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Psychopathic Traits as Predictors of Future Criminality, Intimate Partner Aggression and Substance Use in Young Adult Men

Olivier F. Colins,

Leiden University Medical Centre; Örebro University

Henrik Andershed, and

Örebro University

Dustin A. Pardini

University of Pittsburgh Medical Center

Abstract

This study examined the prospective relation between Youth Psychopathic Traits Inventory (YPI) scores and various negative outcomes in a community sample of young men. Official criminal records and self-reported outcomes, including criminality, physical and relational aggression against intimate partners and excessive substance use, were obtained on average 5.4 years (records) and 3.5 years (self-reports) after the YPI assessment. Results showed that psychopathic traits measured with the YPI (approximately at age 25) did not significantly contribute to the prediction of future official criminal charges and self-reported crime, physical aggression against intimate partners, and excessive alcohol and marijuana use, after controlling for several covariates. However, results also showed that men with higher scores on the YPI were more likely to commit future acts of relational aggression against their partner, even after controlling for prior relational aggression. This novel finding needs replication, though, and -for now- does not jeopardize the overall conclusion that psychopathic traits as measured with the YPI hardly predict over and above prior criminality and aggression. Altogether, the findings of the present study and their consistency with past research suggest that one should rethink the role of psychopathy measures for risk assessment purposes, at least when these measures do not index prior criminality.

Keywords

psychopathy; antisocial; prospective; prediction; men

Psychopathic personality is a multifaceted personality disorder comprised of a constellation of co-occurring traits that load onto at least three dimensions, including interpersonal, affective and behavioral/lifestyle dimensions. Although contested (e.g., Cooke, Michie, Hart, & Clark, 2004), several researchers add a fourth dimension that primarily indexes

Corresponding concerning this article should be addressed to Olivier F. Colins, Department of Child and Adolescent Psychiatry, Curium-Leiden University Medical Center, Endegeesterstraatweg 27, AK 2342 Leiden, The Netherlands. o.colins@curium.nl.
Olivier F. Colins, Department of Child and Adolescent Psychiatry, Leiden University Medical Centre and Center for Criminological and Psychosocial Research, Örebro University
Henrik Andershed, Center for Criminological and Psychosocial Research, Örebro University.
Dustin A. Pardini, Department of Psychiatry, University of Pittsburgh Medical Center.

criminal behavior to the definition of psychopathic personality (e.g., Hare & Neumann, 2008). Regardless of the number of dimensions that best represents psychopathic personality, cross-sectional research among adults has consistently found that psychopathic personality traits are associated with severe and persistent criminal behaviour, intimate partner aggression, and heavy substance use (e.g., Coid, Freestone, & Ullrich, 2012; Theobald, Farrington, Coid, & Piquero, 2015; Walsh & Kosson, 2008). In addition, measures assessing psychopathic personality traits are increasingly being used as risk tools in research and clinical settings (e.g., Edens, Magyar, & Cox, 2013). However, as outlined in detail below, few longitudinal studies have examined the prospective link between psychopathic personality traits in young adults and various undesirable outcomes, and even fewer studies have examined if these traits add something to the prediction of these outcomes after accounting for other well-established risk factors.

Psychopathic Personality Traits and Future Criminality

Mounting evidence suggests that the prospective relation between the total score of the Psychopathy Checklist-Revised (Hare, 2003) and future criminality is largely driven by the PCL-R's Antisocial Dimension, which consists of items assessing a history of early emerging and persistent criminal behavior (e.g., Kennealy, Skeem, Walters, & Camp, 2010; Walters, Knight, Grann, & Dahle, 2008). However, the link between PCL-R scores and future antisocial behaviour is not always significant. For example, Camp and colleagues (2013) recently found that neither the PCL-R total score nor any of the four PCL-R subscales predicted infractions for aggression among prison inmates, or violent re-offending upon release into the community.

In addition to the PCL-R, various self-report instruments have been developed to measure psychopathic personality traits in adults, but their usefulness for predicting future criminality has not been extensively examined. Many of these instruments do not include criminal behavior as a facet of psychopathy, which may limit their predictive utility. Studies that have examined the predictive utility of various self-report psychopathy measures have produced inconsistent findings. For example, one study found that only the behavioral/lifestyle dimension of the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996) was uniquely related to aggressive and non-aggressive institutional misconduct, though its prospective relation with aggressive misconduct was no longer significant after controlling for prior institutional misconduct (Edens, Poythress, Lilienfeld, Patrick, & Test, 2008). In another study, the PPI's behavioral/lifestyle dimension (but none of the other PPI dimensions) was uniquely related to future violence in prison and the community (Camp, Skeem, Barchard, Lilienfeld, & Poythress, 2013). A third study using the Self-Report of Psychopathy Scale (SRP-III; Paulhus, Neumann, & Hare, 2012) found that the sum of the interpersonal, affective and behavioral/lifestyle dimensions predicted charges for violent offenses (but not theft), even after controlling for a host of risk factors, including prior criminality (Vitacco, Neumann, & Pardini, 2014). However, none of the three individual SRP-III dimensions uniquely predicted violent offenses after controlling for their co-occurrence (Vitacco et al., 2014). A fourth study found that callous-unemotional (CU) traits predicted charges for serious crime (but not for violence or theft), even after controlling for variables that can be tied to the behavioral/lifestyle (e.g., impulsivity) and antisocial (past

criminality) dimensions of the psychopathy construct (Kahn, Byrd, & Pardini, 2013). However, it remains unclear if this relation would hold after controlling for the interpersonal psychopathy dimension, an issue that is relevant since this dimension has been uniquely related to bullying, aggression, and delinquency, sometimes stronger than CU traits (e.g., Colins, Noom, & Vanderplasschen, 2012; Marsee, Silverthorn, & Frick, 2005; Theobald et al., 2015; Vahl et al., 2014). In addition, a limitation of all the studies reviewed above is that official records were used to assess future criminal offending, making it unclear whether psychopathic traits are associated with future criminal offending that is not detected by the police.

