Published in final edited form as:
Personal Disord. 2014 April ; 5(2): 154–163. doi:10.1037/per0000060.

Distinct Variants of Extreme Psychopathic Individuals in Society at Large: Evidence from a Population-Based Sample

Laura E. Drislane,
Florida State University

Christopher J. Patrick,
Florida State University

Andre Sourander,
University of Turku, Turku University Hospital

Lauri Sillanmäki,
University of Turku

Steven H. Aggen,
Virginia Institute for Psychiatric and Behavioral Genetics, Medical College of Virginia/Virginia Commonwealth University

Henrik Elonheimo,
University of Turku

Kai Parkkola,
Finnish Defense Forces, Helsinki

Petteri Multimaki, and
Finnish Defense Forces, Helsinki

Kenneth S. Kendler
Virginia Institute for Psychiatric and Behavioral Genetics, Medical College of Virginia/Virginia Commonwealth University

Abstract

This study used model-based cluster analysis to identify subtypes of men who scored high in overall psychopathy (i.e., ≥ 95th percentile on the Triarchic Psychopathy Measure; n = 193) from a larger sample evaluated for service in the Finnish military (N= 4043). Cluster variates consisted of scores on distinct facets of psychopathy together with a measure of negative affectivity. The best-fitting model specified two clusters, representing ‘primary’ (n = 110) and ‘secondary’ psychopathy

Correspondence concerning this article may be addressed to Laura Drislane, Department of Psychology, Florida State University, Tallahassee, FL 32306. drislane@psy.fsu.edu.
Laura E. Drislane and Christopher J. Patrick, Department of Psychology, Florida State University, Tallahassee, FL, USA; Andre Sourander, Department of Child Psychiatry, University of Turku, Turku, Finland; Lauri Sillanmäki, Department of Child Psychiatry, University of Turku, Turku, Finland; Steven H. Aggen, Virginia Institute for Psychiatric and Behavioral Genetics, Department of Psychiatry, Medical School of Virginia/Virginia Commonwealth University, Richmond, VA, USA; Henrik Elonheimo, Faculty of Law, University of Turku, Turku, Finland; Kai Parkkola and Petteri Multimaki, Finnish Defense Forces, Helsinki, Finland; Kenneth S. Kendler, Virginia Institute for Psychiatric and Behavioral Genetics, Departments of Psychiatry and Human Genetics, Medical School of Virginia/Virginia Commonwealth University, Richmond, VA, USA.

(*n* = 83) groups. Compared to a low-psychopathy comparison group (*n* = 1878), both psychopathy subgroups showed markedly elevated levels of externalizing symptoms and criminal behavior. Secondary psychopathic participants also reported high levels of internalizing problems including anxiousness, depression, and somatization, and scored higher on the disinhibition facet of psychopathy relative to the primary group. By contrast, primary psychopathic individuals reported fewer internalizing problems than either the secondary psychopathy or comparison groups and scored higher on the boldness facet of psychopathy. Primary psychopathic participants also had higher rates of violent crimes than the secondary psychopaths. Implications for conceptualizing and studying psychopathy in non-forensic populations are discussed.

Keywords

psychopathy subtypes; crime; antisocial behavior; model-based cluster analysis; epidemiology

Research on psychopathy has tended to focus on the disorder as a unitary condition encompassing a homogenous set of individuals. It may be the case, however, that there are subtypes of psychopathy that differ in phenotypic expression, external correlates, and perhaps etiology. The present study sought to identify subtypes of high-psychopathic individuals in a population-based sample by clustering individuals in terms of profiles of scores on distinct boldness, meanness, and disinhibition facets of psychopathy (Patrick, Fowles, & Krueger, 2009) along with scores on a measure of negative affectivity (or neuroticism), long considered important for differentiating psychopathic subgroups (Cleckley, 1976; Karpman, 1941). A strict selection criterion was used to classify individuals as psychopathic (≥95th percentile of overall scores on a self-report inventory of psychopathy) to provide for subgrouping of individuals likely to show clinically significant levels of psychopathic tendencies as evidenced by collateral records (i.e., official crime registry data).

Psychopathy Subtypes: Historic Perspectives

Cleckley (1976) portrayed psychopathy as a condition in which deficient behavioral control (expressed as impulsiveness, capricious antisocial behavior, etc.) and emotional-interpersonal deficits (e.g., lack of remorse, incapacity for love) are accompanied by an appearance of psychological stability, in the form of social poise and good intellect, absence of delusions or irrationality, lack of nervousness, and immunity to suicide. Relative to other psychiatric disorders, this observed emotional stability was particularly striking to Cleckley, who noted that “psychopaths are very sharply characterized by the lack of anxiety” (1976, pp. 271).

Karpman (1941) noted the presence of a subset of erratic/antisocial individuals exhibiting high levels of anxiety and depression along with anger, aggression, and impulsiveness, who he labeled “secondary psychopaths”. Karpman posited an acquired basis to this condition, in environmental adversities such as parental rejection or abuse. By contrast, he viewed primary psychopathy (i.e., the type described by Cleckley), as entailing an innate deficit in emotional sensitivity. Consistent with this conception, Lykken (1957) reported contrasting response patterns for these psychopathy subtypes in lab tasks, with the primary (low-

anxious) type distinguished from the secondary (high-anxious) type by failure to inhibit punished responses and low physiological arousal during anticipation of pain. Based on these and other data, Lykken (1995) theorized that primary psychopathy reflects low dispositional fear, where secondary psychopathy arises from temperamentally-based oversensitivity to reward cues. Blackburn and colleagues (Blackburn & Lee-Evans, 1975; Blackburn et al., 2008) likewise characterized secondary psychopathy as entailing the conjunction of high reward sensitivity and high anxiousness.

Research on Psychopathy Subtypes in Prisoners

Recent research has provided empirical evidence for primary and secondary subtypes in male offenders identified as psychopathic based on high overall scores on the Psychopathy Checklist-Revised (PCL-R; Hare, 2003). Hicks, Markon, Patrick, Krueger, and Newman (2004) used model-based cluster analysis to identify subtypes in a sample of 96 psychopathic (PCL-R ≥ 30) prisoners on the basis of personality traits. Two groups were found, labeled *emotionally stable* and *aggressive*, that appeared analogous to primary and secondary psychopathy subtypes. The stable subgroup exhibited lower levels of stress reactivity and higher dominance and well-being, whereas the aggressive subgroup showed high scores on negative affective traits (aggressiveness, alienation, stress reactivity) and low scores on traits reflecting behavioral restraint and social closeness. The two psychopathy subgroups differed substantially from one another in stress reactivity and history of physical fights (aggressive>stable), and also in IQ, age of first arrest, and scores on a measure of socialization (aggressive<stable).

