

**Psychopathic Traits in a Large Community Sample:
Links to Violence, Alcohol Use, and Intelligence**

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Abstract

Numerous studies conducted with offender or forensic psychiatric samples reveal that individuals with psychopathic traits are at risk for violence and other externalizing psychopathology. These traits appear to be continuously distributed in these samples, leading investigators to speculate on the presence of such traits in the general population. Nonetheless, few studies of psychopathy have been conducted with large random samples of individuals from the community. The community sample from the MacArthur Violence Risk Assessment Study provides an opportunity to examine the prevalence and structural nature of psychopathic traits, as well as their association with external correlates in an urban community. The community data ($N = 514$) represent a stratified random sample of persons between the ages of 18 and 40 who were assessed on the Psychopathy Checklist: Screening Version (PCL: SV) and also for violent behavior, alcohol use, and intellectual functioning. Structural equation model analyses revealed that a four-factor model found in offender and forensic psychiatric samples fit the community data well and was invariant across sex and ethnicity. Also, a superordinate factor comprehensively accounted for the four psychopathy first-order factors, and significantly predicted the external correlates. The findings offer further insight into the dimensional nature of the psychopathy construct.

Keywords: Psychopathy, PCL: SV, Community, Structural Equation Modeling, Violence, Alcohol, Intelligence

Psychopathy is a clinical construct defined by a pattern of interpersonal, affective, and behavioral characteristics, including egocentricity, deception, manipulation, irresponsibility, impulsivity, stimulation-seeking, poor behavioral controls, shallow affect, a lack of empathy, guilt or remorse, and a range of unethical and antisocial behaviors, not necessarily criminal (Hare, 2003; Neumann, Hare, & Newman, 2007; Vitacco, 2007). These features appear to be heritable, begin to manifest early in childhood, and are relatively stable throughout adolescence and into adulthood (Larsson et al., 2007; Lynam et al. 2007; Viding, Frick, & Plomin, 2007).

New taxometric studies indicate that psychopathy is a dimensional construct, whether assessed by self-report (Marcus, John, & Edens, 2005), clinical ratings with the Psychopathy Checklist-Revised (PCL-R; Hare, 2003; Edens, Marcus, Lilienfeld, & Poythress, 2006; Guay, Ruscio, Knight, & Hare, 2007), or its derivatives, the Psychopathy Checklist: Screening Version (PCL: SV; Hart, Cox, & Hare, 1995; Walters et al., 2007), and the Psychopathy Checklist-Youth Version (PCL: YV; Forth, Kosson, & Hare, 2003; Murrie et al., 2007). The findings are consistent with the view that psychopathic traits may be continuously distributed within the general population (Hare & Neumann, in press).

In most previous attempts to study adult psychopathy in the community, university students or community members were administered self-report psychopathy scales or personality inventories with scales theoretically related to psychopathy. This research has aided our understanding of psychopathy, but the scales used have only modest relations with established clinical rating scales (Hare & Neumann, in press). In other research, advertisements have been used to solicit paid volunteers who see themselves as charming, impulsive, sensation-seeking, and so forth. Among the volunteers who receive relatively high PCL-R scores, some report a history of criminal arrests and others escape detection of their criminal behavior. Those without evidence of criminal arrests have been referred to as successful psychopaths. However, such

‘success’ often is ephemeral, or a matter of circumstances, and typically defined without recognition of the negative impact on others (de Oliveira-Souza et al., in press).

Self-reports and small non-random samples provide only a limited understanding of the nature, distribution, and correlates of psychopathic traits in the general population. The use of standardized assessment tools with representative community samples would allow for more direct comparisons with the research conducted with forensic samples. Several large sample studies have begun to address these issues. Weiler and Widom (1996) found that adults who had been abused as children had higher PCL-R scores than did a matched non-abused comparison sample, and that PCL-R scores mediated the relationship between early abuse and later violence. Farrington (2006) reported that the adult PCL: SV scores of males followed from age 8 to 48 were linked to a host of variables, including poor family functioning, low IQ, and externalizing behavior problems. More representative of the general population is a recent “household” study of men and women in the United Kingdom (Coid et al., in press), which found that the correlates of the PCL: SV (e.g., violence, substance use) were consistent with the literature on the correlates of the PCL-R and the PCL: SV in forensic samples.

