder, 24% with a substance abuse/dependence disorder, 17% with schizophrenia, 13% with bipolar disorder, 4% with a psychotic disorder other than schizophrenia, and 2% with a personality disorder only. Most participants (71%) had at least one prior psychiatric hospitalization and 42% were hospitalized involuntarily at the time of study recruitment.

### ***Procedures***

Study participants were assessed at baseline using the measures outlined above to gather information regarding psychiatric diagnosis, SES, demographics, and criminal history. During subsequent follow-up periods, the Psychopathy Checklist – Screening Version (PCL-SV; Hart, Cox, & Hare, 1995) was administered to assess levels of psychopathy. The Structured Interview for DSM-III-R Personality (SIDP-R; Pfohl, Blum, Zimmerman, & Stangl, 1989) was administered during the second or third follow-up periods. Of the 1136 individuals who received a baseline assessment, 951 were available for at least one study follow-up and 801 received a SIDP-R assessment. Those who did not receive a SIDP-R assessment were not included in this study. Individuals available for follow-up were compared to those assessed at baseline and results indicated that individuals who completed follow-up assessments were more likely to have bipolar disorder, less likely to have a history of substance abuse, less likely to be gravely disabled, and less likely to have a history of violence (Steadman et al., 1998).

There were no significant differences with regard to demographic characteristics between individuals available for follow-up and those with SIDP-R assessments. Any missing data were assumed to be missing at random and were imputed using expectation-maximization procedures (Dempster, Laird, & Rubin, 1977).

### *Measures*

*Indicators of psychopathy.* Psychopathy was assessed using the Psychopathy Checklist-Screening Version (PCL-SV; Hart, Cox, & Hare, 1995), by interviewers trained in its administration. The PCL-SV was designed to be used in non-criminal settings and has shown to be strongly correlated with the parent instrument, PCL-R (Hare & Neumann, 2008; Hart, Cox, & Hare, 1995). The PCL-SV consists of 12 items rated on a 3-point scale that assesses both interpersonal manipulativeness and narcissism, behavioral and emotional control, and social deviance. Items are summed to provide an overall psychopathy rating, with higher scores reflecting greater levels of psychopathy. The items were used to identify classes across the pool of participants. Their means and standard deviations can be found in Table 2. Previous research has shown the PCL-SV to be a predictor of future violent behavior in this sample (Skeem & Mulvey, 2001). Internal consistency reliability in the present study sample was  $\alpha = .84$ . There is considerable debate about the structure of the psychopathy construct and whether it is best constituted by two, three, or four factors (Cooke & Michie, 2001; Hare & Neumann, 2008; Skeem, Mulvey, & Grisso, 2003; Vitacco, Neumann, & Jackson, 2005), and whether dimensional approaches to measurement are superior to categorical approaches (Pryor, Miller, & Gaughan, 2009), however, evaluating this empirical question is not our current focus. Instead, the current study is interested in the extent to which psychopathic traits are present among patients with BPD.

*BPD.* The presence of BPD and other personality disorders (including narcissistic, histrionic, sadistic, and antisocial) used as external covariates was assessed using the Structured Interview for DSM-III-R Personality (SIDP-R; Pfohl et al., 1989). The SIDP-R is a commonly used diagnostic interview for DSM-III-R personality disorders that has been shown to be a reliable method of arriving at personality disorder diagnoses (Rogers, 2001).

*NEO personality dimensions.* The NEO-Five Factor Inventory (NEO-FFI) (Costa & McCrae, 1989) is a 60-item scale designed to measure five domains of adult personality (i.e. neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness). Research has demonstrated a strong correlation between the NEO-FFI and the full NEO-Personality Inventory (NEO-PI) (Costa & McCrae, 1992). The NEO-FFI uses a Likert-type scale

that ranges from 1 (strongly disagree) to 5 (strongly agree). Numerous studies support the use of the five-factor model as a reliable and valid measure of adult personality, including in this sample, in particular (e.g. Costa & McCrae, 1992; Miller & Lynam, 2003; Skeem, Miller, Mulvey, Tiemann, & Monahan, 2005; Widiger & Costa, 2002).

