Factor Structure and Construct Validity of the Dutch Version of the Antisocial Process Screening Device

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Abstract The goal of the present study was to evaluate the factor structure and construct validity of the Antisocial Process Screening Device (APSD) in a community sample of Dutch adolescents. Confirmatory factor analyses supported the two- and three-factor model, but the two-factor model (Callous-Unemotional and Impulsivity/Conduct Problems) was more parsimonious. Model fit was invariant across gender. Interrater reliability was good and internal consistency of the factors was modest to good, with the exception of the Callous-Unemotional factor. Convergence with the APSD self-report version, divergence with the Big Five personality dimensions of Agreeableness and Conscientiousness, and expected gender differences in mean APSD scores reproduced findings obtained in American samples, supporting the cross-cultural validity of the APSD.

Keywords Callous-unemotional traits · Psychopathy · APSD · Cross-cultural validity

The Antisocial Process Screening Device (APSD) is a questionnaire measure of psychopathic traits in youth (Frick and

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Hare 2001). Psychopathic traits are important for subtyping antisocial youth who show a particularly severe and chronic pattern of antisocial behaviour (see Frick et al. 2013 for a comprehensive review). These traits are found in clinical (Christian et al. 1997), forensic (Vaughn et al. 2008) and community samples (Frick et al. 2003, 2005). Psychopathic traits in childhood have a strong genetic component (Viding et al. 2005) and are associated with measures of psychopathy in adulthood (Burke et al. 2007). Identification of psychopathic traits early in development will aid our understanding of the etiology of adult psychopathy and may help to improve prevention and intervention programs (Forth et al. 1990; Frick et al. 2000). The development of valid measurement instruments for psychopathic traits in youth is therefore considered critically important, both for clinical and legal purposes (Petrila and Skeem 2003).

The major methods of measuring psychopathic traits in youth include the Psychopathy Checklist:Youth Version (PCL:YV; Forth et al. 2003), the Youth Psychopathic Traits Inventory (YPI; Andershed et al. 2002), the Childhood Psychopathy Scale (CPS; Lynam 1997), and the APSD (see Kotler and McMahon 2010, for a review). The PCL:YV is scored by trained raters on the basis of a semi-structured interview plus file and collateral data. The YPI relies on self-report, while the CPS and APSD have different versions for parents, teachers and children. The APSD is a relatively short questionnaire which does not refer back to a subject's case history, and is therefore applicable to both clinical and community samples.

The APSD is the most widely used measure of psychopathic traits in children and adolescents (e.g., Murrie and Cornell 2002; Salekin et al. 2004, 2005). The APSD has been well validated, but validation studies have almost exclusively focused on American samples (Frick and Hare 2001; Kotler and McMahon 2010). Two studies have examined its validity in a community sample of Flemisch adolescents (Bijttebier and Decoene 2009) and Russian juvenile delinquents (Fritz

et al. 2008), suggesting that the structure of psychopathy is similar but not always identical across cultures. The current study is a first study to examine the factor structure and construct validity of the APSD in a Dutch community sample of male and female adolescents.

Factor Structure

Adult psychopathy has originally been conceptualized as a two-factor construct based on Hare's (1991, 2003) *Psychopathy Checklist-Revised* (PCL-R). Factor 1 measures a selfish, remorseless and exploitative use of others and Factor 2 measures a chronically unstable and antisocial life-style. Cooke and Michie (2001), however, identified three factors based on ratings of the PCL-R: (1) arrogant and deceitful interpersonal style, (2) deficient affective experience, and (3) impulsive and irresponsible behavioral style. This three-factor structure was confirmed for a sample of incarcerated adolescents by Neumann et al. (2006) and for an adolescent community sample by Frick et al. (2000). Nevertheless, the two-factor model is probably the least controversial, and relatively recent studies still employ the two-factor structure (e.g. Blair 2008; Lynam et al. 2005).

The APSD is modelled down from the PCL-R to be applicable to youth. Using clinical samples, Frick and colleagues (Frick et al. 1994) initially identified two factors within the APSD, Impulsivity and Conduct Problems (I/CP) and Callous-Unemotional traits (CU). Later research with clinical and community samples (Frick et al. 2000) identified three factors, the original CU and two new factors comprising the I/CP items, Narcissism (NAR) and Impulsivity (IMP). Frick et al. (2000) recommend employing the three factor structure for the APSD due to clear differences between the NAR and IMP factors, as well as its closer accordance with the psychopathy structure reported by Cooke and Michie (2001). Still, two- and three-factor models are found and used in recent studies with clinical (Fite et al. 2009) and community samples (McMahon et al. 2010).

