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Examining the Factor Structure of the Hare Self-Report Psychopathy Scale

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Abstract

The 64-item Hare Self-Report Psychopathy Scale (Hare SRP; Paulhus, Neumann, & Hare, in press) is the most recent revision of the SRP, which has undergone numerous iterations. Little research has been conducted with this new edition; therefore, the goal of the current study was to elucidate the factor structure as well as the criterion-related, convergent, and discriminant validity of the measure in a large sample of college students (*N*=602). Confirmatory factor analyses revealed that the best-fitting model was the original four-factor model proposed by the authors of the Hare SRP (compared to a one-factor, two-factor, and four-factor random model). The four-factor model revealed superior fit for the data relative to the other alternative models. In addition, we elaborated on the psychometric properties of this four-factor model in this sample. The Hare SRP total and factor scores evidenced good internal reliability as well as promising criterion-related, convergent, and discriminant validity in terms of predicting scores on conceptually relevant external criteria. Implications for theory and future research are discussed.

Examining the Factor Structure of the Hare Self-Report Psychopathy Scale

Psychopathy is a personality disorder consisting of interpersonal (e.g., grandiosity, deceitfulness, superficial charm), behavioral (e.g., manipulativeness, irresponsibility, impulsivity), and affective traits (e.g., lack of remorse, callousness, shallow affect) (Hare, 1991/2003; Hare & Neumann, 2008). Because psychopathy has been shown to predict criminal behavior, recidivism, and violence (Hare, 2003; Hare & Neumann, 2009; Harris, Rice, & Cormier, 1991; Salekin, Rogers, & Sewell, 1996; Walters, 2003), it has emerged as an important clinical construct. Accuracy in measuring psychopathy is thus an important goal and tools for measuring this construct continue to be developed and refined.

The Psychopathy Checklist – Revised (PCL-R; Hare, 1991/2003) has served as the "gold standard" for the assessment of psycopathic personality for decades. Psychopathy has typically been broken down into a two-factor structure (interpersonal/affective and social deviance; Hare, 1991; Hare, Harpur, Hakstian, Forth, Hart & Newman, 1990; Harpur, Hare, & Hakstian, 1989). However, the factor structure of psychopathy currently remains a point of contention in the literature. More recent research has supported competing three-factor (interpersonal, affective, and lifestyle; Cooke & Michie, 2001) and four-factor structures (interpersonal, affective, lifestyle, and antisocial; Hare, 2003; Hare & Neumann, 2008) as best capturing the underlying construct. Part of the debate over the factor structure of psychopathy is in regard to whether antisocial or criminal behavior should be considered part of the construct or a potential consequence of the personality traits (Cooke, Michie, Hart, & Clark, 2004; Skeem & Cooke, 2010). In terms of construct validity, it is imperative to demonstrate that psychopathy measures adhere to similar structures in order to argue that they have similar positions in a nomological network (cf. Cronbach & Meehl, 1955).

The PCL-R is a 20-item clinician-rated scale completed after a semi-structured interview and a review of collateral information. Although its purpose is to be an objective and reliable measure of psychopathy, it requires significant time to complete, extensive clinician training, and access to collateral records (Lilienfeld & Fowler, 2006). Consequently, alternatives for psychopathy assessment have been developed, including self-report inventories particulary for non-institutional and non-forensic settings where time is limited (Lilienfeld & Fowler, 2006). One example of such an instrument is the Hare Self Report Psychopathy Scale (Hare SRP; Paulhus, Neumann, & Hare, in press; see also Williams, Paulhus, & Hare, 2007, for an experimental precursor to this measure).[1]

The potential contribution of the Hare SRP to the field is significant. If psychopathy can be accurately and relatively quickly measured in various populations with a self-report instrument capturing the important domains encompassed within the PCL-R model of psychopathy, important implications for research and practice follow.

The Hare SRP is the most recent revision of original Self-Report Psychopathy scale, which was first developed by Hare shortly after the original PCL (Hare, 1980) to measure the psychopathy construct in a self-report format (Hare, 1985). Previous versions of the SRP evidenced various strengths, including demonstrating criterion-related validity, having scale scores positively correlated with other self-report measures of psychopathy, and having promising construct validity, as reflected in the scale scores' association with related personality constructs (Lester, Salekin, & Sellbom, 2011; Williams et al., 2007), as well as offensive activities and antisocial behavior (Nathanson, Paulhus, & Williams, 2006a, 2006b; Williams, Cooper, Howell, Yuille, & Paulhus, 2009; Williams et al., 2007). In spite of these strengths, previous editions of the SRP were problematic for various reasons, including failing to capture

the factor structure of psychopathy as defined in the literature (Benning, Patrick, Salekin, & Leistico, 2005; Williams, Nathanson, & Paulhus, 2003; Williams & Paulhus, 2004; Williams et al., 2007), having an abundance of anxiety-related items and too few antisocial behavior items (Williams & Paulhus, 2004), and poor internal consistency reliabilities (Williams et al., 2007).

The current version of the instrument, the Hare SRP, was designed to overcome the limitations of previous versions (Paulhus et al., in press; cf. Williams et al., 2007). Paulhus and colleagues (in press) report that the measure was expanded to 64 items and the overall scale has four 16-item subscales: Interpersonal Manipulation, Callous Affect, Erratic Lifestyle, and Criminal Tendencies. The subscale inter-correlations range from 0.48 to 0.63, and the internal consistency (coefficient alpha) values are good: total scale $\alpha = 0.93$, with subscale values ranging from 0.78 to 0.86. Three different studies have elaborated on the convergent validity of the Hare SRP, in that it was shown to correlate positively with the psychopathic personality traits of impulsive antisociality and fearless dominance (Witt, Donnellan, Blonigen, Krueger, & Conger, 2009), it emerged as a unique predictor of aggression in response to physical provocation (Jones & Paulhus, 2010), and it was shown to surpass other personality measures in predicting academic cheating (Williams, Nathanson, & Paulhus, 2010). Although some initial research has been conducted with the Hare SRP, the current investigation was designed to further elucidate its construct validity as a measure of psychopathy, including confirmation of its internal structure in independent samples.

