



Psychological and behavioral adjustment in female youths with high or low psychopathic traits



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ABSTRACT

The aim of the present study was to analyze the role of psychopathic traits in female juvenile delinquency. Using a sample of 236 young females from the Juvenile Detention Centers of the Portuguese Ministry of Justice and schools in the Lisbon area, a group of female youths with high psychopathic traits ($n = 118$; $M = 15.84$ years of age; range = 14–18 years of age) and a group of female youths with low psychopathic traits ($n = 118$; $M = 15.77$ years of age; range = 14–18 years of age) were formed based on the Portuguese version of the Antisocial Process Screening Device-Self-report (APSD-SR). The results showed that young females with high psychopathic traits start engaging in criminal activities and come into contact with the justice system earlier in life; exhibit higher levels of behavioral problems, conduct disorder, delinquent behaviors and serious criminality; and demonstrate lower levels of self-esteem and pro-social behavior. The importance of some variables in predicting group membership (high versus low psychopathic traits) was established through a binary logistic regression. Our findings reinforce the importance of the psychopathy construct for the early identification of potentially high-risk female youths and for the assessment of female youths who have already come into contact with the judicial system.

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1. Introduction

Juvenile delinquency can take various forms and be understood in distinct ways. Antisocial behaviors in youths are intrinsically related to their inability or unwillingness to conform to the norms of a particular society and respect the authority or rights of other individuals. These behaviors can take on less severe forms (e.g., school absenteeism) or have markedly serious aspects (e.g., homicide); such acts are often related and do not occur in isolation (Farrington, Loeber, & Kalb, 2001; Frick, 1998). Although many youths are sporadically involved in antisocial or illegal activities, only a small minority commit serious and violent acts in a persistent manner. That small minority, however, accounts for a substantial portion of committed delinquent acts (e.g., Loeber & Farrington, 2001; Office of Juvenile Justice and Delinquency Prevention, 1995).

Interest in the study of juvenile delinquency and the development of new theories and research hypotheses has recently been renewed (e.g., Moffitt, Caspi, Rutter, & Silva, 2006; Patterson & Yoerger, 2002). Prominent authors in this research area (e.g., Farrington et al., 2001)

emphasize the need to encourage research that studies persistent and serious delinquent youths to accumulate consistent scientific evidence that can then substantiate interventions, in terms of both their therapeutic efficacy and cost–benefit relationship. Research conducted in recent decades has led to the conclusion that serious antisocial behaviors are concentrated in male youths and that when such behaviors are initiated at an early age, they are highly stable over the life times of affected individuals (Hawkins, Laub, & Lauritsen, 1998; Lipsey & Derzon, 1998).

Unfortunately, significantly less research has been conducted with regard to female youths. Females under the age of 18 comprise one of the fastest growing segments of the juvenile justice population, with their arrests accounting for 27% of total arrests during 1999 (American Bar Association & National Bar Association, as cited in Leve & Chamberlain, 2004; Porter, 2000). In recent years, violence among young females has increased both in terms of the number of offenses committed as well as their severity (Cauffman, Lexcen, Goldweber, Shulman, & Grisso, 2007; Thomas, 2005). Theoretical and empirical models describing the development of antisocial behavior among girls have been scarce, and risk factors have been identified primarily for males (Wong, Slotboom, & Bijleveld, 2010). Not much is known about

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the precursors, etiological factors and correlates of female delinquency. This dearth of knowledge on developmental trajectories is partly attributable to the lower base rate of criminal activity among females relative to males, particularly among youths.

The application of the psychopathy construct to adolescents in the context of juvenile delinquency has recently been gaining importance in research despite its long history in the biomedical and psychological sciences (Vaughn & Howard, 2005). Evidence has been accumulating that associates this construct among male youths with more stable and frequent antisocial behaviors, more serious and violent delinquent behaviors, early onset of criminal activity, early arrests by police and early convictions (e.g., Forth & Book, 2010; Kruh, Frick, & Clements, 2005; Van Baardewijk, Vermeiren, Stegge, & Doreleijers, 2011). Psychopathy is generally conceptualized as a syndrome that remains present throughout the lifetime of the affected individual and encompasses a constellation of extreme interpersonal, emotional, behavioral and lifestyle traits. Adult men diagnosed as psychopaths tend to more frequently demonstrate proactive violent behaviors motivated by instrumental reasons such as material gains and revenge (e.g., Cornell et al., 1996; Porter & Woodworth, 2007; Serin, 1991). Psychopathic traits, which can be defined from the dimensional point of view, refer to a manipulative, deceitful, callous and remorseless pattern that has come to be associated with a more serious, persistent and violent early-onset type of antisocial behavior in adult men with a preference for exciting and dangerous activities (e.g., Andershed, Gustafson, Kerr, & Stattin, 2002; Frick, Kimonis, Dandreux, & Farrel, 2003; Vitacco, Neumann, Robertson, & Durrant 2002).

In the past, the study of psychopathy by forensic psychologists and psychopathologists focused almost exclusively on adult men (Verona & Vitale, 2006; Verona, Sadeh, & Javdani, 2010). However, researchers (e.g., Frick, 1998; Lynam, 1996, 1997) have recently been trying to modify the nomological network of psychopathy and to adapt the existing psychopathy research instruments to children, adolescents and women. These authors argue that children who exhibit a combination of impulsivity, hyperactivity, attention deficit, and conduct disorder are affected by a particularly deleterious conduct disorder variant that makes them similar to adult psychopaths. The many investigations that have now been dedicated to adolescent psychopathy suggest support for the existence of similar correlates as seen in adult samples. For example, youths with higher psychopathic traits are generally more prone to use excessive and disproportional violence in their crimes (Fritz, Wiklund, Kopsosov, Klinteberg, & Ruchkin, 2008; Lindberg et al., 2009). However, the feasibility of the downward extension of this construct to children and adolescents is still controversial (Seagrave & Grisso, 2002; Sevecke, Lehmkuhl, & Krischer, 2009), and juveniles encounter a number of specific additional factors that must be considered. For example, research indicates that some potential jurors feel that juveniles labeled as psychopaths deserve greater punishments and are at more risk of future criminality (Boccaccini, Murrie, Clark, & Cornell, 2008).