Skeem, Johansson, Andershed, Kerr, and Louden (2007) used model-based cluster analysis to identify subgroups of high psychopathic prisoners (PCL-R ≥29) on the basis of PCL-R facet scores and a measure of trait anxiousness. Two clusters were identified that they labeled *primary* and *secondary*. The groups differed in levels of anxiousness (secondary>primary) and in scores on the PCL-R as a whole and its interpersonal, affective, and lifestyle facets (secondary<primary). Additionally, the secondary subgroup exhibited more symptoms of major mental disorders, along with greater irritability and withdrawal, lower assertiveness, and poorer clinical functioning.

Blackburn et al. (2008) likewise identified primary and secondary variants as two of four subgroups identified in a sample of 79 high PCL-R scoring male forensic patients classified on the basis of scores on an inventory of antisocial deviance and affiliated tendencies. The primary (“controlled”) group showed very high PCL-R Factor 1 scores and very low levels of anxiety, neuroticism, and anxiety disorder symptoms, along with high self-esteem, heightened intelligence and agreeableness, and greater histrionic and narcissistic features. The secondary subgroup displayed elevated levels of neuroticism and introversion, a high incidence of anxiety disorder diagnoses and other comorbid psychopathology, and more prominent histories of neglect, physical and sexual abuse, and posttraumatic stress disorder (PTSD).

Other subtyping studies that have focused on general samples of adult male prisoners, not preselected according to PCL-R scores (Poythress et al., 2010; Swogger & Kosson, 2007;

Vassileva, Kosson, Abramowitz, & Conrod, 2005), have likewise found evidence for primary and secondary psychopathy subtypes exhibiting patterns of external correlates largely consistent with those of high PCL-R offender studies. Primary and secondary psychopathy subtypes have also been identified using model-based cluster analysis in samples of African American male prisoners (Swogger, Walsh, & Kosson, 2008) and female prisoners (Hicks, Vaidyanathan, & Patrick, 2010).

Summary

Despite differences in participant selection, clustering methods, cluster variates, and criterion measures, primary and secondary psychopathy groups have emerged in all studies to date that have tested for subtypes in prisoner samples. Studies that have used scores on facets of the PCL-R as cluster variates have generally reported higher interpersonal and affective features for the primary group, and higher impulsive-irresponsible features for the secondary group. Other variables that have consistently differentiated these groups include anxiousness and other negative affective traits (secondary>primary), internalizing psychopathology (secondary>primary), social assertiveness/dominance (primary>secondary), impulsiveness (secondary>primary), alcohol and drug problems (secondary>primary), and reported history of childhood abuse (secondary>primary). Notably, whereas studies have generally reported higher alienation, irritability, and dispositional aggression for secondary psychopathic prisoners, higher levels of violent offending have more often been reported for the primary subgroup.

Research on Psychopathy Subtypes in Non-Prisoners

A few recent studies have sought to identify psychopathy subtypes in undergraduate and community samples (Coid, Freestone, & Ulrich, 2008; Faulkenbach, Poythress, & Creevy, 2008; Lee & Salekin, 2010). Except for Lee and Salekin (2010), who used model-based cluster analysis to subgroup undergraduates with somewhat high scores (top third) on a short form of the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996), these studies did not target participants selected to be extreme in psychopathic tendencies. As such, the clusters identified in these prior studies appear to represent largely *subclinical* variants of psychopathy. Despite these limitations, each of these studies found evidence for subtypes distinguished by differences in affective-interpersonal features of psychopathy and negative affective traits.

Current Study Rationale and Hypotheses

The current study extended prior work by using model-based cluster analysis to test for distinct subtypes among adult males from the community selected as extreme in overall scores (top 5%) on a brief self-report measure of psychopathy—the 58-item Triarchic Psychopathy Measure (TriPM; Patrick, 2010). The TriPM assesses psychopathy in terms of distinguishable facets specified by the Triarchic model of psychopathy (Patrick, Fowles, & Krueger, 2009): boldness, meanness, and disinhibition. Boldness is indexed in the TriPM by items tapping social dominance, emotional resilience, and venturesomeness; meanness is captured by items assessing for callousness, cruelty, proactive use of aggression, and lack of affiliation; and disinhibition is indexed by items reflecting impulsivity, irresponsibility,

alienation, impatience, and thievery. Evidence for the validity of the TriPM has been reported in terms of robust associations with other established measures of psychopathy (Drislane, Patrick, & Arsal, in press; Marion et al., 2013; Sellbom & Phillips, 2013; Stanley, Wygant, & Sellbom, 2013).

We expected that individuals scoring high in overall psychopathy as indexed by the TriPM would show a substantially elevated rate of criminal offences and greater criminal versatility than low to moderate TriPM scorers. In line with the approach used in a number of prior subtyping studies focusing on offenders, we utilized scores on differing facets of psychopathy along with scores on a measure of negative affectivity (i.e., anxiety/depression) as cluster variates for subtyping analyses. Our primary hypothesis, based on prior offender studies, was that at least two distinct subgroups of high TriPM scorers would be evident, one representing primary psychopathy and the other secondary psychopathy. Additionally and more specifically, based on variables shown to differentiate these groups in previous research, we predicted that: (1) the primary subgroup would be distinguished by low negative affectivity and high boldness (reflecting interpersonal features including dominance and social assurance), along with low levels of internalizing problems; (2) the secondary group would be distinguished by high negative affectivity and high disinhibition (reflecting impulsive-irresponsible features of psychopathy), along with high levels of both internalizing and externalizing problems. Further, based on prior findings (Swogger & Kosson, 2008; Vassileva et al, 2005; but see also Poythress et al, 2010 for contrasting results), we predicted that primary psychopaths would show a larger number of occurrences of violent crime compared to secondary psychopaths.

Method

Participants

Participants were adult men recruited from the Finnish military call-up roster between September and November, 2009. The call-up is a standard procedure for assessing suitability for military service that all Finnish male citizens undergo at age 18. Thus, the sample for the current study comprises a population-based sample of the cohort of Finnish men born in the year 1991. To obtain a random population-representative sample of this designated age cohort, participants were selected from the overall geographical area of Finland, with emphasis on the most densely populated southern parts of the country. The four call-up areas selected for the current study (of 19 geographical areas covering the country as a whole) were Varsinais-Suomi Regional Office, Helsinki Regional Office, North Karelia Regional Office, and Lapland Regional Office. The target sample thus consisted of 4, 910 men attending the military call-up in these four military call-up districts. Altogether, 4,324 men (88.1%) returned the questionnaires administered in the study.