Psychopathic Personality Traits and Future Aggression Against Intimate Partners

Cross-sectional studies have found that psychopathic personality traits are positively related to physical aggression and sexual abuse against intimate partners, and sexually coercive tactics against dating partners (Czar, Dahlen, Bullock, & Nicholson, 2011; Mager, Bresin, & Verona, 2014; Muñoz, Khan, & Cordwell, 2011; Theobald et al., 2015). However, we are aware of only one longitudinal study that examined whether psychopathy scores predict future physical aggression against intimate partners. Specifically, among convicted male batterers, the total and behavioral/lifestyle factor scores of the Minnesota Multiphasic Personality Inventory (MMPI) predicted domestic violence (Rock, Sellbom, Ben-Porath, & Salekin, 2013). Clearly, future prospective studies on the topic are urgently needed. In the context of some evidence that most psychopathic individuals do not physically attack their partner (Hervé, Vincent, Kropp, & Hare, 2001), studies should also include forms of aggression that are more subtle and less easy to detect than physical aggression. Relational aggression is such a subtle and a non-physical form of aggression that may be at least as harmful as physical aggression, and primarily aims to damage relationships and feelings of belonging and friendship, for example, by means of gossiping, spreading rumours, social exclusion, and threats to end a relationship (Coyne, Archer, & Eslea, 2006; Czar et al., 2011; Linder, Crick, & Collins, 2002). Although relational aggression is often described as a female form of aggression, there is evidence that psychopathy scores are positively and sometimes as strongly related to relational aggression in men as well (Czar et al., 2011; Miller & Lynam, 2003; Schmeelk, Sylvers, & Lilienfeld, 2008). We are aware of no study that tested if psychopathy scores are prospectively related to this specific form of aggression.

Psychopathic Personality Traits and Future Substance Use

Psychopathy total scores have been positively related to past substance use and substance use disorder (e.g., Coid, Yang, Ullrich, Roberts, & Hare, 2009; Smith & Newman, 1990; Walsh, Allen, & Kosson, 2007). Available evidence also suggests that the link between psychopathy total scores and substance use is largely driven by the behavioral/lifestyle and the antisocial dimensions of the psychopathy construct (e.g., Hall, Benning, & Patrick, 2004; Miller & Lynam, 2012; Walsh et al., 2007). This is not surprising given the two dimensions consist of well-documented risk factors for alcohol and drug use, including impulsive behavior, thrill-seeking and involvement in criminal activities. Nevertheless, one study

found that the interpersonal dimension of the PCL-R was the only dimension uniquely related to drug use (Walsh et al., 2007), a finding still in need of replication. Excessive alcohol and drug use is a relevant outcome to consider when scrutinizing the prognostic usefulness of psychopathy scores. Indeed, excessive alcohol and drug use not only cause destruction to the consumer self, but it may also trigger (further) involvement in criminal activities to finance their substance use. In addition, the reckless behavior, including risky driving (Lee & Salekin, 2010) displayed by adults with a psychopathic personality may pose an extra risk to the community when being drunk or under influence. But here again, studies on the link between psychopathy scores in adulthood and future substance use are lacking.

The Relevance of Studying the Prognostic Utility of Psychopathy Measures

For various reasons, empirical work examining the predictive utility of psychopathic personality traits is urgently warranted. First, there is a growing interest in using self-report measures of psychopathic personality such the Youth Psychopathic Traits Inventory and the Childhood Psychopathy Scale in applied forensic setting to inform clinical decision making (e.g., Vahl et al., 2014; Verschuere, Candel, Van Reenen, & Korebrits, 2012). Because the PCL-R is often used in real-word settings to assess individuals' future risk of violence and criminal recidivism (Edens et al., 2013; Kennealy et al., 2010), it is likely that alternative measures soon will be used for risk assessment purposes and legal decision making as well. Therefore, it seems crucial to start testing to what extent these measures really are predictive of future violent and non-violent criminality. Second, various researchers raised concerns about the potentially stigmatizing and harmful effects of trait-labels such as 'egocentricity' 'callous-unemotional', and 'remorseless' on legal decision making (e.g., Edens et al., 2013; Frick, Ray, Thornton, & Kahn, 2014). Therefore, it can be argued that the label 'psychopathic personality' should not be used for risk assessment purposes if the interpersonal and affective psychopathy dimensions do not significantly add to the prediction of future outcomes (e.g., aggression against intimate partners) beyond the other psychopathy dimension(s) and other risk factors (e.g., past aggression against intimate partners). Third, echoing work with children and adolescents (Frick et al., 2014), screening for affective traits has been considered to be potentially useful for identifying adults in need of intensive treatment efforts designed *to prevent future offending* (Kahn et al., 2013). This implies that affective psychopathy scores in adults are not only considered to be relevant for risk assessment purposes, but also for intervention and treatment purposes. However, the overall lack of a prospective relation between the affective dimension and future offending currently does not provide strong support for focusing on affective traits *to prevent* future criminality.

Current Study

This current study is designed to examine the prospective relation between self-reported psychopathic personality traits (total, interpersonal, affective and behavioral/lifestyle) and various socially undesirable outcomes after controlling for other known risk factors. By relying on different sources and outcome variables, the present study is sensitive to previous calls to include self-reported criminality (e.g., Kahn et al., 2013; Vitacco et al., 2014) and other outcomes apart from criminality (Salekin, 2008). First, it was examined if the

psychopathy total score has utility in predicting official criminal charges and self-reported crime, future physical and relational aggression against an intimate partner, and future excessive alcohol and marijuana use. Second, it was tested whether the total psychopathy score significantly contributed to the prediction of these outcomes beyond a diverse array of known risk factors, including past official criminal charges, past self-reported crime, past intimate partner aggression and past substance use. Third, to examine the unique and incremental contribution of the three psychopathy dimensions, analyses were repeated with the interpersonal, affective and/or behavior/lifestyle psychopathy dimension in place of the total psychopathy score in predicting future negative outcomes.

Method

Participants

Participants are part of the Pittsburgh Youth Study (PYS), an on-going longitudinal study of boys initially recruited from Pittsburgh public schools (Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998). Three cohorts of first, fourth, and seventh graders in Pittsburgh public schools were randomly selected for an initial screening in 1987. From this initial pool of students, families of 1,165 first graders (i.e., youngest cohort), 1,146 fourth graders (i.e., middle cohort), and 1,125 seventh graders (i.e., oldest cohort) participated in a screening assessment that included mother-, teacher-, and self-report of the boys' externalizing behavior problems. Utilizing this screening assessment, those rated in the top 30% on behavior problems from each cohort were selected for further study. In addition, an approximately equal number of boys were randomly selected from the remaining boys in each cohort for follow-up assessments (total $n = 503$ for the youngest, total $n = 508$ for the middle, total $n = 506$ for the oldest).

