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Psychopathy Variants: Empirical Evidence Supporting a Subtyping Model in a Community Sample

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Psychopathy is a personality construct typically related to deficits in interpersonal and affective functioning and antisocial behavior. Currently, the majority of research focuses on the omnibus construct of psychopathy as it applies to criminal populations. However, theories of psychopathy and empirical evidence suggest that there may be different variants of psychopathy and diverse expressions of psychopathic traits across individuals. Thus, there is a need to consider psychopathy in terms of subtypes and across more broadly defined populations. The present study used model-based cluster analysis and garnered support for the differentiation of primary and secondary subtypes in a college sample. Analysis yielded 6 clusters, 2 of which demonstrated the expected patterns of traits indexed by theories of primary and secondary psychopathy; the factors of psychopathy, anxiety, borderline personality traits, aggression, and affect, all differentiated the subtypes. Overall, the results provide continued support for the existence of psychopathy variants in college samples, initial empirical support for model of psychopathy, and aid in the understanding of psychopathy subtypes.

Keywords: psychopathy, subtypes, successful psychopathy, Psychopathic Personality Inventory (PPi-R)

Although psychopathy is not classified as a disorder in the recent *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; American Psychiatric Association, 2000), it is recognized as a personality dysfunction related to deficits in interpersonal and affective functioning (Vitacco et al., 2005). Cleckley (1941) established an initial foundation for what characteristics compose the psychopathic personality. Karpman (1941) enumerated on these ideas with his *secondary* psychopath, coining Cleckley's version the *primary* psychopath. Predominant thought suggests that the subtypes are fundamentally different in the etiology of, and motivation for their behavior (Poythress & Skeem, 2006; Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003). Primary psychopaths are believed to have a constitutional deficit in affective response manifesting in an egotistical, manipulative, and charming interpersonal style. Secondary psychopaths display a more environmentally driven antisocial, aggressive, and reward-seeking lifestyle, dominated by impulsivity and negative affective responses (see Lykken, 1995; Porter, 1996; Skeem et al., 2003).

Identifying Subtypes

Since the seminal works of Cleckley (1941) and Karpman (1941), the multifaceted nature of psychopathy has become evident. Despite a narrow array of criterion variables, lack of theoretical perspective, or methodological flaws, initial cluster analysis research supported the subtypes perspective of psychopathy (e.g., Haapasalo & Pulkkinen, 1992; Vassileva, Kosson, Abramowitz, & Conrod, 2005). In an attempt to modernize and converge subtyping theories, Skeem and colleagues (2003) proposed a model of the essential differentiators for primary and secondary psychopathy: (a) the affective/interpersonal and irresponsible/impulsive characteristics of psychopathy, (b) trait anxiety or neuroticism, (c) borderline personality traits, and (d) overt and covert narcissism (for a detailed review, see Skeem et al., 2003).

Psychopathy subtyping research and theory contend that primary psychopaths possess a deficit in affect, whereas secondary psychopaths tend to be impulsive and irresponsible (Cooke & Michie, 2001; Harpur, Hare, & Hakstian, 1989; Porter, 1996). These differences are often understood via the two-factor solution demonstrated by most psychopathy assessment inventories such as the Psychopathy Checklist—Revised (PCL–R; Hare, 1991) and the Psychopathic Personality Inventory (PPI; Benning, Patrick, Hicks, Blonigen, & Krueger, 2003; Lilienfeld & Andrews, 1996). Factor 1 consists of the personality-based items that highlight the affective and interpersonal deficits of primary psychopathy, such as superficial charm, grandiosity, manipulation, callousness, lack of empathy and guilt, and lack of respect or care for others. Factor 2 includes behavior-based items similar to the criteria for antisocial personality disorder (Hare, Hart, & Harper, 1991; Lilienfeld, 1994; Widiger & Corbitt, 1997), reflecting socially deviant behavior, aggression, irresponsibility, and impulsivity. The content and correlates of the individual factors have led some researchers (e.g., Levenson, Kiehl, & Fitzpatrick, 1995; Mealey, 1995) to suggest that the factors themselves differentiate the two subtypes of psychopathy. However, subtypes are not distinguished solely by the correlates of the factors; multiple traits and features need to be considered (Lykken, 1995).

Primary psychopaths are characterized by a lack of anxiety, whereas secondary psychopaths are driven by anxiety (Cleckley,

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1941; Karpman, 1941; Lykken, 1995). Lykken (1995) elaborated that the behavioral inhibition system (BIS) and behavioral activation system (BAS) etiologically discern primary from secondary psychopaths. Primary psychopaths do not experience anxiety and, therefore, may not inhibit their behavior in response to cues for punishment. Secondary psychopaths continue reward-seeking behaviors despite suffering anxiety related to the consequences of their actions. Research indicates that BIS and anxiety are inversely associated with Factor 1 traits, and high levels of BAS and anxiety are related to high Factor 2 traits (e.g., Harpur et al., 1989; Hundt, Kimbrel, Mitchell, & Nelson-Gray, 2008).

Meloy and Gacono (1993) suggested the existence of the *borderline psychopath*, who is characterized by psychopathic and borderline features. The impulsivity and patterns of instability in interpersonal relationships, self-image, and affect that characterize borderline personality disorder (BPD; American Psychiatric Association, 2000) have been associated with secondary psychopathy (Blackburn, 1998). As Skeem et al. (2003) note, "this overlap may characterize the impulsive, anxious, angrily reactive secondary psychopath" (p. 530), and studies have demonstrated a relationship between BPD and Factor 2 rather than Factor 1 (see Blackburn & Coid, 1998; Hart & Hare, 1989; Rutherford, Alterman, Cacciola, & McKay, 1997; Salekin, Rogers, & Sewell, 1997).