Although there is an increasing amount of evidence that corroborates the utility of the psychopathy construct in male adolescents, very few studies have specifically addressed psychopathy in female youths. There is, however, some evidence that psychopathy is expressed differently in girls and women (Charles, Acheson, Mathias, Furr, & Dougherty, 2012). A close examination of the studies that have investigated the role of psychopathic traits in female youths reveals that they include relatively small sample sizes of adjudicated girls, who constitute approximately 11% to 22% of total samples (Frick, 1998, Frick, O'Brien, Wootton, & McBurnett, 1994). We can conclude that, although psychopathic personality traits can be detected in female samples, whether psychopathy in girls has the same structure and behavioral correlates as psychopathy in boys remains unclear. For example, Vincent, Vitacco, Grisso, and Corrado (2003) tried to identify subtypes of offenders based on the Psychopathy Checklist: Youth Version (PCL:YV), but although their sample consisted of 441 adolescents (326 boys, 115 girls), all girls were excluded from the analysis due to the "limited evidence for the validity of the PCL: YV in girls."

Frick, Lilienfeld, Ellis, Loney, and Silverthorn (1999) have proposed a developmental trajectory to psychopathy that is especially applicable to youths with early-onset conduct problems (Moffitt, 1993; Moffitt & Caspi, 2001). These authors suggested that the antisocial behavior of youths with high scores on callous-unemotional (CU) traits is qualitatively different from that of youths who exhibit conduct problems but not CU traits. In a series of studies, they have demonstrated that the antisocial and aggressive behaviors of children who score high on CU traits are less strongly related to adversity factors, such as poor parenting or low intelligence, and more strongly related to thrill and adventure seeking (Frick et al., 2003), a reward-dominant response style, and deficits in processing negative emotional stimuli (Kimonis, Frick, Fazekas, & Loney, 2006; Loney, Frick, Clements, Ellis, & Kerlin, 2003).

After reviewing the limited available research on antisocial girls, Silverthorn and Frick (1999) suggested that childhood- and adolescent-onset pathways cannot be applied to girls without some important modifications. These authors proposed that antisocial girls exhibit a third developmental pathway, which they called the "delayed-onset" pathway. Their model assumes that many of the pathogenic mechanisms that may contribute to the development of antisocial behavior in girls, such as cognitive and neuropsychological deficits, a dysfunctional family environment, and/or the presence of a CU interpersonal style, could be present in childhood but do not lead to severe and overt antisocial behavior until adolescence. They therefore proposed that the delayed-onset pathway for girls is analogous to the childhood-onset pathway in boys and that there is no analogous pathway in girls to the adolescent-onset pathway in boys.

Charles et al. (2012) examined whether the relationship between psychopathic traits, specifically CU traits, and adjustment differed between girls and boys who were at risk for antisocial behavior in a sample of children ($n = 116$ boys, $n = 118$ girls) whose biological fathers had past or current alcohol or drug problems. Boys were generally rated higher on measures of CU traits, but these traits were more prominently related to adjustment problems among girls. These authors suggest that the expression of psychopathic traits may have more negative effects on adjustment among girls than boys and that CU traits may impact adjustment in girls by impairing interpersonal relationships.

The APSD is currently the most researched questionnaire measure of juvenile psychopathy (Johnstone & Cooke, 2004; Patrick, 2010; Sharp & Kine, 2008). In terms of its factorial structure, the research carried out thus far suggests that the juvenile psychopathy construct that has accumulated the most consistent evidence is the tridimensional one, which contains the callous/unemotional, impulsive and narcissistic traits dimensions. The literature has highlighted the role of callous/unemotional traits, defined as an affective (e.g., absence of guilt, restraint of emotional displays) and interpersonal (e.g., lack of empathy) style, which emerges as a distinct dimension; it has been found that such traits can enable the identification of a more severe and aggressive type of juvenile delinquent (Caputo, Frick, & Brosky, 1999; Kruh et al., 2005) in a way that the other impulsivity and narcissism dimensions cannot. Few studies have investigated how youth psychopathy measures function across gender, but preliminary evidence indicates that they may function similarly in both boys and girls, although the factor structure may be somewhat different; a two-factor solution may be more justifiable in girls (Frick, Barry, & Bodin, 2000).

Verona et al. (2010) consider that, in contrast to the adult literature, research on the relative prevalence rates of psychopathic traits in boys and girls is inconclusive, with some researchers noting generally higher psychopathic tendencies among boys than girls and others finding no gender differences. Comparisons of parent or teacher psychopathy rating scales indicate that boys are, on average, rated higher than girls on psychopathic traits; consistent with this finding, a survey of child clinical psychologists demonstrated lower ratings for girls than boys on criteria compiled from several widely used youth psychopathy measures. However, according to Verona et al. (2010), other investigations of youth prevalence rates only report gender differences on certain

aspects of psychopathy or fail to observe any significant gender differences at all.