The current study focuses on the youngest cohort of boys who were selected for longitudinal follow-up, and completed the Youth Psychopathic Traits Inventory in young adulthood (YPI; Andershed, Kerr, Stattin, & Levander, 2002). This resulted in a sample of 425 participants who were approximately 25 years of age ($M = 25.76$, $SD = 0.95$, range 23.95–28.72) at the time of the YPI assessment. Regarding race/ethnicity, 43% were Caucasian, 53% were African American, and less than 5% were either Hispanic, Asian, American Indian or biracial. We assessed for differential participation rate by comparing those who participated in the follow-up, with non-participants in terms of initial risk status, race, and family SES. Nonparticipants were significantly more likely to be African American. There were 11 African American participants who died prior to the most recent assessment (predominately as the result of homicide); no Caucasian males were confirmed dead. This contributed substantially to the differential attrition rate between the races. Moreover, other studies have found that African American participants are more difficult to locate and are more likely to refuse participation than Caucasians (Fischer, Dornelas, & Goethe, 2001). Further demographic information regarding the Pittsburgh Youth Study cohorts can be retrieved elsewhere (e.g., Loeber et al., 1998).

Procedure

The majority of participants were interviewed privately in their homes. Interviews were occasionally completed by phone for participants who moved outside of an acceptable driving distance. For both in-person and telephone interviews, the YPI and Adult Self-Report (described below) were completed independently by the participant as part of a self-administered booklet. Official records of arrests were obtained annually for all participants throughout their participation in the study, from childhood (age 10) through early adulthood (~age 30) using juvenile, state, and federal records. For all 425 men who completed the YPI official records could be obtained, though data about control variables were missing for 8 men. For all analyses with official registered criminality as outcome, analyses will, therefore, be performed with 417 men. There were no significant differences in YPI scores between the 8 men who were excluded and the 417 men who were included in the analyses with official criminal charges as outcome. Between one and six years *after participants completed the YPI*, self-reported information about crime, aggression against intimate partners and substance use was collected (described below). Data for self-reported outcomes and/or control variables were missing for 53 men. For all analyses with self-reported crime, aggression against intimate partners, and excessive substance use as outcome, analyses will, therefore, be performed with 372 men.¹ There were no significant differences in YPI scores between the 53 men who were excluded and the 372 men who were included in the analyses with negative outcomes that are based on self-report. Descriptive information for both samples ($n = 425$ and $n = 372$) is presented in Table 1. Informed written consent was obtained prior to the assessment and men were paid for their participation. Procedures during all phases of this study were reviewed and approved by the Institution Review Board at the University of Pittsburgh.

Measures

Main Predictor

Youth Psychopathic Traits Inventory (YPI): The YPI (Andershed et al., 2002) is a self-report questionnaire that is based on the 3-factor model of psychopathy (Cooke & Michie, 2001). Its 50 items are organized into 10 subscales, with five items in each subscale. Each item is scored on a 4-point Likert-type scale ranging from “Does not apply at all” to “Applies very well.” The Grandiose-Manipulative or Interpersonal Dimension (ID) includes four subscales: Dishonest Charm, Grandiosity, Lying, and Manipulation. The Callous-Unemotional or Affective Dimension (AD) includes three subscales: Callousness, Unemotionality, and Remorselessness. The Impulsive-Irresponsible or Behavioral Dimension (BD) includes three subscales: Impulsiveness, Thrill-Seeking, and Irresponsibility. The YPI was designed to assess psychopathic traits in adolescence, and there is evidence that its 3-factor structure is invariant across adolescents from several ages (Pihet, Suter, Meylan, & Schmid, 2014). Importantly, several studies have supported the YPI’s factor structure (Neumann & Pardini, 2014), internal consistency and validity among young adults in their mid-20s (Campbell, Doucette, & French, 2009; Neumann & Pardini,

¹When Physical and Relational Aggression Against Intimate Partners were the outcomes, only the 275 men who reported to be involved in an intimate relationship were included in the analyses.

2014), while evidence suggests that a short version of the YPI is a suitable measure for longitudinal investigations focused on examining stability and changes in psychopathic traits during the transition into emerging adulthood (Colins & Andershed, *in press*; Hawes, Mulvey, Schubert, & Pardini, 2014). Alphas for the YPI scores in the present study were: total score = 0.93; ID = 0.91; AD = 0.73; and BD = 0.82. The YPI dimension inter-correlations in the present study were: Interpersonal-Affective = 0.61 (95% *CI* = 0.55, 0.67; $p < .001$); Interpersonal-Behavioral = .64 (95% *CI* = 0.58, 0.69; $p < .001$) and Affective-Behavioral = 0.51 (95% *CI* = 0.43, 0.58; $p < .001$).

Outcome Measures—Information about official criminal charges and self-reported outcomes (crime, physical and relational aggression against intimate partners and excessive substance use, were obtained on average 5.4 years (official criminal charges) and 3.5 years (all self-report outcomes) after the YPI assessment.

Official Criminal Charges: Information about official criminal charges was derived from a number of sources, including Pennsylvania State Police, the Pennsylvania Court of Common Pleas, and the Federal Bureau of Investigation. Records were double entered into a database, checked for accuracy, and then compared to prevent redundancy of coding criminal charges across data sources. The date the men completed the YPI and the offense date reported on the official criminal records were used to differentiate between past and future offending. Continuous criminal outcome variables, including total charges [$M(SD) = 0.82 (2.00)$; skewness = 2.35; kurtosis =], violent charges [$M(SD) = 0.29 (1.05)$; skewness = 5.56; kurtosis = 37.35] and theft charges [$M(SD) = 0.29 (1.18)$; skewness = 5.65; kurtosis = 34.93] were heavily skewed and kurtic. In line with prior work on the prospective relation between psychopathic personality traits and criminal outcomes (e.g., Camp et al., 2013; Kahn et al., 2013; Rock et al., 2013; Vitacco et al., 2014) or institutional misconduct (Edens et al., 2008), we dichotomized these three outcomes as 0 (no charge) versus 1 (one or more charges). Specifically, we used the following three binary outcomes: (1) any charge (excluding minor traffic and ordinance violations); (2) any violent charge, which included homicide, robbery, kidnapping, sexual assault, aggravated assault, and simple assault; and (3) any theft charge, such as burglary, larceny, unauthorized use of a motor vehicle, possession of stolen property, fraud, and forgery. For brevity, these three dichotomous outcomes will be referred to as Total, Violent and Theft charges, respectively.