The pervasive pattern of grandiosity, need for admiration, and lack of empathy associated with narcissistic personality disorder (American Psychiatric Association, 2000) has also been noted to overlap with the psychopathy variants. Wink (1991) asserted that the distinctions between overt and covert forms of narcissism parallel the psychopathy subtypes. Primary psychopaths are characterized by overt narcissistic traits such as superiority, dominance, and self-assurance. Secondary psychopaths demonstrate covert narcissistic traits including superficial grandiosity with a lack of self-confidence and self-esteem. Research has found support for the relationship between the psychopathy and narcissism factors (Claes et al., 2009; Falkenbach, Howe, & Falki, 2013).

Most recently, three studies of male psychopathic offenders examined the psychopathy variants through model-based cluster analysis, a more objective approach for disaggregating subtypes (Hicks, Markon, Patrick, Krueger, & Newman, 2004; Poythress et al., 2010; Skeem, Johannsson, Andershed, Kerr, & Louden, 2007). Consistent with the Skeem et al. (2003) model, findings suggested that the interpersonal and affective traits (Factor 1), anxiety and negative affect (Hicks et al., 2004; Poythress et al., 2010; Skeem et al., 2007), and borderline features (Skeem et al., 2007) differentiated the subtypes. Although these studies were empirically sophisticated and based on the literature, those variables considered did not maximally differentiate the subtypes in the way theorized, and the factors of psychopathy (Hicks et al., 2004; Poythress et al., 2010; Skeem et al., 2007), BAS (Poythress et al., 2010), and narcissism (Skeem et al., 2007) did not distinguish the subtypes. In addition, none of these studies considered the compilation of variables suggested by the Skeem et al. (2003) review. It is difficult to determine whether the lack of findings regarding the factors of psychopathy can be attributed to the restricted range of psychopathy, violence, and symptoms of antisocial personality disorder in all three of the studies. Skeem et al. (2007) suggested continued research looking at multiple subtyping models across more diverse and varied samples, specifically using the PPI, the more Clecklyian and a less violence-based assessment of psychopathy traits.

Psychopathic Traits in the Community

Possession of psychopathic traits often leads to antisocial behavior and criminal activity (Hare et al., 1991; Vitacco et al., 2005). However, many individuals with these traits are able to avoid engaging in maladaptive behavior (Ullrich, Farrington, & Coid, 2008). In Cleckley's (1941) original work, he proposed that individuals with psychopathic personalities are found across all aspects of society. Recent research suggests that psychopathy is best conceptualized dimensionally rather than categorically (Edens, Marcus, Lilienfeld, & Poythress, 2006; Marcus, John, & Edens, 2004; Murrie et al., 2007; Walters, Duncan, & Mitchell-Perez, 2007), and as Marcus and colleagues (2004) point out, the apparent dimensional structure of psychopathy has implications for how psychopathy is studied and what populations are considered. If psychopathic traits fall along a continuum, differing in degree and not kind, studying noncriminal populations is essential for a complete understanding of the construct.

The limited research available suggests that considerable variance in psychopathic traits exists in community samples, and psychopathy represents a similar construct in college samples as found in correctional/forensic samples (e.g., Falkenbach, Poythress, Falki, & Manchak, 2007; Salekin, Trobst, & Krioukova, 2001). The two-factor structure of assessment instruments has been replicated (Benning et al., 2003), and the expected differential associations with external correlates have been noted in community samples. Previous research has been criticized for being limited to institutionalized samples, and Lilienfeld (1998) asserted the need to study psychopathy as a general construct across various populations, emphasizing that broader sampling is necessary for developing a better understanding of the construct of psychopathy.

Subsequent Subtyping Research

To date, only two studies have used model-based cluster analysis to identify psychopathic personality subtypes in community samples. Falkenbach, Poythress, and Creevy (2008) found evidence of two clusters that were consistent with Lykken's (1995) primary and secondary psychopathy. The primary psychopathy group had less anxiety, BIS, and more instrumental aggression, whereas the secondary psychopathy group reported higher anxiety, BAS, and hostile/reactive aggression. Like the previous studies with antisocial samples, Falkenbach et al. (2008) did not find significant differences between the groups on Factor 2; however, questions were raised about the discriminant validity of the Levenson's Psychopathy Scales (LPS; Levenson et al., 1995). Lee and Salekin (2010) used the eight subscales of the PPI—Short Form (Lilienfeld & Andrews, 1996) to analyze what psychopathic traits cluster together for males and females. They found subtypes analogous to primary and secondary psychopathy, particularly in terms of neuroticism. However, they did not create clusters based on a theoretical model of primary and secondary psychopathy. Although both studies have significant findings and suggest the existence of subtypes within nonforensic samples, additional research needs to be conducted using more updated measures and models of psychopathy subtypes.