The first aim of the present study is to examine the factor structure of the APSD in a sample of Dutch adolescents. Both the two- and three-factor models of psychopathic traits will be examined by confirmatory factor analysis (CFA). Model fit will be compared for boys and girls. Though the research on psychopathic traits shows a predominance of male samples, there is growing evidence that the factor structure is similar across gender in adult (Cale and Lilienfeld 2002) and adolescent samples (Frick and Hare 2001; Hillige et al. 2010). Nonetheless, boys and girls may differ in their manifestations of psychopathic traits (e.g., Marsee et al. 2005) and many studies of gender differences in psychopathic traits indicate that boys score higher than girls (Czar et al. 2011; Dadds et al. 2009; Hillige et al. 2010; Marsee et al. 2005). It is therefore

expected that boys will obtain higher APSD scores than girls, though model fit will be invariant for gender.

Reliability and Construct Validity

The second aim of the study is to examine the internal consistency of the APSD by computing Cronbach's alpha's, and interrater reliability by correlating the composite factor scores of two informants (father and mother). A third aim is to establish construct validity of the APSD, by examining convergence with the APSD self-report version and the Big Five personality dimensions of Agreeableness, Conscientiousness, Extraversion, Emotional Stability (reversed Neuroticism) and Openness to experience.

As the APSD was originally designed for young children, the items are intended to be answered by teachers and parents. Nevertheless, self-report versions have been validated and used in forensic (e.g., Poythress et al. 2006; see also Vaughn and Howard 2005, for a review) and community samples (Bijttebier and Decoene 2009). Validation studies with multiple informants confirm the validity of the APSD, and demonstrate moderate correlations (ranging from 0.47 to 0.58) between parent- and self-report total scores, and somewhat lower correlations (ranging from 0.30 to 0.58) for the subscale scores (Falkenbach et al. 2003; Muñoz and Frick 2007). Moderate to low correlations among ratings of multiple informants is quite common especially among youth and other informants (e.g., Grigorenko et al. 2010). Based on these findings, we expect to find moderately positive correlations between the APSD parent- and self-report ratings.

Lynam and his colleagues (e.g., Brinkley et al. 2004; Lynam 2002; Lynam and Widiger 2001) claim that psychopathy can be understood in terms of the Five Factor Model of personality (FFM; Costa and McCrae 1990), comprising Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness. The psychopathic individual is thought to be low in Agreeableness and Conscientiousness, high in Extraversion and high or low in Neuroticism. Factor 1, reflecting an unemotional interpersonal style, may relate to low Neuroticism, whereas Factor 2, reflecting an impulsive antisocial lifestyle, may relate to high Neuroticism (e.g., Lynam et al. 2005). Research in adult (Harpur et al. 1994; Miller et al. 2001) and adolescent samples (Salekin et al. 2010; Roose et al. 2012) consistently shows negative associations between psychopathy (total and subscale scores) and the FFM domains Agreeableness and Conscientiousness. A meta-analytic study conducted by Decuyper et al. (2009) shows that the negative associations with Agreeableness and Conscientiousness are even stronger in adolescent than adult samples. Less consistent findings have been reported for the FFM domains Extraversion, Neuroticism and Openness. Accordingly, we expect to find negative associations between psychopathic traits and

Agreeableness and Conscientiousness. No expectations are formulated for psychopathic traits in relation to the other FFM domains.

Methods

Participants

The present study used data from the fifth wave of the family sample of the CONAMORE longitudinal study (CONflicts And Management Of RElationships, van Doorn et al. 2011). Participants were initially recruited from high schools in the province of Utrecht, the Netherlands. From a total sample of 323 adolescents, only those for whom the APSD was completed by both mother and father were included in this study (n=309). Adolescents who did not complete all questionnaires (n=2) were excluded from the sample. In total, 307 adolescents had a complete dataset, with 149 boys (49 %), and 158 girls (51 %) aged between 14 and 18 years (M_{boys}=16.32, SD=.52; M_{girls}=16.13, SD=.51). Most adolescents were Dutch (99 %) and lived with both parents (94 %). Different levels of education were represented, with 52 % attending schools preparing for university, 32 % attending schools for higher education, 11 % attending vocational school and 2 % attending the lowest level of Dutch secondary education. Three percent were not currently involved in any educational program.

Measures

The Antisocial Process Screening Device (APSD)

APSD ratings were obtained by administering the authorized Dutch translation (Das et al. 2004) of the original APSD parent version (Frick and Hare 2001). The questionnaire contains 20 items such as 'Keeps promises', 'Brags excessively' and 'Acts without thinking', which are scored on a 3-point rating scale (0=*item does not apply*, 1=*item applies to a certain extent*, 2=*item definitely applies*). Each participant was rated by both parents, after which a combined response set was formed by taking the highest response per item. Ten respondents had one missing item. Missing data were given a value of '1' as suggested by Frick and Hare (2001). Two items were excluded from the analyses, namely item 2 ("Engages in illegal activities") and item 6 ("Lies easily and skilfully"), as neither item was included in the factor analyses outlined by Frick and Hare (2001).