Some of the most interesting common characteristics between psychopathic traits and antisocial behaviors (Forth & Book, 2010) are their strong mutual association and their high stability from childhood to adulthood (Farrington, 1989; Huesmann, Eron, Lefkowitz, & Walder, 1984; Moffitt, 1993). The co-morbidity of psychopathic traits with other disorders is high and may even be considered the rule (Frick, 1998). There has been increasing evidence that minors diagnosed with co-morbid combinations of Disruptive Behavior Disorders and Attention Deficit (DSM-IV-TR; American Psychiatric Association, 2000) exhibit a particularly severe and aggressive type of antisocial behavior that is similar to that of adults with psychopathy (Barry et al., 2000; Leistico, Salekin, DeCoster, & Rogers, 2008; Lynam, 1996, 1998).

After analyzing the relationship between juvenile psychopathy and externalizing psychopathology as defined in terms of disruptive behaviors, Salekin, Leistico, Neumann, DiCicco, and Duros (2004) concluded that there were moderately high correlations ($r = .36-.49$) between them. Sevecke and Kosson (2010) demonstrated the existence of a retrospective link between psychopathy in adults and conduct disorder in childhood, such as the early onset of antisocial behavior, chronic violence, various crimes and impulsivity. Myers, Burket, and Harris (1995) studied the relationship between psychopathy and certain forms of psychopathology in hospitalized adolescents, finding statistically significant positive correlations among psychopathy, conduct disorder and antisocial behaviors. Frick et al. (2000) found strong and significant correlations ($R = .52-.65$; $p \leq .001$) between the dimensions of the APSD (impulsivity, narcissism and callous/unemotional traits) and conduct disorder.

Low self-esteem is a construct that has been classically associated with juvenile delinquency, but its relation to psychopathic traits is under-investigated and remains unclear. For a long time, psychologists, sociologists and criminologists have considered self-esteem to be significantly correlated with antisocial behavior (Caldwell, Beutler, Ross, & Silver, 2006; Mason, 2001) but have not investigated its relation to psychopathic traits, especially among young females. Low self-esteem can lead young people to associate with other young people who exhibit antisocial behaviors. Barnow, Lucht, and Freyberger (2005) showed that teenagers with low self-esteem are more frequently rejected by their peers and that this rejection produces a vicious cycle that amplifies violent behavior. Other empirical evidence (e.g., Baumeister, Smart, & Boden, 1996; Toch, 1993) shows that young people with low self-esteem tend to engage in antisocial behaviors more frequently and that this leads to increases in their self-esteem.

Juvenile delinquency and juvenile psychopathy are important areas of study. There is a scientific need for information on the characteristics of delinquent female youths from a variety of cultures. Unfortunately, there is a lack of research on this topic, especially among European samples. To our knowledge, this is the first study examining psychopathic traits in a sample of Portuguese female adolescents. Bearing in mind the theoretical framework mentioned above, two groups were formed (based exclusively on rates of psychopathic traits) to test our two hypotheses: a) we expect that young females with high psychopathic traits will demonstrate significantly higher values for conduct disorder, behavioral problems, delinquent behaviors and serious crimes as well as lower values for self-esteem and pro-social behavior; and b) we expect that scores obtained for behavioral problems, delinquent behaviors, and crime seriousness measurements will be significantly associated with membership in the high psychopathic traits group.

2. Method

2.1. Participants

The sample was composed of 236 female participants recruited from forensic and school contexts; of this total, 118 participants formed the

group with high psychopathic traits (High APSD-SR; $M = 15.84$ years of age; $SD = 1.31$ years; range = 14–18 years of age), and 118 participants formed the group with low psychopathic traits (Low APSD-SR; $M = 15.77$ years of age; $SD = 1.15$ years; range = 14–18 years of age).

Table 1 presents data regarding the origin, number and respective percentage of participants in each APSD-SR group.

These groups were formed based on the median ($Mdn = 9$) calculated from the total scores of the female participants in the Portuguese validation of the APSD-SR (Pechorro, 2011; Pechorro, Marôco, Poiares, & Vieira, 2013), specifically the scores of the females in the community and present forensic samples. The aim of forming these groups was to study a mixed sample of youths, focusing on psychopathic traits from a dimensional point of view without necessarily taking the origin of the participants (forensic versus community) into account. The APSD was chosen because it is currently the most researched questionnaire measure of juvenile psychopathy (e.g., Patrick, 2010; Sharp & Kine, 2008). The APSD-SR mean scores were 10.53 ($SD = 5.39$) for the sample, 6.60 ($SD = 1.71$) for the low psychopathic traits group, and 14.46 ($SD = 4.94$) for the high psychopathic traits group.

The participants had an average age of 15.86 years ($SD = 1.37$ years) and an average of 8.24 years of schooling ($SD = 2.16$ years). The ethnic distribution of the participants was as follows: white European (53.8%), African (25%), mixed ethnicity (16.5%), and gypsy (4.7%). The vast majority of the participants came from an urban background (99%) with a low socio-economic status (56%), and some were taking psychiatric drugs (12%).

2.2. Instruments

The Antisocial Process Screening Device–Self-report (APSD-SR; Frick & Hare, 2001; Muñoz & Frick, 2007) is a multi-dimensional, 20-item measure designed to assess psychopathic traits in adolescents. Originally named the Psychopathy Screening Device (PSD), it was modeled after the Psychopathy Checklist-Revised (PCL-R; Hare, 2003). Each item is scored on a 3-point ordinal scale (Never = 0, Sometimes = 1, Often = 2); higher scores represent an increased presence of the traits in question. The total score, as well as that for each dimension, is obtained by adding the values of the respective items. Some studies (e.g., Frick et al., 1994) reported two main factors: callous/unemotional traits (CU, tapping interpersonal and affective dimensions of psychopathy, such as lack of guilt and absence of empathy) and an impulsivity/conduct problems factor (I-CP, tapping behavioral aspects of conduct problems and impulse control problems). Another study (Frick et al., 2000) in a community sample reported three main factors: callous/unemotional traits factor (CU) and an I-CP factor, which was subdivided into two further factors, namely, narcissism (Nar) and impulsivity (Imp). Higher scores indicate an increased presence of the characteristics associated with each factor.