*Verbal skills.* Verbal skills were assessed using the Wechsler Adult Intelligence Scale- Revised vocabulary subtest that comprised 35 items ( $\alpha = .93$ ).

*Impulsivity.* Impulsivity was assessed using the Barratt Impulsivity Scale (BIS) (Barratt, 1965, 1994), one of the most widely used self-administered measures of impulsivity. The BIS conceptualizes impulsivity as consisting of three main domains: motor, cognitive, and non-planning. Patton, Stanford, & Barratt (1995) reported internal consistency coefficients for the BIS-11 total score ranging from .79 to .83 across samples of undergraduates, substance-abusing patients, general psychiatric patients, and prison inmates.

*Felony conviction.* Felony conviction was derived from review of official records. We used felony conviction occurring during the past two years (0 = no, 1 = yes).

*Socioeconomic status (SES).* SES was coded using Hollingshead and Redlich's (1958) SES index. This index has been widely used in the psychiatric and sociological literature to assess SES and adjusts for education and occupation prior to hospitalization to formulate a composite SES rating with higher ratings reflecting higher SES levels.

### ***Analytic plan***

LPA was conducted with previously described PCL-SV ordinal indicators to form latent classes. Models were run using Latent GOLD<sup>®</sup> 4.0 software (Vermunt & Magidson, 2005) with the goal of analyzing one to five classes. We could have included more classes but, generally, maintaining parsimony is critical. Final optimal class solutions were based on several fit indices including maximum likelihood estimation using the Bayesian Information Criterion (BIC). Lower BIC values indicate model improvement. Additional fit indices such as class error, number of parameters, and entropy were also examined. Class assignment probabilities were also evaluated to assess class homogeneity. Bivariate residuals and zero-order correlations among PCL-SV items were checked to ensure that the assumption of local independence was not violated and no violations were detected.

We also employed bootstrapping methods in two ways. Bootstrapping is a re-sampling technique that relaxes the assumptions made about the distribution of variables and performs a large number of random iterations to compare fit indices between models (Van der Hiejden, Hart, & Dessens, 1997). The conditional bootstrapping procedure comparing models included 1000 random iterations. First, we used a bootstrap to provide an estimate that relaxed the assumption that the  $L^2$  statistic followed a chi-square distribution. This procedure indicated additional evidence of model fit. Second, comparisons were made between competing classes (e.g. four- versus three-class solution). This technique aids in adding increased validation with respect to the final number of formed classes. Finally, analysis of variance (ANOVA) with Bonferroni and Games-Howell *post hoc* comparisons and chi-square tests was used to compare mean differences and proportionality between classes across covariates. These analyses not only serve to validate the LPA but provided rich descriptions of classes.

## Results

### *Descriptive summary*

Table 1 summarizes the characteristics of the study sample. The mean age of subjects was 29.24 ( $SD = 6.02$ ). Females comprised the majority of the sample (53.4%), and Caucasians were the largest racial group (77.4%), followed by African-Americans (21.2%), and Hispanic (1.4%). Over half of the subjects (59.3%) met criteria for a personality disorder in addition to BPD. Mean PCL-SV scores were 10.40 ( $SD = 5.15$ , range = 0–24). The mean score on the Hollingshead index of SES was 65.61 ( $SD = 11.71$ , range = 22–84).

Table 1. Characteristics of persons with borderline personality disorder (BPD) ( $N = 221$ ).