Self-Reported Crime: Participants completed the Self-Reported Delinquency Scale (SRD; Elliott, Ageton, & Huizinga, 1982) to assess the number of times *in the past year* they had committed a series of different illegal acts (e.g., theft, assault, robbery, vandalism). Total self-reported crime was based on 25 items, and referred to the commission of at least one delinquent act. Self-reported violence referred to the presence of at least one out of five violence-related crimes, such as hitting someone with the intention of hurting them, and using a weapon to obtain money from someone. Self-reported theft referred to the presence of at least one out of 11 theft-related crimes, such as auto theft, stealing something more than \$100, and snatching a purse or wallet. Continuous criminal outcome variables, including total self-reported crimes [$M(SD) = 14.55 (65.22)$; skewness = 5.49; kurtosis = 31.46], self-reported violent crimes [$M(SD) = 0.002 (0.05)$; skewness = 19.29; kurtosis =

372.00] and self-reported theft [$M(SD) = 0.30 (2.79)$; skewness = 15.78; kurtosis = 275.58] were heavily skewed and kurtic. We, therefore, dichotomized these three outcomes as 0 (no self-reported crime) versus 1 (one or more self-reported crimes). Unfortunately, the numbers of men that reported at least one violent crime ($n=1$) or at least one theft-related crime ($n=18$) were too small to be considered as outcome variables in the analyses, which implies that only Any Self-reported crime will be used as an outcome variable.

Physical and Relational Aggression Against Intimate Partners: Participants were asked to report if they were currently in a committed relationship. For those participants that reported being in a relationship in the past six months, participants completed a version of the Conflict Tactics Scale (CTS; Magdol, Moffitt, Caspi, & Silva, 1998) and reported on how many times in the past year they engaged in physical aggressive against a partner (15 items) and relational aggressive acts against a partner. Physical aggressive acts included items like “pushed, grabbed, or shoved your partner” and “choked or strangled your partner” while relational aggressive acts - included items like “tried to stop your partner from seeing or talking to family”; “insulted or shamed your partner in front of others”; tried to turn family, friends, or children against your partner”, “made threats to leave”, or “humiliated your partner”. Again, continuous variables referring to physical aggression [$M(SD) = 0.60(1.62)$; skewness = 3.54; kurtosis = 13.87] and relational aggression [$M(SD) = 1.38 (2.34)$; skewness = 2.34; kurtosis = 6.08] against intimate partners were skewed and kurtic. Therefore, and in line with prior work that used the CTS to investigate the relation between psychopathic traits and physical aggression against intimate partners (Theobald et al., 2015) we dichotomized physical aggression against intimate partners based the on absence (zero) versus the occurrence of at least one act of physical aggression. Using the same cut-off to dichotomize relational aggression against intimate partners may be too rude, for example, because men who shouted or yelled at their partner just one time would be lumped in the same group as men who engaged more frequently in relational aggression. We therefore dichotomized relational aggression against intimate partners based on the relative absence (zero to two) versus the occurrence of three or more acts of relational aggression. Complete CTS data was available for 275 men who reported that they were involved in an intimate relation.

Excessive Alcohol Use and Marijuana Use: Participants completed the Substance Use Questionnaire (SUQ) from the National Youth Survey (Loeber et al., 1998) to assess the number of days they used alcohol [$M(SD) = 58.11 (116.75)$] and marijuana [$M(SD) = 61.97 (79.43)$] in the past year. In line with prior work that focused on excessive substance use (e.g., Grisso, Barnum, Fletcher, Cauffman, & Peuschold, 2001; Sivertsen, Skogen, Jakobsen, & Hysing, 2015) we used the 90th percentile cut off to identify a group of men who excessively used alcohol and marijuana in the past year. This resulted in a group of 37 men who used alcohol at least 160 days in the past year, and 37 men who smoked marijuana at least 300 days in the past year.

Control Variables—Variables measured at the time of the YPI administration were included to control for prior levels of the targeted outcomes. Also, risk factors were

measured that have been previously associated with the development of antisocial behavior and/or substance use problems.

Prior Criminal Charges: The total number of criminal charges (including violent and theft charges) that occurred before the YPI administration was measured using information collected from juvenile, state, and federal criminal records.

Prior Self-Reported Crime: The SRD was used to assess if any (versus zero) self-reported crime occurred in the year before the YPI administration.

Prior Physical and Relational Aggression Against an Intimate Partner: For each CTS item, participants were asked how frequently they had engaged in physical aggression (alpha in the present study = .86) and relational aggression (alpha in the present study = .84) within the context of their most recent intimate relationship (i.e., wife, girlfriend, romantic partner) over the past year before the YPI administration.

Frequency of Past Alcohol and Marijuana Use: Levels of alcohol and illicit drug use during the past 12 months prior to the YPI administration were assessed using the SUQ (see earlier).

Attention-Deficit/Hyperactivity Problems: Men rated the extent to which they experience behaviors consistent with attention-deficit hyperactivity disorder (ADHD) over the past six months before the YPI administration using the ASR (Achenbach & Rescorla, 2003). ADHD problems (alpha in the present study = .86) were assessed with 13 items (3-point Likert scale; ranging from 0 = *not true*; to 2 = *very often true*).

Peer-Delinquency: The Peer Delinquency Scale (Loeber et al., 1998) was used to assess the number of the men's friends who engage in various delinquent behaviors. Participants rated how many of their friends engaged in a specific delinquent act (e.g., theft, vandalism, assault) using a 5-point scale (from 0 = *none of them* to 4 = *all of them*). The alpha for this score in the present study was .89

Unemployed/Not Attending School: As a part of a demographic questionnaire, participants reported on their current employment and enrolment in school. A binary variable was created indicating whether the participant was unemployed and not enrolled in school over the past year before the YPI administration. For brevity, this variable will be referred to as Unemployed.

Age, Race/Ethnicity, SES, Unmarried: Age, race and marital status were assessed using a demographic questionnaire. Due to the low base rate of other racial/ethnic groups (e.g., Hispanic), men were dichotomized into either Black and White/Other. Men provided information on their education and occupation, which was used to calculate SES whilst using the Hollingshead Index (Hollingshead, 2011).

Duration of follow-up: This variable reflects the total amount of time (in years) that elapsed between the date of the YPI administration and the date that outcome data was obtained.

Incarceration: This variable indicates whether the participant was (versus was not) incarcerated at the time of the YPI administration.