The Portuguese validation of the APSD self-report (Pechorro, 2011; Pechorro et al., 2013) was used. A Principal Component Analysis (PCA) using a criterion of greater than or equal to .30 as the level of loading significance was conducted on the present female sample (KMO measure of sampling adequacy = .81; Bartlett Test of Sphericity $p \leq .001$). The PCA revealed a two-factor solution (I-CP and CU) by both the eigenvalue and scree test criteria, accounting for 27% of the common variance in scale items. The internal consistency for the present study, estimated by Cronbach's alpha, was as follows: APSD-SR Total = .77; APSD-SR I-CP = .80; APSD-SR CU = .56; APSD-SR

Table 1

Frequency and percentage of participants for the Low APSD-SR and High APSD-SR groups.

	Low APSD-SR	High APSD-SR	N	Percentage
Forensic sample	25	68	93	39.41%
School sample	93	50	143	60.59%
Total sample	118	118	236	100%

Narcissism = .73; and APSD-SR Impulsivity = .51. The results were somewhat similar to those obtained by Pechorro et al. (2013).

The Strengths and Difficulties Questionnaire-Self-response (SDQ-SR; Goodman, Meltzer, & Bailey, 1998) is a short behavioral questionnaire aimed at pre-adolescents and adolescents that is composed of 25 items rated on a 3-point ordinal scale (Not true = 0, Somewhat true = 1, and Certainly true = 2). The SDQ consists of five dimensions: Emotional symptoms (ES), Conduct problems (CP), Hyperactivity (H), Peer problems (PP), and Pro-social behavior (P). The scores for emotional symptoms, conduct problems, hyperactivity and peer problems are summed to generate a total difficulties score (TDS) ranging from 0 to 40; the pro-social score is not incorporated into the TDS because the absence of pro-social behaviors is conceptually different from the presence of psychological difficulties. Internal consistency for the present study, estimated by Cronbach's alpha, was as follows: SDQ-SR TDS = .65; SDQ-SR P = .61. The official Portuguese translation of the SDQ-SR was used (Pechorro, 2011; Pechorro, Poiares, & Vieira, 2011).

The Adapted Self-Reported Delinquency Scale (ASRDS; Carroll, Durkin, Houghton, & Hattie, 1996; Carroll, Houghton, Durkin, & Hattie, 2009) is a self-reported measure consisting of 38 items that assesses adolescent involvement in illegal and antisocial activities. The ASRDS score can be obtained by adding the items from a 3-point ordinal scale (Never = 0, Sometimes = 1, Frequently = 2), where higher scores signify greater involvement in criminal activities. A Portuguese version of the ASRDS was used. Pechorro (2011) was able to demonstrate psychometric properties that justify its use among the population of Portuguese adolescents in terms of factorial validity, internal consistency (Cronbach's $\alpha = .96$), temporal stability ($r = .88$; $p \leq .01$), discriminant validity (Λ Wilks = .51; $\chi^2 = 508.88$; $p \leq .001$), divergent validity ($r = -.13$; $p \leq .01$), convergent validity ($r = .66$; $p \leq .01$), concurrent validity ($r_{pb} = .40$; $p \leq .01$), retrospective validity ($r = -.44$; $p \leq .01$), cutoff score (CS = 16, sensibility = 86.4%, specificity = 85.5%, ROC = .86), corrected item-total correlation (range = .32–.80.) and average inter-item correlation (.38). Internal consistency for this study, estimated by Cronbach's alpha, was .94.

The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1989) is a brief self-report measure that evaluates self-esteem in adolescents and adults. The RSES can be scored by simply adding the ten items on a 4-point ordinal scale (Strongly disagree = 0, Disagree = 1, Agree = 2, Strongly agree = 3) after reversing the appropriate items (namely, items 2, 5, 6, 8 and 9). Higher scores indicate higher levels of self-esteem. A Portuguese version of the RSES was used (Pechorro, 2011). Pechorro, Marôco, Poiares, and Vieira (2011) found psychometric properties that justify the use of the RSES on the Portuguese adolescent community and forensic populations, namely, in terms of internal consistency (Cronbach's $\alpha = .79$), unidimensional factorial structure (35.55% of variance), temporal stability ($r_s = .86$; $p \leq .01$), discriminant validity (Λ Wilks = .961; $\chi^2 = 29.806$; $p \leq .001$), divergent validity ($r = .10$; ns), corrected item-total correlation (range = .27–.62.) and average inter-item correlation (.27). Internal consistency for the present study, estimated by Cronbach's alpha, was .77.

The Marlowe–Crowne Social Desirability Scale's (MCSDS; Crowne & Marlowe, 1960) short composite (MCSDS-SF) version was designed by Ballard (1992) based on the original Marlowe–Crowne scale; it is recognized as a composite sub-scale and is likely to be the most widely used of all the subscales that have been derived from the original MCSDS. A Portuguese version of the MCSDS-SF, which was especially translated and adapted for adolescents, was used (Pechorro, 2011). Pechorro, Vieira, Poiares, and Marôco (2012) found psychometric properties that justify the use of the MCSDS-SF in the Portuguese adolescent community and forensic populations, namely, in terms of internal consistency (Kuder–Richardson = .61), unidimensional factorial structure, temporal stability ($r_s = .76$; $p \leq .001$), discriminant validity (Λ Wilks = .988; $\chi^2 = 8.848$; $p \leq .001$), and divergent validity ($r = .10$; ns). Internal consistency for the present study (using a 12-item version of the MCSDS-SF), estimated by the Kuder–Richardson coefficient, was .60.