Procedure

At military call-up, participants were given the option of completing a set of questionnaires on a voluntary basis for research purposes, separate from the standard call-up assessment. To ensure anonymity, responses to the questionnaire were coded by number and returned in sealed envelopes. The study was approved by the ethical committees of Turku University

and Turku University Hospital, and by the Finnish Defense Forces. The questionnaire packet included a consent form that participants read and signed prior to completing the questionnaires, which included the TriPM psychopathy inventory along with items covering demographic characteristics, clinical symptoms and problems, adaptive functioning, life events, and risky behaviors. Data were obtained from a total of 4309 18-year old males; 266 (6.2%) of these men did not to complete the questionnaire assessment, leading to a final sample of 4043.

Cluster analyses focused on the subset of men scoring at or above the 95th percentile on the TriPM as a whole (i.e., ≥ 1.80 *SD*s above the sample mean), yielding an analysis sample of 193. The use of this high cutoff reflects the assumption that psychopathy represents a low base rate phenomenon in the population at large. Nonetheless, given the very large size of the base sample, the target sample for analyses substantially exceeds *N*s (range = 79–124) for previously published cluster analytic subtyping studies that have focused on high PCL-R scoring prisoners. Participants scoring in the bottom half on TriPM total scores (n = 1878) were used as a comparison group.

Cluster Variables for Subtyping High-Psychopathy Participants

Psychopathy facets—The Triarchic Psychopathy Measure (TriPM) is a 58-item self-report inventory that includes three scales for indexing the phenotypic components of psychopathy specified by the Triarchic model of psychopathy: boldness, meanness, and disinhibition. The Boldness scale comprises 19 items that index tendencies toward social poise and effectiveness, emotional resiliency, and venturesomeness. The Disinhibition and Mean ness scales (20 and 19 items, respectively) index broad disinhibition and callous-aggression factors, respectively, from the brief-form Externalizing Spectrum Inventory (ESI-BF; Patrick, Kramer, Krueger, & Markon, in press). Scores on the three scales are summed to yield an overall Triarchic psychopathy score. Recent published research provides support for the validity of the TriPM as a measure of psychopathic features (Drislane et al., in press; Marion et al., 2013; Sellbom & Phillips, 2013).

Cluster variables consisted of the three subscales of the TriPM along with a measure of anxiety/depression (see next section). To prevent criterion contamination in follow-up comparisons of groups on crime variables and to reduce interrelatedness of scales, shortened versions of the TriPM Meanness and Disinhibition scales (11 items each) were used that omitted items referring to criminal acts (e.g., stealing, robbery) and items that correlated most strongly across the two scales. Internal consistency (Cronbach's alpha) for the TriPM total score in the overall base sample was .86; for the 19-item Boldness, 11-item Meanness, and 11-item Disinhibition scales, alphas were .77, .69, and .79 respectively.

Anxiety/Depression—Given the prominence of negative affectivity or neuroticism in theoretical models of psychopathy subtypes (i.e., Cleckley, Blackburn, Karpman), previous psychopathy subtyping studies have often included a measure of neuroticism or trait anxiety as a cluster variate (e.g., Hicks et al., 2004; Poythress et al., 2010; Skeem et al., 2007). The current study used the Anxious-Depression subscale of the YASR (18 items; α = .84) as a cluster variate along with the facet scales of the TriPM.

Criterion Variables for Validating Cluster Groups

Young Adult Self-Report (YASR)—The YASR (Achenbach, 1997) is an upward extension of the Child Behavior Checklist, Teacher's Report Form, and Youth Self-Report (Achenbach & Ruffle, 2000) that assesses for emotional and behavioral problems in individuals aged 18–30 years. Items are presented in a 3-point response format (0 = 'not true'; 1 = 'somewhat true'; 2 = 'very true or often true') and cover problems relevant to psychopathology, adaptive functioning, and social desirability. The present study utilized responses to the psychopathology items of the YASR (110 items), aggregated into scores for eight distinct problem areas (Anxious-Depression; Withdrawal; Somatic Complaints; Thought Problems; Attention Problems; Intrusiveness [i.e., disruptive, attention-seeking behaviors]; Delinquency; Aggressive Behavior; αs = .68–.84) and two broad domains of dysfunction (Internalizing, encompassing Anxious-Depression, Withdrawal, and Somatic Complaints; and Externalizing, encompassing Intrusiveness, Delinquency, and Aggressive Behavior; αs = .90 and .89). A Total Problems/Dysfunction score was also computed by summing all individual item scores (α = .94).

Criminal behavior—Data on criminal offense behaviors for participants in the present sample were acquired through the Finnish National Police Register, a nationwide electronic database maintained by the Finnish Police Administration. Access to the Register was granted by the Police Department, Ministry of the Interior. The Register includes all suspected offenders apprehended by the police; mere warnings or municipal parking fines are not included. Minor traffic violations were excluded from the analyses.

Consent for access to the Police Register records was obtained from participants separately from consent for completion of the questionnaire measures. Ninety percent of the questionnaire administration sample consented to having their Police records accessed.[1] Given the sensitive nature of criminal history information, special precautions were taken to protect confidentiality of this information. Police record data were coded by number and kept separate from participants' responses to the questionnaires, and were accessible only to the Finnish research team (Drs. Sourander, Elonheimo, and Sillanmäki), who performed analyses that utilized crime variables.

Criminal offense data were collected in spring 2011, when the participants were 19–20 years old (72% age 19). The Police Register consists of all suspected offenses that have been registered by the time of access to the data. If multiple crimes have been committed at the same time, each is registered. In each instance, the police provide an initial descriptive label for the suspected crime, which may change when official charges are brought to court. Offenses committed before age 15 are not consistently registered with the Police, as 15 is the formal age of criminal responsibility in Finland. Despite inconsistencies in reporting, in

[1]In order to clarify the impact of unwillingness to authorize access to Police records on the results for offense variables, supplemental analyses were performed. Within the comparison and secondary psychopathy groups, participants who indicated unwillingness for their crime records to be accessed did not differ significantly from those who indicated willingness in responses to any of the crime-related TriPM items (all *p*s > .30). Within the primary psychopathy group, participants who withheld consent for access endorsed the theft-related items at a higher rate than participants who provided consent to access, $t(91) = 2.93$, $p = .004$. Results of these supplemental analyses thus revealed no biases across groups that would alter the interpretation of basic findings.

the current sample, 323 participants (accounting for 602 offences) had registered offences occurring before age 15.