None of these community studies, however, tested current latent models of psychopathy derived from forensic samples. A quantitative modeling approach allows investigators to identify common latent factors among a range of diverse indicators, measures, and samples (Krueger, Markon, Patrick, Benning, & Kramer, 2007). To gauge if similar underlying processes may be at play, it is important to determine if the structural properties and correlates of standard psychopathy scales are similar in community samples relative to forensic samples. In addition, evidence of invariant factor structure across sex and ethnicity in community samples would increase confidence in the generalizability of these scales across a range of diverse samples (Jackson, Neumann, & Vitacco, 2007). To address these issues, we analyzed PCL: SV scores and

their external correlates in the large random community sample used as a comparison group in the MacArthur Study of Mental Disorder and Violence (Monahan et al., 2001).

Our goals for the current study were as follows: 1) determine the psychometric properties of the PCL: SV and the distribution of scores in this sample; 2) test a four-factor latent variable model of psychopathy identified in a variety of forensic populations assessed with the PCL-R and its derivatives (Hare & Neumann, 2006). We also tested whether the model was invariant across sex and race/ethnicity; and 3) examine whether psychopathic traits in this sample have much the same external correlates as in offender and forensic psychiatric samples.ⁱ

Method

Participants

The community sample is from the MacArthur Violence Risk Study (Monahan et al., 2001). This is a stratified random sample of 514 adults (196 men and 318 women) who lived in the same neighborhoods that the psychiatric patients in the MacArthur Study resided. Participants had to have lived in a specified census tract at the current address for at least 2 months, be between the ages of 18 and 40, and be of either white or African-American ethnicity. The sample included 303 European Americans and 211 African Americans, with a mean age of 31.0 ($SD = 6.1$). The proportions of males and females did not differ by ethnicity ($X^2(1) = 0.073$, ns).

Measures

Principal assessments used with the MacArthur Study patient sample were also administered to the community sample (Monahan et al., 2001). In the MacArthur study, interviews with informants, usually family members, also were obtained, along with official arrest records. In the interviews the participant and the collaterals were questioned about the participant's behavior in the past 10 weeks. For the current study, we relied upon the assessments pertaining to violent/aggressive behavior, alcohol use, intellectual functioning, and psychopathic traits.

Violent/Aggressive Behavior. The same questions about violence in the past 10 weeks asked of the patients were also asked of community participants using the same methodology (Monahan et al., 2001). The specific questions used for the current study are referred to in the MacArthur code book as Violence Screen #1. The seven items asked whether the person had been aggressive/violent toward anyone in terms of: slapping, pushing, throwing something, hitting with fist/object, kicking/biting/choking, using a knife/gun, or threatening with a weapon. The same general set of questions has shown good construct validity in other research with offenders (Michie & Cooke, 2006). A summed score (Total violence) of all items was used for the SEM analyses given that they reflect a superordinate factor (Michie & Cooke, 2006). Eighteen percent of the sample endorsed at least one violent/aggression item.

Alcohol Use. Three specific alcohol use questions asked of participants were “how many days during the past week have you drank [beer/wine/liquor]?” These questions were summed and the mean number of days alcohol was consumed was computed ($M = 1.50$ ($SD = 2.23$)).

Intelligence. In the MacArthur study, all 35 items from the Wechsler Adult Intelligence Scale-Revised (WAIS-R) Vocabulary sub-test were used. For an estimated intelligence variable, we computed a total mean Vocabulary score ($M = 41.32$, $SD = 15.65$).

Psychopathy. The PCL: SV was used for assessment of psychopathic traits. Each item is rated on a 3-point scale (0 = does not apply, 1 = applies to a certain extent, 2 = applies) and summed to yield a total score from 0 to 24. This represents a dimensional measure of the degree to which a given individual matches the prototypical psychopath. The PCL: SV has good reliability and validity, and is strongly related to the PCL-R, both conceptually and empirically (Cooke, Michie, Hart, & Hare, 1999; Guy & Douglas, 2006).