Variable	$M (SD)$	$N (%)$
Age	29.24 (6.02)	
Gender		
Female		118 (53.4%)
Male		103 (46.6%)
Race		
African-American		47 (21.2%)
Caucasian		171 (77.4%)
Latino/Latina		3 (1.4%)
Socioeconomic status (SES)	65.61 (11.71)	
Psychopathy (PCL-SV)	10.40 (5.15)	
Other personality disorder		131 (59.3%)

## LPA

Using the entire sample of persons with BPD a total of five LPA models were examined, ranging from one to five classes. Each model was estimated with 10 random starts with 50 iterations. No problems with local maxima were found. The empirical fit indices are revealed in Table 2. BIC values decreased as more classes were added until, with the addition of the fifth class, values began to increase. Overall, the four-class solution exhibited the best fit based on BIC values and other fit indices such as a relatively high posterior probability of class assignment. Conditional bootstrapping (1000 iterations) showed that the four-class model was a better fit to the data ( $-2\text{Log Likelihood} = 89.232$ ,  $p < .0001$ ). The conceptual fit of the models was examined through visual inspection. This involved plotting the mean values (for each PCL-SV item) for each class.

Overall, the four-class model provided the best statistical and conceptual fit to the data. Classes consisted of (1) *impulsive/antisocial* (38%,  $n = 85$ , PCL-SV mean score = 9.74,  $SD = 2.23$ ), (2) *low psychopathic* (24%,  $n = 52$ , PCL-SV mean score = 4.15,  $SD = 1.72$ ), (3) *interpersonally exploitative/narcissistic* (20%,  $n = 43$ , PCL-SV mean score = 11.58,  $SD = 2.76$ ), and (4) *psychopathic/antisocial* (18%,  $n = 41$ , PCL-SV mean score = 18.20,  $SD = 2.57$ ). Mean PCL-SV Factor 1 and Factor 2 scores for each group are displayed in Table 3.

*Comparisons of classes*

Chi-square and ANOVA tests showed several distinctions between classes (see Table 3). There were no significant differences between classes with respect to race. However, classes did differ by gender with females comprising a significantly (69.2%,  $p < .01$ ) greater proportion of class 2 and males a greater proportion in class 4 (65.9%,  $p < .01$ ). In addition, there were significant differences with respect to age ( $F = 4.26$ ,  $p = .006$ ). A relatively high proportion of persons in class 4, *high psychopathic*, had been convicted of a felony in the past two years (28.2%,  $p = .009$ ). Several personality disorders were compared across classes. As expected there was a

Table 2. Fit indices for latent classes defined by PCL-SV items.

Class solution	BIC	L <sup>2</sup>	Entropy	Class sizes (N)
1 class	5433.51	2941.19	–	–
2 class	5059.10	2496.61	.84	134, 87
3 class	5021.19	2388.52	.77	111, 67, 43
4 class	5002.13	2299.28	.80	85, 52, 43, 41
5 class	5015.32	2242.29	.80	67, 43, 39, 39, 33

Note: BIC = Bayesian information criterion.

Table 3. Comparisons of latent classes using chi-square and ANOVA ( $N = 221$ ).