Present Study

The review of the literature by Skeem et al. (2003) suggests that the predominant psychopathy subtyping theories converge into four domains; however, this model has yet to be empirically validated. If this model accurately captures the distinction between the psychopathy variants, then, given the dimensional structure of psychopathy, it should apply to forensic and community populations alike. Continued examination of community samples is essential for understanding the full range of features, subtypes, and the different pathways that lead to possessing these traits. Further scrutiny of the lack of differentiation of the factors of psychopathy found in previous subtyping studies is also warranted. Thus, the current study subjected the four Skeem et al. domains to a model-based cluster analysis to explore the existence of subtypes analogous to primary and secondary psychopathy in a sample of college students. Considering the sample in entirety broadens the field of study for an extensive look at the full continuum of these traits, not just those found in the upper levels of psychopathy. It was hypothesized that groups with primary or secondary psychopathic traits would differ on Factor 1 and Factor 2 traits of psychopathy, as measured by the PPI–I and PPI–II, respectively (Lilienfeld & Andrews, 1996); trait anxiety, as measured by the State–Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970); characteristics of BPD, as measured by the Borderline subscale of the Personality Disorders Questionnaire—Revised (BPDQ–R; Hyler & Rieder, 1987); and overt and covert narcissism as measured by the Narcissistic Personality Inventory (NPI–O and NPI–C, respectively; Raskin & Terry, 1988). To validate cluster analysis findings of psychopathy subtypes, we expected further analysis to reveal low BIS and negative affect (NA), and high Factor 1 traits and positive affect (PA) for those in the primary cluster. Those with secondary psychopathic traits were expected to demonstrate more Factor 2, BAS, aggression, and NA.

Method

Participants

Previous research has been criticized for considering only male participants, leaving limited understanding of psychopathic traits in female samples (e.g., Falkenbach, 2008); therefore, men and women were included in the current study. The participants were 418 college students (112 men, 294 women, and 12 did not indicate sex) whose age ranged from 18 to 45 years (M = 19.80 years, SD = 3.48). The sample was racially and ethically diverse with 21.3% (n = 89) Caucasians, 19.1% (n = 80) African Americans, 44.7% (n = 187) Hispanic, 4.3% (n = 18) Asian, 7.4% (n = 31) categorized themselves as other, and 3.1% (n = 13) of the sample did not specify their ethnic group. African American 19.1% (n = 80); did not specify (n = 13) 3.1%.

Measures

PPI (Lilienfeld & Andrews, 1996). The PPI is a 187-item self-report psychopathy measure designed for noninstitutionalized groups. Items are rated on a 4-point Likert scale (from 1 = *false* to 4 = *true*). The PPI consists of eight subscales—Machiavellian Egocentricity, Social Potency, Coldheartedness, Carefree Nonplanfulness, Fearlessness, Blame Externalization, Impulsive Nonconformity, and Stress Immunity (Lilienfeld & Andrews, 1996) and three validity scales. The PPI has excellent internal consistency in previous research (α = .70–.93) and in the present study for the PPI–Total (α = .89) and for the subscales (α = .88–.89). Benning et al. (2003) factor analyzed the PPI subscales and found two factors similar to Factor 1 (PPI–I) and Factor 2 (PPI–II). The PPI–I is composed of the Stress Immunity, Social Potency, and Fearlessness subscales and the PPI–II includes the Carefree Nonplanfulness, Impulse Nonconformity, Machiavellian Egocentricity, and Blame Externalization subscales. The current study created the respective factors by adding raw scores on the subscales that constitute each factor. In the present study, the PPI–I and PPI–II had strong internal consistency, with α = .88 and α = .89, respectively.

STAI (Spielberger et al., 1970). The Trait scale of the STAI is a 20-item self-report measure of the *general* presence or absence of anxiety. Items are rated on a 4-point Likert scale (from 1 = *almost never* to 4 = *almost always*). The STAI has excellent internal consistency (α = .86–.92) in past research and in the present sample (α = .87).

Personality Diagnostic Questionnaire—Revised (PDQ–R; Hyler & Rieder, 1987). The Borderline subscale of the PDQ–R (BPDQ–R) is a nine-item true-or-false self-report measure that assesses borderline personality traits based on the criteria noted in the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed.; *DSM-III*; American Psychiatric Association, 1980). The negative predictive power for the personality disorder diagnosis is excellent. In the current sample, the internal consistency was α = 77.

NPI (Raskin & Terry, 1988). The NPI is a 40-item self-report inventory that measures the behavioral criteria for narcissistic personality from *DSM-III*. Participants are given two different attitudes for each item and asked to select which one they most agree with. Principal components analyses yielded a seven-factor solution (Emmons, 1984): Authority, Exhibitionism, Superiority, Entitlement, Exploitativeness, Self-Sufficiency, and Vanity. Overt narcissism is assessed by combining the scores on the Authority, Exhibitionism, Superiority, Self-Sufficiency, and Vanity subscales. Covert narcissism is assessed by adding the Entitlement and Exploitativeness subscales. Alpha coefficients for the full scale and component scales range from .50 to .83. The present study has an internal consistency of α = .82 for the total scale, α = .76 for the Overt scale, and α = .77 for the Covert scale.

LPS (Levenson et al., 1995). The LPS is a 26-item self-report psychopathy measure. Items are measured on a 5-point Likert scale (from 1 = *strongly disagree* to 5 = *strongly agree*). Factor analysis of the measure yielded a two-factor structure: the Primary Psychopathy subscale (LPS–P) and the Secondary Psychopathy subscale (LPS–S). The two scales correlate at r = .40, and the coefficient alphas for the scales were .82 (LPS–P) and .63 (LPS–S); in the current sample, α = .75 and .76, respectively.

BIS/BAS (Carver & White, 1994). The BIS/BAS scales are composed of 20 self-report items that are rated on a 4-point Likert scale (1 = *disagree strongly*, 2 = *disagree somewhat*, 3 = *agree somewhat*, and 4 = *agree strongly*). The BAS scale includes three subscales: Drive, Reward Responsiveness, and Fun Seeking. Internal consistency ranges from .66 to .76. The internal consistency

in the present study for the BIS was $\alpha = .77$ and for the BAS was $\alpha = .82$.