Data Analytic Plan

Confirmatory factor analysis (CFA) was used to test the four correlated factors model (Vitacco et al., 2005). The items were set to load on their factors: *Interpersonal* (items 1, 2, 3), *Affective* (4, 5, 6), *Lifestyle* (7, 9, 10), *Antisocial* (8, 10, 12). The factors were allowed to freely correlate. Multi-sample CFA (MCFA) was used to test for strong structural invariance (equal factor loadings and thresholds) across sex and ethnicity. For descriptive purposes, we re-ran the CFA of the four-factor model and included the external correlates to gauge the degree of association between the psychopathy factors and the external correlates, using the total sample and the sex, ethnicity sub-groups. In this way we could explore whether sex or ethnicity moderated the associations between the psychopathy factors and the correlates.

We also tested whether the four first-order psychopathy factors could be accounted for by a superordinate factor, as has been demonstrated for both adult and adolescent offenders (Neumann et al., 2006, 2007). The superordinate model aids in the interpretation of PCL: SV total scores and provides evidence for a cohesive syndrome of psychopathy. Thus, the first-order factors were set to load onto a single second-order factor. Finally, structural equation modeling was used to predict the external correlates using the superordinate psychopathy factor. All model analyses were conducted with Mplus (Muthen & Muthen, 1998-2006), using robust weighted least squares for parameter estimation and model fit, given the PCL: SV items are ordinal.

Results

Distribution and Internal Consistency of PCL: SV Scores

The mean PCL: SV score was 2.67 ($SD = 3.50$) for the total sample, 3.53 ($SD = 3.79$) for males, 2.16 ($SD = 3.23$) for females, 1.70 ($SD = 2.80$) for whites, 3.86 ($SD = 4.06$) for African-Americans.ⁱⁱ As indicated in Figure 1, over half of the total sample had a score of 0 or 1, and about two-thirds had a score of 2 or less. A score of at least 13, used in the MacArthur civil

psychiatric study as an indication of “potential psychopathy” (Monahan et al., 2001), was obtained by 1.2% of the total sample, 1.0% of males, 1.2% of females, 1.9% of African-Americans, and approximately 1% of whites. Cronbach’s alpha for the scale was .84; the four PCL: SV facet alphas ranged from .65 (Interpersonal) to .75 (Lifestyle), which were acceptable given only three items/facet.

Four-Factor PCL: SV Model Fit and Association with External Correlates

The CFA results indicated that the four correlated factor PCL: SV model provided excellent fit, $X^2(28, 514) = 69.52$, CFI = .97, TLI = .98, RMSEA = .04, SRMR = .05. See Figure 2 (Panel A) for standardized parameters. All factor loadings and factor correlations were significant (p 's < .05 - .001). To test for strong invariance of this model across sex (male/female) and ethnicity (White/Afr.-Am.), MCFAs were conducted by constraining both loading and threshold parameter estimates to be equal across sub-groups. Both MCFAs provided strong evidence of structural invariance (e.g., Sex: $X^2(48, 514) = 88.14$, CFI = .97, TLI = .98, RMSEA = .05; Ethnicity: $X^2(47, 514) = 83.76$, CFI = .97, TLI = .98, RMSEA = .05).ⁱⁱⁱ

A total sample CFA of the PCL: SV model was run in conjunction with external correlates, to gauge the associations between the psychopathy factors and the correlates. Also, we used the same invariance approach as above and included the external correlates in the model to explore how sex and ethnicity may alter the associations between the psychopathy factors and the correlates. Model fit was essentially unchanged (Total sample: $X^2(40, 514) = 105.88$, CFI = .96, TLI's = .97, RMSEA's = .05).^{iv} As seen in Table 1, most of the correlations were highly significant. The pattern of correlations were consistent with expectations and previous research (e.g., Vitacco et al., 2005). Only two correlations were significantly different—i.e., between the African-Am. and white participants, the Affective-Violence and Antisocial-Violence associations differed significantly ($p < .01$).^v

Next, a single superordinate factor accounted for the variance of the first-order psychopathy factors, and fit for this adjunctive model was also good ($X^2(28, 514) = 78.26$, CFI = .97, TLI = .98, RMSEA = .05, SRMR = .06).^{vi} As expected, the superordinate factor accounted for the majority of the variance in the Interpersonal (60%), Affective (94%), Lifestyle (85%), and the Antisocial (61%) factors, suggesting that the PCL: SV reflects a cohesive construct.