To provide for analyses of differing crime types, registered offenses were grouped into the following categories: violent, stealing, vandalism, other property, drug, drunk driving, traffic offenses, and miscellaneous crimes. Violent crimes were defined as overt aggressive behavior toward another person, encompassing various forms of assault, battery, and robbery. Property crimes were parsed into specific subcategories including stealing, vandalism, and other property crimes (e.g., operating a stolen vehicle, receiving stolen goods). Economic crimes (e.g., fraud, embezzlement, forgery) were also included in the "other property crimes" category. Drug offenses encompassed various drug-related activities including producing, importing, exporting, delivering, selling, purchasing, or possessing illegal drugs. Drunk driving was defined as operation of a vehicle with a blood alcohol concentration exceeding 0.05%. Traffic offenses consisted of reckless driving and driving without a license. Finally, miscellaneous crimes included offenses such as illegal possession of weapons or dangerous substances, negligence/endangerment, obstruction or resisting arrest, falsification, invasion or trespass, disturbing the public order, alcohol-related offenses, and sexual offenses.

Questionnaire Translation

The TriPM and YASR were each administered in Finnish language form. A translator reworded the original English items of these inventories into Finnish. The reworded items were then translated back from Finnish to English by an independent translator to permit evaluation of the effectiveness of translation. Back-translated items were reviewed and any that contained translation errors were re-processed through steps of translation and independent back-translation until they were deemed effective.

Data Analysis

Model fitting—Cluster analysis was conducted using the model-based clustering routine (Mclust) in the R statistical package (Ihaka & Gentleman, 1996). In contrast with traditional clustering methods, model-based cluster analysis uses a statistical goodness-of-fit approach, based on approximation of the Bayes factor, to compare models differing in the number of clusters specified and the parameters of their underlying probability distributions including volume, shape, and orientation. The Bayes factor represents the posterior probability that a given model specifying two or more clusters provides better fit to the data than the null hypothesis (i.e., that the data are derived from a single, homogenous population). The Bayesian Information Criterion (BIC) serves as an index of comparative model fit and is computed as: $2\log_{10}(p(x|M))$, where $p(x|M)$ represents the Bayes factor. The observed value of BIC for a given model reflects the probability that cases have been assigned to the proper clusters given both the parameters (volume, shape, orientation) and number of clusters in the solution. Mclust selects the model with the largest BIC value (closest to 0) as the best fitting model. If the value of BIC for the next-best model is 10 or more units lower, it can be concluded with strong confidence that the model with the larger BIC provides superior fit to the data (Raftery, 1995). If the BIC value for the next-best model differs by less than 10

units, but more than 2, it can be concluded with moderate confidence that the model with the larger BIC provides superior fit.

In the present study, 10 alternative cluster models we re evaluated. After the best-fitting model was identified, the certainty of cluster assignment for each participant was estimated by calculating the posterior probability of being assigned to each cluster of the model. Classification of an individual case was considered effective if the posterior probability of assignment to the designated cluster, P(A), was >.80.

Descriptive comparisons—Further analyses were undertaken to characterize the psychopathy subgroups specified by the best-fitting cluster model. An initial multivariate analysis of variance (MANOVA) was performed to compare the subgroups with one another and with control participants in terms of scores on the clustering variables themselves (i.e. Boldness, Meanness, Disinhibition, Anxiety-Depression). As follow-up to this omnibus analysis, post hoc (Tukey) tests were used to evaluate pairwise group effects for individual cluster variates.

Criterion-related validity of cluster groups—Convergent and discriminant validity of the psychopathy subtypes was examined by comparing the cluster groups on scale measures of internalizing and externalizing psychopathology from the YASR. An initial multivariate analysis of variance (MANOVA) incorporating all YASR subscales was performed to evaluate whether psychopathy cluster groups differed overall on these criterion measures. This was followed by Tukey's post hoc tests to identify group differences on specific criterion measures. We hypothesized that one psychopathy cluster (primary group) would exhibit low levels of internalizing problems compared to the other group(s) and low-psychopathy controls, whereas another of the clusters (secondary group) would exhibit prominent elevations on both internalizing and externalizing problems relative to the primary group and controls.

We also compared the psychopathy subtypes and the control group in terms of criminal behaviors officially-recorded by the police. Chi-square tests were employed to test for the presence of significant differences between groups (psychopathy clusters; psychopathy clusters vs. comparison group) in the frequency of having committed crimes of particular types. Our major predictions were that primary and secondary psychopathy clusters would show substantially elevated rates of criminal offending and higher criminal versatility relative to low-psychopathy controls, and that primary psychopaths would have higher rates of violent crimes than secondary psychopaths.

Results

Model Fitting

Comparative fit indices (BIC values) for each of the candidate models evaluated in the model-based cluster analysis are presented in Table 1. All of the one-cluster models fit the data less well (as indicated by larger negative BIC values) than counterpart two-cluster models. Accordingly, the null hypothesis (i.e., that the high-psychopathy sample was composed of individuals from only a single population) was rejected. The two best-fitting

models each contained two clusters specified as being ellipsoidal in distributional shape within multivariate space. The overall best-fitting model (BIC = −2825) specified two clusters of varying volume, shape, and orientation, while the next best-fitting model (BIC= −2829) specified clusters with equal volume and shape but varying orientation. Because the BIC values of the two best-fitting models differed by more than 2 points, indicating moderate support for Model 1 as providing superior fit to the data (Raftery, 1995), we chose the first of these models as the best-fitting model. All other models evinced a substantial decline in fit to the data (BIC ≤ −2834).

Having identified the best-fitting model, we next calculated the posterior probability of each high-psychopathy participant being assigned to one or the other cluster in the model. The model was able to classify most participants with a high degree of certainty. Over 87% of participants were classified effectively (P ≥ 80%), with approximately 60% classified with very high effectiveness (P ≥ 95%). This high degree of certainty of cluster assignment accords with findings from previous subtyping studies utilizing offenders (Hicks et al., 2004, 2010).[2]

Psychopathy Subgroups: Cluster Variate Profiles

To provide a descriptive representation of profiles for the two psychopathy subgroups identified through cluster analysis, Figure 1 depicts mean scores on the cluster variables (TriPM facet scores, YASR Anxious-Depression) for these two groups and the low-psychopathy comparison group. To facilitate comparisons across variables, results are depicted in terms of T-scores, computed by z-transforming raw scores for each cluster variable across participants in the questionnaire sample as a whole (*N*= 4043), and then rescaling *M*s and *SD*s for the resultant scores to 50 and 10, respectively. A three-group MANOVA comparing the groups on the four cluster variates yielded an overall omnibus difference, $F(8, 4130) = 510.89$, $p < .001$; Wilk's $\lambda = .253$, partial $\varepsilon^2 = .497$. Follow-up Tukey tests revealed that participants assigned to psychopathy cluster 1 scored higher than the comparison group on the Boldness facet of the TriPM as well as the Disinhibition and Meanness facets. Participants in this cluster group also scored significantly lower on YASR Anxious-Depression, although the magnitude of the score difference was modest. Participants in psychopathy cluster 2, like those in cluster 1, scored higher in Disinhibition and Meanness than comparison participants. However, unlike participants in psychopathy cluster 1, those in cluster 2 scored markedly *higher* than the comparison group on YASR Anxious-Depression, and did not differ from comparison participants on TriPM Boldness, $p=.61$.