The APSD Self-Report

A self-report version of the APSD has been adapted from its translation by restating the items to a second-person

perspective (e.g., "Keeps promises" to "You keep promises"). For logistic reasons, the APSD self-report was administered in a subsample of adolescents only (n=74). The subsample did not differ from the total sample in terms of age or education level ($t's$<1). In agreement with previous studies (e.g., Bijttebier and Decoene 2009), Cronbach's α's obtained in the present study were low to moderate for the subscales Callous-Unemotional (.54), Impulsivity (.30), Narcissism (.66), and Impulsivity/Conduct Problems (.61). Cronbach's α for the APSD total score was acceptable (.73).

Big Five

Personality ratings were obtained by administering a selection of Big Five markers based on those developed by Goldberg (1992). A total of 30 adjectives were rated on a 7-point scale, ranging from 1 (*doesn't describe me at all*) to 7 (*describes me very well*). The self-report questionnaire measures all five personality dimensions with 6 adjectives each, and has been shown to provide a valid and reliable estimate of adolescent personality (Branje et al. 2004). *Extraversion* assesses the extent to which the person actively engages the world. Those high on extraversion are talkative and assertive (not shy). *Agreeableness* includes attributes as friendliness, kindness, helpfulness and other prosocial behaviours. *Conscientiousness* assesses the extent to which one is organized, persistent, accurate and thoughtful. *Emotional Stability* (reversed *Neuroticism*) is measured in the current questionnaire, and reflects the extent to which a person is emotionally stable (*not* nervous or irritable). *Openness to Experience* includes characteristics as imagination, insight and versatility. Cronbach's α's for the five factors in our sample were: .88 for Extraversion, .81 for Agreeableness, .89 for Conscientiousness, .84 for Emotional Stability and .78 for Openness.

Statistical Analyses

To determine the factor structure of the APSD, confirmatory factor analysis (CFA) was performed using structural equation modelling in M*plus* (Muthén and Muthén 2007). The weighted least squares method (WLSM) of estimation was employed, as it is specifically designed for non-normally distributed categorical data (Muthén et al. 1997). Both two- and three-factor models were tested and their model fit compared. The Chi Square, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA) are reported as fit statistics. In comparing model fit, we also examined changes in CFI and RMSEA. Model comparison is evaluated according to suggestions made by Chen (2007). After identification of the preferred model, the quality and power of parameter estimates were tested, using Monte Carlo simulation analysis. Finally,

measurement invariance was tested for groups differing in gender.

The ratings provided by mothers and fathers were used to calculate interrater reliability coefficients for all APSD scores. Cronbach's alpha coefficients were computed to examine the internal consistency of the APSD total and subscale scores. To further examine construct validity, the APSD scores of the best fitting model were related to the APSD self-report scores and the Big Five markers by means of Pearson correlations. Very few respondents had missing items on any of the measures, and never more than one item per measure. These cases were included in the analyses and missing values were estimated using the EM procedure in SPSS.

Results

Confirmatory Factor Analysis

One Versus Two Sources

A first-order CFA was performed in Mplus to compare the fit of the two- and three-factor models to the data, using one source (father *or* mother ratings) or two sources (father and mother ratings combined). Practically no differences in fit were observed between the models with different parents as source of information. Model fit statistics appeared somewhat stronger for the models using a combined source of information (ΔCFIs > .026 and $\Delta RMSEA$s > .004).

To test the measurement invariance of the two different sources (father and mother), the results of two models were compared: One model, in which indicator thresholds and factor loadings are constrained to be equal for fathers and mothers (constrained model), and one model in which these parameters are freely estimated (unconstrained model). According to the criteria suggested by Chen (2007), the measurement of both the two-factor model and the three-factor model was clearly invariant to the source of information with values of ΔCFI and $\Delta RMSEA$ < .005. We will use the combined scores in all subsequent analyses, accordingly.

Two- Versus Three-Factor Models

Both models showed an acceptable fit (Two-factor model: $\chi^2(130)=195.11$, $p<.001$, $RMSEA=.040$ (.028 – .052), $CFI=.936$. Three-factor model: $\chi^2(128)=184.31$, $p<.001$, $RMSEA=.038$ (.025 – .050), $CFI=.945$. Only minor differences in fit between the models were observed: $\Delta RMSEA=.002$ en $\Delta CFI=.009$. Nevertheless, the two-factor model is preferred for the following reasons: (a) it is the more parsimonious model, and (b) in the three-factor model, the NAR and IMP factors were highly correlated

(e.g., for the model based on the combined sources of information, $r=.81$).