The delinquency seriousness classification from official reports was guided by the Sellin–Wolfgang Index of Crime Seriousness (ICS; Wolfgang, Figlio, Tracey, & Singer, 1985, as cited in White et al., 1994). Level 0 consisted of no delinquency. Level 1 consisted of minor delinquencies committed at home, such as stealing minor amounts of money from the parents' wallets. Level 2 consisted of minor delinquencies outside the home, including the shoplifting of something worth less than €5, vandalism and minor fraud (e.g., not paying bus fare). Level 3 consisted of moderately serious delinquencies such as any thefts worth over €5, gang fighting, carrying weapons, and joyriding. Level 4 consisted of serious delinquencies such as car theft and breaking and entering. Level 5 consisted of having performed at least two of each of the level 4 behaviors.

In addition, a questionnaire was constructed to describe the socio-demographic and criminal characteristics of the participants and to analyze the moderating effects of these variables. This questionnaire includes questions about the participants' ages, nationalities, ethnic groups, rural versus urban origins, completed levels of schooling, socio-economic status, parents' marital status, numbers of siblings/half-siblings, the taking of psychiatric drugs, age of first transgression, age of first problem with the law, and age of first incarceration in a Juvenile Detention Center. Socio-economic status was measured by a combination of the parents' levels of education and professions, appropriate to the Portuguese reality (Simões, 1994).

2.3. Procedures

The age range for youth participation in the study was previously set between 12 and 20 years because this is the age range when young people are amenable to detention under the Portuguese judicial system's Educational Guardianship Act (*Lei Tutelar-Educativa*), although it is very rare for girls under the age of 14 or above the age of 18 to be detained in Juvenile Detention Centers (*Centros Educativos*) in Portugal. Despite the relative scarcity of girls admitted to Portuguese Juvenile Detention Centers, we chose to use female participants because there is a general lack of studies about psychopathic traits and female juvenile delinquency. Each questionnaire was preceded by an informed consent form in which participants were informed of the voluntary and confidential nature of participating in the study. The first author of this study consulted the available official reports, diagnosed DSM-IV-TR Conduct Disorder (American Psychiatric Association, 2000) and defined the ratings for the classification of delinquency seriousness.

Questionnaire collection in the forensic context was carried out individually after obtaining authorization from the General Directorate of Reintegration and Prison Services–Ministry of Justice (*Direção-Geral de Reinserção e Serviços Prisionais-Ministério da Justiça*). All the detainees in the three existing Juvenile Detention Centers that admit girls were informed about the nature of the study and were asked to participate. The main author of this study personally collaborated with the directors of each Detention Center to motivate young people to participate in the study, answering any questions that arose regarding participation. No incentives were provided to encourage participation, but the fact that Detention Center directors were personally involved in encouraging participation might have contributed to increasing the participation rate (in the Portuguese cultural reality, detained youths hold director figures in high regard). The participation rate was approximately 96%. Not all young people agreed or were able to participate; reasons for this included refusal to participate (6%), inability to participate due to not understanding the language (1%) and inability to participate due to security issues (1%). The participants were mostly convicted of serious and violent crimes (89.2%) and were sentenced to an average of 19.2 months of detention ($SD = 5.25$ months). All the questionnaires of those who participated were completed appropriately.

The collection of questionnaires in the school context took place after having obtained permission from the Directorate General of Education, Ministry of Education (*Direção-Geral de Educação-Ministério da*

Educação). Twelve elementary and secondary schools in the greater Lisbon area were randomly selected, and four agreed to participate. Reasons for non-participation included the systematic failure to respond to the collaboration requests of the researcher, alleged internal school organization issues that made collaboration impossible, and the refusal to collaborate due to the forensic content of the questionnaire. The schools that agreed to participate requested that the participation of students be authorized in advance through written consent signed by their parents or guardians. Questionnaire collection took place in small groups of participants (e.g., groups of 4 or 5 participants). Approximately 13% of participants were ultimately excluded because they were not within the established age range or returned incomplete, blank or illegible questionnaires.

The questionnaire data that were considered valid (i.e., appropriately completed by participants within the selected age range) were analyzed using SPSS v21 (IBM SPSS, 2012). Following data entry, 10% of the questionnaires were randomly selected to evaluate the quality of their entry. The quality was considered to be very good because practically no entry errors were detected (99.7% of entries were correct). Then, the high (High APSD-SR) and low (Low APSD-SR) psychopathic traits groups were formed. Participants in both groups (High APSD-SR = 118 participants; Low APSD-SR = 118 participants) were approximately matched on age, socio-economic status and ethnicity a posteriori to control for the possible confounding effects of these variables (i.e., to obtain no statistically significant differences between the groups with regard to these variables).

MANOVA was used to jointly analyze the multiple dependent variables. Because the homogeneity of variance/covariance assumption was met (Box's $M = 14.986$; $F = 1.471$; $p = .143$) and group sizes were identical, the appropriate multivariate statistic was used. Univariate ANOVAs were used to compare groups when the assumptions of normality (skewness and kurtosis between -2 and 2) and homogeneity of variance were validated; Welch's ANOVA was used when the assumptions of normality were validated but group variances were heteroscedastic. Mann-Whitney's U test was used when the variables were ordinal or when the data clearly violated both the assumptions of the normality and homogeneity of variance (Tabachnick & Fidell, 2007). The Chi-square test was used to compare nominal variables. Point biserial correlations were used to analyze the association between nominal dichotomous variables and scale variables, Spearman Rho was used to analyze associations between ordinal variables, and Pearson r was used to analyze correlations between scale variables. Binary logistic regression was also used (coding of the dependent variable: Low APSD-SR Group = 0, High APSD-SR Group = 1). Effect size and power calculations were made (as described in Marôco, 2011) to clarify the degree of accuracy/reliability of the statistical judgments and the strength of the relationships among the variables; the following values were obtained: SDQ-SR TDS scale ($\eta_p^2 = .19$; power = 1), SDQ-SR P scale ($\eta_p^2 = .12$; power = 1), RSES ($\eta_p^2 = .05$; power = .94), ASRDS ($r = -.48$; power = .95), MCSDS-SF ($\eta_p^2 = .20$; power = 1), and ICS ($r = -.47$; power = .95).