Relative to one another, the two psychopathy clusters differed most on YASR Anxious-Depression and TriPM Disinhibition, with cluster 2 scoring higher on both. The two clusters also differed on TriPM Boldness, with cluster 1 scoring higher than cluster 2. The two psychopathy groups did not differ significantly on TriPM Meanness ($p=.14$). Considering

[2]To assess the stability of the best-fitting model, supplemental model-based cluster analyses were undertaken that focused on participants scoring in the highest 10% on the TriPM. Again the best-fitting model was a solution indicating two ellipsoidal clusters of varying volume, shape, and orientation (BIC= −5311; BIC for next-best model = −5325). There was 97% correspondence between cluster assignments identified in the top-5% of TriPM scorers versus the top-10%.

these results in relation to study hypotheses, we refer to clusters 1 and 2 as *primary* and *secondary* psychopathy groups, respectively (Skeem et al., 2007).

Psychopathy Subgroups: Comparisons on External Criteria

Self-Report Psychopathology—As one approach to criterion-related validity, we compared the two psychopathy subtypes and the comparison group in terms of problems in domains of internalizing and externalizing as assessed by the YASR (see Table 2). Consistent with the view of psychopathy as an externalizing disorder, participants in the primary subgroup exhibited higher levels of externalizing problems than the comparison group as demonstrated by higher Delinquency, Aggressive Behavior, and Externalizing Composite scores. Additionally, in line with higher levels of Boldness, the primary psychopathy group showed *lower* scores on Withdrawal and Overall Internalizing Problems variables than the comparison group. It should be noted, however, that the Overall Internalizing Problems composite encompasses the Anxiety/Depression scale, which was used as a clustering variate, prohibiting entirely independent assessment of differences between groups on broad internalizing symptomology. Primary group participants also displayed higher scores on Attention Problems, Somatic Complaints, Thought Problems and Intrusiveness, and Overall YASR Problems relative to the non-psychopathic comparison group, but these differences were all modest in magnitude.

In contrast, secondary psychopaths displayed markedly higher scores than the comparison group on *all* subscales of the YASR, reflecting generally increased levels of both externalizing and internalizing problems. Effect sizes were large (Cohen's $d > .9$) for Delinquency, Externalizing Composite, Aggressive Behavior, Thought Problems, and Overall Problems scores, moderate ($d = .5–.66$) for Somatic Complaints, Attention Problems, Intrusiveness, and Overall Internalizing Problems scores, and modest in magnitude ($d = .29$) for scores on the Withdrawal subscale.

In relation to one another, the two psychopathy subtypes were most strongly differentiated by scores on internalizing scales of the YASR, including Withdrawal, Somatic Complaints, and Overall Internalizing Problems, with secondary psychopaths in each case scoring higher than primary psychopaths. Further, secondary psychopaths also scored higher on measures of externalizing problems including Attention Problems, Thought Problems, Delinquency, Aggressive Behavior, and Overall Externalizing Problems. There was also a small yet significant difference in scores between the psychopathy groups on Intrusiveness (secondary > primary).

Offense Behavior from Official Police Records—Table 3 lists the frequency and percentage of arrests for crimes in major categories as well as the overall rate of apprehension by police for crimes of *any* type ("All Crimes") for the two psychopathy clusters and the comparison group. Also shown are chi-square comparisons of the frequency of commission of offenses in each of the major crime categories for the two psychopathy clusters, and for the psychopathy groups compared to control participants. Consistent with prediction, the psychopathy groups had markedly and significantly higher rates of criminal convictions than the comparison group in all major crime categories. These effects were

large in magnitude, with values of chi-square ranging from 24.93 for drunk driving ($p = 5.95 \times 10^{-7}$) to 114.83 for property-related crimes other than theft or vandalism ($p = 8.56 \times 10^{-27}$). The main observed difference between the two psychopathy groups was for the frequency of having committed a violent crime, $\chi^2(1) = 7.52$, $p = .006$, with the primary group exhibiting a higher rate than the secondary group (26.5% versus 7.6%, respectively). There was also a trend for primary psychopaths to have committed thefts at a higher rate, $\chi^2(1) = 3.48$, $p = .06$.

Discussion

The current study identified and characterized *subtypes* of high scoring psychopathic males from a general population sample. Paralleling findings from prior research with offenders, subtypes of high-psychopathy scorers from the community were found to differ on conceptually important traits of negative affectivity (anxiousness/depression), impulsive dysconstraint (disinhibition), and dispositional fearlessness (boldness). The findings of the current study are also important in demonstrating that psychopathic individuals exhibiting high levels of externalizing tendencies and high rates of criminality can be effectively identified in the community through use of an efficiently administrable self-report inventory.

Psychopathy Subtypes

Replicating prior work with incarcerated offenders (Hicks et al., 2004; Skeem et al., 2007), the current study identified two distinct subtypes among high-psychopathy individuals in the general community, interpretable as primary and secondary psychopathy variants. Primary psychopaths were most distinctly characterized by high boldness/fearlessness and low neuroticism, whereas secondary psychopaths were defined by high levels of impulsive-irresponsibility and neuroticism, and normative levels of boldness. The subgroups displayed comparable levels of antagonism and callous affect, which appears consistent with the view that the presence of callousness/antagonism is especially indicative of psychopathy (e.g., Lynam & Derefinko, 2006), with other facets defining distinctive expressions.

In addition to displaying unique configurations of scores on subscales of the TriPM and YASR Anxious/Depression, the two psychopathy subtypes exhibited differing profiles on criterion measures of differing types. Specifically, primary psychopaths displayed high levels of externalizing problems and a relative immunity to internalizing problems, whereas secondary psychopaths showed high levels of both internalizing and externalizing problems. Relevant to these results, internalizing and externalizing forms of psychopathology have been shown to be moderately positively correlated in epidemiological studies (Krueger, 1999). Viewed in this light, the secondary psychopathy group in the present study can be seen as displaying a more prototypical expression of antisocial deviance that is accompanied by increased levels of negative affect and internalizing psychopathology. On the other hand, the very *low* rates of internalizing psychopathology in in the primary psychopathy group (i.e., *lower* scores relative to the comparison group on Anxious/Depression, Withdrawal, and Overall Internalizing Problem scales of the YASR) appear consistent with Cleckley's characterization of psychopathy as a "masked" disturbance in which severe behavioral pathology is concealed by an outward appearance of psychological health..