Structural Equation Modeling (SEM) Results: Predicting the external correlates

For the SEM, the external correlates were regressed onto the superordinate psychopathy factor. The SEM showed little difference in fit from the previous superordinate model results ($X^2(43, 514) = 121.52$, CFI = .95, TLI = .97, RMSEA = .05). The psychopathy factor significantly predicted Total violence (.41, $p < .01$), alcohol use (.26, $p < .01$), and estimated intelligence (-.34, $p < .01$). The standardized coefficients and variance accounted for are shown in Figure 2 (Panel B).

Discussion

The distribution of PCL: SV scores in this sample is consistent with the findings of other large community studies (Coid et al. in press; Farrington, 2006). In each study, most participants had very low PCL: SV scores (< 3), suggesting that clinically significant levels of psychopathy are rare for individuals within the general population. Only 1-2% of the participants in the present sample received a score greater than 12, a score used as an indication of potential psychopathy among the patients in the MacArthur Study (Monahan et al., 2001).

The current study is the first to demonstrate invariance of a latent PCL: SV model across sex and ethnicity in a large, randomly ascertained, community sample. Thus, the results provide additional support for the four-factor model of psychopathy, consistent with studies of offender (Neumann et al., 2007), psychiatric (Jackson et al. 2007; Vitacco et al. 2005), and adolescent (Neumann et al., 2006) samples. A similar four-factor structure has been found using self-report

of psychopathy traits among young adults (Williams, Paulhus, & Hare, 2007). That the same latent model holds across such diverse samples is consistent with theory and research suggesting psychopathy is a dimensional construct with representation in both forensic and community populations (Hare & Neumann, in press; Lynam & Widiger, 2007).

The present study indicates that the PCL: SV factors are associated with violent behavior, alcohol use, and intelligence in much the same way as they are in offender and psychiatric samples (Hare, 2003; Vitacco et al., 2005). That the superordinate psychopathy factor significantly predicted, and the four psychopathy factors correlated with, violent behavior is also consistent with other community studies, particularly the moderate-strong associations between violence and the Affective and Antisocial factors (Coid et al., in press).^{vii} Overall, the associations between the psychopathy factors and the external correlates were similar across the sex and ethnic sub-groups, with few statistical differences in these associations between groups. Thus, the findings suggest that the links between the psychopathy construct and critical external correlates are similar across heterogeneous populations.

The superordinate modeling results are supported by studies showing that the covariation of antisocial tendencies and other psychopathic traits reflect common genetic factors (Larsson et al., 2007; Viding et al., 2007). Environmental factors, such as exposure to abuse/neglect (Weiler & Widom, 1996), may also play a role in desensitizing individuals' emotional responsivity and the development of aggressive psychopathic dispositions. From a developmental psychopathology perspective, interventions designed to prevent the evolution of psychopathic personality might entail identification of high risk individuals with persistent antisocial behavior and early treatment in the course of personality development (Belsky, 2007).

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Table 1

PCL: SV Psychopathy Factor Correlations with Intelligence, Alcohol Use & Violent Behavior

Sample/ Correlates	Psychopathy Factors			
	Interpersonal	Affective	Lifestyle	Antisocial
<i>Total Sample (n = 514)</i>				
Intelligence	-.18**	-.35***	-.38***	-.25***
Alcohol Use	.18**	.19**	.27***	.24***
Violent Behavior	.20**	.40***	.34***	.46***

<i>Males (n = 196)</i>				
Intelligence	-.13ns	-.31**	-.34**	-.29**
Alcohol Use	.23*	.25*	.36***	.22**
Violent Behavior	.28*	.36**	.36**	.53***

<i>Females (n = 318)</i>				
Intelligence	-.28***	-.45***	-.45***	-.29***
Alcohol Use	.09ns	.09ns	.15**	.20**
Violent Behavior	.22**	.49***	.39***	.51***

<i>Blacks (n = 211)</i>				
Intelligence	.02ns	-.12ns	-.23**	-.18*
Alcohol Use	.23*	.16ns	.34***	.24**
Violent Behavior	.21*	.49**	.32**	.56***

<i>Whites (n = 303)</i>				
Intelligence	-.14	-.32***	-.24***	-.14*
Alcohol Use	.18*	.22***	.20**	.25**
Violent Behavior	.07ns	.13ns	.30**	.27**

* = $p < .05$, ** = $p < .01$, *** = $p < .001$

Figure Captions

Figure 1. Distribution of PCL: SV total scores in a large community sample.

