Published in final edited form as:
J Psychopathol Behav Assess. 2014 September 1; 36(3): 389–400. doi:10.1007/s10862-014-9405-6.

Psychopathy in Bulgaria: The cross-cultural generalizability of the Hare Psychopathy Checklist

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Abstract

The generalizability of the psychopathy construct to Eastern European cultures has not been well-studied, and no prior studies have evaluated psychopathy in non-offender samples from this population. The current validation study examines the factor structure, internal consistency, and external validity of the Bulgarian translation of the Hare Psychopathy Checklist: Screening Version. Two hundred sixty-two Bulgarian adults from the general community were assessed, of which 185 had a history of substance dependence. Confirmatory factor analysis indicated good fit for the two-, three-, and four-factor models of psychopathy. Zero-order and partial correlation analyses were conducted between the two factors of psychopathy and criterion measures of antisocial behavior, internalizing and externalizing psychopathology, personality traits, addictive disorders and demographic characteristics. Relationships to external variables provided evidence for the convergent and discriminant validity of the psychopathy construct in a Bulgarian community sample.

Keywords

Psychopathy; construct validity; cross-cultural generalizability; factor structure

Introduction

Although the majority of recent research into the construct of psychopathy has been conducted in North American and Western European samples, early conceptualizations of the construct highlighted its universality across cultures. Researchers have found references to the construct of psychopathy (or “manie sans délire,” “moral insanity,” “constitutional inferiority,” or “sociopathy”) in biblical, classical, and medieval texts (Arrigo & Shipley, 2001; McCord & McCord, 1964). Although psychopathy is considered to be one of the oldest personality disorders in the field of psychiatry (Millon, Simonsen, & Birket-Smith,

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1998), systematic exploration and elaboration of the construct has only commenced in the past 30 years. Psychopathy is typically operationalized via the Psychopathy Checklist–Revised (PCL-R: Hare 1991, 2003), a twenty-item rating scale completed by a trained assessor based on a semi-structured interview and a file review of available criminal records. Research using the PCL-R and its derivatives has identified psychopathy across the lifespan (children: Barry et al., 2000; adolescents: Brandt, Kennedy, Patrick, & Curtin, 1997; older adults: Harpur & Hare, 1994), across genders (Jackson, Rogers, Neumann, & Lambert, 2002), and within a variety of settings (incarcerated: Loza 2003; forensic psychiatric: Rogers et al., 2000; psychiatric: Silver, Mulvey, & Monahan, 1999; substance abuse treatment: Alterman, Cacciola, & Rutherford 1993; Windle, 1999; community: Forth, Brown, Hart, & Hare, 1996). Psychopathy appears to be a reliable construct across raters (Hare et al., 1990) and over time (Rutherford, Cacciola, Alterman, McKay, & Cook, 1999).

Structural Models of Psychopathy

Initial factor analyses of the PCL-R revealed two distinct and inter-correlated underlying factors (Harpur, Hakstian, & Hare, 1988; Hare et al., 1990). The first factor describes a shallow, unempathic affect and a charming, deceitful, interpersonal style. The second factor contains features characterizing a chronically unstable and antisocial lifestyle. Items loading on the second factor describe social deviance similar to the Antisocial Personality Disorder (ASPD) criteria of the DSM-IV-TR (APA, 2000). Although the two factors of psychopathy overlap considerably, each has distinct correlates: the Emotional/Interpersonal factor has been found to relate to narcissism, unusual processing of affective material, and low anxiety, while the Antisocial/Lifestyle factor is associated with substance abuse, antisociality, and socioeconomic status (Hare, 1996; Vassileva et al., 2005). The two-factor structure has been replicated with comparable internal consistency in the abridged twelve-item version of the PCL-R, the Psychopathy Checklist: Screening Version (PCL:SV), designed to assess psychopathy in community samples based on ratings obtained from a semi-structured interview (Hart, Cox, & Hare, 1995).

Cooke and Michie (2001) proposed a three-factor model of PCL-R psychopathy, subdividing Factor 1 into two distinct factors: an Interpersonal factor encapsulating arrogant and deceitful tendencies, and an Affective factor reflecting deficient affective experience. The third factor, Lifestyle, includes items that measure an impulsive and irresponsible behavioral style. The three-factor model of psychopathy has received substantial empirical support, including findings indicating superior fit to the two-factor model in Hispanic inmates (Tubb 2002) and female offenders (Jackson et al., 2002; Warren et al., 2003). Hare (2003) subsequently proposed a four-factor[1] structural model for the PCL-R which includes the three factors identified by Cooke and Michie (2001) and adds an Antisocial factor comprised of antisocial behavioral items omitted from the three-factor model. Confirmatory factor analyses support the four-factor model for the PCL-R (Vitacco, Rogers, Neumann, Harrison, & Vincent, 2005), the PCL:SV (Hill, Neumann, & Rogers, 2004; Vitacco,

[1]While the 4 factors are referred to as “facets” in Hare (2003), the term “factors” will be used consistently throughout this manuscript for ease of comparison with other structural models.