In contrast with this marked difference in reported levels of internalizing psychopathology, and consistent with Cleckley's concept of a hidden but severe pathology, the primary subgroup displayed very high rates of criminal offending. Indeed, both psychopathy groups showed greatly elevated rates of apprehension for crimes of all types relative to comparison group subjects, supporting the notion that these subtypes represent clinically significant levels of psychopathy. Notably, primary psychopaths showed higher rates of police apprehension than secondary psychopaths for crimes of most types, except Drunk Driving and Drug Offenses. In particular, primary psychopaths exceeded secondary psychopaths in occurrences of Violent Crimes – encompassing both assaults and robberies. The higher rate of violent criminal behavior in primary psychopaths may reflect their reputed tendency to engage in instrumental aggression in preference to, or in addition to, reactive forms of aggression (Blackburn & Lee-Evans, 1985). However, more detailed information regarding the specific nature of violent criminal acts would be needed to substantiate this inference.

Psychopathy in the General Population

It has been assumed that a distinct, albeit small, proportion of individuals in the general population show marked psychopathic tendencies (Hare, 2003). However, systematic research on noncriminal variants of psychopathy has proceeded slowly due to uncertainties about how to recruit psychopathic individuals from the community at large in an efficient, valid manner (however, see DeMatteo, Heilbrun, & Marczyk, 2006). Self-report based measures provide a potential methodology for this (Lilienfeld & Fowler, 2006), but most self-report studies to date have focused on continuous score analyses rather than delineation of groups (however, see Mahmut, Homewood, & Stevenson, 2008).

The current study illustrates how a self-report based approach to assessment can help to advance our understanding of psychopathy in the general population. The TriPM was selected as a time-efficient, easily administrable inventory of psychopathy. By including this inventory as part of a large-scale screening of a population-representative sample, we were able to apply a highly selective criterion for diagnosing psychopathy (95^{th} percentile on overall TriPM score) and still retain an appreciable number of high psychopathy participants for subtyping analysis. The resultant contingent of high-psychopathy participants displayed very high rates of criminal behavior, as emphasized in many prominent theories of psychopathy (Hare, 2003; McCord & McCord, 1964). Of those classified as psychopathic according to the TriPM for whom crime data were available, 64.7% had been apprehended for at least one suspected crime. This highlights the need for continuing systematic efforts to develop effective methods for identifying and treating psychopathic individuals in the general population who impose a significant burden on societal resources and on the well being of individuals in society.

While the majority of participants scoring high on the TriPM exhibited some history of criminal behavior, approximately one-third of highly psychopathic individuals had no history of apprehension by the police. It is conceivable that a portion of high scorers on the TriPM without official histories of police apprehension in the current study may represent "successful" or "noncriminal" psychopaths (Hall & Benning, 2006) – that is, individuals possessing high levels of psychopathic traits but expressing this underlying disposition in

noncriminal forms. It will be important in future research to systematically examine variables of differing types that moderate the expression of psychopathy in more adaptive (e.g., entrepreneurism, leadership) as opposed to less adaptive (i.e., criminal/antisocial) directions. For example, protective factors such as intelligence, high socioeconomic status, or highly effective parenting (cf. Lykken, 1995) may operate to block or forestall salient criminal expressions of underlying psychopathic traits.

Limitations and Future Directions

Given that the present findings are based on a sample of young Finnish men, it is unclear to what extent these results will generalize to older individuals, non-European samples, or female samples. Accordingly, it will be important in future research to further examine replicability of the current findings across samples, and to evaluate the impact of age-related declines in antisocial traits on subtype stability over time.

Notwithstanding these limitations, the current work extends prior research with offender samples in important ways. Our results indicate that individuals in the community exhibiting configurations of tendencies consistent with primary and secondary psychopathy can be effectively identified and distinguished. While both subtypes displayed high levels of externalizing problems and criminal behavior, they differed markedly on indices of anxiety, fear, and negative affect. The finding of distinct psychopathy subtypes in the general community is consistent with the idea that differing etiological pathways contribute to the development of psychopathy. Secondary psychopathy may predominantly reflect an externalizing pathway, whereas primary psychopathy may arise more from temperamental fearlessness in conjunction with some degree of externalizing proneness (Fowles & Dindo, 2006; Patrick & Bernat, 2009).

As a further point, our finding of diverging relations for primary and secondary psychopathy with internalizing problems may help to clarify contradictory findings for physiological variables in relation to psychopathy, such as P300 event-related potential response (Raine, 1989) or activity of brain structures such as the amygdala and prefrontal cortex during affective cuing (Patrick, Venables, & Skeem, 2012). Some physiological response anomalies may be more associated with fearless tendencies characteristic of primary psychopathy, others more associated with disinhibitory-externalizing tendencies characteristic of secondary psychopathy. In this and other ways discussed, results from the current study highlight the importance of conceiving of psychopathy as multifaceted phenotype that can reflect differing configurations of underlying dispositions.

Acknowledgments

The research reported here was supported by grants MH089727 and MH072850 from the National Institute of Mental Health. The authors wish to thank members of the Finnish Defense Forces who conceived of the original research protocol and were essential in collection of the data presented in the current manuscript.

References

Achenbach, TM. Manual for the Young Adult Self-Report and Young Adult Behavior Checklist. Burlington, Vermont: University of Vermont Department of Psychiatry; 1997.

Achenbach T, Ruffle T. The Child Behavior Checklist and related forms for assessing behavioral/emotional problems and competencies. Pediatrics in Review. 2000; 21:265–271. [PubMed: 10922023]

Blackburn R, Lee-Evans JM. Reactions of primary and secondary psychopaths to anger-evoking situations. British Journal of Clinical Psychology. 1985; 24(2):93–100. [PubMed: 4005475]

Blackburn R, Logan C, Donnelly JP, Renwick SJD. Identifying psychopathic subtypes: Combining an empirical personality classification of offenders with The Psychopathy Checklist-Revised. Journal of Personality Disorders. 2008; 22(6):604–622. [PubMed: 19072680]

Cleckley, HM. The Mask of Sanity. 5. St. Louis, Missouri: Mosby; 1976.

Coid J, Freestone M, Ulrich S. Subtypes of psychopathy in the British household population: Findings from the national household survey of psychiatric morbidity. Social Psychiatry and Psychiatric Epidemiology. 2012; 47:879–891. [PubMed: 21603969]

DeMatteo J, Heilbrun K, Marczyk G. An empirical investigation of psychopathy in a noninstitutionalized and noncriminal sample. Behavioral Sciences and Law. 2006; 24:133–146.

Drislane LE, Patrick CJ, Arsal G. Clarifying the content coverage of differing psychopathy inventories through reference to the Triarchic Psychopathy Measure. Psychological Assessment. (in press).

Faulkenbach D, Poythress NG, Creevy C. The exploration of subclinical psychopathic subtypes and the relationship with types of aggression. Personality and Individual Differences. 2008; 44:821–832.