Data-analysis

In line with aforementioned work on the prospective relation between psychopathic traits and undesirable outcomes, including violent and theft charges (e.g., Camp et al., 2013; Kahn et al., 2013; Vitacco et al., 2014) and aggression against intimate partner aggression (Rock et al., 2013) a series of logistic regression analyses were conducted to examine the relation between the YPI total and dimension scores and the various outcomes. First, the bivariate associations between the YPI total and dimension scores and the outcomes were examined. Next, all three YPI dimensions were entered into a single logistic regression to examine their unique associations with the outcomes. Logistic regression models were then run to examine whether the YPI total and dimensions scores predicted each outcome after controlling for baseline control variables (from here on referred to as the baseline models). Only those baseline control variables that were significantly correlated with the outcome were included in these logistic regression models. For this purpose, alpha was set at $<.01$ to restrict the number of control variables to be included in the models given the relative low number of men in the outcome categories of interest (e.g., violent offenders) (Hosmer Jr & Lemeshow, 2004). Lastly, all selected control variables (Block 1) and YPI scores (Block 2) were simultaneously included in the logistic models. To evaluate the incremental contribution of the YPI total and dimensions scores above and beyond the control variables, the block χ^2 statistic and changes in -2 log likelihood ratio will be presented.

Results

Prediction of Criminal Charges

Baseline models—SES (r 's -0.15 [99% $CI = -0.27, -0.03$] to -0.28 [99% $CI = -0.39, -0.16$]), unemployed (r 's 0.14 [99% $CI = 0.01, 0.26$] to 0.31 [99% $CI = 0.19, 0.42$]) and prior charges (r 's 0.20 [99% $CI = 0.08, 0.32$] to 0.32 [99% $CI = 0.20, 0.43$]) were significantly correlated to all three outcomes. In addition, African American race/ethnicity was significantly correlated to total charges ($r = 0.16$; 99% $CI = 0.04, 0.28$) and violent charges ($r = 0.23$; 99% $CI = 0.11, 0.35$); and peer delinquency and marijuana use frequency, to total charges (r 's 0.14 [99% $CI = 0.01, 0.26$] and 0.20 [99% $CI = 0.08, 0.32$], respectively) and theft charges (r 's 0.14 [99% $CI = 0.01, 0.26$] and 0.19 [99% $CI = 0.07, 0.31$], respectively).

YPI total score—The YPI total score was significantly related to total charges but not to violent and theft charges (Table 2). The association between the total score and total charges outcomes became non-significant after including the baseline control variables in the model, and the YPI total score did not significantly contribute in predicting the three outcomes (Table 3).

YPI dimensions—The AD was significantly related to total and violent charges, but not to theft charges. The other YPI dimensions were not significantly related to any outcome (Table 2). Adding the ID (Block 2b), the AD (Block 2c), or the BD (Block 2d) to the baseline models showed that none of the YPI dimensions were significantly related to total, violent, and theft charges, and that these dimensions did not significantly contribute to the baseline models in predicting these outcomes. Finally, when simultaneously adding the three YPI-S dimensions to the baseline model, only the AD was a significant predictor of total charges and violent charges (Block 2 e, Table 3), yet, without significant incremental contribution to the baseline model.

Prediction of Self-Reported Crime

Baseline model—Peer delinquency ($r = 0.23$; 99% $CI = 0.20, 0.43$), and prior self-reported crime ($r = 0.22$; 99% $CI = 0.09, 0.34$) were significantly correlated to self-reported crime.

YPI total score—The YPI total score was significantly related to self-reported crime (Table 4). The addition of the YPI total Score (Block 2a) to the baseline model showed that the YPI total score was not a significant predictor of self-reported crime, and did not significantly contribute to the prediction of this outcome (results not shown).

YPI dimensions—The ID and AD, but not the BD, were significantly related to self-reported crime. None of the YPI dimensions were significantly related to this outcome after controlling for their shared variance (Table 4). The addition of the YPI dimensions (Blocks 2b-e) showed that not one of these dimension was a significant predictor and significantly contributed to the prediction of self-reported crime (results not shown).

Prediction of Physical and Relational Aggression Against Intimate Partners

Baseline models—SES ($r = -0.22$; 99% $CI = -0.36, 0.07$), African American race/ethnicity ($r = 0.18$; 99% $CI = 0.03, 0.33$), prior charges ($r = 0.19$; 99% $CI = 0.04, 0.34$), and prior physical aggression against intimate partners ($r = 0.24$; 99% $CI = 0.09, 0.38$) were significantly related to physical aggression against intimate partners. Age ($r = 0.17$; 99% $CI = 0.02, 0.32$) peer delinquency ($r = 0.17$; 99% $CI = 0.02, 0.32$), unemployed ($r = 0.24$; 99% $CI = 0.09, 0.38$), prior physical aggression against intimate partners ($r = 0.21$; 99% $CI = 0.06, 0.35$) and prior relational aggression against intimate partners ($r = 0.30$; 99% $CI = 0.15, 0.43$) were significantly related to relational aggression against intimate partners.

YPI total score—The YPI total score was significantly related to relational aggression but not to physical aggression against intimate partners (Table 4). Adding the YPI total score to the baseline model showed that the YPI total score remained a significant predictor of relational aggression ($OR = 1.03$; 95% $CI = 1.01, 1.04$) and significantly contributed in predicting relational aggression (Baseline $\chi^2 = 39.01$, $p < .001$; $-2LL = 224.34$, Nagelkerke $R^2 = 0.22$; YPI Total Score Block $\chi^2 = 7.39$, $p < .01$; $-2LL = 216.96$; Nagelkerke $R^2 = 0.25$). This was not the case for physical aggression (results not shown).

YPI dimensions—The three YPI dimensions were significantly related to relational aggression but not to physical aggression against intimate partners (Table 4). The significant relation between the three YPI dimensions and relational aggression remained no longer significant after controlling for their shared variance (Table 4). The addition of the YPI dimensions (Blocks 2b–e) showed that none of the YPI dimensions were a significant predictor or significantly contributed to the prediction of physical aggression (results not shown). However, the addition of the ID (Block 2b) and the BD (Block 2d) showed that these dimensions were significant predictors of relational aggression (ID: $OR = 1.05$; 95% $CI = 1.01, 1.09$; BD: $OR = 1.06$; 95% $CI = 1.01, 1.12$), and significantly contributed to the baseline model in predicting relational aggression against intimate partners (ID: Block $\chi^2 = 6.94$, $p < .01$; $-2LL = 217.40$, Nagelkerke $R^2 = 0.25$; BD: Block $\chi^2 = 5.35$, $p < .05$; $-2LL = 18.99$; Nagelkerke $R^2 = 0.24$).

Prediction of Excessive Alcohol Use and High Frequency Marijuana Use

Baseline models—Past alcohol use frequency ($r = 0.14$; 99% $CI = 0.01, 0.27$) and past marijuana use frequency ($r = 0.14$; 99% $CI = 0.01, 0.27$) were significantly related to excessive alcohol use. SES ($r = -0.18$; 99% $CI = -0.31, -0.05$), marijuana use frequency ($r = 0.38$; 99% $CI = 0.26, 0.49$), and African American race/ethnicity ($r = 0.15$; 99% $CI = 0.02, 0.28$), were significantly related to excessive marijuana use.