The Current Study

The goals of the current study included evaluating the factor structure of the Hare SRP as well as elaborating on its criterion-related, convergent, and discriminant validity. The optimal factor structure of the instrument was evaluated in a large sample of college students using

Confirmatory Factor Analysis (CFA). A total of four *a priori* models were tested: (a) a one-factor model indicated by all Hare SRP items, (b) a two-factor model consistent with the traditional division of affective-interpersonal traits on one factor and social deviance items on a second factor (e.g., Hare, 1991; Hare et al., 1990; Harpur et al., 1989), (c) a four-factor model in which items loaded on random factors, and (d) and Paulhus and colleagues' (in press) proposed four-factor model, which maps onto more recent four-factor models of psychopathy (e.g., Hare, 2003; Hare & Neumann, 2008). The purpose for comparing four models was to explore whether Paulhus and colleagues' (in press) proposed four-factor model would fit the data better than the other models. The one-factor, two-factor, and four-factor proposed models (non-random) were included to address the discussion of the factor structure of psychopathy with this particular measure of psychopathy. We included the random four-factor model to investigate whether the Paulhus et al.'s (in press) four-factor model would be a superior fit to the random model with an equal number of factors.

We evaluated the Hare SRP's criterion-related validity by examining its relation to other established measures of psychopathy (i.e., Antisocial Practices Screening Device and Inventory of Callous-Unemotional Traits). To evaluate the convergent and discriminant validity of the factor structure, we tested the Hare SRP's association with extra-test criteria conceptually relevant to the construct of psychopathy. We expected the Hare SRP to be positively related to constructs such as aggressiveness, criminal behavior, drug use, excitement seeking, impulsivity, irresponsibility, narcissism, rebelliousness, and callous and unemotional traits. The Hare SRP was expected to correlate negatively with empathy, dependability, honesty, and planful control. To evaluate the measure's discriminant validity, we examined the pattern of associations between Hare SRP scores and conceptually non-relevant criteria, including measures of

emotional distress and psychoticism. We expected non-significant correlations with such criteria. Furthermore, we expected factors that are theoretically more closely related to various extra-test criteria to be stronger predictors than other factors. For instance, the Interpersonal factor should be the best predictor of deceitfulness and manipulativeness; Callous Affect should be the best predictor of low empathy and callous-unemotional traits; Erratic Lifestyle should be the best predictor of impulsivity; and Criminal Tendencies factor should best predictor of overt antisocial behavior, such as stealing (see e.g., Williams et al., 2007, for support for these hypotheses).

Method

Participants

The sample consisted of 602 undergraduate students at a mid-sized Midwestern university who participated in research for course credit. Participants ranged in age from 18 to 48 years (M = 19.90, SD = 3.48), and 94.4% reported being unmarried. The gender composition of the sample was 70% female (n = 428) and 30% male (n = 178). Although we did not formally ask about ethnicity, students from this subject pool are mostly Caucasian (~90%) with about 7% African-American and the remaining roughly 3% from other ethnic backgrounds.

Measures

Hare Self-Report Psychopathy Scale. The Hare SRP (Paulhus et al., in press) is a self-report inventory designed to assess four facets of psychopathy. It consists of 64 items to which participants respond on a scale from 1 (*Disagree Strongly*) to 5 (*Agree Strongly*). Internal consistency estimates of reliability were examined for each of the four factors in the model (described below) using coefficient alpha. Each coefficient fell into the acceptable range of > 0.70 (0.92 for the Total Score, 0.82 for Interpersonal Manipulation, 0.78 for Callous Affect, 0.79 for Erratic Lifestyle, 0.75 for Criminal Tendencies; Cronbach, 1951). However, alpha

coefficients have been criticized for being imperfect indicators of internal consistency due to their reliance on the number of test items in addition to inter-correlations among the items (see e.g., Cortina, 1993). Psychometrics scholars have recommended that in addition to alpha reliabilities, researchers should use average inter-item correlations to establish internal consistency values, because average inter-item correlations are not dependent on number of items (Clark & Watson, 1995; Cortina, 1993). The average inter-item correlation values for the four factors (0.22 for IPM, 0.19 for CA, 0.20 for ELS, 0.20 for CT) and the total score (0.15) were within the recommended benchmarks of 0.15 to 0.50 (Clark & Watson, 1995). For this sample, the scale means and standard deviations were as follows: Total Score *M*= 121.17, *SD*= 141.23; Interpersonal Manipulation *M*= 30.98, *SD*= 81.40; Callous Affect *M*= 31.96, *SD*= 57.70; Erratic Lifestyle *M*= 36.01, *SD*= 71.14; and Criminal Tendencies *M*= 22.23, *SD*= 41.53.

Minnesota Multiphasic Personality Inventory-2-Restructured Form. The MMPI-2-RF (Ben-Porath & Tellegen, 2008) is a 338-item self-report personality inventory measuring a wide range of personality and psychopathology. The inventory includes 50 scales, with validity, higher-order (H-O), restructured clinical (RC), specific problems (SP), interest, and Personality Psychopathology Five (PSY-5) scale sets. Our current study examined a selected subset of scales reflecting personality characteristics and symptoms conceptually relevant (for evaluating convergent validity) and non-relevant (for evaluating discriminant validity) to the psychopathy construct. These scales included the three H-O psychopathology scales: Emotional/Internalizing Dysfunction (EID), Thought Dysfunction (THD), and Behavioral/Externalizing Dysfunction (BXD); the PSY-5 scales Aggressiveness-Revised (AGGR-r), Psychoticism-Revised (PSYC-r), Disconstraint-Revised (DISC-r), Negative Emotionality/Neuroticism-Revised (NEGE-r), and Introversion/Low Positive Emotionality – Revised (INTR-r); the interpersonal scales

Interpersonal Passivity (IPP), Social Avoidance (SAV), Shyness (SHY), and Disaffiliativeness (DSF); and the internalizing scales Behavior-Restricting Fears (BRF) and Multiple Specific Fears (MSF).