3. Results

In the initial data treatment phase, the High APSD-SR and Low APSD-SR groups were compared in terms of socio-demographic variables. The results showed statistically significant differences between the groups regarding their completed levels of schooling ($F_W = 32.409$; $p \leq .001$) and the taking of psychiatric drugs ($\chi^2 = 7.942$; $p \leq .01$). No statistically significant differences were found between the two groups with regard to age ($F = 1.409$; $p = .236$), ethnicity ($\chi^2 = .153$; $p = .794$), socio-economic status ($U = 5155$; $p = .341$), parents' marital status ($\chi^2 = 3.198$; $p = .561$), number of siblings/half-siblings ($U = 5868$; $p = .06$), and rural versus urban origin ($\chi^2 = 1.004$; $p = 1$). The analysis of these variables showed that the high psychopathic traits group

contained participants with fewer years of schooling and participants who were taking more psychiatric drugs.

The results of the criminal variables were then analyzed. Statistically significant differences were found between the High APSD-SR and Low APSD-SR groups with regard to engagement in illegal activities ($\chi^2 = 32.812$; $p \leq .001$), age of onset of criminal activities ($F_W = 10.021$; $p \leq .01$), problems with the law ($\chi^2 = 32.812$; $p \leq .001$), age of first problem with the law ($F = 4.988$; $p \leq .05$), entry into a Juvenile Detention Center ($\chi^2 = 32.812$; $p \leq .001$), and diagnosis of DSM-IV-TR conduct disorder ($\chi^2 = 53.449$; $p \leq .001$). The analysis of these criminal variables showed that participants from the high psychopathic traits group were more highly involved in illegal activities, began their involvement with criminal activities earlier in life, had more problems with the law, were younger when they first had problems with the law, and had entered a Juvenile Detention Center proportionately more often.

A MANOVA was conducted to assess if there were differences between the two groups (Low APSD-SR and High APSD-SR) in terms of a linear combination of dependent variables. There were statistically significant differences in the dependent variables of the two groups (Wilks' Lambda = .652; $F = 30.771$; $p \leq .001$; $\eta_p^2 = .348$; power = 1). Follow-up univariate ANOVAs and U Mann-Whitney tests showed that statistically significant differences were found with regard to all variables (see Table 2).

To assess the significance of the measured constructs, namely, behavioral problems, delinquent behaviors, crime seriousness, self-esteem and social desirability, we conducted a binary logistic regression using the Enter method (Tabachnick & Fidell, 2007). Tolerance and VIF were used to demonstrate the absence of multicollinearity (Leech, Barrett, & Morgan, 2008). The variables that exhibited multicollinearity problems (e.g., crime seriousness) and the variables for which statistically significant values were not obtained in the model (e.g., self-esteem) were removed from the equation despite the fact that both were significant when not in the equation. The proportional-by-chance accuracy rate was 50%. The variables shown in Table 3, when considered together, were statistically significant with regard to group membership.

The two highest odds ratios (above 1) were SDQ-SR TDS, at 1.189, and ASRDS, at 1.086; these values indicate that the odds of belonging to the high psychopathic traits group improved by 1.19 for each unit increase in SDQ-SR TDS and by 1.09 for each unit increase in ASRDS (Leech et al., 2008). The model was also used to classify study participants, and an overall correct classification of 79.2% was observed, demonstrating the usefulness of the model for the classification of new observations.

Table 2

Descriptive statistics, ANOVAs and U Tests for the SDQ-SR TDS, SDQ-SR P, ASRDS, ICS, RSES, and MCSDS-SF.

	Low APSD-SR	High APSD-SR	p value ^a
SDQ-SR TDS			$F = 55.609$
M (SD)	11.45 (4.24)	15.52 (4.15)	$p \leq .001$
SDQ-SR P			$F = 32.102$
M (SD)	8.88 (1.26)	7.84 (1.53)	$p \leq .001$
ASRDS			$U = 3150.5$
MR (IR)	86.20 (7)	150.80 (15)	$p \leq .001$
ICS			$U = 3546.5$
MR (IR)	89.56 (0)	147.44 (2)	$p \leq .001$
RSES			$F = 12.291$
M (SD)	21.94 (4.66)	19.81 (4.68)	$p \leq .001$
MCSDS-SF			$F = 56.808$
M (SD)	19.52 (2.05)	17.42 (2.22)	$p \leq .001$

Note. SDQ-SR = Strengths and Difficulties Questionnaire-Self-report; TDS = Total Difficulties Score; P = Pro-social Behavior; ASRDS = Adapted Self-Report Delinquency Scale; ICS = Index of Crime Seriousness; RSES = Rosenberg Self-Esteem Scale; MCSDS-SF = Marlowe-Crowne Social Desirability Scale-Short Form. M = Mean; SD = Standard deviation; MR = Mean Rank; IR = Interquartile Range.

^a ANOVA or U Mann-Whitney Test (exact sig. 2-tailed).

Table 3
Binary logistic regression coefficients for the Low APSD-SR and High APSD-SR groups.