Fowles, DC.; Dindo, L. A dual-deficit model of psychopathy. In: Patrick, CJ., editor. Handbook of psychopathy. New York: Guilford Press; 2006. p. 14-34.

Hall, JR.; Benning, SD. The “successful” psychopath: Adaptive and subclinical manifestations of psychopathy in the general population. In: Patrick, CJ., editor. Handbook of psychopathy. New York: Guilford Press; 2006. p. 459-478.

Hare, RD. Manual for the Revised Psychopathy Checklist. 2. Toronto: MHS; 2003.

Hicks BM, Markon K, Patrick C, Krueger R, Newman J. Identifying psychopathy subtypes on the basis of personality structure. Psychological Assessment. 2004; 16:276–288. [PubMed: 15456383]

Hicks BM, Vaidyanathan U, Patrick CJ. Validating female psychopathy subtypes: Differences in personality, antisocial and violent behavior, substance abuse, trauma, and mental health. Personality Disorders: Theory, Research, and Treatment. 2010; 1:38–57.

Ihaka R, Gentleman R. R: A sanguage for data analysis and graphics. Journal of Computational and Graphical Statistics. 1996; 5:299–314.

Karpman B. On the need of separating psychopathy into two distinct clinical types: the symptomatic and the idiopathic. Journal of Criminal Psychopathology. 1941; 3:112–137.

Krueger RF. The structure of common mental disorders. Archives of General Psychiatry. 1999; 56:921–926. [PubMed: 10530634]

Lee Z, Salekin R. Psychopathy in a noninstitutional sample: Differences in primary and secondary subtypes. Personality Disorders: Theory, Research, and Treatment. 2010; 1:153–169.

Lilienfeld SO, Andrews BP. Development and preliminary validation of a self-report measure of psychopathic personality traits in noncriminal populations. Journal of Personality Assessment. 1996; 66:488–524. [PubMed: 8667144]

Lilienfeld, SO.; Fowler, KA. The self-report assessment of psychopathy: Problems, pitfalls, and promises. In: Patrick, C., editor. Handbook of psychopathy. New York: Guilford; 2006.

Lykken DT. A study of anxiety in the sociopathic personality. The Journal of Abnormal and Social Psychology. 1957; 55:6–10.

Lykken, DT. The antisocial personalities. Hillsdale, NJ: Erlbaum; 1995.

Lynam, DR.; Derefinko, KJ. Psychopathy and personality. In: CJ, editor. Handbook of psychopathy. New York: Guilford Press; 2006. p. 133-155.

Mahmut MK, Homewood J, Stevenson RJ. The characteristics of non-criminals with high psychopathy traits: Are they similar to criminal psychopaths? Journal of Research in Personality. 2008; 42:679–692.

Marion BE, Sellbom M, Salekin RT, Toomey JA, Kucharski LT, Duncan S. An examination of the association between psychopathy and dissimulation using the MMPI-2-RF validity scales. Law and Human Behavior. 2013; 37:219–230. [PubMed: 22799603]

McCord, W.; McCord, J. The psychopath: An essay on the criminal mind. Oxford, England: D. Van Nostrand; 1964.

Patrick, CJ. Triarchic psychopathy measure (TriPM). 2010. from https://www.phenxtoolkit.org/index.php?pageLink=browse.protocoldetails&id=121601

Patrick, CJ.; Bernat, EM. Neurobiology of psychopathy: A two-process theory. In: Berntson, GG.; Cacioppo, JT., editors. Handbook of neuroscience for the behavioral sciences. New York: John Wiley & Sons; 2009. p. 1110-1131.

Patrick CJ, Fowles DC, Krueger RF. Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. Development and Psychopathology. 2009; 21:913–938. [PubMed: 19583890]

Patrick CJ, Kramer MD, Krueger RF, Markon KE. Optimizing efficiency of psychopathology assessment through quantitative modeling: Development of a brief form of the Externalizing Spectrum Inventory. Psychological Assessment. (in press).

Patrick, CJ.; Venables, NC.; Skeem, J. Psychopathy and brain function: Empirical findings and legal implications. In: Hakkanen-Nyholm, H.; Nyholm, JO., editors. Psychopathy and law: A practicitioner's guide. New York: Wiley-Blackwell; 2012. p. 39-78.

Poythress NG, Edens JF, Skeem JL, Lilienfeld SO, Douglas KS, Frick PJ, Wang T. Identifying subtypes among offenders with antisocial personality disorder: A cluster-analytic study. Journal of Abnormal Psychology. 2010; 119(2):389–400. [PubMed: 20455611]

Raftery A. Bayesian model selection in social research. Sociological Methodology. 1995; 25:111–163.

Raine A. Evoked potentials and psychopathy. Int Journal of Psychophysiology. 1989; 8:1–16.

Sellbom M, Phillips TR. An examination of the triarchic conceptualization of psychopathy in incarcerated and non-incarcerated samples. Journal of Abnormal Psychology. 2013; 122:208–214. [PubMed: 22867118]

Skeem J, Johansson P, Andershed H, Kerr M, Louden JE. Two subtypes of psychopathic violent offenders that parallel primary and secondary variants. Journal of Abnormal Psychology. 2007; 116(2):395–409. [PubMed: 17516770]

Stanley JH, Wygant DB, Sellbom M. Elaborating of the construct validity of the triarchic psychopathy measure in a criminal offender sample. Journal of Personality Assessment. 2013; 95(4):343–350. [PubMed: 23113864]

Swogger MT, Kosson DS. Identifying subtypes of criminal psychopaths: A replication and extension. Criminal Justice and Behavior. 2007; 34(8):953–970. [PubMed: 19458783]

Swogger MT, Walsh Z, Kosson DS. Psychopathy subtypes among African American county jail inmates. Criminal Justice and Behavior. 2008; 35(12):1484–1499. [PubMed: 19458787]

Vassileva J, Kosson D, Abramowitz C, Conrod P. Psychopathy versus psychopathies in classifying criminal offenders. Legal and Criminological Psychology. 2005; 10:27–43.

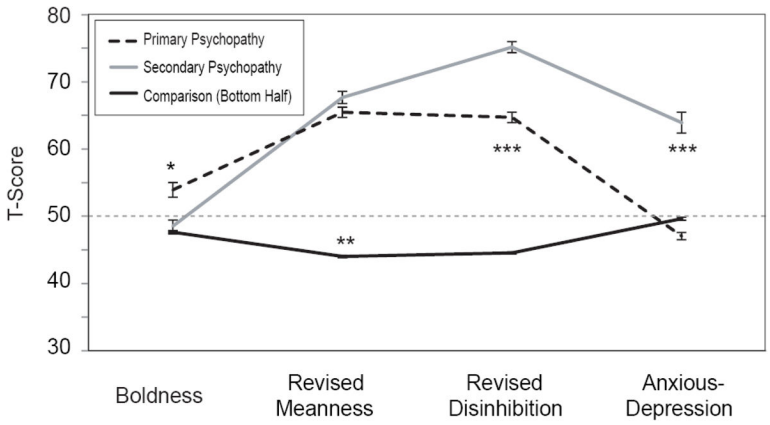

Figure 1.