	Class 1 <i>N</i> (%) Mean ( <i>SD</i> )	Class 2 <i>N</i> (%) Mean ( <i>SD</i> )	Class 3 <i>N</i> (%) Mean ( <i>SD</i> )	Class 4 <i>N</i> (%) Mean ( <i>SD</i> )	$\chi^2$	<i>F</i> statistic <sup>a,b,c</sup>	<i>p</i> -value ( $\eta^2$ )
Age	30.4 (5.81)	30.1 (6.69)	26.6 (5.87)	29.4 (5.04%)		4.26 <sup>b,c</sup>	.006 (.14)
Race							
African-American	18 (21.2%)	6 (11.5%)	8 (18.6%)	15 (36.6%)			
Caucasian	65 (76.5%)	46 (88.5%)	35 (81.4%)	25 (61.0%)	11.59		ns
Latino/Latina	2 (2.4%)	0 (.0)	0 (.0)	1 (.5%)			
Gender							
Female	43 (50.6%)	36 (69.2%)	25 (58.1%)	14 (34.1%)	12.00		.007
Male	42 (49.4%)	16 (30.8%)	18 (41.9%)	27 (65.9%)			
SES	66.80 (10.44)	62.37 (12.10)	62.56 (14.77)	70.31 (8.01)		4.34 <sup>ef</sup>	.006 (.15)
PCL-SV factor 1	2.19 (1.37)	1.13 (1.24)	6.02 (1.77)	7.83 (1.89)		209.01 <sup>abcdef</sup>	<.001 (.74)
PCL-SV factor 2	7.55 (1.69)	3.02 (1.46)	5.56 (1.80)	10.36 (1.43)		175.30 <sup>abcdef</sup>	<.001 (.71)
Antisocial personality	84 (98.8%)	51 (98.1%)	43 (100.0%)	41 (100.0%)	1.44		ns
Antisocial personality – early onset	56 (65.9%)	19 (36.5%)	16 (37.2%)	34 (82.9%)	29.64		<.001
Paranoid personality	29 (34.1%)	11 (21.2%)	11 (25.6%)	22 (34.1%)	12.33		.006
Narcissistic personality	13 (15.3%)	9 (17.3%)	11 (25.6%)	15 (36.6%)	8.37		.039
Sadistic personality	13 (15.3%)	2 (3.8%)	6 (14.0%)	14 (34.1%)	16.05		.001
Histrionic personality	33 (38.8%)	15 (28.8%)	19 (44.2%)	14 (34.1%)	2.70		ns
Verbal IQ	31.90 (15.23)	39.18 (15.23)	35.17 (19.05)	28.45 (14.15)		3.96 <sup>a,e</sup>	.009 (.23)
BIS impulsivity	65.55 (13.11)	57.84 (15.88)	58.53 (13.04)	68.50 (14.69)		6.02 <sup>a,e,f</sup>	.001 (.08)
BIS cognitive	18.36 (4.31)	16.76 (5.68)	15.93 (5.63)	18.09 (5.04)		2.48	ns
BIS non-planning	26.35 (6.40)	23.78 (7.48)	24.05 (6.66)	29.00 (7.39)		4.87 <sup>e,f</sup>	.003 (.25)
BIS motor skills	20.84 (7.66)	17.39 (6.97)	18.55 (5.62)	21.41 (6.67)		3.58 <sup>a</sup>	.015 (.16)
NEO neuroticism	31.26 (7.51)	31.49 (7.93)	27.62 (7.78)	30.09 (6.29)		2.51	.06 (.04)

(continued)

Table 3. (Continued).

	Class 1 N (%) Mean (SD)	Class 2 N (%) Mean (SD)	Class 3 N (%) Mean (SD)	Class 4 N (%) Mean (SD)	$\chi^2$	F statistic <sup>a,b,c</sup>	p-value ( $\eta^2$ )
NEO extraversion	24.24 (7.98)	23.12 (8.01)	26.31 (6.93)	23.46 (7.60)		1.41	ns
NEO openness	25.62 (5.40)	25.57 (6.23)	26.49 (6.76)	24.34 (4.57)		.85	ns
NEO agreeableness	25.35 (5.03)	27.99 (5.99)	26.79 (5.59)	23.20 (6.12)		5.65 <sup>e,f</sup>	.001 (.15)
NEO conscientiousness	26.11 (6.56)	27.27 (8.78)	28.92 (7.03)	26.63 (7.24)		1.29	ns
Felony conviction (past two yrs)	8 (10.0%)	1 (2.0%)	2 (4.9%)	11 (28.2%)	22.11		.009

Note: Bonferroni and Games-Howell *post hoc* comparisons conducted for all ANOVAs: a = classes 1 and 2 are different; b = classes 1 and 3 are different; c = classes 2 and 3 are different; d = 1 and 4 are different; e = 2 and 4 are different; f = 3 and 4 are different.

high co-morbidity with ASPD for all four classes, however, 82.9% of the persons in class 4 possessed an early onset form of ASPD, which the DSM-III-R (1987) refers to as conduct disorder before the age of 18 years, compared to only 36.5% for class 2, *low psychopathic*, and 37.2% for class 3, *interpersonally exploitative*. Thus, the co-morbidity between psychopathy and ASPD is quite high for class 4, the ‘high psychopathic (and antisocial)’ group (83%), moderately high for the class 1 ‘impulsive/antisocial’ group (66%) and substantially lower for the other two groups (36–37%). Class 4 also had a relatively high co-occurrence of paranoid personality (34.1%), narcissistic personality (36.6%), and sadistic personality (34.1%).