Neumann, & Jackson, 2005) and the Youth Version of the PCL (Forth, Kosson, & Hare, 2004; Salekin et al., 2004).

Cross-Cultural Generalizability of Psychopathy

The PCL-R has amassed an impressive body of research attesting to its concurrent and predictive validity (e.g., Hare, 1996) and figures prominently in the decisions of professionals in therapeutic, correctional, and legal settings around the world (Hart 2001; Hemphill & Hart, 2008; Lyon & Ogloff, 2000). Despite the widespread usage of the construct, however, knowledge regarding the generalizability of psychopathy to individuals of different cultures is limited. The first study to compare non-Westerners and North Americans found differential PCL:SV item functioning across cultures despite similar factor structures (Shariat et al., 2010). Additionally, mean PCL-R scores in Western European samples appear to be several points lower than those for North American populations (Andersen, Sestoft, Lillebaek, Mortensen, & Kramp, 1999; Blackburn, Logan, Donnelly, & Renwick, 2003; Cooke, 1998). Cooke and colleagues determined that cross-cultural dissimilarities in PCL-R scores represent differences in the prevalence of psychopathy, and using item response theory (IRT) demonstrated that equivalent PCL scores represent lower levels of psychopathy for North American offenders than for European offenders (Cooke & Michie, 1999; Cooke, Hart, & Michie, 2004; Cooke, Michie, Hart, & Clark, 2005). These findings have been used to argue for the use of a lower PCL-R cutoff to diagnose psychopathy in European countries, as have concerns regarding the relative size of European populations (Hartmann, Hollweg, & Nedopil, 2001). Accordingly, the PCL:SV diagnostic cutoff of 18 used in North American samples has proven relatively ineffective in predicting criminal recidivism among Swedish prisoners, while an empirically derived cutoff of 14 was substantially more effective in this sample (Urbaniok, Endrass, Rossegger, & Noll, 2007).

Despite these cultural differences in the manifestation of psychopathy, there is considerable evidence that the construct has substantial cross-cultural generalizability. Sullivan, Abramowitz, Lopez, and Kosson (2006) demonstrated structural consistency and construct validity of PCL-R psychopathy across European American, Latino, and African American subcultures in North America. Research in the United Kingdom has revealed configural and metric invariance of PCL-R ratings across prisoner nationalities (Cooke et al., 2005), and good cross-national reliability of PCL-R scores has been established between Scottish and Canadian assessors (Cooke et al., 2004). The pattern of associations between psychopathy ratings and external measures seen in North America (e.g. Hare, 2003) has also been observed in many other cultures. For example, PCL-R and PCL:SV ratings have been shown to predict institutional misbehavior, violation of conditional release, recidivism, and poor treatment response in Western European nations including Belgium (Pham, Remy, Dailliet, & Lienard 1998); Germany (Freese et al. 1996; Huchzermeier et al., 2006); Netherlands (Hildebrand, De Ruiter, & Nijman, 2004); Spain (Moltó, Poy, & Torrubia, 2000); Sweden (Tengström, Grann, Långström, & Kullgren, 2000; Urbaniok et al., 2007); England, Norway, and Denmark (Hare et al., 2000).

Assessment of Psychopathy in Community Samples

Examining psychopathy in community, non-forensic populations provides an opportunity to understand the wider generalizability of this important construct. Cross-cultural differences in psychopathy ratings of forensic samples may be partially attributable to idiosyncrasies in the judicial systems of different cultures, such as differing imprisonment rates and placement decisions. For example, a relatively higher base rate of psychopathy (49%) in Norwegian prisoners is posited to be a reflection of conservative imprisonment policies, resulting in a more deviant incarcerated population (Rasmussen, Storsaeter, & Levander, 1999). To this end, assessing non-offenders may yield a less confounded picture of the nature and prevalence of psychopathy across nations and its relationship to outcomes of interest.

Establishing the validity of psychopathy in community samples is also a necessary step towards utilizing the construct in public health research, an issue that is of particular relevance to Eastern European researchers facing a burgeoning HIV epidemic (UNAIDS, 2012). Psychopathy may be an important factor in understanding HIV transmission risk in this region of the world, given that spread of HIV in Eastern Europe occurs primarily via injection drug use and risky sexual practices among drug users (UNAIDS, 2012). Evidence indicates that drug users with high levels of psychopathic traits engage in higher rates of risky sexual and injection drug use behavior (Compton et al., 1995, 2000; Darke et al., 1998; Kelley & Petry, 2000; Ladd & Petry, 2003) and that pyschopathy may be superior to other measures of antisociality in predicting HIV risk behavior (Tourian et al., 1997). However, no research to date has examined the role of psychopathy in risk behavior among Eastern Europeans. On the contrary, the characterization of psychopathy among Eastern Europeans has received substantially less attention than in Western Europe, with only one previous study examining the construct validity of psychopathy in the Northeastern European country of Lithuania (Žukauskiene, Laurinavicius, & Cesniene, 2010).