Figure 2. Four-factor PCL: SV model of psychopathy (Panel A). Superordinate psychopathy factor's prediction of intelligence, alcohol use, and violent behavior (Panel B).

Figure 1

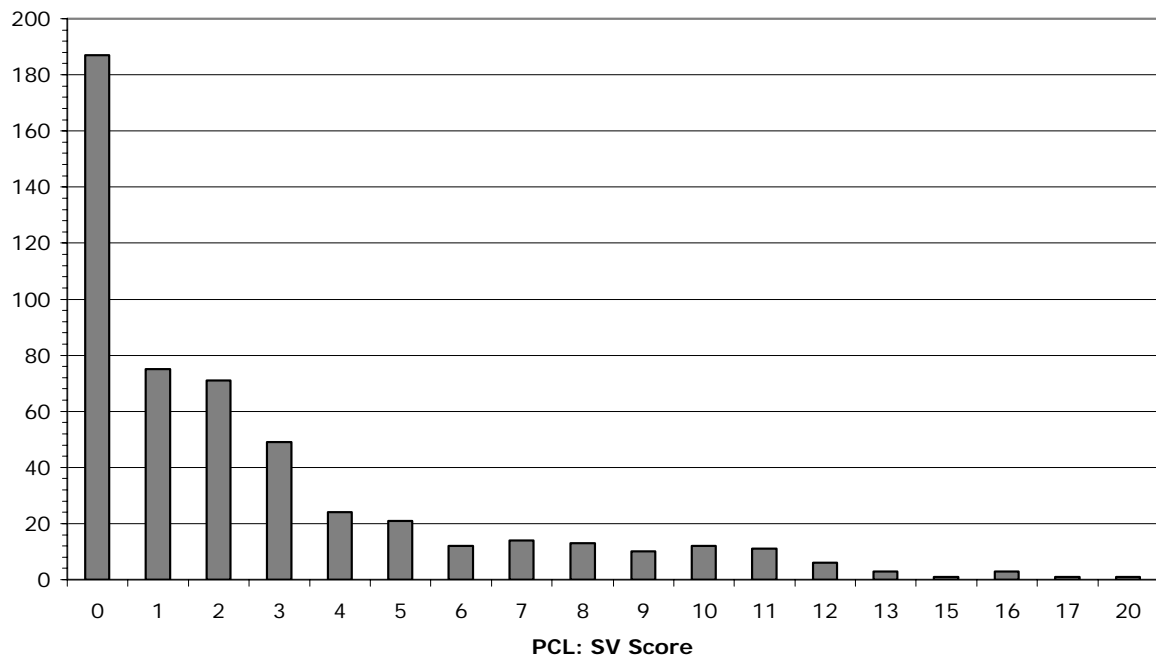
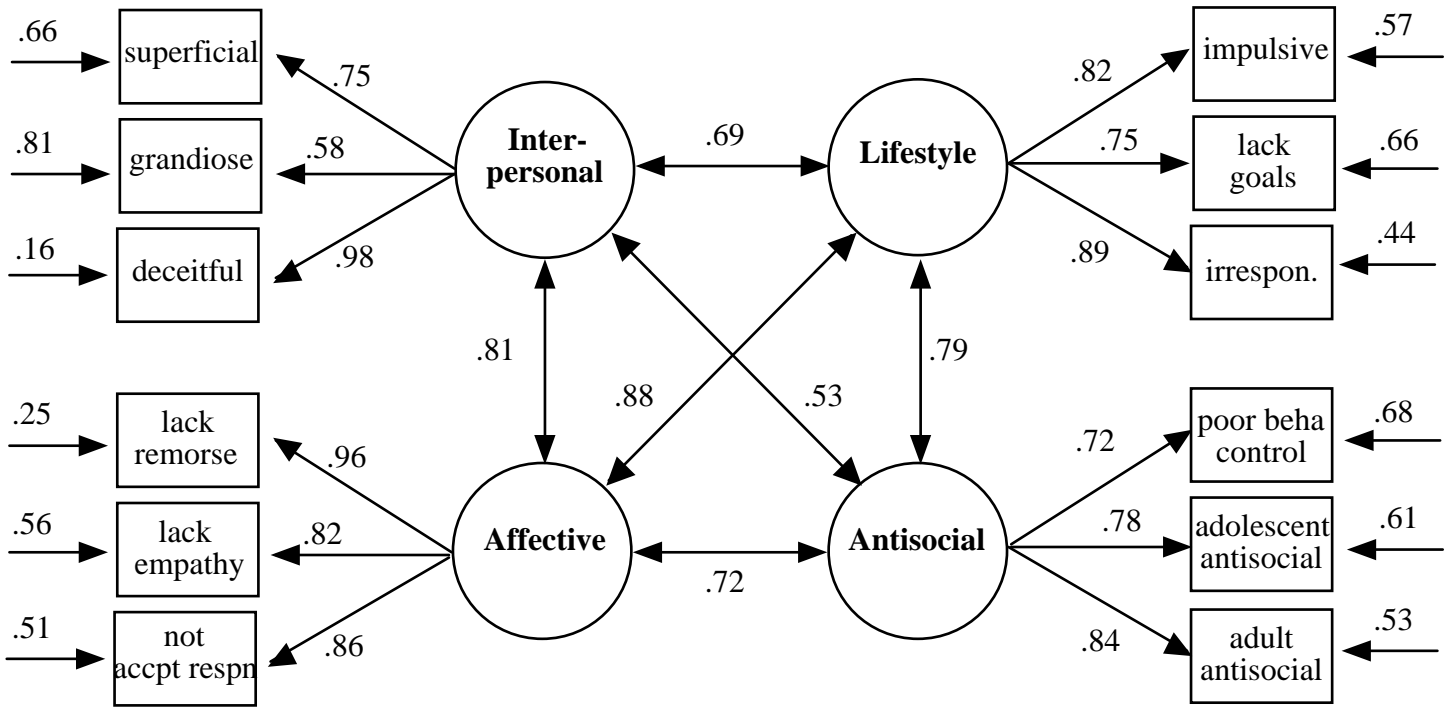
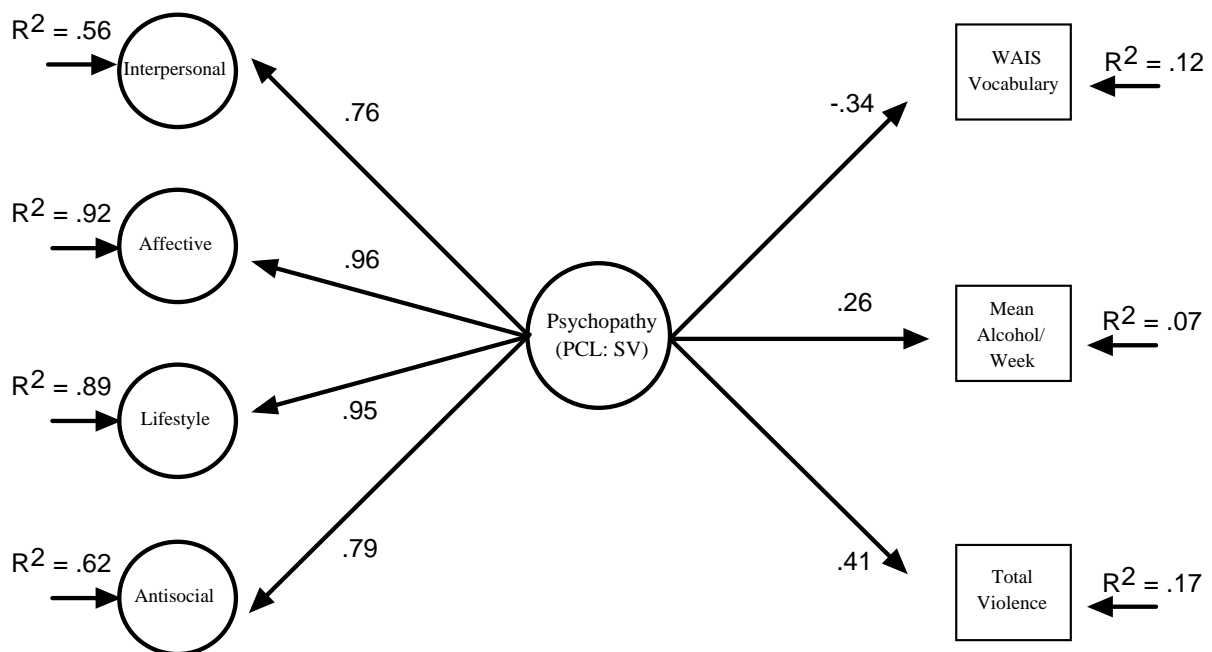