Aggression Questionnaire (AQ; Buss & Perry, 1992). The AQ is a 29-item self-report measure using a 5-point Likert scale (from 1 = *not at all like me* to 5 = *completely like me*). It is composed of four subscales: Physical Aggression, Verbal Aggression, Anger, and Hostility. Previous coefficient alphas reflected satisfactory consistency from .72 to .89. The internal consistency in the present sample was $\alpha = .74$.

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS consists of two 10-item self-report scales designed to measure PA and NA. Respondents rate on a 5-point scale (from 1 = *very slightly/or not at all* to 5 = *extremely*) the extent to which they have experienced each of the 20 mood adjectives within a particular timeframe. The NA adjectives include *distressed*, *upset*, *hostile*, *irritable*, *scared*, *jittery*, *afraid*, *ashamed*, *guilty*, and *nervous*. The PA adjectives include *interested*, *excited*, *strong*, *enthusiastic*, *proud*, *alert*, *inspired*, *determined*, *attentive*, and *active*. Internal consistency ranges from .86 to .90 for the PA scale and from .84 to .87 for the NA scale; in the current sample, $\alpha = .85$ and $\alpha = .82$ for the PA and NA scales, respectively.

Procedure

College students from a northern, urban university were compensated with extra course credit for their participation in the study. On arrival, participants signed a consent form that explained the procedure approved by the university institutional review board. Each participant completed a demographics form, followed by the personality, psychopathy, and validation measures in mixed order.

Cluster Analysis

Model-based cluster analysis, a type of hierarchical clustering, is the recommended method to empirically test subtyping theories of psychopathy (Poythress & Skeem, 2006; Skeem et al., 2003). Several studies provide a detailed description of the procedures and evidence that cluster analysis is an effective method to test different theoretical models of psychopathy variants in forensic (e.g., Hicks et al., 2004) and college (Falkenbach et al., 2008) samples. In the current study, model-based cluster analysis was employed using the software package S-Plus Version 8.2 (TIBCO Software, 2010).

Cluster analysis groups people on the basis of score similarities across multiple variables, ultimately creating homogeneous subgroups within the sample population (Rapkin & Luke, 1993). Model-based cluster analysis uses various methods and assumptions about the covariance matrices of the cluster distributions, which determine the shape and structure of the data (see Fraley, 1998), including the amount of variability (size), strength of relationship (shape), and direction of relationship (orientation). There are various Bayesian methods that may be used to determine the best cluster solution, or the posterior odds ratio that one model is the best fit compared with the other models. The Bayesian information criterion is the method suggested but Fraley (1998), whereas Banfield and Raftery (1993) suggested using the approximate weight of evidence (AWE), which is the goodness-of-fit index used by this statistical program. The largest AWE value indicates the number of clusters needed for the best fitting solution. A difference of 10 between the highest AWE statistic and the next highest demonstrates odds of 150:1 in favor of the higher AWE value being the best fit, thereby objectively determining the optimal solution (Raftery, 1995).

Results

Correlations

To consider the relationships between psychopathy, clustering variables, and validation variables, we report correlations in Table 1. The PPI scales were not significantly correlated with each other ($r = .08$, $p = .10$). The PPI–I demonstrated a significant negative correlation with BPDQ–R, STAI, LPS–S, NA, BIS, and AQ–Hostility, and a significant positive correlation with NPI–O and NPI–C, LPS–P, PA, BAS, and AQ–Physical. The PPI–II demonstrated a significant positive correlation with the BPDQ–R, STAI, NPI–O, NPI–C, LPS–P, LPS–S, BAS, NA, and all AQ subscales and a significant negative correlation with PA.

Cluster Analyses

Standardized *z*-scores were calculated from raw scores on the PPI–I, PPI–II, NPI–O, NPI–C, STAI, and BPDQ–R, and were subjected to model-based cluster analyses. The best solution was a six-cluster solution (AWE = 461.58) obtained using Model S^*, which has spherical shape, and the orientation and size differ across groups (Banfield & Raftery, 1993). All other solutions were

Table 1
Pearson Correlations for Clustering and Validation Variables

Measure	PPI−I	PPI−II
PPI−II	.08	
BPDQ–R	−.13**	.59**
STAI	−.40**	.47**
NPI−O	.51**	.19**
NPI−C	.37**	.41**
LPS−P	.15**	.48**
LPS−S	−.10*	.63**
BIS	−.30**	.06
BAS	.28**	.29**
PA	.40**	−.12*
NA	−.30**	.35**
AQ−Total	−.02	.63**
AQ−Physical	.12*	.55**
AQ−Verbal	.06	.51**
AQ−Hostility	−.14**	.56**
AQ−Anger	−.08	.54**

Note. PPI–I = Psychopathic Personality Inventory—Factor 1; PPI–II = Psychopathic Personality Inventory—Factor 2; BPDQ–R = Borderline subscale of the Personality Disorders Questionnaire—Revised; STAI = State–Trait Anxiety Inventory; NPI–O = Narcissistic Personality Inventory—Overt subscale; NPI–C = Narcissistic Personality Inventory—Covert subscale; LPS–P = Levenson's Psychopathy Scale—Primary Psychopathy subscale; LPS–S = Levenson's Psychopathy Scale—Secondary Psychopathy subscale; BIS = behavioral inhibition system; BAS = behavioral activation system; PA = positive affect; NA = negative affect; AQ = Aggression Questionnaire.
* $p < .05$. ** $p < .01$.

represented by a difference of greater than 10 (next closest values were AWE = 438.81 and AWE = 355.31), suggesting that the odds of the current solution representing the correct solution are better than 150:1 (Raftery, 1995).