ANOVA with *post hoc* comparisons (Bonferroni and Games-Howell) revealed significant differences with strong effect sizes on external measures of agreeableness ( $\eta^2 = .25$ ), non-planning ( $\eta^2 = .16$ ), motor skill problems ( $\eta^2 = .16$ ), and verbal skills ( $\eta^2 = .23$ ) with class 4, *high psychopathic*, scoring lowest in agreeableness and verbal skills and highest in non-planning and motor skill problems. Classes also differed with respect to an interval measure of SES ( $\eta^2 = .15$ ). Differences in the level of psychopathy traits across the four classes of individuals with BPD is illustrated in Figure 1.

**Discussion**

This study investigated the heterogeneity in characteristics evidenced by individuals meeting criteria for BPD with regard to items comprising the Psychopathy Checklist Screening-Version measure of psychopathy. Utilizing LPA, bootstrapping techniques and ANOVA, we identified four latent classes describing specific differential subgroups of individuals

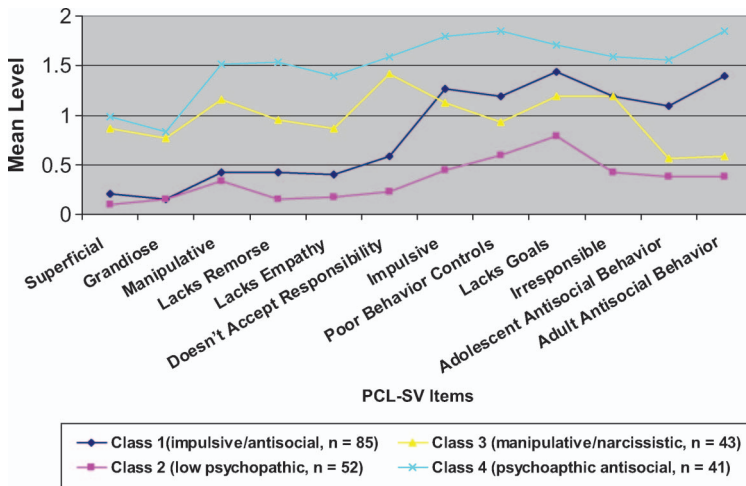


Figure 1. Level of psychopathy traits across BPD classes.

with BPD. Our findings have significant implications for evidence-based treatment development and strategies for managing such challenging patients in both community and institutional settings. Specifically, the identified classes show distinctive characteristics that identify critical differential needs that should be reflected in service delivery, given that it has been shown that the same treatment administered to different subgroups of the same disorder can lead to different treatment outcomes (Digre et al., 2009).

Most commonly, individuals with BPD are known to and treated by mental health providers. Both BPD and antisocial traits are associated with negative emotion dysregulation and impulsivity which leads to elevated risk for suicide (Douglas et al., 2008). If, in addition, the individual engages in criminal behavior, they are likely to be also involved in the criminal justice system. Whether we want to or not – and research suggests many service providers hold highly negative perceptions of individuals with BPD (Markham, 2003) and assume those with psychopathic traits are not treatable (Skeem, Monahan, & Mulvey, 2002) – we must devise appropriate and effective methods for treatment and management of this population or we risk considerable economic, human, and social costs.

Because recent reviews of randomized controlled trials of pharmacological treatments (Duggan, Huband, Smailagic, Ferriter, & Adams, 2008) and randomized controlled trials of psychological treatments (Duggan, Huband, Smailagic, Ferriter, & Adams, 2007) suggest that the overall evidence in support of treatment efficacy for personality disorders is relatively weak, identifying more effective interventions may rest on a better understanding of the heterogeneity in the presentation of personality disorders such as BPD. There are a number of evidence-based treatments with proven effectiveness in the treatment of BPD including psychodynamic psychotherapy, dialectical behavior therapy (DBT), and supportive psychotherapy (Clarkin, Levy, Lenzenweger, & Kernberg, 2007). If the subgroups suggested by our findings do exist, future research on the effectiveness of these various intervention approaches could be refined to see if there are significant differential treatment effects across the different subgroups. For the purpose of this discussion, we will address one of these three established treatments, that is, DBT, and describe how it might be modified to meet the needs implied by the unique characteristics of each class of subjects with BPD identified in the current study.