The purpose of the current study is to examine psychopathy in a community sample of Bulgarian adults using the Bulgarian translation of the PCL:SV (Hart, Cox, & Hare, 1995). The current investigation will be the first to examine the psychometric properties of the PCL:SV and to characterize the relationship between psychopathy and relevant criterion variables within this understudied Southeastern European population. We hypothesize that total scores on the PCL:SV with be significantly correlated with all criterion variables, including measures of antisocial behavior, addictive disorders, externalizing psychopathology, trait impulsivity and sensation-seeking, estimated IQ, and years of education. Because no prior studies have examined the psychopathy construct in community samples of Eastern Europeans, we do not hypothesize whether a specific structural model will show optimal fit to the current sample. Utilizing the *a priori* two-factor structure of the PCL:SV, we predict that Factor 1 of the PCL:SV will be negatively associated with trait impulsivity and internalizing psychopathology and positively associated with self-reported psychopathy. In addition, we hypothesize that Factor 2 of the PCL:SV will be positively associated with measures of antisocial behavior, externalizing psychopathology, addictive disorders, sensation-seeking, impulsivity, and self-reported psychopathy.

Methods

Participants and Data Collection

Participants were recruited for a larger ongoing study of substance dependence via flyers placed at substance abuse clinics and cafes, bars, and night clubs in Sofia, Bulgaria. Participants were screened on their medical and substance abuse histories; healthy individuals with no history of substance dependence and individuals with lifetime opiate or stimulant dependence as defined by DSM-IV-TR criteria were invited to participate. Inclusion criteria included an age of 18–50 years, a minimum of eight years of education, the ability to read and speak Bulgarian, and an estimated IQ > 75. Exclusion criteria included history of neurologic illness (including dementia secondary to substance abuse) or injury (e.g. open head wound), schizophrenia, and current mania or major depression. All participants provided informed consent.

The study protocol consisted of two 3.5-hour sessions. The first session was devoted to assessment of addictive disorders, externalizing psychopathology, and intelligence. The second session included neuropsychological testing and self-report assessments of personality constructs and internalizing psychopathology. All assessment instruments were translated into Bulgarian. Participants were paid 80 Bulgarian Leva (≈US$50) for their participation in the study. Procedures were approved by the Institutional Review Boards of the University of Illinois at Chicago and the Medical University in Sofia on behalf of the Bulgarian Addictions Institute.

The sample consisted of 201 male and 61 female Bulgarian adults with a mean age of 25.5 years (*SD* = 5.2) and 13.2 years of education (SD = 2.2). Seventy percent of participants (*n* = 185) met DSM-IV-TR criteria for lifetime stimulant or opiate dependence. Mean PCL:SV scores were 9.2 (*SD* = 5.4) for the total scale, 3.7 (*SD* = 2.6) for Factor 1, and 5.5 (*SD* = 3.3) for Factor 2. The standard diagnostic cutoff score of 18 identified 7% (*n* = 17) of the sample as psychopaths, while a cutoff of 14 as recommended by Urbaniok et al. (2007) for Europeans classified 24% of the sample (*n* = 61) as psychopaths.

Instruments

Primary measure

Psychopathy Checklist: Screening Version (PCL:SV): The PCL:SV is a 12-item scale based on the PCL-R, rated by trained observers following a semi-structured interview of the participant. PCL:SV items are scored on a three point scale (*0 = absent; 1 = somewhat present; 2 = definitely present*) and summed to provide total scores ranging from 0 to 24 points, with a total score > 18 considered indicative of psychopathy in North Americans. The PCL:SV is divided into two factors: the six items from Factor 1 assess a manipulative interpersonal style and deficient affective experience, while the six items from Factor 2 measure an unstable lifestyle and antisocial behavior.

Psychopathy ratings were based on standardized PCL:SV clinical interviews translated into Bulgarian. Assessments with the PCL:SV were conducted by a trained team of research assistants and clinicians at the Bulgarian Addictions Institute. Initial training in psychopathy

assessment was provided by JV, who created the authorized version of the Bulgarian PCL-R with its publisher Multi-Health Systems. Training and supervision was further provided by GV, who had participated in formal training workshops led by Dr. Robert Hare. The two trainers have substantial experience with the use of the PCL-R and PCL:SV and with the construct of psychopathy. Training consisted of didactic sessions, case examples, and discussions. Initial ratings of study participants were conducted by pairs of team members, followed by a discussion of item scoring and total scores. Difficult or unusual assessments and instances of discordant ratings between pair members were discussed with supervisors during weekly team meetings.