YPI total score—The YPI total score was not significantly related to excessive alcohol or marijuana use (Table 4), and did not significantly contribute to the baseline model in predicting excessive alcohol or marijuana use (results not shown).

YPI dimensions—None of the three YPI dimensions were significantly related to excessive alcohol or marijuana use (Table 4) or significantly contributed in predicting these outcomes (results not shown, all results are available upon request).

Discussion

The relationship between psychopathy scores and future criminality has been the focus of a considerable amount of studies. This research has almost entirely been based on the PCL-R as the assessment method of psychopathic personality. Now, alternative models and measures are available, including expert-rated devices, such as the Comprehensive Assessment of Psychopathic Personality (Cooke, Hart, Logan, & Michie, 2004) and self-report tools, such as the YPI. Being modeled after the 3-factor model of psychopathic personality (Cooke & Michie, 2001), the YPI does not include items that index criminality. As such, our findings are particularly informative for the debate between proponents of a 4-factor model of psychopathic personality claiming that criminality is part of the definition and proponents of a 3-factor model arguing that criminality is a consequence rather than a symptom of psychopathic personality, and that including criminality in the definition yield a prognostic tautology when predicting future criminality (e.g., Cooke, Michie, et al., 2004). The present study showed that the YPI total score was significantly related to future criminality, being total charges and self-reported criminality. Though this finding cannot be explained by a prognostic tautology, it should be mentioned that the strength of these

prospective relations was weak and the lower 95% *CI* was close to 1.00. Importantly, the YPI total score was no longer predictive of total charges and self-reported criminality after adding indices of past criminal behavior to the logistic regression models. Overall, this set of findings dovetails with prior work showing the first three facets or dimensions of the PCL–R or its screening version contributed minimally to predictions of future criminality beyond what could be achieved with the Antisocial Dimension alone (e.g., Walsh & Kosson, 2008). Of note, in the very same sample as the one used in the present study, the SRP-III total score (antisocial scale not included) was predictive of future official violent offending (Vitacco et al., 2014). Thus, it could be argued that the usefulness of self-reported psychopathic personality traits to predict future violent offending may depend on the instrument under investigation. Yet, the SRP-III total score provided modest incremental validity over the control variables (Vitacco et al., 2014), suggesting that psychopathy scores may not play a large role in predicting violent offending.

The YPI total score was not predictive of future physical aggression against intimate partners. This finding contrasts prior work among convicted male batterers that showed a (unique) prospective relation between the MMPI based psychopathy's total score and officially registered domestic violence (Rock et al., 2013). Unfortunately, various methodological differences hamper a straightforward comparison between this latter study and the present study. These differences do not only relate to sample characteristics (general population versus convicted batterers) and operationalization of the outcome (self-report versus official records), but also to differences in logistic regression models [models in the Rock (2013) study only included psychopathy scores together with treatment failure] and the number of potential other risk or control factors [Rock (2013) only controlled for treatment failure]. Yet, if men with elevated levels of psychopathic personality traits have a façade of sanity (Cleckley, 1941), they may exert their toll on their intimate partners in more subtle and less easy to detect forms of aggression. The present study provides novel evidence that the YPI total score was prospectively related to relational aggression against intimate partners, and significantly contributed to its prediction above and beyond past relational aggression. Of note, when controlling for their shared variance, none of the three YPI dimensions were predictive of relational aggression, suggesting that psychopathic personality should be considered as a whole construct and that information is lost when trying to break down the construct into “independent” dimensions (e.g., Hare & Neumann, 2008). This is not to say that there is no value in using YPI dimensions in isolation from each other to predict future outcomes, especially not because we showed that the ID (model 2b) and the BD (model 2d) contributed to the prediction of relational aggression against intimate partners. The point is that one should be careful when interpreting such findings in terms of psychopathic personality. Traits such as grandiose self-appraisals, lack of empathy, and impulsivity are seen in many conditions other than psychopathic personality *without occurring together*, as is expected to be the case when a person exhibits a psychopathic personality.

The empirical literature supports a moderate link between psychopathy scores and intense alcohol and drug use, but few studies have examined the prospective link between psychopathic traits and alcohol and drug use. The current study showed that neither the YPI

total score nor any YPI dimension was predictive of excessive substance use. This null-finding dovetails well with the finding from a recent study in which adolescents were assessed with the Psychopathy Checklist—Youth Version (PCL-YV) and were reassessed 5 years later in terms of substance use (Hemphälä & Hodgins, 2014). Specifically, this study showed that only the PCL:YV's Antisocial Dimension uniquely predicted the number of alcohol use disorder and drug use disorder symptoms. The scarce research does not allow to make firm conclusion about the usefulness of psychopathy scores to predict future excessive substance use, but it would come as no surprise to see that future alcohol and substance use is better predicted by past alcohol and substance use (see present study), and that interpersonal, affective and behavior/lifestyle psychopathic traits have not much to add.

The central finding of this study is that a significant relation between YPI scores and negative outcomes was only occasionally revealed, and that these scores, did not, or only very modestly, significantly contribute to the prediction of these outcomes above and beyond control variables (baseline models). These findings converge with prior work that failed to reveal a prospective relation between PPI scores and violence (Camp et al., 2013) or showed that only a low portion of (additional) variance of criminality and physical aggression against intimate partners was explained by MMPI, ICU or SRP-III measured psychopathic traits (Kahn et al., 2013; Rock et al., 2013; Vitacco et al., 2014). All the aforementioned studies relied on self-report tools, so it could be argued that these null-findings support prior scepticism surrounding the reliance on self-report to assess psychopathic traits (e.g., Lilienfeld, Fowler, & Patrick, 2006). Yet, these self-report tools were not designed for risk assessment purposes, which imply that the overall lack of prognostic usefulness is not necessarily a reason to question the usefulness or construct validity of these tools to assess the psychopathy construct. If this would be the case, then the usefulness and construct validity of the PCL-R should not be taken for granted, particularly since the PCL-R total score is not always predictive of future criminality (Camp et al., 2013), and when it does, this is mainly because of its Antisocial Dimension (e.g., Kennealy et al., 2010). A more likely explanation is that including criminality in the definition of psychopathic personality indeed causes a prognostic tautology (Cooke, Michie, et al., 2004) or strengthen its prognostic usefulness, and that interpersonal and affective psychopathic traits are of limited value in predicting violence and physical aggression (Camp et al., 2013; Kennealy et al., 2010). This raises the question if there is indeed a compelling need to use psychopathy measures for risk assessment purposes.