Figure 1 presents the mean *z*-scores for all clusters on all variables. Relative to the other clusters, one cluster had higher scores on the PPI–I and NPI–O, thus demonstrating the patterns of results projected for primary psychopathy (n = 106; women = 57, men = 45; and 4 did not report gender). Another cluster had higher scores on the PPI–II, STAI, BPDQ–R, and NPI–C, reflecting the prototypical traits of secondary psychopathy (n = 25; women = 21, men = 4*).[1] These two groups are referred to as the *psychopathic traits* groups because of their above average scores on the PPI scales. All of the other clusters were considered the *low psychopathic trait* groups. The third and fourth clusters, with below average scores on the clinical scales, were referred to as *low psychopathology* Group 1 (n= 37; women = 31, men = 6*) and Group 2 (n = 105; women = 71, men = 29*; and 5 did not report their gender), respectively. The dominant characteristics of the final two clusters were anxiety and borderline features; therefore, these were referred to as the *neurotic features* Group 1 (n = 23; women = 17, men = 6*) and Group 2 (n = 122; women = 97, men = 22*; and 3 did not report their gender), respectively.

A one-way multivariate analysis of variance (MANOVA) revealed significant differences between the clusters on all of the clustering variables. Individual analyses of variance suggested differences between the clusters on all of the clustering variables. Follow-up mean comparisons were conducted using the Tukey method. Differences between all clusters are shown in Table 2; however, for the sake of room, the narrative focuses on the psychopathic traits groups. There was a significant difference between the primary group and all other clusters on the PPI–I. There was also a significant difference between the primary and the secondary groups on the PPI–II, and both psychopathic traits groups scored higher on the PPI–II compared with all other groups. The primary group scored significantly lower than the secondary group on the STAI and the BPDQ–R. Although the trends were in the expected directions, there were no significant differences between the primary cluster and the secondary cluster on NPI–O or NPI–C.

Validation of Clusters

To validate these clusters, we performed a one-way MANOVA. Results suggest significant differences between the cluster groups on external variables that have been identified through theory to differentiate between psychopathy variants. Table 3 illustrates the means and standard deviations for all of the clusters on the validation measures. The primary and the secondary groups differed on the LPS–S, PA, NA, AQ–Total, AQ–Hostility, and AQ–Anger in the hypothesized directions, whereas the LPS–P, AQ–Physical, AQ–Verbal, BAS, and BIS did not yield significant differences between the psychopathic traits subtypes. The psychopathic traits groups were higher than all low psychopathic traits groups on the LPS–P, NPI–O, NPI–C, and BAS. The neurotic features groups had scores similar to those of the primary group on the LPS–S and the AQ, and there were no differences between the scores of the neurotic features groups and the secondary group on PANAS–PA and PANAS–NA, whereas the no psychopathology groups were no different from the primary group on PANAS–PA and PANAS–NA. The low psychopathy groups all had higher BIS mean scores than the primary group, and none was significantly different from the secondary traits group. When the AQ subscales were considered, the neurotic features Group 2 was similar to the primary group on AQ–Physical, AQ–Verbal, and AQ–Anger subscales; the neurotic features Group 1 was not significantly different from the primary group on AQ–Hostility; but all low psychopathic traits groups were significantly lower than the psychopathic traits groups on all AQ subscales.

Discussion

There is accumulating empirical evidence in support of psychopathy subtyping theory. However, questions remain regarding what characteristics most accurately differentiate the variants, particularly across a range of samples (Hall & Benning, 2006; Karpman, 1941; Lykken, 1995; Marcus et al., 2004; Skeem et al., 2003). Studying variations in subtypes and populations enables us to develop a model that encompasses all aspects of this personality type and, thus, work toward improvements in prevention and treatment of psychopathic traits manifested as antisocial behavior. The current study used model-based cluster analysis, and is the first to garner support for the differentiation of primary and secondary subtype using the theory proffered by Skeem and colleagues (2003) across a more broadly defined population. These are not necessarily clinical psychopaths, but those persons that display the psychopathic subtype patterns of traits at the lower end of the continuum. Analysis yielded six clusters, two of which demonstrated patterns of traits indexed by theories of primary and secondary psychopathy, providing further evidence for the existence of psychopathy variants in nonclinical samples.

The traits suggested by Skeem and colleagues (2003) for the most part significantly distinguished primary and secondary psychopathy in this college sample. As in other cluster analysis research, anxiety (Falkenbach et al., 2008; Hicks et al., 2004; Poythress et al., 2010; Skeem et al., 2007), borderline personality traits (Skeem et al., 2007), and affect (positive and negative; Hicks et al., 2004) maximally differentiated the primary and secondary subtypes. When examining the clusters, consistent with theory (Levenson et al., 1995; Mealey, 1995; Skeem et al., 2003), we found the expected patterns of psychopathic traits. The primary group had more interpersonal and affective traits of psychopathy than impulsive and antisocial traits, whereas the secondary group had more impulsive and antisocial psychopathy traits than affective and interpersonal traits. Other subtyping research has been less consistent in identifying differences in the factors of the PCL–R (Hicks et al., 2004; Poythress et al., 2010; Skeem et al., 2007). However, as Skeem et al. (2007) note, the lack of findings may be due to the truncated range of related symptoms in the samples used (i.e., prisoners high in psychopathy, violence, and antisocial personality disorder features). In prison settings, to meet the required cutoff score of 30 on the PCL–R, individuals must have features from both factors; therefore, if using a psychopathic sample, those in both subtype groups will necessarily have features of Factor 1 and Factor 2. The current study used a sample of college students

[1] Those *n*s marked with * indicate significant differences in the number of women versus men in each cluster.