In the current sample, Cronbach's alpha for the individual scales ranged from 0.34 (DSF) to 0.91 (EID). Three of the fourteen scales had Cronbach's alpha coefficients that fell below the acceptable range of > 0.70 (0.34 for DSF, 0.56 for BRF, and 0.63 for MSF; Cronbach, 1951). The average inter-item correlation values ranged from 0.09 (DSF) to 0.33 (SHY). Six scales fell below the recommended benchmark of 0.15 (THD, BXD, BRF, DSF, PSYC, and DISC; Clark & Watson, 1995).[2] However, because these scales have been subject to extensive construct validation (e.g., Tellegen & Ben-Porath, 2008), we decided to move forward with them and use them in our analyses. The means for the scales in our sample ranged from a low *T*-score of 48.59 (*SD*= 9.90) on the SAV scale to 55.43 (*SD*= 11.69) on the NEGE-r scale.[3]

Externalizing Spectrum Questionnaire. The ESQ (Krueger, Markon, Patrick, Benning, & Kramer, 2007) is a 415-item self-report inventory with items anchored on a 4-point scale (*true*, *somewhat true*, *somewhat false*, and *false*). It was developed to measure the broad externalizing spectrum of psychopathology, which encompasses disinhibition, excitement seeking, aggression, alcohol and substance abuse, and symptoms characteristic of conduct disorder and antisocial behavior as defined by the *DSM-IV-TR* (Krueger et al., 2007). Many existing instruments as well as diagnostic criteria for disorders with externalizing features were consulted during initial item writing. Over three waves of data collection, the authors delineated a final set of 23 unidimensional scales covering a range of content as well as severity of externalizing behavior (Krueger et al., 2007). The resulting scales were: Relational, Destructive, and Physical Aggression, Boredom Proneness, Empathy, Impatient Urgency, Excitement

Seeking, Honesty, Dependability, Planful Control, Blame Externalization, Alienation, Alcohol Use and Problems, Marijuana Use and Problems, Drug Use and Problems, Theft, Fraud, Irresponsibility, Problematic Impulsivity, and Rebelliousness. We did not include Alcohol Use, Marijuana Use, or Drug Use, because these scales were redundant with the "problem" scales in the current study. In this sample, Cronbach's alpha for the 20 individual scales in the current sample ranged from 0.78 (Theft) to 0.96 (Alcohol Use). The means ranged from a low of 0.24 (*SD*= 0.44) on the Drug Problems scale to 2.50 (*SD*= 0.42) on the Empathy scale.[4]

Antisocial Processes Screening Device. The APSD (Frick & Hare, 2001) is a 20-item inventory designed to measure psychopathic traits in juveniles. It was developed as a downward extension of the PCL-R (Hare, 1991) to be filled out by an adult rating the juvenile on each item on a 0 (*not at all true*) to 2 (*definitely true*) point scale. However, we used the measure as a self-report inventory with altered wording for first-person responses, as other researchers have done (e.g., Caputo, Frick, & Brodsky, 1999; Murrie, Cornell, Kaplan, McConville, & Levy-Elkon, 2004). The total score alpha coefficient in the current sample was 0.76; factor-level alphas were 0.67 (Narcissism), 0.54 (Impulsivity), and 0.46 (Callous-Unemotional). These values are consistent with a review of the measure's internal consistency by Spain, Douglas, Poythress, and Epstein (2004). Because scale length substantially affects Cronbach's alpha reliability estimates (Cortina, 1993), we also calculated the average inter-item correlations to evaluate the measure's internal consistency in this sample. The average inter-item correlations were 0.14 (APSD Total Score), 0.22 (Narcissism), 0.20 (Impulsivity), and 0.14 (Callous-Unemotional). These average inter-item correlation values are fairly low, but still close to the recommended benchmarks provided by Clark and Watson (1995). The means and standard deviations for the scales in this

sample were as follows: Total Score *M*= 30.77, *SD*= 4.83; Narcissism *M*= 10.47, *SD*= 2.26; Impulsivity *M*= 8.64, *SD*= 1.81; and Callous-Unemotional *M*= 8.46, *SD*= 1.59.

Reactive-Proactive Aggression Questionnaire. The RPQ (Raine et al., 2006) is a 23-item self-report inventory designed to measure aggression in children and adolescents. Items are rated on a 0 (*never*) to 3 (*often*) point scale for frequency of occurrence. In addition to a total score, the scale yields two subscale scores: reactive (11 items) and proactive (12 items) aggression. Cronbach's alpha for the reactive aggression subscale in this sample was 0.81, and the coefficient for the proactive aggression subscale was 0.78. These internal consistency values are slightly lower but generally consistent with those reported by Raine and colleagues (2006). The mean for the proactive aggression subscale in this sample was 14.26 (*SD*= 2.68) and the reactive aggression subscale mean was 19.95 (*SD*= 3.84).

Inventory of Callous-Unemotional Traits. The ICU (Essau, Sasagawa, & Frick, 2006) is a 24-item self-report inventory of callous and unemotional traits for adolescents. It is anchored on a 0 (*not at all true*) to 3 (*definitely true*) point scale. The measure was developed as an improvement of the Callous-Unemotional scale of the APSD. To address the psychometric limitations of the original subscale of the APSD, eighteen additional items were added, the rating system was expanded by one point for greater variability, and the wording of items was attended to in order to reduce the possibility of a response bias. The alpha coefficient for the ICU total score in the current sample was 0.80. This value is consistent with internal consistency values reported in previous studies (Essau et al., 2006; Kimonis et al., 2008). The mean for the scale in this sample was 41.79 (*SD*= 7.53).

Procedure

All measures were administered in groups of up to 30 individuals by a trained, graduate student research assistant. Participants provided informed consent prior to completing the battery. The measures were administered in randomized order to prevent order effects. Upon completion, students were debriefed and received course credit for their participation.

Results

Confirmatory Factor Analysis

To estimate the parameters of each of our models, we conducted a Confirmatory Factor Analysis (CFA) with maximum likelihood estimation in M*plus* 5.21 (Muthen & Muthen, 2005). Because some Hare SRP items were not normally distributed, which contributes to potentially violating the assumption of multivariate normality, we estimated parameters with robust scaling (i.e., MLR) and evaluated model fit with the Satorra-Bentler scaling correction χ^2 statistic (Satorra & Bentler, 1994). We freed the parameters but fixed latent variances to equal one to provide a standardized metric for latent factor scores. We also evaluated model fit using the Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Confirmatory Fit Index (CFI; Bentler, 1990), Akaike's Information Criterion (AIC; Akaike, 1987), and Bayesian Information Criterion (BIC; Schwarz, 1978).