	B	SE	Wald	Exp (B)	p value
SDQ-SR TDS	.173	.045	14.665	1.189	$p \leq .001$
SDQ-SR P	-.605	.140	18.723	.546	$p \leq .001$
ASRDS	.082	.019	17.846	1.086	$p \leq .001$
MCSDS-SF	-.328	.085	15.060	.720	$p \leq .001$
Constant	7.824	2.017	15.042	2500.046	$p \leq .001$

Note. SDQ-SR = Strengths and Difficulties Questionnaire-Self-report; TDS = Total Difficulties Score; P = Pro-social Behavior; ASRDS = Adapted Self-Report Delinquency Scale; MCSDS-SF = Marlowe–Crowne Social Desirability Scale-Short Form.

The model also demonstrated high sensitivity (81.4%) and good specificity (77.1%).

The correlations of the APSD-SR total score, the APSD-SR I-CP and the APSD-SR CU with the other measures and variables were also tested to analyze how they were related. Regarding the APSD-SR total score, statistically significant correlations were found, specifically with SDQ-SR TDS ($r = .54$; $p \leq .001$), RSES ($r = -.19$; $p \leq .01$), ASRDS ($r = .63$; $p \leq .001$), ICS ($r_s = .62$; $p \leq .001$), MCSDS-SF ($r = -.36$; $p \leq .001$), DSM-IV-TR Conduct Disorder diagnosis ($r_{pb} = .60$; $p \leq .001$), age of crime onset ($r = -.48$; $p \leq .001$), and age of first problem with the law ($r = -.34$; $p \leq .001$). Regarding the APSD-SR I-CP, the following correlations were found: SDQ-SR TDS ($r = .58$; $p \leq .001$), RSES ($r = -.20$; $p \leq .01$), ASRDS ($r = .65$; $p \leq .001$), ICS ($r_s = .61$; $p \leq .001$), MCSDS-SF ($r = -.40$; $p \leq .001$), DSM-IV-TR Conduct Disorder diagnosis ($r_{pb} = .58$; $p \leq .001$), age of crime onset ($r = -.45$; $p \leq .001$), and age of first problem with the law ($r = -.26$; $p \leq .01$). Regarding the APSD-SR CU, the following correlations were found: SDQ-SR TDS ($r = .12$; $p = .06$), RSES ($r = -.05$; $p = .44$), ASRDS ($r = .22$; $p \leq .001$), ICS ($r_s = .22$; $p \leq .001$), MCSDS-SF ($r = -.04$; $p = .56$), DSM-IV-TR Conduct Disorder diagnosis ($r_{pb} = .29$; $p \leq .001$), age of crime onset ($r = -.28$; $p \leq .01$), and age of first problem with the law ($r = -.32$; $p \leq .01$).

Additionally, comparisons between the forensic and school samples were conducted (see Table 4).

4. Discussion

The application of the psychopathy construct to youths has been gaining importance in the literature. The aim of the present study was

Table 4
Descriptive statistics, ANOVAS and U Tests for the SDQ-SR TDS, SDQ-SR P, ASRDS, ICS, RSES, MCSDS-SF, and APSD-SR.

	School sample	Forensic sample	p value ^a
SDQ-SR TDS			$F = 24.627$
M (SD)	12.33 (.37)	15.26 (.47)	$p \leq .001$
SDQ-SR P			$F_w = .736$
M (SD)	8.29 (.13)	8.46 (.15)	$p = .392$
ASRDS			$U = 777$
MR (IR)	77.43 (6)	181.65 (19)	$p \leq .001$
ICS			$U = 1625$
MR (IR)	83.36 (0)	172.53 (2)	$p \leq .001$
RSES			$F = 2.09$
M (SD)	21.24 (.43)	20.32 (.42)	$p = .15$
MCSDS-SF			$F_w = .878$
M (SD)	18.58 (.22)	18.3 (.21)	$p = .35$
APSD-SR			$F_w = 61.077$
M (SD)	8.38 (.29)	13.84 (.64)	$p \leq .001$

Note. SDQ-SR = Strengths and Difficulties Questionnaire-Self-report; TDS = Total Difficulties Score; P = Pro-social Behavior; ASRDS = Adapted Self-Report Delinquency Scale; ICS = Index of Crime Seriousness; RSES = Rosenberg Self-Esteem Scale; MCSDS-SF = Marlowe–Crowne Social Desirability Scale-Short Form; APSD-SR = Antisocial Process Screening Device-Self-report. $F_w = F$ Welch; M = Mean; SD = Standard-deviation; MR = Mean Rank; IR = Interquartile Range.

^a ANOVA or U Mann–Whitney Test (exact sig. 2-tailed).

to analyze the role of psychopathic traits in a mixed sample of Portuguese female adolescents. We hypothesized that young females with high psychopathic traits would exhibit significantly higher values for conduct disorder, behavioral problems, delinquent behaviors and serious crimes as well as lower values for self-esteem and pro-social behavior. We also hypothesized that scores for behavioral problems, delinquent behaviors, and crime seriousness measurements would be associated with membership in the high psychopathic traits group.

When comparing the members of the high psychopathic traits group with those of the low psychopathic traits group in terms of socio-demographic variables, the high APSD-SR group was found to contain participants with fewer years of schooling and participants who were taking more psychiatric drugs. When comparing the two groups with regard to the criminal variables, statistically significant differences were found for all the analyzed variables: participants from the high APSD-SR group were proportionately more involved in illegal activities, became involved in criminal activities earlier in life, had had proportionately more problems with the law, were younger when they first had problems with the law, and had entered a Juvenile Detention Center proportionately more often. These data are consistent with studies linking the psychopathy construct to the earlier onset of criminal activity and earlier encounters with the police and the judicial system (Forth & Book, 2010; Kruh et al., 2005; Van Baardewijk et al., 2011).