Measures used for external validation

Demographic Characteristics—We examined relevant demographic factors for external validation including age, years of education, intelligence and socioeconomic status (SES). Participant IQ was estimated by the Raven's Progressive Matrices, a test of nonverbal intelligence (Raven, Raven, & Court 2004). SES was estimated via the Hollingshead work category subscale ((Hollingshead & Redlich, 1958) of the Addiction Severity Index-Lite (McLellan, Cacciola, & Zanis, 1997).

Measures of Antisocial Behavior

Levenson Self-Report Psychopathy Scale (LSRP): The LSRP (Levenson, Kiehl, & Fitzpatrick, 1995) is designed to measure psychopathic traits in community populations. The instrument is comprised of 26-items scored on a four-point Likert-type scale, with scoring of some items reversed to control for response sets. LSRP and PCL-R scores are often correlated and there is evidence that the LSRP measures a similar construct (Brinkley, Schmitt, Smith, & Newman, 2001). The LSRP contains a 16-item subscale measuring primary psychopathy (sample items: "People who get ripped off usually deserve it;" "Looking out for myself is my top priority") and a secondary psychopathy subscale comprised of 10 items (e.g. "I am often bored;" "I have been in a lot of shouting matches with other people") designed to be roughly equivalent to the two factors of the PCL-R. The primary LSRP subscale was demonstrated to have good internal consistency (α = .82) and the secondary subscale showed adequate internal consistency (α = .63) in a community sample (Levenson et al., 1995). Similar internal consistencies were observed in the present sample, (full-scale LSRP α = .82, primary LSRP α = .79, secondary LSRP α = .67). Total scores on the primary and secondary psychopathy scales were used as criterion variables.

Conduct disorder (CD) and Antisocial Personality Disorder (ASPD): History of CD and presence of ASPD was assessed using the ASPD module of the Structured Clinical Interview for DSM-IV Axis II Disorders (SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997). SCID-II raters elicit specific examples of CD and ASPD symptoms endorsed by the examinee, and score each symptom on a 3-point scale (*1 = absent; 2 = subthreshold; 3 = present*). Maffei and colleagues (1997) demonstrated that SCID-II subscales show acceptable internal consistency (α's = .71–.94) in several clinical samples. Severity of CD and ASPD were quantified for the present study by summing the number of symptoms present for each disorder.

Aggression Questionnaire (AQ): The self-report AQ (Buss & Warren, 2000) is a full revision of the Buss-Durkee Hostility Inventory comprised of 34 items (e.g. "I may hit someone if he or she disagrees with me;" "I have trouble controlling my temper") measured on a 5-point Likert-type scale. The AQ yields a total aggression score from items measuring physical aggression, verbal aggression, anger, hostility, and indirect aggression. The summed full-scale AQ showed high internal consistency (α = .90) in a validation sample of college-aged students (Buss & Warren 2000) and demonstrated equivalent internal consistency in the present sample (α = .90).

Measures of Internalizing and Externalizing Psychopathology

Beck Depression Inventory-II (BDI-II): Symptoms of depression were quantified via the BDI-II (Beck, Steer, Ball, & Ranieri, 1996), a 21-item self-report questionnaire requiring respondents to report the extent to which they have experienced symptoms of depression during the past two weeks. BDI-II items are scored on a four-point Likert-type scale (e.g. "*0 = I do not feel sad most of the time; 1 = I feel sad much of the time; 2 = I am sad all of the time; 3 = I am so sad or unhappy I can't stand it*"). The BDI-II has demonstrated excellent internal consistency in clinical (α = .92) and community (α = .93) validation samples (Beck et al., 1996) and demonstrated high internal consistency in the present sample (α = .88). The summed total BDI-II score was utilized for external validity analyses.

State-Trait Anxiety Inventory (STAI): The STAI (Spielberger, Gorssuch, Lushene, Vagg, & Jacobs, 1983) is a 20-item self-report measure of affective and cognitive components of state and trait anxiety (e.g. "I feel tense;" "I am worried"), scored on a four-point Likert-type scale. The trait anxiety measure was utilized as the external validation measure in the present study. The full scale trait anxiety measure showed good internal consistency (α = .88) in a normative sample (Speilberger et al., 1983) but demonstrated relatively low internal consistency in the present sample (α = .58).

Wender-Utah Rating Scale (WURS): Symptoms of attention-deficit/hyperactivity disorder (ADHD) were assessed with the WURS (Ward, Wender, & Reimherr, 1993), a 25-item self-report questionnaire used for the retrospective assessment of childhood ADHD. Examinees report to what extent different symptoms of ADHD (e.g. "concentration problems, easily distracted;" "inattentive, daydreaming") applied to them as a child using a four-point Likert-type scale. Item scores were summed to provide a total score used for validation analyses. The WURS has previously shown high internal consistency (α's = .89–.92) in community samples (Wierzbicki, 2004) and demonstrates equivalent internal consistency in the present sample (α = .89).