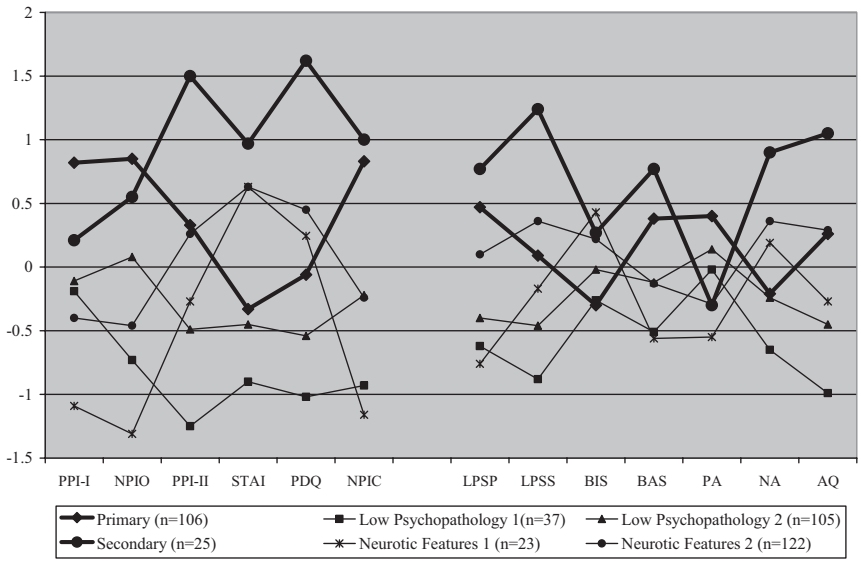

Figure 1. Mean *z*-scores for cluster groups on both cluster and validation variables.

to consider whether a different range of scores would result in distinguishing between the subtypes on Factors 1 and 2, and the results confirm this hypothesis. Interestingly, the LPS–P did not differentiate between the primary and secondary groups. In fact, both LPS scales demonstrated stronger correlations with the PPI–II and higher means in the secondary traits group compared with the primary traits group. Several studies have identified similar discriminant validity concerns with the LPS because of the overlap between the scales (Brinkley, Schmitt, Smith, & Newman, 2001; Falkenbach et al., 2007; Levenson et al., 1995; Lilienfeld & Fowler, 2006; Ross, Lutz, & Bailley, 2004).

Narcissism separated the psychopathy groups from the nonpsychopathy groups and psychopathy subtype differences were in the expected direction; however, the lack of significant differences between the psychopathy subtypes suggests that overt and covert narcissism do not maximally differentiate between the psychopathy variants. The proposed relationship between the narcissism types and psychopathy variants is theoretical and conjectural at this time. It is possible that the types of narcissism do not actually disentangle the types of psychopathy; however, the two studies to date that have considered the relationship between the types of narcissism and the factors of psychopathy found support for the expected discriminant validity (Claes et al., 2009; Falkenbach et al., 2013). Recent questions have been raised regarding the ability of the most common narcissism measures to accurately capture the pathological aspects of narcissism (Pincus et al., 2009; Vater et al., 2013), and in the current study, the overlap between the two NPI scales may prevent this particular scale from distinguishing between the subtypes.

In addition, although the patterns of results for the BIS and BAS within each subtype were as expected, the scales did not significantly differentiate between the variants. These findings have implication for subtyping theory. Correlations and subtype findings in the current study support Lykken's (1995) secondary psychopathy hypothesis. However, the current findings for the primary traits group and prior subtyping research with criminal

Table 2
Raw Score Means (Standard Deviations) Between Clusters on Clustering Variables

			Low psychopathic traits				
	Psychopathic traits		Low psychopathology		Neurotic features		
Measure	Primary	Secondary	Group 1	Group 2	Group 1	Group 2	*F*(5, 412)
PPI−I	159.94_{a} (19.65)	147.25_{b} (13.90)	$138.81_{b,d}$ (14.96)	$140.50_{b,d}$ (18.67)	120.09_{c} (17.83)	134.42_{d} (16.26)	34.15*
PPI−II	197.63_{a} (23.84)	230.10_{b} (18.89)	153.23_{c} (20.43)	174.74_{d} (24.15)	180.92_{d} (22.25)	195.51_{a} (19.25)	51.72*
BPDQ–R	3.32_{a} (1.85)	6.86_{b} (1.24)	1.28_{c} (1.02)	2.29_{d} (1.50)	$3.96_{a,e}$ (2.12)	4.39_{e} (1.77)	50.06*
STAI	40.63_{a} (8.32)	52.88_{b} (5.81)	35.24_{c} (5.92)	39.47_{a} (8.94)	49.72_{b} (6.96)	49.66_{b} (6.96)	42.90*
NPI−O	47.03_{a} (4.36)	$45.56_{a,c}$ (4.27)	$39.26_{b,d}$ (2.75)	43.25_{c} (3.84)	36.39_{b} (3.56)	40.60_{d} (3.49)	56.45*
NPI−C	17.40_{a} (2.01)	17.80_{a} (2.10)	13.28_{b} (1.46)	14.9_{c} (1.66)	12.74_{b} (1.45)	14.90_{c} (1.81)	58.40*

Note. PPI–I = Psychopathic Personality Inventory—Factor 1; PPI–II = Psychopathic Personality Inventory—Factor 2; BPDQ–R = Borderline subscale of the Personality Disorders Questionnaire—Revised; STAI = State–Trait Anxiety Inventory; NPI–O = Narcissistic Personality Inventory—Overt subscale; NPI–C = Narcissistic Personality Inventory—Covert subscale. Means that share subscripts are not significantly different and those that have differing subscripts differ at least $p < .05$.
* $p < .05$. ** $p < .01$.