Although we report the χ^2 statistics, we did not expect them to indicate a good fit because χ^2 is heavily influenced by sample size and is therefore an inappropriately strict test of model fit (Bentler & Bonett, 1980; Kline, 2010; Marsh, Hau, & Grayson, 2005). Smaller χ^2, AIC, and BIC values correspond to better fitting models (Schumacker & Lomax, 2010), with the latter two used to compare non-nested models. RMSEA values up to 0.05 indicate good fit, between 0.06 and 0.08 indicate adequate fit, and $\geq$ 0.10 indicate poor fit (Hu & Bentler, 1999; Kline, 2010). SRMR

values below .08 are indicative of a good fit (Hu & Bentler, 1999). CFI values greater than 0.90 are generally indicative of acceptable model fit (Hu & Bentler, 1999).

We first estimated the four *a priori* models using the 64 Hare SRP items. The model fit indices for each of these models are shown in Table 1. Results indicated that the four-factor model displayed better model fit relative to the one-factor, two-factor, and random four-factor models as evidenced from lowest AIC and BIC values. Unfortunately, none of the estimated models met acceptable model fit criteria per the CFI, which has shown to be excessively low even in accurately specific models that use item-level data (Marsh et al., 2005); thus, the absolute fit statistics are better indicators for model fit.[5] Nevertheless, we examined an alternative method to model the SRP facets to determine if the low CFI values were indeed due to item level data. We transformed the Hare SRP 64-item set into 16 radial parcels (composed of items within each hypothesized factor) to decrease the indicator-to-factor ratio and to conduct the CFAs with these parcels (cf. Little, Cunningham, Shahar, & Widaman, 2002; see Table 2). This parceling technique developed by Cattell and Burdsal (1975) has been used by other researchers conducting CFAs to reduce the complexity of models for instruments with a large number of items (see e.g., Bagby, Ryder, Ben-Dat, Bacchiochi, & Parker, 2002).

[Insert Tables 1 and 2 about here]

We next estimated the same four alternative models (one-factor, two-factor, random four-factor, and original four-factor) using the parcels as indicators (see Table 1). Results indicate the less complex models were all associated with higher CFI values compared to the models based on item level data. However, only the hypothesized four-factor model fit the data well according to our pre-specified criteria for model fit: Satorra-Bentler χ^2 (98) = 273.60, CFI = 0.95, RMSEA = 0.055 (90% CI = 0.047 – 0.062), SRMR = 0.05, AIC = 42,116.09, and BIC = 42,353.70.

Next, we examined whether the factor structures for men and women were invariant. Factor loadings were constrained to be equal across the two groups (SB χ^2 = 417.66, df = 208, p < 0.001) and this model was compared to one in which parameters were freely estimated across the two groups (SB χ^2 = 403.47, df = 196, p < 0.001). The difference in model fit was not statistically significant (ΔSB χ^2 = 14.91, df = 12, p = 0.246), indicating weak factorial invariance. We also tested for strong factorial invariance and compared whether the pattern of intercepts for indicators were invariant across the two gender groups. A model in which factor loadings and indicator intercepts were constrained to be equal across the two groups (SB χ^2 = 430.73, df = 220, p < 0.001) was compared to one in which the intercepts (but not factor loadings) were freely estimated across groups (SB χ^2 = 417.66, df = 208, p < 0.001). The difference in model fit was not significant (ΔSB χ^2 = 11.71, df = 12, p = 0.469), indicating strong factorial invariance.

See Table 3 for the latent factor correlations in this sample and Tables 4 and 5 for the factor loadings for the Hare SRP items and parcels, respectively. Of note, all items loaded significantly on their respective factors. Item 23 ("I avoid horror movies" [R]; λ = 0.14, p = .038) was associated with a significant loading but only a small portion of variance in this item was explained by Callous Affect factor, which suggests that this may be a poor indicator of this construct.

[Insert Tables 3, 4, and 5 about here]

Criterion-Related, Convergent, and Discriminant Validity

To elaborate on the criterion-related, convergent, and discriminant validity of the Hare SRP Total and Factor scores, we employed two types of analyses. We calculated zero-order correlations for the Hare SRP Total and Factor scores with each of our criterion variables (see

Table 6). Further, to determine the factor scores' unique associations when considered in a model, we conducted multiple regression analyses in which each criterion variable was regressed onto the four Hare SRP factors. Table 6 also shows the multiple correlations and standardized beta weights from these regression analyses.

[Insert Table 6 about here]

The Hare SRP Total score was significantly related at the $p < 0.001$ level with other established measures of psychopathy, including the APSD (Frick & Hare, 2001) and the ICU (Essau et al., 2006). These results provide support for the criterion-related validity of the Hare SRP. In addition, the Hare SRP was significantly related at the $p < 0.001$ level with other conceptually-relevant extra-test criteria, demonstrating good convergent validity. These external criteria included the scales from the ESQ (Krueger et al., 2007) and the RPQ (Raine et al., 2006). As expected, the Hare SRP total score was related to measures of drug use, thrill seeking, aggression, irresponsibility, planful control, impulsiveness, fraud and theft, callous affect, and disaffiliativeness, as well as negatively with dependability, empathy, and honesty. This score was not correlated with any fearfulness measures. In terms of discriminant validity, the Hare SRP total score showed generally weak or non-significant correlations with measures of emotional distress, negative emotionality, social avoidance, and shyness. The correlations with thought dysfunction and psychoticism were slightly higher than expected but clearly lower in magnitude relative to most correlations with conceptually-related criteria.

The four Hare SRP factors showed a promising pattern of differential relations with conceptually relevant criteria. Although this pattern was fairly evident when examining the bivariate associations, it became clearer when all four factors were entered into the regression model. Factor 1 (Interpersonal Manipulation, IPM) emerged as the strongest predictor of (low)

honesty, blame externalizing, alienation, relational and physical aggression, fraud, and narcissism. Although less theoretically intuitive, this factor was also associated with the largest beta weight when predicting impatient urgency. Factor 2 (Callous Affect, CA) scale scores best predicted (low) empathy, disaffiliativeness, and callous and unemotional traits (both as indexed via APSD and ICU, and tapped by the MMPI-2-RF AGGR-r scale). Factor 3 (Erratic Lifestyle, ELS) also showed evidence of convergent and discriminant validity in its pattern of relations with the criterion variables, including boredom proneness, excitement seeking, (low) dependability, (low) planful control, disconstraint, and a general externalizing behavioral style. On the APSD, it showed the strongest predictive ability for the Impulsivity scale. Factor 4 (Criminal Tendencies, CT) was the best predictor of destructive aggression and theft but it was also associated with general proclivities toward externalizing and impulsivity (though not as strongly as ELS). As expected, ELS and CT were the strongest predictors of alcohol and drug problems. All of the factor scores produced good evidence for discriminant validity, though the IPM scale showed weak correlations with some aspects of negative emotionality and thought dysfunction/ psychoticism. These correlations were, however, smaller than those with conceptually relevant criteria.