Figure 2

A



B



End Notes

ⁱ Note that the factor structure of the PCL-R and its derivatives has been the subject of debate, primarily with respect to the number of factors and whether antisocial behavior belongs in the construct. In our view, the number of factors is less important than the role played by antisocial behavior in conceptualizations of psychopathy. These issues are discussed in detail elsewhere (Hare & Neumann, 2006, in press). Recent studies provide strong evidence for the importance of antisocial behavior in latent models of the psychopathy construct. Thus, in male and female offenders and in male forensic psychiatric patients the PCL-R is underpinned by four intercorrelated factors or dimensions: Interpersonal, Affective, Lifestyle, Antisocial (Neumann, Hare, & Newman, 2007). Good fit for a four-factor model also has been obtained for the PCL: YV in young offenders (Neumann, Kosson, Forth, & Hare, 2006) and for the PCL: SV in civil psychiatric patients (Vitacco, Neumann, & Jackson, 2005). All four factors are explained by a single, cohesive super-ordinate factor (Neumann et al., 2006, 2007). The Vitacco et al. (2005) study is of particular relevance here because a CFA was conducted on the PCL: SV scores of psychiatric patients in the MacArthur study (from which the community sample used in the present study was obtained). The PCL: SV dimensions (and their items) obtained by Vitacco et al. are as follows: *Interpersonal* (Superficial, Grandiose, Deceitful); *Affective* (Lacks remorse, Lacks empathy, Doesn't accept responsibility); *Lifestyle* (Impulsive, Lacks goals, Irresponsible); and *Antisocial* (Poor behavioral controls, Adolescent antisocial behavior, Adult antisocial behavior). In the PCL: SV Manual the items in the Interpersonal and Affective factors are listed under *Part 1*, while the items in the Lifestyle and Antisocial factors are listed under *Part 2*.

ⁱⁱ Consistent with previous research, the sub-group PCL: SV scores significantly differed in predictable directions (i.e., males > females, African-American > whites). However, the sex by ethnicity interaction was not significant. Results available by request.

ⁱⁱⁱ Note that when independent variables are in the model, Mplus does not provide the SRMR.

^{iv} Given space limitations, we do not provide the individual fit indices for each sub-group. However, for each group, fit was quite good (e.g., TLI's = .97-.98, RMSEA's = .05-.06). Full results sent via request.

^v Using the procedures outlined by Glass & Hopkins (1984; *Statistical Methods in Education and Psychology*. New Jersey: Prentice Hall) we tested for differences between correlation coefficients among all of the subgroups. Given the number of comparisons this involved, we used a conservative level of significance ($p < .01$) for determining differences in correlations. Results available by request.

^{vi} It is important to recognize that chi-square difference tests are not appropriate when the robust weighted least squares estimator is used, though such a test can be calculated with an additional series of model runs. However, the larger consideration here is that this difference test has little practical value when nested models show little difference in incremental (e.g., TLI) or absolute (RMSEA) fit between them.

^{vii} Even though the referential time periods for completing the PCL:SV (baseline evaluation looking back in time) and violence items (looking 10 weeks back at subsequent follow-up) were different in the MacArthur study, the issue of criterion contamination should be considered when interpreting these results. At the same time, not including a baseline index of antisocial tendencies when predicting a criterion such as violent behavior could result in biased parameter estimates for other variables in a regression model. As such, this is a complex issue that might be best addressed in future research by including estimates of reciprocal effects across multi-wave longitudinal assessments.