Addictive Disorders

Substance Use Disorders (SUDs): Lifetime SUDs were assessed using the Substance Abuse Module of the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 1996), an instrument with reliability ranging from adequate to excellent in various clinical samples (Martin, Pollock, Bukstein, & Lynch, 1999; Lobbestael, Leurgans, & Arntz, 2011; Zanari et al., 2000). Raters assessed the presence of DSM-IV symptoms of alcohol, cannabis, opiate, and stimulant abuse and dependence using

a three-point scale (*0 = not present, 1 = subthreshold, 2 = present*). Severity of SUDs was quantified for construct validation analyses by combining total number of abuse and dependence symptoms present into separate continuous measures for alcohol, cannabis, opiates, and stimulants.

Pathological Gambling (PG): Lifetime PG was assessed using the gambling subscale of the Addiction Severity Index (ASI-G; Petry, 2003) cross-referenced with DSM-IV-TR PG diagnostic criteria (APA, 2000). The ASI-G is comprised of five items which showed high internal consistency (α = .90) in a validation sample of individuals with addictive disorders (Petry, 2003). Three items are open-ended and assess time and money spent gambling (e.g. "How many days have you gambled in the past 30 days?") and two items assess distress caused by gambling on a five-point Likert-type scale (e.g. "How important to you now is treatment for gambling problems?"). Severity of PG was calculated by summing the total number of DSM-IV-TR gambling symptoms present from the ASI-G.

Impulsivity and Sensation-Seeking

Barratt Impulsiveness Scale (BIS-11): Trait impulsivity was assessed with the BIS-11 (Patton, Stanford, & Barratt, 1995), a 30-item self-report questionnaire. The BIS-11 has previously found to have good full-scale internal consistency (α's = .79 – .83) across community and clinical samples (Patton et al., 1995) and demonstrates adequate internal consistency in the present sample (α = .75). BIS-11 items (e.g. "I do things without thinking;" "I am restless at talks or lectures") are scored on a four-point Likert-type summative scale, with several items reverse-scored to avoid response sets. Summed BIS-11 total scores were used for construct validation analysis.

Sensation-Seeking Scale-V (SSS-V): Trait sensation-seeking, a personality construct strongly implicated in disinhibited behavior, was assessed via the self-report SSS-V (Zuckerman, 1994), a measure consisting of 40 forced choice items (e.g. "I like wild uninhibited parties" vs. "I prefer quiet parties with good conversation"), with answers indicating sensation-seeking scored as 1 and other answers scored as 0. The summed full-scale SSS-V score has previously showed internal consistency (α's = .83–.86) in community samples (Zuckerman, 1994) and demonstrates adequate internal consistency in the current sample (α = .66).

Results

PCL:SV Reliability and Internal Consistency

Interrater reliability was determined by computing average intraclass correlation coefficients with a one-way random effects model, while interrater congruence on psychopathy diagnosis was determined via Cohen's kappa . Results of these analyses are listed on Table 1. Interrater reliability was good for the full PCL:SV (ICC = .96), Factor 1 (ICC = .93) and Factor 2 (ICC = .81). Agreement was high for the Affective (ICC = .90), Interpersonal (ICC = .84), Lifestyle (ICC = .86) and Antisocial factors (ICC = .90). Acceptable interrater congruence was obtained for the identification of psychopathy using the standard cutoff of 18 (κ = .77) and the exploratory cutoff of 14 (κ = .86).

PCL:SV internal consistency was assessed by calculating Cronbach's alpha and mean inter-item correlations (Table 1). The inter-correlation of Factor 1 and Factor 2 was high (r = .66), and correlations of total PCL:SV scores with Factor 1 (r = .89) and Factor 2 (r = .93) were very strong. Internal consistency for the Antisocial factor of the four-factor model was good (α = .77, $r_{\text{item-total}}$ = .61) and adequate for the Affective factor/factor (α = .67, $r_{\text{item-total}}$ = .48). Internal consistency for the Lifestyle factor/factor was near the lower limit (α = .61, $r_{\text{item-total}}$ = .42), whereas the Interpersonal factor/factor was not internally consistent (α = .34, $r_{\text{item-total}}$ = .21).

Factor Structure

We used confirmatory factor analysis (CFA) to evaluate several structural models of psychopathy for goodness of fit (Table 2). Oblique versions of the two-factor (Harpur et al., 1988), three-factor (Cooke & Michie, 2001) and four-factor (Hare, 2003) structures were modeled in EQS 6.2 (Bentler, 2006) using Maximum Likelihood extraction with robust corrections. Individual PCL:SV item skew ranged from −0.12 to 1.47 and item kurtosis ranged from 1.47 to 1.22. Mardia's multivariate kurtosis estimate was 1.94 and the normalized estimate was 0.84. Fit for the four-factor model was good ($\chi^2(48) = 90.9$, $p < .001$; RMSEA = .06; SRMR = .07; CFI = .98; NNFI = .97). Fit indices for the three-factor model were highly similar ($\chi^2(24) = 46.5$, $p < .005$; RMSEA = .06; SRMR = .07; CFI = .98; NNFI = .96) as were fit indices for the two-factor model ($\chi^2(53) = 105.5$, $p < .001$; RMSEA = .06; SRMR = .07; CFI = .98; NNFI = .97). Scaled chi-square difference testing (Bryant & Satorra, 2012) was used to compare the nested two-factor and four-factor models, with results indicating that the four-factor model fit the $_2$ data more closely than the two-factor model ($\chi_{\text{diff}}(5) = 14.78$, $p = .01$). Because the three-factor model is not nested within the other models due to the omission of several items, goodness-of-fit differences could not be examined for this model.