Discussion

The current investigation was conducted to examine the factor structure of the Hare SRP, as well as to elaborate on the criterion-related, convergent, and discriminant validity of the total and factor scores. The original four factors proposed by the Hare SRP authors were supported in our analyses. The Hare SRP was found to have acceptable internal reliability and our analyses indicate promising evidence for convergent and discriminant validity. We also established

criterion-related validity by demonstrating its relation to other psychopathy measures (i.e., ASPD and ICU).

Regarding construct validity, the Hare SRP total score was associated with criminal and violent behavior, thrill seeking, irresponsibility, planful control, impulsivity, callous affect, and lack of dependability, empathy, and honesty, which would be expected of any comprehensive measure of psychopathy. Further, in line with Williams and colleagues (2007), the individual subscale scores were able to differentially predict various extra-test criteria consistent with what would be theoretically expected. Specifically, the Interpersonal Manipulation (IPM) scale best predicted low honesty, blame externalization, and narcissism, which reflect prototypical characteristics in psychopathy in that such individuals are grandiose, manipulative, deceitful in their interactions with others, and at the same time blame others for the problems they cause with little concern (e.g., Harpur et al., 1989; Williams et al., 2007). From this perspective, it makes particular sense that IPM was the best indicator of fraudulent behavior, which has a significant interpersonal component.

In addition, the Callous Affect (CA) facet complements the IPM facet in that is appears to be the best measure of low empathy, interpersonal and emotional disaffiliativeness, and callous and unemotional traits, indicating that (when present) any interpersonal and behavioral characteristics are manifested in light of a disregard for others' feelings and perhaps even with deriving pleasure from hurting and abusing others (e.g., Woodworth & Porter, 2002).

The two "behavioral" components of psychopathy showed an interesting pattern of convergent and discriminant validity. Erratic Lifestyle (ELS) predicted boredom proneness, excitement seeking, impulsivity, low dependability, and low planful control, whereas Criminal Tendencies (CT) best predicted theft, destructive aggression, and drug problems. Thus, ELS

might better index a dispositional style reflecting high sensation seeking and impulsivity associated with high risk for engaging in externalizing behavior (e.g., Cooke et al., 2004), whereas CT is a purer behavioral measure indicating the actual engagement in externalizing and criminal behavior. The latter appears to play a considerable role in the prediction of violence risk (see e.g., Walters & Heilbrun, 2010), but its role as a component or consequence of psychopathy continues to be subject to debate (e.g., Hare & Neumann, 2010; Skeem & Cooke, 2010).

The pattern of relations between the Hare SRP factors and various forms of aggression is of note. Each factor's zero-order correlation with physical, destructive, and relational aggression, as well as proactive and reactive aggression was large. However, when all four factor scores were entered simultaneously into a regression model, predictable differences emerged. IPM emerged as the strongest predictor of relational aggression, CT was the strongest predictor of destructive aggression, and ELS emerged as the strongest predictor of reactive aggression. From a conceptual standpoint, these results are favorable when considering the construct validity of the Hare SRP. Relational aggression is associated with the strongest interpersonal component, whereas destructive aggression generally refers to a behavioral act that does not necessarily involve others (e.g., vandalism). Reactive aggression is generally indicative of an impulsive form of aggression that has consistently been linked to the behavioral component of psychopathy (e.g., Porter & Woodworth, 2006).

The Hare SRP scales also evidenced good discriminant validity in terms of their associations with various indices of negative emotionality. However, both the Hare SRP total and IPM scores were significantly associated with measures of thought disturbance and psychoticism. Although unexpected, these results may be partly due to their common link with

excessive grandiosity. The PSYC-r scale, for instance, has been linked to measures of narcissistic personality disorder (e.g., Bagby, Sellbom, Costa, & Widiger, 2008).

We also uncovered some unexpected findings. For instance, ELS did not emerge as the strongest predictor of either impatient urgency or irresponsibility. IPM was associated with the largest beta weight when predicting impatient urgency and CT was slightly more predictive of irresponsibility than ELS. The latter finding is likely due to the ESQ irresponsibility scale indexing a behavioral style rather than a personality style. The finding for impatient urgency suggests the IPM may tap more into ELS than would be ideal. Of course, additional research is needed to ensure these are not sample-dependent findings. Furthermore, although perhaps less unexpected given the Hare SRP item content, the measures were generally uncorrelated with fear and only weakly with indices of interpersonal assertiveness and dominance despite these being conceptually and empirically supported correlates (both via self-report and neuroimaging) of psychopathy (e.g., Blair, 2006; Harpur et al., 1989; Verona, Patrick, & Joiner, 2001). Patrick (2010; Patrick, Fowles, & Krueger, 2009) recently proposed a triarchic conceptualization of psychopathy, which integrates various historical and contemporary conceptualizations and measurement models of the construct into three broad phenotypic domains of disinhibition, boldness, and meanness. From this perspective, the Hare SRP appears to capture the meanness and disinhibition components of psychopathy quite well, but measurement of the boldness domain (i.e., social dominance, fearlessness, stress immunity) is generally absent.

This study has important implications. The use of a self-report measure that can measure psychopathic traits in various populations (including non-incarcerated samples) may allow for greater exploration of the relation between criminal behavior and the construct of psychopathy. The ability to measure psychopathic traits in various populations may allow new or less

developed research areas to move forward (e.g., measuring psychopathic traits in corporate executives such as in banking, insurance, and tobacco industries or within military organizations to mention a few). An important difference regarding the respondents in our current study and assessing psychopathy in other "normal" populations such as those described here should be considered. Our participants provided self-reports under conditions of anonymity, with no consequences riding on their performance. In real assessment scenarios with consequences for the respondents, such candid responses may not always be obtained. To determine whether the Hare SRP would be a useful instrument in such a situation, research is needed with these "normal" populations in which real decisions are made based on their responses. The development of validity scales commonly used on omnibus personality inventories, such as the MMPI-2-RF, as well as some self-report measures of psychopathy (e.g., Psychopathic Personality Inventory-Revised; Lilienfeld & Widows, 2005) might be warranted to detect potential dishonest responding.