Conduct disorder refers to persistent and pervasive behavior that indicates disregard for peoples' rights, social norms and laws and causes significant impairments in functioning. Frick et al. (1994) described a sub-type of conduct disorder in which the child or adolescent lacks a sense of guilt, has a low capacity for empathy, manipulates others and is callous and unemotional. This type of functioning generally seems to pose the greatest risks and challenges with regard to adapting to society (Lindberg, 2012; Pardini & Loeber, 2007). The present study found that proportionately more participants in the high APSD-SR group were diagnosed with conduct disorder (DSM-IV-TR; American Psychiatric Association, 2000) and obtained significantly higher values for the total difficulties score of the SDQ-SR TDS and significantly lower values for pro-social behavior (SDQ-SR P). These findings reinforce the literature that supports the consistent association of psychopathy constructs with conduct disorder (e.g., Barry et al., 2000; Leistico et al., 2008; Lynam, 1996; Myers et al., 1995; Salekin et al., 2004).

In a comparison of the groups with regard to the ASRDS and ICS, the high psychopathic traits group obtained significantly higher values for self-reported delinquent behaviors (with a greater frequency and diversity of these behaviors in this group) and crime seriousness. The high correlations found between the APSD-SR and the ASRDS and ICS reinforce the association between psychopathy and delinquent behaviors described in the literature (e.g., Sevecke & Kosson, 2010; Van Baardewijk et al., 2011). The findings regarding psychopathic traits and their association with the age of the onset of criminal conduct or the first problems with the law (Forth & Book, 2010) were corroborated by our study because statistically significant negative moderate correlations were found.

With regard to the RSES and MCSDS-SF, the high psychopathic traits group obtained significantly lower values for self-esteem. These findings are consistent with the literature, which classically associates low self-esteem with antisocial behaviors (e.g., Caldwell et al., 2006; Mason, 2001); our findings associate high psychopathic traits with low self-esteem. With regard to social desirability, which was used to measure potentially biased responses, it may seem that these results are counter-intuitive because higher scores for social desirability could be expected from youths with high psychopathic traits who attempt to portray more positive images of themselves. However, Lilienfeld and Fowler (2006) have shown that psychopaths frequently and reliably report the presence of socially devalued characteristics, such as antisocial behaviors, hostility and weak impulse control. Psychopaths are frequently and incorrectly considered to be more adept at manipulating their questionnaire answers

than non-psychopaths, but there is no consistent empirical evidence that supports such a claim, only a few specific clinical observations.

From the results discussed above, we can conclude that there is some homogeneity between the low and high APSD-SR groups regarding their socio-demographic characteristics. However, we did find some heterogeneity in the criminal characterization of female youths belonging to the high and low psychopathic traits groups, which was also manifested in terms of the constructs measured by the psychometric instruments. We can consider that the psychopathy construct is useful in the characterization of female youths, allowing variables analyzed from this perspective to highlight a number of issues that characterize this group. There is therefore evidence that supports the initial hypothesis that young people with high psychopathic traits show significantly higher values for conduct disorder, behavioral problems, delinquent behaviors and serious crimes, as well as lower values for self-esteem and pro-social behavior.

The binary logistic regression model reinforced the role of the interrelationship among psychopathic traits, behavioral problems (e.g., Frick et al., 2000; Lindberg, 2012) and delinquent behavior variables (e.g., White et al., 1994), which are considered to be related but different constructs. The evidence in this case also mostly confirms our hypothesis.

It should, however, be highlighted that not all minors who exhibit severe antisocial behavior and are diagnosed with conduct disorder should be considered to be potential psychopaths; such a classification should be reserved for a distinct subgroup and be used only after suitable assessment has been conducted (Lynam, 1996). Some caution is advised regarding the use of self-reported measures of juvenile psychopathy for clinical or forensic decision-making in the absence of full clinical assessment (Seagrave & Grisso, 2002; Sharp & Kine, 2008). Given today's harsher juvenile justice system, a middle-to-late adolescent charged with a serious offense and who is psychometrically identified as psychopathic would have a very high likelihood of being tried and sentenced as an adult, which could lead to long prison sentences or even the death penalty (Seagrave & Grisso, 2002). Keeping this in mind, we must also stress the importance of the psychopathy construct for the early identification of potentially high-risk young people and for the rigorous assessment of young people who have already come into contact with the judicial system, thus promoting an empirically grounded foundation to guide interventions.

It is necessary to note several limitations of our study. First, the use of self-reported measures of psychopathy was a limitation. Second, the low internal consistency of some scales and dimensions (e.g., APSD-SR CU) were limitations in terms of measurement reliability. Third, the fact that our study was cross-sectional limited the certainty with regard to the differences that were found between groups. Fourth, the ultimate inclusion of reviewed official police reports or interviews (e.g., parents, teachers) to verify the severity of delinquent behavior would have been advisable. It is recommended that future research in this area use rating scales (e.g., PCL:YV) or measures tapping psychopathy that show better internal consistency as well as longitudinal research methodology, which allows for participants to be studied over time with regard to the stability of the traits.

Our study contributes to the research on juvenile psychopathic traits in European samples, and is, to our knowledge, the first study examining psychopathic traits in a sample of female Portuguese adolescents. We hope to promote the investigation of this important construct, which may help to identify unique etiological pathways in the development of antisocial behavior (Kotler & McMahan, 2005). The identification of persistent and serious juvenile delinquents allows for the improvement of therapeutic interventions in terms of their cost–benefit relationship given that this identification enables the sometimes very scarce available resources to be focused particularly on this group. The benefits of focusing

interventions on these individuals should be assessed in the future with regard to recidivism rates.

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