Item-total correlations and standardized item loadings are presented for each model in Table 2. Item factor loadings were significant at $p < .05$ for all models, with the exception of a non-significant loading of the Grandiosity item on Factor 1 of the two-factor model. Across all models, the items measuring Superficiality and Grandiosity were consistently associated with a lower degree of explained variance than the threshold of .30–.40 typically considered meaningful (Floyd & Widaman, 1995), whereas the loadings of all other items consistently exceeded the .30 threshold.

The sample size of female participants (n = 61) was not sufficiently powered for factor analysis. Therefore, potential gender influences on factor structure were examined by conducting CFAs testing the two-, three- and four-factor/factor models within the subset of male participants only (n = 201). Results indicated that all three structural models showed good fit with the PCL:SV data within male participants. The nested two-factor and four-factor models did not differ in terms of goodness of fit ($\chi^2_{\text{diff}}(5) = 7.78$, $p = .74$) indicating that the two-factor model provides the more parsimonious solution for male participants.

External Validity

The two-factor model of psychopathy was chosen for external validity analyses (Table 3) because of the low internal consistency of the Lifestyle and Interpersonal factors from the three-factor and four-factor models and the *a priori* two-factor design of the PCL:SV. Zero-order and partial correlations between PCL:SV measures and criterion variables were computed with an alpha level of $p < .01$ to limit Type I errors.

Observed associations of PCL:SV total, Factor 1, and Factor 2 scores to demographic characteristics, antisocial behavior, psychopathology, addictive disorders, and personality traits were consistent with hypotheses. A pattern of selective associations was observed indicating the construct validity of the Bulgarian PCL:SV. Specifically, PCL:SV Factor 1 was selectively associated with LSRP primary psychopathy at the partial correlation level, and was not correlated with either LSRP secondary psychopathy, ASPD, aggression, substance use disorders, or trait measures of impulsivity and sensation-seeking after parceling out variance from PCL:SV Factor 2. In contrast, LSRP secondary psychopathy was selectively associated with PCL:SV Factor 2 at the partial correlation level, as were measures of externalizing behavior including ASPD, ADHD, aggression, indices of trait impulsivity and sensation-seeking, and both alcohol and cannabis substance use disorders. Interestingly, symptoms of pathological gambling were unique among the addictive disorders assessed in demonstrating a significant but small association PCL:SV Factor 1 at the partial correlation level. Relevant demographic factors including estimated IQ, years of education, and SES were also negatively associated with PCL:SV Factor 2 at the partial correlation level, but not PCL:SV Factor 1.

Discussion

Our findings provide evidence for the validity of the psychopathy construct as measured by the Bulgarian version of the PCL:SV. Good interrater agreement and acceptable internal consistency were attained for the PCL:SV total score and both Factor 1 and Factor 2. CFAs indicated that the two-factor, three-factor and four-factor models all achieved good fit within the current sample. Chi-square difference testing indicated that the four-factor model fit significantly better than the nested two-factor model; however, the two-factor model showed higher internal consistency. The low internal consistencies of the three-factor and four-factor models are likely influenced by the small number of PCL:SV items comprising each of these factors/factors and limited variability in a community sample with relatively low levels of psychopathy.

The finding that PCL:SV items measuring superficial affect and grandiosity did not explain a meaningful degree of variance in the current sample may indicate that these characteristics are not as culturally salient in Eastern Europe as in North America. Ratings of grandiosity and superficial affect are among the most subjective elements rated by the PCL:SV (Skeem, Polaschek, Patrick, & Lilienfeld, 2011), and may therefore be more prone to cultural bias. Accordingly, Cooke and colleagues (2005) demonstrated that the interpersonal items from PCL-R Factor 1 were markedly less culturally generalizable between North American and European samples than the affective items. Interpersonal items were found only to be discriminating only at high levels of trait psychopathy, in contrast to affective items which

were discriminating over a wider range of trait psychopathy levels (Cooke et al., 2005). Given that our sample is comprised of individuals from the general community with lower levels of psychopathy than would be expected in a forensic sample, the weak correlations of PCL:SV Factor 1 interpersonal items with other psychopathic traits is consistent with these previous findings. Our data reinforces the potentially limited utility of Factor 1 interpersonal items for assessing psychopathy in European samples with relatively low levels of trait psychopathy. In contrast, Žukauskiene and colleagues (2010) demonstrated that in a forensic sample of Eastern Europeans with high levels of psychopathy, interpersonal PCL:SV items were more strongly correlated with other psychopathic characteristics than in the present sample. Additionally, personality traits such as superficial emotions and grandiosity may more accurately represent narcissism than psychopathy, and future studies in this population should include measures that discriminately identify narcissistic personality constructs.