Table 3
Raw Score Means (Standard Deviations) Between Clusters on Validation Variables

			Low psychopathic traits				
	Psychopathic traits		Low psychopathology		Neurotic features		
Measure	Primary	Secondary	Group 1	Group 2	Group 1	Group 2	$F(5, 412)$
LPS–P	40.39_{a} (6.96)	42.56_{a} (7.76)	32.29_{b} (5.68)	33.95_{b} (7.04)	31.28_{b} (7.00)	37.65_{c} (5.99)	20.68*
LPS–S	23.85_{a} (4.44)	28.82_{b} (2.82)	19.60_{c} (3.09)	$21.44_{c,d}$ (3.86)	$22.68_{a,d}$ (3.29)	24.98_{a} (3.54)	27.97*
BIS	18.96_{a} (2.91)	$20.64_{a,b}$ (2.96)	$19.08_{a,b}$ (2.14)	$19.79_{a,b}$ (2.77)	21.13_{b} (3.21)	20.49_{b} (3.13)	4.95*[a]
BAS	43.58_{a} (4.93)	45.60_{a} (5.24)	39.07_{b} (3.87)	41.06_{b} (4.45)	38.83_{b} (5.42)	40.98_{b} (5.04)	11.23*
PA	41.14_{a} (5.68)	$36.44_{b,c}$ (7.25)	$38.30_{a,b,c}$ (6.34)	$39.38_{a,b}$ (6.61)	34.70_{c} (8.35)	36.46_{c} (6.55)	8.39*
NA	$23.90_{a,c}$ (7.71)	32.44_{b} (6.91)	20.57_{a} (5.61)	$23.69_{a,c}$ (6.69)	$27.00_{b,c}$ (8.31)	$28.28_{b,c}$ (7.08)	14.746*
AQ−Total	89.88_{a} (18.90)	105.67_{b} (17.27)	64.61_{c} (14.57)	75.67_{d} (19.16)	$79.23_{a,d}$ (15.42)	90.53_{a} (15.82)	27.57*
AQ−Physical	$29.18_{a,b}$ (7.04)	32.56_{a} (6.14)	20.92_{c} (6.31)	23.62_{c} (6.20)	$24.17_{c,d}$ (5.68)	$27.57_{b,d}$ (6.15)	19.27**
AQ−Verbal	$17.15_{a,b}$ (3.74)	19.42_{a} (3.90)	12.35_{c} (2.86)	14.27_{c} (4.68)	$14.41_{c,d}$ (3.24)	$16.23_{b,d}$ (3.67)	16.69**
AQ−Hostility	24.17_{a} (5.70)	28.87_{b} (5.04)	18.52_{c} (5.15)	$21.07_{c,d}$ (5.79)	$23.51_{a,d}$ (5.28)	$25.93_{a,b}$ (4.64)	21.31**
AQ−Anger	$19.67_{a,e}$ (5.85)	24.67_{b} (4.98)	13.14_{c} (3.64)	16.88_{d} (5.50)	$17.39_{a,d}$ (5.40)	20.94_{e} (4.98)	23.14**

Note. LPS–P = Levenson's Psychopathy Scale—Primary Psychopathy subscale; LPS–S = Levenson's Psychopathy Scale—Secondary Psychopathy subscale; BIS = behavioral inhibition system; BAS = behavioral activation system; PA = positive affect; NA = negative affect; AQ = Aggression Questionnaire. Means that share subscripts are not significantly different and those that have differing subscripts differ at least $p < .05$.
[a] $F(5, 411)$.
* $p < .05$. ** $p < .01$.

(Poythress et al., 2010) and college (Falkenbach et al., 2008) samples are a better match with Blackburn's (2006) postulation that the temperament of the primary psychopaths results in a high BAS as well as a high BIS.

In addition, despite Lykken's (1995) assertion that the motivation for infractions committed by psychopaths is related to high BAS or low BIS functioning, the aggression patterns in the current study suggest that BIS and BAS alone are not responsible for aggression. The low psychopathology groups demonstrated low BIS and low aggression, whereas the neurotic features Group 2 had moderate BIS and BAS but above average aggression. More research is needed to continue disentangling the BIS and BAS theories.

Conclusions and Implications

This research has implications for research, theory, and practice. Previous research has been criticized for being limited to institutionalized samples, and Lilienfeld (1998) asserted the need to study psychopathy as a general psychological construct across various populations, emphasizing that this broader sampling is necessary for developing a better understanding of the construct of psychopathy. Overall, the current results provide continued support for the existence of psychopathy variants in college samples, thereby justifying continued research on psychopathy and subtypes in nonforensic samples. Ultimately, continuing to examine the various subtype models in a breadth of populations facilitates the understanding and development of a psychopathy model that accurately captures the range of personality characteristics found in psychopaths, and research must continue to consider which variables most accurately disentangle the subtypes as well as the predictive utility of the subtypes in nonforensic samples.