Future research should investigate this measure's relation to the PCL-R and other established measures of psychopathy to further elucidate its criterion-related validity. If this self-report measure is found to map well onto the PCL-R, it may be useful for reducing the clinical administration time of the PCL-R in forensic and correctional samples. Finally, an encouraging finding was that we were able to demonstrate the Hare SRP's ability to capture a four-factor structure of psychopathy in a largely female (70%) college student sample, and that this structure was invariant across genders.

The current findings need to be interpreted in light of several important limitations. One of these is that we did not include a correctional sample; therefore, future research should attempt to validate the factor structure of the Hare SRP in an incarcerated sample to explore

whether this measure would reflect the same construct in that population. Furthermore, future research should replicate and extend these findings in broader community-based samples as well as any other setting where routine assessment of psychopathy might be conducted (e.g., forensic inpatient psychiatric settings). Another limitation concerned our sole reliance on self-report questionnaires for our validity analyses, which introduces shared method variance. Such variance will likely yield artificially inflated correlations between measures, though it is unlikely that the pattern of correlations for the factor scores would be affected. Future studies should continue to examine the Hare SRP total and factor scores using multiple measurement modalities.

In conclusion, the current study indicates that the Hare SRP reflects a four-factor model of psychopathy that can be efficiently indexed via self-report. The correlates presented here and elsewhere (see Williams et al., 2007) indicate that these four factors align quite well with the PCL-R four-facet model, but further research is sorely needed in forensic and correctional samples before researchers can be confident about factorial invariance across settings. Nonetheless, the Hare SRP may be a good choice of measure to capture psychopathy in a broad range of individuals. It has promising validity for use with both men and women, and it can be successfully used with non-incarcerated samples. Finally, the Hare SRP could potentially be used as another avenue in understanding three vs. four-factor structures of psychopathy, in that IPM, CA, and ELS factors align quite well with Cooke and Michie's (2001) proposed three-factor model, and CT completes Hare's (2003) four-facet structure.

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Footnotes

[1] This measure has also been referred to in the literature as the SRP-III and SRP-IV. Because the commercially published version of the scale will be named Hare Self-Report Psychopathy Scale (K. Williams, personal communication, March 15, 2011), we have decided to use this name.

[2] The Cronbach's alpha and average inter-item correlation values for all the scales in this sample are available from the authors upon request.

[3] The means and standard deviations for all the scales in this sample are available from the authors upon request.

[4] The means and standard deviations for all the scales in this sample are available from the authors upon request.

[5] One thoughtful reviewer questioned our use of Confirmatory Factor Analysis (CFA), as it has shown to demonstrate poor fit for several widely used personality measures with well-documented reliability and criterion-related validity (e.g., see Hopwood & Donnellan, 2010). In their analysis of the use of CFA and Exploratory Factor Analyses (EFA) for inherently complex personality inventories, Hopwood and Donnellan (2010) conclude EFAs may be more useful to evaluate model fit for these complex measures due to EFA's less stringent tests of model viability than CFA. As per their recommendation, we conducted an EFA on the 64-item Hare SRP with maximum likelihood estimation and oblique Geomin rotation in M*plus* 5.21 (Muthen & Muthen, 2005). The EFA fit indices for the fixed 4-factor 64-item model were better than the CFA results for the 64-item model, but they were still not a good fit: Satorra-Bentler χ^2 (1766) = 3492.84, CFI = 0.79, RMSEA = 0.040 (90% CI = 0.038 – 0.042), SRMR = 0.04, AIC = 102,192.93, and BIC = 103,856.23. These EFA results suggest that incremental fit indices have

problems with item-level data even when optimal solutions with cross-loadings are considered.

Table 1.

Goodness-of-Fit Indices for the Item- and Parcel-Level Models of the Hare SRP.

Model	SB-X^2	*Df*	CFI	RMSEA (90% CI)	SRMR	AIC	BIC
Items							
One-factor	5,478.51	1952	0.57	0.055 (0.053-0.056)	0.07	104,229.68	105,074.53
Two-factor	5,214.76	1951	0.60	0.053 (0.051-0.054)	0.07	103,920.77	104,770.02
Four factor (Random)	5,471.71	1946	0.57	0.055 (0.053-0.057)	0.07	104,224.40	105,095.65
Four factor (Original)	4,790.78	1946	0.65	0.049 (0.048-0.051)	0.07	103,404.62	104,275.87
Parcels							
One-factor	758.35	104	0.81	0.102 (0.095-0.109)	0.07	42,665.39	42,876.61
Two-factor	601.26	103	0.85	0.09 (0.083-0.097)	0.06	42,484.39	42,700.00
Four factor (Parcels loading on random factors)	722.60	98	0.82	0.103 (0.096-0.11)	0.07	42,627.29	42,864.904
Four factor (Parcels loading on Original Factors)	273.60	98	0.95	0.055 (0.047-0.062)	0.05	42,116.09	42,353.70

Note. SB-X^2: Satorra–Bentler scaled chi-square; *df*: degrees of freedom; CFI: comparative fit index; RMSEA: root mean square error of approximation; SRMR: standardized root mean square residual; CI: confidence interval; AIC: Akaike's information criterion; BIC: Bayesian information criterion.

Table 2.

Items Randomly Assigned to Parcels.

	Parcel 1	Parcel 2	Parcel 3	Parcel 4
IPM	3, 13, 16R, 61R	27, 41, 45, 50	8, 24R, 35, 54	20, 31R, 38R, 58
CA	15, 33, 53, 60	30, 40, 44R, 56	7, 23R, 37, 48	2, 11R, 19R, 26R
ELS	17, 22R, 28, 55	4, 25R, 47R, 59	14R, 36R, 39, 42	1, 9, 32, 51
CT	6R, 12, 49, 62	34R, 43, 57, 64	5R, 10, 29, 63	18R, 21R, 46R, 52

Note. IPM (Interpersonal Manipulation), CA (Callous Affect), ELS (Erratic Lifestyle), CT (Criminal Tendencies). R = reverse coded item.

Table 3.