The finding that all three structural models of psychopathy showed good fit in our sample is consistent with past CFAs indicating good fit of competing structural models to North American PCL:SV data (Hill et al., 2004; Vitacco et al., 2005; Vitacco, Neumann & Jackson, 2005). The only previous study examining the PCL:SV in Eastern Europe (Žukauskiene et al., 2010) found good fit for both the three-factor and four-factor models in a sample of male prisoners. Our results are the first to indicate evidence of psychopathic traits in a sample including both female and male Eastern Europeans. Consistent with previous research indicating that psychopathy is less prevalent among women than men (Bolt, Hare, Vitale, & Newman, 2004; Cale & Lilienfeld 2002; Rutherford, Caccioloa, Alterman, & McKay 1996; Vitale, Smith, Brinkley, & Newman, 2002) psychopathy was negatively associated with female gender in our sample. This relationship was driven by Factor 1 at the partial correlation level, in line with research indicating that primary psychopathy is less prominent in women (Cooke et al. 2005; Cooke et al., 1999). Similarly, levels of psychopathy observed in women were lower than those in men, as reported in several studies (Jackson et al., 2002; Salekin et al., 1997; Vitale & Newman, 2001). Although we did not have sufficient power to examine structural invariance of psychopathy separately within our female participants, examination of male participants indicated that all structural models fit the data equally well.

The observed associations between PCL:SV factors and criterion variables provide evidence of the construct validity of psychopathy. Consistent with the literature, relationships were observed between total PCL:SV scores and theoretically related indices of externalizing (Leistico, Salekin, DeCoster, & Rogers 2008; Salekin et al., 2004) and internalizing psychopathology (Stinson, Becker, & Tromp, 2005; Vitacco, 2003), addictive disorders (Gudonis, Derefinko, & Giancola, 2009; Hare, 2003; Smith & Newman, 1990), and personality traits (Morgan, Gray, & Snowden, 2011; Poythress & Hall, 2011). Discriminant relationships between PCL:SV factors and external variables at the partial correlation level indicate that the two factors of the Bulgarian instrument measures similar dimensions as the North American PCL-R and PCL:SV (Hare, 2003; Hart et al., 1995). Partial associations between PCL:SV and LSRP factors are consistent with findings that PCL-R Factor 1 has a stronger relationship to LSRP primary psychopathy and PCL-R Factor 2 is more strongly related to LSRP secondary psychopathy (Brinkley et al., 2001; Poythress et al., 2010). PCL:SV Factor 1 scores were positively associated with externalizing disorders at the zero-

order level, but these relationships were nonsignificant after partialing out variance from Factor 2. In contrast, Factor 2 scores were positively associated with internalizing and externalizing psychiatric conditions at the partial correlation level, consistent with the negative emotionality and dysregulation characteristic of secondary psychopathy (Hare, 2003; Hicks, Markon, Patrick, Krueger, & Newman, 2004; Skeem, Johansson, Andershed, Kerr, & Louden, 2007). In line with previous research indicating that secondary psychopathic characteristics drive relationships between psychopathy and SUDs (Hare, 2003; Hemphill, Hart, & Hare, 1994; Rutherford et al., 1996; Walsh, Allen, & Kosson, 2007), PCL:SV Factor 2 scores were associated with most categories of SUDs in our sample. The selective association of trait impulsivity and PCL:SV Factor 2 scores at the partial correlation level is consistent with findings linking trait impulsivity to externalizing disorders and substance use (Hopley, 2012; Sargeant, Bornovalova, Trotman, Fishman, & Lejuez, 2012). Similarly, trait sensation-seeking has been modestly and selectively associated with PCL-R Factor 2 (Hare, 2003), a finding that was replicated with the PCL:SV in the current study.

Discriminant relationships of PCL:SV scores to demographic factors were also consistent with previous research. We observed a positive association of age and PCL:SV total scores in the current sample, which was driven by PCL:SV Factor 1 scores at the partial correlation level. Given that most of our participants were primarily in their twenties, this was consistent with the literature demonstrating stability of Factor 1 PCL scores but not Factor 2 scores through early adulthood (Harpur & Hare, 1994). The negative association of PCL:SV Factor 2 and IQ at the partial correlation level is in accordance with previous findings indicating a discriminant negative association of secondary psychopathy and intelligence (Harpur et al., 1988).