As argued in the introduction, the answer to this question is not trivial as the assessment of psychopathy is increasingly used for judicial and clinical decision-making. Available evidence altogether suggests that one does not really need psychopathy measures to identify adults at risk for negative outcomes if one have available indices of past criminality, aggression and social disadvantage. Indeed, in support of the old adage that the best predictor of future behavior is past behavior (e.g., Kennealy et al., 2010), our findings, for example, showed that past self-reported crime (*ORs* from 2.59 to 2.73), past physical aggression (*ORs* from 3.47 to 3.63) and past relational aggression (*ORs* from 2.77 to 3.84) against intimate partners were unique and robust predictor of future self-reported crime and aggression against intimate partners, respectively (see Supplementary Material). In addition,

the present study also showed that low SES and unemployment were more robust or stronger predictors of future official criminality than YPI measured psychopathic traits, a finding that supports the notion that social disadvantage in some ways contribute to criminal behavior (e.g., Ward, 2002). Even though we showed that psychopathy scores were predictive of future relational aggression against intimate partners, this finding needs replication and does not jeopardize the overall conclusion that psychopathic traits hardly predicts over and above prior criminality or aggression. This overall ‘null-finding’ is an important one. Knowing that some things sometimes do not work is not only important to advance science, but also to safeguard individuals from being labelled and/or treated in a non-evidence based manner. For now, our findings suggest that one might need to rethink the role psychopathy measures have for risk assessment purposes, especially when these measures do not directly index prior crime. Hopefully, numerous studies on the prospective relation between psychopathy measures and negative outcomes will be published in the next few years, even if this relation is not significant. Having not hidden in the file drawers would increase the confidence in the outcome of expected meta-analyses on the topic. The outcome of these meta-analyses will be important as they will advise if researchers and clinicians must continue or must stop prioritizing psychopathy for risk assessment purposes.

Strengths and Limitations

The main strengths of this study include that we relied on a well-known ongoing longitudinal study, used well-validated measures to assess various variables of interest, and were responsive to previous calls to include both official registered and self-reported criminality (Kahn et al., 2013; Vitacco et al., 2014) and other outcomes apart from criminal outcomes (Salekin, 2008) when studying the prospective relation between psychopathic traits and negative outcomes.

The present findings should be interpreted in the context of several limitations. First, and notwithstanding that the sample was relatively large, it cannot be excluded that the number of participants in various outcome categories was too small to demonstrate a prospective relation between psychopathic traits and future outcomes above and beyond various other predictors in the model. Future work is needed to test if the YPI is more useful to predict future negative outcomes in samples with higher base rates of criminality and the like. Yet, earlier YPI work in juvenile-justice involved adolescents (Cauffman, Kimonis, Dmetrieva, & Monahan, 2009; Colins, Vermeiren, De Bolle, & Broekaert, 2012) suggests that YPI scores will also not add much to the prediction of future criminality in adult forensic samples.

Second, all negative outcomes other than future official crimes were based on self-report. If possible, other informants, such as intimate partners (e.g., Theobald et al., 2015), should be used to assess psychopathic traits and other features of interest (e.g. domestic violence, substance use). On a related note, the low number of men who reported violent and theft-related offenses seems to contradict with the idea that self-report, in principle, could provide a more complete picture of criminal behavior than official records (Blumstein, Cohen, Roth, & Visser, 2001). Yet, the inconsistencies between self-reported and officially registered criminal outcomes most likely are explained by the different time-frames used for assessing

both outcomes. Whereas official records were collected annually, the men were asked once to self-report about criminal behavior in the *past year*. Future research on the prospective relation between psychopathic traits and self-reported criminality in adulthood must consider longer time frames when assessing the occurrence of criminal activities, particularly because the prevalence of criminality declines in the early 20s and self-reported criminality shows an earlier peak than official records (Loeber & Farrington, 2012).

Third, dichotomizing our outcome variables may have decreased the power to reveal significant prospective relations with YPI scores. Yet, it is unlikely that substantive differences in the patterns of association or in the main conclusion would have appeared if we were able to use continuous outcomes (Walsh & Kosson, 2008). Importantly, the use of binary logistic regression and dichotomization of outcome variables has benefits as well (Farrington & Loeber, 2000), and are common in criminology research (Britt & Weisburd, 2010) and research on the prospective relation between psychopathy and outcomes. As such, our analytical strategy greatly enhances comparison with prior work on adult psychopathy scores and future dichotomized outcomes, including criminality (e.g., Camp et al., 2013; Kahn et al., 2013; Vitacco et al., 2014), and aggression against intimate partners (Rock et al., 2013).

Other limitations were that we cannot be certain if the men displayed psychopathic traits before or after the onset of various risk factors in the baseline models (e.g., past criminal behaviors), and that the sample only included males (which implies that the level of generalizability to samples of female adults is unknown at this time).

In conclusion, this study showed that a significant relation between YPI scores and negative outcomes was only occasionally revealed but that these scores, nevertheless, did not significantly contribute to the prediction of future official and self-reported criminality, physical aggression against intimate partners, and excessive alcohol and marijuana use. The present study did provide novel evidence that YPI scores significantly, though modestly, contributed to the prediction of relational aggression against intimate partners, after controlling for control variables, including past relational aggression against intimate partners.

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Table 1

Descriptive Information For the Predictors Assessed At Age 25

	Sample With Official Criminality As Outcome (<i>N</i> = 417)	Sample With Self- Reported Outcomes (<i>N</i> = 372)
Continuous Predictors	Mean (SD; range)	Mean (SD; range)
Age	25.76 (0.95; 23.95–28.72)	25.72 (0.92; 23.95–28.45)
SES	29.79 (11.75; 6–63)	30.29 (11.83; 6–63)
Duration Follow-Up	5.37 (0.60; 3.99–6.14)	3.49 (0.87; 1.44–5.86)
Total YPI Score	96.44 (19.36; 59–153)	96.54 (19.34; 60–153)
YPI Interpersonal Dimension	34.78 (9.64; 20–72)	34.83 (9.67; 20–72)
YPI Affective Dimension	30.04 (5.80; 17–53)	30.10 (5.75; 17–53)
YPI Behavioral Dimension	31.61 (7.08; 15–54)	31.61 (7.11; 15–54)
ADHD Problems	4.16 (4.16; 0–24)	4.28 (4.33; 0–24)
Peer Delinquency	2.00 (3.40; 0–21)	2.08 (3.48; 0–21)
Alcohol Use Frequency	66.54 (79.76; 0–365)	69.11 (80.87; 0–365)
Marijuana Use Frequency	60.25 (121.77; 0–365)	63.64 (123.64; 0–365)
Prior Official Crimes	12.77 (18.94; 0–115)	12.24 (18.60; 0–115)
Categorical Predictors	N (%)	N (%)
African-American	221 (53.0)	196 (52.7)
Unemployed	210 (50.4)	185 (49.7)
Single	364 (87.3)	325 (87.4)
Incarceration	44 (10.6)	34 (9.1)
Prior Self-Reported Crime	128 (30.7)	113 (30.4)