These results bolster assertion that these traits are the core features originally proposed by Cleckley (1941), and the paradoxical nature of psychopathy is one of the great mysteries of the disorder, motivating the need for continued research in order to gain a more complete understanding of the construct (Lilienfeld et al., 2012). Thus, this study is the initial step before advancements in assessing, diagnosing, preventing, and treating this personality disorder can be made. Because psychopathy has been notoriously difficult to treat (Gacono, Nieberding, Owen, Rubel, & Bodholdt, 2001), if select psychopathic traits repeatedly relate to a certain type of psychopath, then clinicians can develop and tailor treatments to address the specific personality deficits found in the client.

The existence of theory-driven subtypes in community samples, or those at the lower ends of the criminality spectrum, provides empirical support for the dimensionality of the construct as a whole and the two subtypes indicating a difference of degree, not kind from criminal psychopaths. In addition, the parallels between the patterns of traits demonstrated in various samples suggest that this syndrome of traits manifests in similar ways across populations, with pathology even at the subclinical level.

The primary group accounts for a large portion (25%) of the total sample and is more than 4 times the size of the secondary group. The larger group of participants in the primary group may not be unusual if one considers the dual-process theory of successful psychopathy (Hall & Benning, 2006), wherein those traits typically measured by Factor 1 and Factor 2 are orthogonal. Consistent with Cleckley's (1941) view, the traits associated with primary psychopathy but not those related to secondary psychopathy, can lead to successful adaptation in society (Hall & Benning, 2006), thus explaining why the traits of primary psychopathy may be more prominent relative to secondary traits in a community or college sample. There is, however, disagreement in the literature regarding the pathology of the traits associated with Factor 1 of psychopathy measures. Lynam and Miller (2012; Miller & Lynam, 2012) argue that the adaptive nature of "fearless dominance" (PPI–I) makes it inconsistent with psychopathy. However, the correlations of the PPI–I with aggression in the current study suggest otherwise. In the current study, the pathology of the primary traits group is more subtle than the secondary traits group. However, despite below average scores on anxiety, borderline, and

NA, they were above average on psychopathy (both factors), narcissism, BAS, and aggression. In fact, they were higher than all other groups on most of these measures, with the neurotic features Group 2 displaying similar levels of pathology on Factor 2 traits of psychopathy and aggression.

The relationship between the primary traits group and aggression suggests that, despite these recent arguments questioning the pathology of the Fearless Dominance scale of the PPI–R, there is something unique about the accumulation of traits associated with primary and secondary psychopathy that is linked to negative reports of behavior. This concept is supported by Lee and Salekin's (2010) study demonstrating elevations in risky driving in both subtypes. On a practical level, given the link of psychopathy with lie telling (e.g., Kucharski, Falkenbach, Egan, & Duncan, 2006; Williams, Spidel, & Paulhus, 2005) and academic cheating (e.g., Coyne & Thomas, 2008; Nathanson, Paulhus, & Williams, 2006), the current research has potential implications for college classroom integrity and behavior. Recent studies have linked psychopathy with sexual aggression (e.g., Fulton, Marcus, & Payne, 2010) and hypersexuality (Kastner & Sellbom, 2012). With violence, date rape, and violence on college campuses under closer scrutiny, assessments of these patterns of traits may also become important for risk prediction for these dangers.

Beyond college-specific risks, the findings from this study suggest that, even at the lower end of the psychopathy spectrum, there are implications for risk assessment. The patterns of traits found in primary and secondary psychopathy are associated with elevated aggression. Given the links found in this study and others (e.g., Falkenbach et al., 2008) between the psychopathy subtypes and particular types of aggression, these findings have implications for the types of potential problems a person could have depending on the pattern of traits he or she exhibits. Although psychopathic traits in general may predict aggression, those with secondary patterns may be more susceptible to angry and hostile reactions to perceived provocation, and those with primary patterns may be more aggressive for instrumental purposes.

In addition, the group means on aggression scores for the primary group and the neurotic features Group 2 were not significantly different from each other; however, the neurotic features Group 2 had lower scores than the primary traits group on the AQ–Verbal and AQ–Physical scales and higher scores on the AQ–Angry and AQ–Hostility scales. These results, consistent with other studies (Baumeister, 2001; Cale & Lilienfeld, 2006; Falkenbach et al., 2013; Miller, Zeichner, & Wilson, 2012), indicate that the pattern of traits including elevated anxiety, borderline traits, NA, and even minor elevations on Factor 2 traits, may also be a risk for angry and reactive aggression, even without the elevations in BAS and narcissism so often associated with aggression and violence. As such, risk assessors should consider these traits for a more comprehensive evaluation.

Limitations and Future Research

It is important to note that this study contains limitations that may have impacted the results. First, a college sample was used, and this type of sample is not necessarily representative of the general community; therefore, caution must be exercised when extending these findings. This subtyping theory should also be considered and compared in a forensic setting. Second, this study relied solely on self-report measures. Participants may have answered in a socially desirable way rather than answering in a way that truly mirrors their attitudes and behaviors. Collateral and behavioral measures would help to more objectively assess psychopathic traits, clustering variables, and correlates.

Third, and most important, the sample contained almost twice as many women as men and a large proportion of Hispanic participants. Psychopathy has traditionally been examined in incarcerated White males, and differences may exist in diverse populations (Kosson, Smith, & Newman, 1990; Swogger, Welsh, & Kosson, 2008) of both sexes (Falkenbach, 2008; Lee & Salekin, 2010). A detailed analysis of demographic variables was beyond the scope of the current study; however, studies have found that there are cultural and sex differences that may shape traits related to the subtypes of psychopathy. Future research should include more detailed analyses of potentially pertinent demographic variables, and continue to explore subtype differences across sex and race using a variety of report methods.

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