In conclusion, our findings provide evidence for convergent and discriminant validity of psychopathy as measured by the Bulgarian PCL:SV. Several limitations and directions for future research should be considered. The decision to utilize the two-factor model for construct validation was based not on best fit of the structural model, which was achieved by the four-factor model, but to maximize internal validity in order to obtain the most reliable correlational estimates possible for analyzing relationships between psychopathy and criterion variables. Our sample was comprised primarily of substance users, which may limit generalizability to other samples. In order to comprehensively assess the nature of psychopathy among Eastern Europeans, future studies should examine incarcerated individuals and forensic samples with higher levels of psychopathy, and investigate structural differences between males and females, drug users and non-users, and psychopathy across the life span. Future replication studies, IRT analyses and cross-cultural comparisons of PCL factorial structure and metric validity may elucidate specific effects of the Eastern European culture on the manifestation of psychopathy.

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Table 1

Interrater reliability and internal consistency of PCL:SV structural models.

	Interrater	Internal Consistency	
Structural Model	***ICC***	**Cronbach's α**	**Mean $r_{item\text{-}total}$**
Unidimensional Model	.96	.80	.52
2-Factor Model			
Factor 1	.93	.80	.56
Factor 2	.81	.67	.40
3-Factor/4-Factor Models			
Affective†	.90	.67	.48
Interpersonal†	.84	.34	.21
Lifestyle†	.86	.61	.42
Antisocial$^{\Delta}$	.90	.77	.61

† Common to both the 3- and 4-factor models;

$^{\Delta}$ unique to the 4-factor model

Table 2

PCL:SV item-total correlations and factor loadings on theoretical models of psychopathy

	Item-Total	2-Factor Model		3-Factor Model			4-Factor Model			
PCL:SV Item	***r***	**IP/AF**	**LI/AS**	**IP**	**AF**	**LI**	**IP**	**AF**	**LI**	**AS**
Superficial	.19	.20*		.24*			.22*			
Grandiose	.15	.14		.15*			.15*			
Deceitful	.63	.81*		.89*			.93*			
Lacks Remorse	.50	.63*			.65*			.63*		
Lacks Empathy	.48	.59*			.62*			.59*		
Denies Responsibility	.64	.87*			.84*			.86*		
Impulsive	.56		.70*			.65*			.68*	
Poor Behavioral Control	.55		.69*							.69*
Lacks Goals	.26		.31*			.44*			.42*	
Irresponsible	.70		.82*			.92*			.89*	
Juvenile Antisociality	.60		.79*							.80*
Adult Antisociality	.70		.88*							.91*

Note. IP = Interpersonal; AF = Affective; LI = Lifestyle; AS = Antisocial;

* $p < .05$

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Table 3

Zero-order & partial correlations of PCL:SV scores and criterion variables

Criterion	PCL:SV F1 *r* (*pr*$_1$)	PCL:SV F2 *r* (*pr*$_2$)	PCL:SV Total *r*
Self-Reported Psychopathy			
Total LSRP	.53**(.29**)	.52** (.27**)	.57**
LSRP F1	.52** (.36**)	.41** (.10)	.50**
LSRP F2	.30** (.01)	.45** (.35**)	.42**
Antisocial Behavior			
Conduct Disorder	.62** (.31**)	.65** (.40**)	.70**
Antisocial Personality Disorder	.63** (.24)	.76** (.58**)	.77**
Aggression Questionnaire	.30** (.08)	.45** (.33**)	.46**
Psychopathology			
Wender Utah Rating Scale	.31** (.03)	.44** (.33**)	.43**
Beck Depression Inventory-II	.16** (−.04)	.28** (.23**)	.25**
Trait Anxiety Inventory	.16** (−.05)	.31** (.27**)	.27**
Addictive Disorders			
Alcohol	.14 (−.11)	.34** (.33**)	.28**
Cannabis	.28 (−.01)	.49** (.43**)	.42**
Opiates	.34** (.19)	.34** (.18)	.39**
Stimulants	.19 (.02)	.25 (.18)	.24
Gambling	.31** (.19*)	.26** (.08)	.31**
Impulsivity & Sensation-Seeking			
Barratt Impulsiveness Scale-11	.30** (−.03)	.45** (.35**)	.39**
Sensation-Seeking Scale-V	.09 (−.07)	.22** (.21**)	.18**
Demographic Measures			
Age	.27** (.18*)	.21** (.05)	.25**
Raven's IQ	−.23** (−.03)	−.32** (−.23**)	−.32**
Education	−.10 (.06)	−.21** (−.20**)	−.18**

Criterion	PCL:SV F1 *r* (*pr*$_1$)	PCL:SV F2 *r* (*pr*$_2$)	PCL:SV Total *r*
SES	.01 (−.05)	.21** (.19**)	.18**
Gender	−.37** (−.30)	−.23** (.03)	−.31**

Note. (*pr*$_1$) = partial correlation controlling for PCL:SV Factor 1; (*pr*$_2$) = partial correlation controlling for PCL:SV Factor 2;

** $p < .01$;

LSRP = Levenson Self-Report Psychopathy Scale; Gender coding 0 = male, 1 = female