Cluster variate profiles for psychopathy subtypes and the comparison group referenced to the overall base sample. The base sample (N = 4043) is scaled to have a mean of 50 and a standard deviation of 10. Primary Psychopathy = participants in the first cluster group (n = 110). Secondary Psychopathy = participants in the second cluster group (n = 83). Comparison (Bottom Half) = participants scoring at or below the 50th percentile on TriPM total scores (n = 1878). Error bars represent standard errors of the mean. * Primary Psychopathy group differs significantly (p<.001) from both Secondary Psychopathy and Comparison groups; ** Both Psychopathy groups differ significantly from Comparison group (p<.001), but not from one another (p > .05); *** All three groups differ significantly from one another (p<.001).

Table 1

Bayesian Information Criterion (BIC) Values for Alternative Models

	Cluster Characteristics				Number of Clusters								
Model	**Distribution**	**Shape**	**Volume**	**Orientation**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	ellipsoidal	varying	varying	varying	−2861	**−2825**	−2886	−2952	--	--	−3009	−3047	−3122
2	ellipsoidal	equal	equal	varying	−2861	**−2829**	−2855	−2890	−2911	−2968	−2967	−3009	−3025
3	ellipsoidal	equal	varying	varying	−2861	−2834	−2872	−2884	−2928	−2932	−2982	−3012	−3095
4	diagonal	varying	varying	equal	−2931	−2862	−2855	−2886	--	--	--	--	--
5	diagonal	varying	equal	varying	−2931	−2870	−2863	−2871	−2889	−2912	−2904	--	--
6	diagonal	equal	varying	varying	−2931	−2883	−2861	−2848	−2852	−2888	−2895	−2869	−2882
7	diagonal	equal	equal	varying	−2931	−2883	−2853	−2844	−2859	−2854	−2875	−2882	−2895
8	ellipsoidal	equal	equal	equal	−2861	−2884	−2857	−2839	−2860	−2872	−2878	−2900	−2899
9	spherical	equal	varying	varying	−4608	−4433	−4233	−4146	−4031	−3975	−3926	−3883	−3849
10	spherical	varying	equal	varying	−4608	−4470	−4281	−4186	−4134	−4106	−4005	−3990	−3995

Note. Values represent BIC values; smaller negative values indicate better fit. The two best-fitting models are in bold. Cluster characteristics include Shape, Volume, and Orientation and refer to the geometric characteristics of the clusters' distributional shape in multivariate space. Dashes in the row for Model 1 indicates that an orientation parameter could not be estimated, as there were no off-diagonal elements. Dashes in the rows for Models 4 and 5 indicate that the sample was too small to estimate the fit of the Model beyond 4 or 7 clusters.

Table 2

Means and Group Comparisons for Self-Report Psychopathology Criteria

	Psychopathy Subtypes						*Effect sizes (Cohen's d) for Tukey's Post-hoc Comparisons*		
Scale	**Control (N = 1878)**		**Primary (N = 110)**		**Secondary (N = 83)**		**Primary vs. Secondary**	**Primary vs. Control**	**Secondary vs. Control**
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**d**	**d**	**d**
YASR Subscales									
Intrusiveness	47.10	8.07	54.88	12.38	59.31	12.84	−.33*	**+.43**	**+.59**
Withdrawal	50.18	10.01	47.83	9.17	57.89	14.60	**−.84**	−.11*	**+.29**
Somatic complaints	48.58	8.38	51.32	10.21	65.18	21.21	**−.81**	+.14*	**+.66**
Attention problems	47.75	9.09	52.93	10.07	61.88	12.62	**−.77**	**+.25**	**+.59**
Aggressive behavior	46.72	7.22	60.06	13.29	70.81	18.76	**−.65**	**+.78**	**+1.18**
Delinquency	46.32	5.11	60.32	13.30	73.19	21.30	**−.73**	**+1.07**	**+1.60**
Thought problems	48.01	6.40	54.35	12.82	69.24	24.90	**−.76**	**+.41**	**+1.03**
Internalizing Composite	49.80	10.03	47.11	6.20	62.88	14.45	**−1.47**	−.18*	**+.50**
Externalizing Composite	46.07	6.46	60.49	12.93	71.48	18.95	**−.69**	**+.93**	**+1.36**
Overall Problems	47.59	8.56	53.70	8.58	69.29	17.45	**−1.15**	**+.32**	**+.93**

Note. Means and Standard Deviations are based on T-scores for the entire sample, with each variable having a mean of 50 and standard deviation of 10;

* entries are significant at p<.05; Entries in bold are significant at p<.001; All p-values are Tukey-adjusted; YASR = Young Adult Self Report.

Table 3

Frequencies and Group Comparisons for Offense Behavior from Official Police Records

	Control (N = 1659)	Primary (N = 83)	Secondary (N = 53)	Primary vs. Secondary		Psychopathy Groups vs. Control	
Crime Category	**Frequency (%)**	**Frequency (%)**	**Frequency (%)**	**Chi-Square Statistic**	***p*-value**	**Chi-Square Statistic**	***p*-value**
All Crimes	422 (25.4)	58 (69.9)	30 (56.6)	2.50	0.11	**95.30**	1.640E-22
Violent	51 (3.1)	22 (26.5)	4 (7.6)	**7.52**	0.006	**78.80**	6.868E-19
Stealing	106 (6.4)	26 (31.3)	9 (17.0)	3.48	0.062	**64.93**	7.513E-16
Vandalism	61 (3.7)	22 (26.5)	11 (20.8)	0.58	0.45	**107.36**	3.715E-25
Other Property	142 (8.6)	35 (42.2)	17 (32.1)	1.40	0.24	**114.83**	8.563E-27
Drug	8 (0.5)	4 (4.8)	5 (9.4)	1.11	0.29	**50.44**	1.230E-12
Drunk Driving	37 (2.2)	7 (8.4)	6 (11.3)	0.31	0.58	**24.93**	5.945E-07
Traffic	272 (16.4)	32 (38.6)	15 (28.3)	1.50	0.22	**28.38**	9.984E-08
Miscellaneous	99 (5.5)	30 (36.1)	12 (22.6)	2.76	0.10	**107.80**	2.975E-25

Note. Entries in bold are significant at the Bonferonni-corrected level of $p<.00625$.

Crime categories including “All Crimes” do not account for multiple offenses committed by the same individual.

Personal Disord. Author manuscript; available in PMC 2015 April 01.