Note. YPI = Youth Psychopathic Traits Inventory

YPI Total Score And YPI Dimensions As Predictor Of Future Charges (Odds Ratios and 95% Confidence Intervals)

Table 2

	Total Charges (No/Yes: 312/105)		Violent Charges (No/Yes: 364/53)		Theft Charges (No/Yes: 371/46)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
YPI total score	1.01 (1.002;1.03)	na	1.01 (0.99;1.02)	na	1.01 (<1.00;1.03)	na
YPI Interpersonal Dimension	1.02 (0.99;1.04)	0.99 (0.96;1.03)	1.01 (0.98;1.04)	0.99 (0.95;1.03)	1.02 (0.99;1.05)	0.99 (0.95;1.04)
YPI Affective Dimension	1.08 (1.04;1.12)	1.10 (1.04;1.15)	1.07 (1.02;1.12)	1.10 (1.03;1.17)	1.05 (<1.00; 1.10)	1.05 (0.98;1.12)
YPI Behavioral Dimension	1.02 (0.98;1.05)	0.98 (0.94;1.03)	1.00 (0.96;1.05)	0.97 (0.92;1.03)	1.03 (0.98;1.07)	1.02 (0.96;1.07)

Note. YPI = Youth Psychopathic Traits Inventory; In Model 1 only one YPI dimension is included as predictor; in Model 2 all YPI dimensions were simultaneously included as predictors; na = not applicable; significant ORs are displayed in bold

Table 3

The Incremental Contribution of YPI Total Score and YPI Dimensions In Predicting Future Charges

	OR (95%CI)	χ^2	-2LL	Nag ²
Baseline Model: Total Charges	na	83.07***	387.56	0.27
Block 2a: Total score	1.00 (0.99;1.02)	0.32	387.24	0.27
Block 2b: Interpersonal	1.01 (0.98;1.03)	0.25	387.31	0.27
Block 2c: Affective	1.04 (<1.00;1.09)	3.71	383.85	0.28
Block 2d: Behavioral	0.99 (0.95;1.02)	0.49	387.06	0.27
Block 2e: Three Dimensions	na	7.51	380.05	0.29
Interpersonal	1.00 (0.96;1.04)			
Affective	1.07 (1.01;1.13)			
Behavioral	0.96 (0.92;1.01)			
Baseline Model : Violent Charges	na	32.99***	284.63	0.14
Block 2a: Total score	1.00 (0.99;1.02)	0.04	284.59	0.14
Block 2b: Interpersonal	1.00 (0.97;1.03)	0.00	284.63	0.14
Block 2c: Affective	1.04 (0.99;1.09)	2.30	282.32	0.15
Block 2d: Behavioral	0.99 (0.94;1.03)	0.50	284.13	0.15
Block 2e: Three Dimensions	na	5.58	279.05	0.17
Interpersonal	0.99 (0.95;1.04)			
Affective	1.08 (1.01;1.15)			
Behavioral	0.96 (0.91;1.02)			
Baseline Model: Theft Charges	na	33.14***	256.40	0.15
Block 2a: Total score	1.01 (0.99;1.02)	0.42	255.98	0.15
Block 2b: Interpersonal	1.01 (0.98;1.05)	0.43	255.97	0.15
Block 2c: Affective	1.02 (0.96;1.08)	0.40	256.00	0.15
Block 2d: Behavioral	1.01 (0.96;1.05)	0.12	256.28	0.15
Block 2e: Three Dimensions	na	0.54	255.86	0.16
Interpersonal	1.01 (0.96;1.06)			
Affective	1.01 (0.94;1.08)			
Behavioral	<1.00 (0.94;1.06)			

Note. YPI = Youth Psychopathic Traits Inventory; OR = odds ratio; CI = confidence interval; Predictors in the Baseline models that were significant in models 2a–2e are presented as Supplementary Material; na = not applicable;

p < .001; significant ORs are displayed in bold

Table 4

YPI Total Score And YPI Dimensions As Predictor Of Self-Reported Crime, Aggression Against Intimate Partners, and Substance Use Disorders (Odds Ratios and 95% Confidence Intervals)

YPI	Future Crime (No/Yes:329/43)		Physical Aggression (No/Yes:220/55)		Relational Aggression (No/Yes:225/50)		High Freq. Alcohol Use (No/Yes:335/37)		High Freq. Marijuana Use (No/Yes:335/37)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Total score	1.02 (1.01;1.04)	-	1.01 (0.99;1.02)	-	1.04 (1.02;1.05)	-	1.00 (0.98;1.02)	-	1.01 (0.99;1.03)	-
Interpersonal	1.04 (1.01;1.08)	1.03 (0.99;1.08)	1.02 (0.99;1.04)	1.02 (0.97;1.06)	1.07 (1.04;1.10)	1.05 (0.01;1.10)	1.00 (0.97;1.04)	0.99 (0.94;1.05)	1.02 (0.98;1.05)	1.01 (0.96;1.06)
Affective	1.08 (1.02;1.14)	1.05 (0.99;1.12)	1.04 (0.99;1.09)	1.04 (0.97;1.11)	1.10 (1.03;1.14)	1.02 (0.95;1.09)	1.01 (0.96;1.07)	1.01 (0.94;1.09)	1.05 (0.99;1.10)	1.05 (0.98;1.13)
Behavioral	1.04 (0.99;1.08)	0.99 (0.93;1.05)	1.00 (0.96;1.04)	0.96 (0.91;1.02)	1.08 (1.04;1.13)	1.03 (0.97;1.09)	1.01 (0.96;1.06)	1.01 (0.95;1.07)	1.01 (0.96;1.05)	0.97 (0.91;1.04)

Note. YPI = Youth Psychopathic Traits Inventory; In Model 1 only one YPI dimension is included as predictor; in Model 2 all three psychopathy dimensions were simultaneously included as predictors; na not applicable; significant ORs are displayed in bold