DBT is a type of cognitive behavioral treatment which focuses on teaching individuals skills for managing certain kinds of symptoms. DBT emphasizes *dialectics*, which means a ‘reconciliation of opposites in a continual process of synthesis’ (Linehan, 1993, p. 19). This approach stems from Linehan’s (1993) theory that BPD results from an underlying biologically based difficulty in emotion regulation coupled with an invalidating social environment. Thus, treatment emphasizes the dialectics

of validating the person's feelings and experiences while, at the same time, helping him or her to change patterns of emotional expression and behavior that have made their lives extraordinarily difficult. DBT has been shown to be effective across a number of populations (Scheel, 2000) but initially showed positive results with women who met criteria for BPD and engaged in repetitive parasuicidal behavior (Linehan, Armstrong, Suarez, Allmon, & Heard, 1991). The following describes how this particular treatment might be modified to appropriately treat each of the four classes of patients identified in our analysis.

Patients in class 2 – the *low psychopathic* subgroup – were predominantly female (69%) and had the lowest psychopathy scores with only 36.5% meeting the criteria for ASPD. Traditional DBT treatment could serve as an appropriate intervention for individuals in this class. Such individuals are most likely to be seen in the mental health treatment system and show relatively low levels of antisocial behavior, in spite of meeting criteria for ASPD.

Patients in class 1 – labeled the *impulsive/antisocial* subgroup – scored higher than class 2 on psychopathy and might benefit from DBT with an increased emphasis on learning impulse control skills and planning. This was the largest group (38%) of patients. For these individuals, DBT core mindfulness skills which emphasize awareness of one's thoughts, actions, or motivations, coupled with emotion regulation skills to manage negative affect could help in reducing impulsivity, suicidality, and dysregulated antisocial behavior.

Patients in class 3 – which we call the *interpersonally exploitative/narcissistic* subgroup – are individuals who present the affective and interpersonal aspects of psychopathy including lack of remorse and guilt, lack of empathy, grandiose sense of self-worth and the exploitation of others for selfish gain in combination with the characteristics of BPD (Vaughn, DeLisi, Beaver, Wright, & Howard, 2007). These are difficult individuals to engage in treatment because they tend to view their problems as molded by external factors, see their problematic behaviors as justified, and view their lifestyle as non-problematic. However, these individuals can wreak havoc in other people's lives, such as friends, family, employers, or employees, and exact a considerable cost in human suffering. Underneath their exploitative narcissistic behavior, however, is often shame and extreme lack of self-worth (Gilligan, 1996; Morrison & Gilbert, 2001; Yudofsky, 2005). The best chance of treatment engagement with such individuals lies in the basic principles of treatment of narcissistic personality, that is, consistent respect, strict honesty, and structure and limits combined with genuine empathy. Class 3 patients might benefit from learning how to be more empathic, or at least to act more empathically toward others to achieve self-beneficial results. DBT interpersonal effectiveness skills in which the patient learns how to maximize the chances that their goals in a specific situation will be

met, while at the same time not damaging either the relationship or the person's self-respect may also be helpful.

Patients in class 4 – the *high psychopathic/antisocial* subgroup – comprised the smallest group, were predominantly male (66%), and scored the highest on psychopathy. A relatively high proportion of this group had been convicted of at least one felony and the majority had histories of childhood onset of conduct disorder. However, the lower verbal skill runs counter to the descriptions of glibness and manipulateness associated with prototypical psychopathy. Outside of this, class 4 represents the typical profile of the psychopathic criminal offender whose antisocial career is lengthy and severe (DeLisi, 2001, 2005; Hare & Neumann, 2008; Vaughn & DeLisi, 2008; Vaughn, Newhill, DeLisi, Howard, & Beaver, 2008) and would probably be classified as primary psychopaths. These patients presented with many additional challenges in terms of skills and coping abilities in managing their lives and scored low on both verbal skills and motor skills. They scored the lowest on 'agreeableness', which means they lacked the capacity for compassion and cooperativeness and, instead, showed a tendency to be suspicious and antagonistic, particularly toward authority figures. In addition, they scored the highest on the 'non-planning' aspects of impulsivity in which the individual acts without planning ahead or reflecting on the consequences of his/her behavior. They also met criteria for BPD, of course.