*Latent factor correlations using items as indicators.***

Factor	*IPM*	*CA*	*ELS*	*CT*
IPM	-	0.80	0.71	0.61
CA		-	0.63	0.64
ELS			-	0.58
CT				-

*Latent factor correlations using parcels as indicators.***

Factor	*IPM*	*CA*	*ELS*	*CT*
IPM	-	0.76	0.74	0.62
CA		-	0.69	0.62
ELS			-	0.64
CT				-

Note. Factor: IPM (Interpersonal Manipulation), CA (Callous Affect), ELS (Erratic Lifestyle), CT (Criminal Tendencies). **All correlation are significant at the 0.01 level (2 tailed).

Table 4.

Factor Loadings for Hare SRP Items.

	Standardized		
	λ	S. E.	*P*
Interpersonal Manipulation			
#3 (beat lie detector)	0.44	0.04	<.001
#8 (flatter people)	0.51	0.05	<.001
#13 (false identity)	0.34	0.04	<.001
#16 (sly)	0.55	0.05	<.001
#20 (enjoy scamming people)	0.46	0.04	<.001
#24 (do not trust others)	0.28	0.05	<.001
#27 (enjoy pushing people)	0.58	0.04	<.001
#31 (easy to manipulate people)	0.56	0.05	<.001
#35 (take advantage of others)	0.46	0.04	<.001
#38 (good at lying)	0.45	0.05	<.001
#41 (pretend to like people)	0.68	0.04	<.001
#45 (can easily talk people into things)	0.45	0.04	<.001
#50 (people lie all the time)	0.38	0.05	<.001
#54 (manipulate people)	0.71	0.04	<.001
#58 (people are easily fooled)	0.62	0.04	<.001
#61 (do what it takes to get what I want)	0.42	0.05	<.001

Callous Affect			
#2 (tough-minded)	0.34	0.05	<.001
#7 (people are weak)	0.47	0.04	<.001
#11 (injured animals not hard to see)	0.38	0.05	<.001
#15 (enjoy watching fights)	0.75	0.05	<.001
#19 (cold person)	0.44	0.04	<.001
#23 (enjoy horror movies)	0.14	0.07	0.038
#26 (enjoy driving very fast)	0.50	0.05	<.001
#30 (do not keep in touch with family	0.26	0.04	<.001
#33 (never cry at movies)	0.51	0.06	<.001
#37 (cold-hearted)	0.55	0.04	<.001
#40 (enjoy violent movies and sports)	0.66	0.06	<.001
#44 (not soft-hearted)	0.53	0.04	<.001
#48 (people are too sensitive)	0.45	0.04	<.001
#53 (do not cry at funerals)	0.38	0.04	<.001
#56 (do not feel bad about hurting others)	0.33	0.04	<.001
#60 (dump friends when not useful)	0.36	0.04	<.001
Erratic Lifestyle			
#1 (rebellious)	0.63	0.04	<.001
#4 (have done illegal drugs)	0.59	0.07	<.001
#9 (thrilled by danger)	0.93	0.04	<.001

#14 (do not plan weekly activities)	0.31	0.05	<.001
#17 (make fast decisions)	0.50	0.05	<.001
#22 (miss appointments)	0.33	0.05	<.001
#25 (enjoy driving fast)	0.62	0.05	<.001
#28 (like doing wild things)	0.79	0.05	<.001
#32 (do not follow rules)	0.47	0.04	<.001
#36 (like gambling)	0.42	0.06	<.001
#39 (like to have sex with strangers)	0.43	0.05	<.001
#42 (impulsive)	0.52	0.05	<.001
#47 (enjoy taking risks)	0.55	0.05	<.001
#51 (do not learn from mistakes)	0.40	0.04	<.001
#55 (easily bored)	0.33	0.05	<.001
#59 (say mean things without thinking)	0.49	0.05	<.001
Criminal Tendencies			
#5 (have been involved in gang activity)	0.43	0.07	<.001
#6 (have stolen a vehicle)	0.36	0.06	<.001
#10 (have gotten money through trickery)	0.48	0.05	<.001
#12 (have assaulted an officer or social worker)	0.15	0.03	<.001
#18 (have tried to rape someone)	0.40	0.06	<.001
#21 (have attacked someone intentionally)	0.63	0.06	<.001
#29 (have broken in to steal or vandalize)	0.45	0.05	<.001

#34 (have been arrested)	0.61	0.06	<.001
#43 (have taken hard drugs)	0.43	0.06	<.001
#46 (have shoplifted)	0.61	0.07	<.001
#49 (have been convicted of a serious crime)	0.29	0.04	<.001
#52 (carry a weapon sometimes for protection)	0.46	0.05	<.001
#57 (have threatened people into giving me stuff)	0.27	0.04	<.001
#62 (have friends who have been in prison)	0.35	0.05	<.001
#63 (have tried to hit someone with a vehicle)	0.25	0.03	<.001
#64 (have violated probation)	0.14	0.03	<.001

Note. The full items could not be reproduced here, because they are copyrighted by Multi-Health Systems, Inc.. Instead, we refer to item numbers and provide a paraphrased indication of the item content within parentheses.

Table 5.

Factor Loadings for Parcels.

	Standardized		
	λ	S. E.	*P*
IPM Parcel 1	0.67	0.03	<.001
IPM Parcel 2	0.75	0.03	<.001
IPM Parcel 3	0.74	0.03	<.001
IPM Parcel 4	0.74	0.03	<.001
CA Parcel 1	0.67	0.03	<.001
CA Parcel 2	0.77	0.02	<.001
CA Parcel 3	0.63	0.03	<.001
CA Parcel 4	0.77	0.02	<.001
ELS Parcel 1	0.71	0.03	<.001
ELS Parcel 2	0.67	0.03	<.001
ELS Parcel 3	0.65	0.03	<.001
ELS Parcel 4	0.81	0.02	<.001
CT Parcel 1	0.64	0.04	<.001
CT Parcel 2	0.60	0.04	<.001
CT Parcel 3	0.78	0.03	<.001
CT Parcel 4	0.69	0.03	<.001

Note. Factor: IPM (Interpersonal Manipulation), CA (Callous Affect), ELS (Erratic Lifestyle), CT (Criminal Tendencies).

Table 6.

Correlation and Regression Results for 4-factor Hare SRP Model with External Criteria.