Because of the extensiveness of their antisocial behavior, individuals in class 4 are most likely to be encountered in the criminal justice system and, thus, modifying existing treatments such as DBT for provision in this environment is important. This group presents two main challenges for clinicians. First, they are an exceptionally difficult group to engage and retain in treatment and other related services because of the severity of their personality pathology. Second, they present a complicated panoply of skill development needs and exhibit behaviors that can undermine treatment progress. However, individuals with class 4 characteristics exact a heavy toll on the criminal justice system, mental health system, and society and, thus, development of effective treatment for this population is an important goal (Vaughn & DeLisi, 2008). To date, however, there have been few randomized controlled trials of interventions delivered in inpatient or custodial settings where such individuals are likely to reside (Duggan et al., 2007).

High psychopathic antisocial individuals with BPD are most likely to be engaged if they perceive treatment as being to their advantage. Such individuals usually come to treatment on an involuntary basis – either via the criminal justice system or civil commitment procedures – and thus principles for engagement of involuntary clients are recommended. For example, one strategy is the 'quid pro quo' or 'let's make a deal' strategy (Murdach, 1980; Rooney, 1992) in which the clinician offers some small

benefit in exchange for the patient agreeing to try treatment. All of the skills modules offered in DBT, that is, emotion regulation skills, distress tolerance skills, mindfulness skills, and interpersonal effectiveness skills, are relevant to working with this population. Maintaining the dialectical approach is important as well, however, validating the patient does not mean condoning the antisocial behavior the individual has engaged in, which is a critical message to be conveyed. Furthermore, to be effective, the clinician must maintain clear boundaries and keep the responsibility for change and consequences on the client. Hopefully, as the client learns new skills and gives up some of the destructive behaviors, they will begin to 'buy into' treatment and real engagement can occur.

Although an evidence-based treatment targeted for individuals with BPD and characteristics of psychopathy has yet to be developed, recent research suggests that treatment can reduce the impairment associated with personality pathology (Blackburn, 2000) and, thus, development of such a treatment targeted to this particular population may be feasible. For instance, Evershed et al. (2003) examined the effectiveness of an 18-month trial of DBT targeting anger and violence with a sample of eight male patients with BPD who resided in a high-security forensic hospital in the United Kingdom. Findings showed that the DBT group made greater gains in reducing incidents of aggression and violence as compared to standard treatment suggesting that DBT may be an effective treatment approach for violence reduction. More recently, Nelson-Gray et al. (2006) reported positive results, including reduction in aggressive behavior using a modified form of DBT with adolescents diagnosed with oppositional defiant disorder (ODD). Furthermore, recent research has shown that provision of treatment and other social services significantly reduces recidivism among jail offenders, thus, for those individuals with BPD whose antisocial behavior results in incarceration, development of targeted treatments may have benefits for these individuals as well (University of Pittsburgh, 2008).

In summary, this study sheds light on the co-morbidity between psychopathy and BPD – two forms of psychopathology that are similar in terms of the profile of an impulsive, interpersonally chaotic individual. The participants with BPD evinced varying dimensions of psychopathic traits including a severely antisocial group with the hallmarks of enduring criminal offenders. DBT is a popular approach for the treatment of individuals with BPD, and more needs to be known about its effectiveness with individuals having BPD with additional co-morbid conditions, such as psychopathy, because treatment effectiveness may differ with such groups. Although these are challenging individuals to work with, we believe that with appropriate modifications, existing evidence-based treatments such as DBT may prove to be helpful in enabling such individuals to manage their symptoms and achieve more productive fulfilling lives.

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