	SRP Total	Factor 1 (IPM)		Factor 2 (CA)		Factor 3 (ELS)		Factor 4 (CT)		
	r	*r*	*β*	*r*	*β*	*r*	*β*	*r*	*β*	$R^{2\,a}$
Externalizing Spectrum Questionnaire										
ESQ – Alcohol Problems	.46‡	.34	.05	.27	-.10*	.50	.43‡	.38	.18‡	.27
ESQ – Marijuana Problems	.40‡	.26	-.03	.24	-.06	.41	.33‡	.39	.26‡	.22
ESQ – Drug Problems	.43‡	.27	-.04	.27	-.03	.40	.25‡	.46	.37‡	.25
ESQ – Alienation	.25‡	.30	.34‡	.09	-.22‡	.25	.16†	.16	.02	.12
ESQ - Blame Externalization	.37‡	.38	.30‡	.24	-.07	.35	.20‡	.24	.02	.17
ESQ - Boredom Proneness	.39‡	.35	.18‡	.29	.05	.40	.31‡	.19	-.09	.19
ESQ - Excitement Seeking	.68‡	.51	.07	.48	.05	.74	.64‡	.45	.07	.56
ESQ – Dependability	-.36‡	-.30	-.11	-.29	-.10	-.30	-.12*	-.28	-.12*	.13
ESQ – Empathy	-.55‡	-.46	-.12†	-.61	-.53‡	-.36	.06	-.37	-.08*	.39
ESQ – Honesty	-.47‡	-.47	-.35‡	-.34	-.01	-.37	-.11*	-.34	-.11*	.24
ESQ - Physical Aggression	.64‡	.53	.17‡	.54	.24‡	.52	.18‡	.50	.21‡	.41
ESQ - Destructive Aggression	.59‡	.47	.13†	.45	.10*	.48	.18‡	.53	.32‡	.37
ESQ - Relational Aggression	.60‡	.60	.46‡	.43	-.01	.48	.14†	.43	.13†	.40
ESQ – Irresponsibility	.55‡	.39	.04	.36	-.01	.51	.31‡	.52	.35‡	.35

ESQ – Rebelliousness	.63‡	.51	.18‡	.42	-.02	.63	.46‡	.46	.15‡	.44
ESQ - Planful Control	-.44‡	-.33	-.06	-.25	.10*	-.49	-.45‡	-.33	-.12†	.26
ESQ - Problematic Impulsivity	.57‡	.48	.23‡	.32	-.18‡	.58	.43‡	.22	.22‡	.40
ESQ - Impatient Urgency	.45‡	.47	.40‡	.25	-.19‡	.45	.31‡	.28	.02	.28
ESQ – Fraud	.60‡	.55	.33‡	.41	-.02	.49	.16‡	.52	.28‡	.39
ESQ – Theft	.58‡	.44	.11*	.38	-.03	.47	.18‡	.61	.48‡	.41
Antisocial Processes Screening Device										
APSD Total Score	.64‡	.63	.44‡	.45	-.02	.58	.31‡	.40	.03	.46
APSD Narcissism	.48‡	.57	.58‡	.34	-.05	.36	.03	.29	.01	.33
APSD Impulsivity	.47‡	.39	.15†	.27	-.12†	.56	.55‡	-.02	-.02	.32
APSD Callous-Unemotional	.38‡	.34	.15†	.37	.24‡	.27	.01	.26	.06	.16
Reactive Proactive Aggression Questionnaire										
RPQ Proactive	.59‡	.51	.26‡	.43	.04	.44	.09*	.54	.34‡	.37
RPQ Reactive	.47‡	.43	.26‡	.32	-.03	.45	.28‡	.31	.05	.24
Inventory of Callous and Unemotional Traits										
ICU Total	.53‡	.43	.09	.55	.43‡	.40	.08	.34	.04	.32
Minnesota Multiphasic Personality Inventory – 2 – Restructured Form										
Emotional/Internalizing Dysfunction	.11‡	.16	.23‡	-.01	-.21‡	.11	.07	.08	.03	.05
Thought Dysfunction	.30‡	.29	.22‡	.19	-.07	.26	.12*	.24	.10*	.11
Behavioral/Externalizing Dysfunction	.72‡	.53	.06	.49	.01	.71	.50‡	.62	.33‡	.59

PSY-5: Aggressiveness-r	.44‡	.37	.12*	.39	.20‡	.39	.20‡	.27	.01	.20
PSY-5: Psychoticism-r	.31‡	.31	.24‡	.17	-.11*	.28	.15†	.24	.10*	.12
PSY-5: Disconstraint-r	.69‡	.48	-.01	.48	.03	.72	.57‡	.57	.27‡	.57
PSY-5: Negative Emotion/Neuroticism-r	.14‡	.22	.33‡	-.01	-.27‡	.13	.06	.11	.05	.09
PSY-5: Introversion/Low Positive Emo-r	-.05	.01	.08	.03	.14*	-.14	-.25‡	.06	-.04	.04
Interpersonal: Interpersonal Passivity	-.28‡	-.24	-.09	-.24	-.10	-.27	-.17†	-.15	.03	.09
Interpersonal: Social Avoidance	-.05	.01	.11	.05	.18†	-.18	-.34‡	-.04	-.01	.07
Interpersonal: Shyness	-.05	.01	.12*	-.07	-.11	-.06	-.07	-.03	.01	.03
Interpersonal: Disaffiliativeness	.18‡	.18	.10	.21	.21‡	.09	-.07	.09	-.03	.06
Behavior-Restricting Fears	-.04	.04	.21‡	-.15	-.30‡	-.03	-.01	.01	.05	.05
Multiple Specific Fears	-.15‡	-.06	.15†	-.22	-.29‡	-.15	-.12*	-.04	.08	.07

Note. SRP (Hare Self Report Psychopathy Scale) Total Score correlations and regression weights statistically significant at the $^{*}p <$ 0.05 level, $^{\dagger}p < 0.01$ level, and $^{\ddagger}p < 0.001$ level. All reported beta weights are standardized coefficients. *r* for the factor scores is the zero-order correlation. For these correlations, *r*s ≥ 0.08 are significant at the $p < 0.05$ level, and *r*s ≥ 0.11 are significant at the $p < 0.01$ level. [a] R^2 indicates the amount of variance captured in each criterion measure by the four SRP factors. For each criterion measure, R^2 was statistically significant at the $p < 0.001$ level.