Two-Factor Model: Test of the Quality and Power of Parameter Estimates

To test the quality and the power of the parameter estimates of the two-factor model based on the combined scores of fathers and mothers, a Monte Carlo simulation analysis (Muthén 2002) was performed on 500 simulated data sets with the model estimated parameter values as population values, assuming exactly the same sample size of 307 participants for each simulated data set. Results are reported in Table 1.

The estimation of factor loadings and factor correlations appeared to be unbiased. The estimated variance of one of the indicator items and the estimated variance of the CU factor seemed to be slightly biased with bias percentages exceeding

Table 1 Assessment of estimation quality and power using Monte Carlo Simulations

Model parameters	Model value	Average estimate	Bias[a]	Model SD	Average SE	Bias[a]	Power
Factor regression weights							
Factor CU							
Item03	1.000	1.0000	–	–	–	–	–
Item07	1.626	1.6704	2.7	.5618	.5158	8.9	.90
Item12	*0.264*	0.2690	1.9	.2214	.2084	6.2	.95
Item18	1.151	1.2031	4.3	.4375	.3834	14.1	.91
Item19	0.548	0.5729	4.3	.2680	.2438	9.9	.95
Item20	*0.410*	0.4360	6.0	.2531	.2361	7.2	.95
Factor I/CP							
Item05	1.000	1.0000	–	–	–	–	–
Item08	0.984	1.0180	3.3	.2865	.2616	9.5	.92
Item10	1.841	1.9168	4.0	.5405	.5144	5.1	.93
Item11	1.462	1.5270	4.3	.3911	.3790	3.2	.95
Item14	0.889	0.9222	3.6	.2704	.2516	7.5	.94
Item15	0.921	0.9442	2.5	.2500	.2458	1.7	.94
Item16	1.185	1.2258	3.3	.3080	.2959	3.9	.94
Item01	1.359	1.3918	2.4	.3310	.3313	0.1	.94
Item04	1.046	1.0940	4.4	.2978	.2729	8.4	.94
Item09	0.572	0.5829	1.9	.1820	.1720	5.5	.93
Item13	0.612	0.6338	4.1	.1967	.1941	1.3	.96
Item17	0.951	0.9800	3.0	.2645	.2438	7.8	.92
Factor variances and factor covariance							
CU	0.219	0.2507	14.5	.1170	.1069	8.6	.95
I/CP	0.398	0.4346	9.2	.1705	.1623	4.8	.94
CU with I/CP	0.231	0.2488	7.7	.0806	.0753	6.6	.94

Values in italics are not statistically significant at $p<.01$

[a] The reported values refer to percentages

the critical value of 10 % (14.1 % and 14.5 %, respectively). Power values were satisfactory with values ranging between .90 and .96 (quite a bit larger than the critical value of .80). To correct for the possibly biased estimation of the CU factor variance, a conservative significance level of $p<.001$ will be considered in future statistical tests including this estimate.

Multigroup Analysis: Comparison of Boys and Girls

Before analyzing possible differences in parameter estimates for boys and girls, the model's measurement invariance to both groups was tested. The fit of a model with equality constraints concerning individual factor loadings and indicator thresholds was compared with the fit of a model in which these estimates (i.e., factor loadings and indicator thresholds) were freely estimated for each group. Analyses are based on the combined scores of fathers and mothers. Model fit statistics of the model with equality constraints were: $\chi^2(292)=397.58$, $p<.001$, $RMSEA=.049$ (.036 – .060), $CFI=.894$. Fit statistics of the model with freely estimated parameters were: $\chi^2(260)=330.58$, $p<.001$, $RMSEA=.042$ (.026 – .055), $CFI=.929$.

These results appeared to be somewhat ambiguous. According to Chen (2007) the value of ΔCFI was too large (critical value .010) to assume measurement invariance. On the other hand, the value of ΔRMSEA (with a critical value of .015) typically suggests the opposite. In this case, more importance is attached to the value of ΔRMSEA. RMSEA is an absolute fit statistic and the value of ΔRMSEA is not affected by the quality of the null model (Cheung and Rensvold 2002). Moreover, a Monte Carlo simulation analysis of the invariant model with 500 simulated datasets for each gender group revealed for both boys and girls similar unbiased results as reported in Table 1 for the total sample. Tests of the equality of parameters that were freely estimated for boys and for girls were subsequently executed. The results are reported in Table 2.

Table 2 Comparison of parameter values for boys and girls

Parameter	Boys ($n=149$)			Girls ($n=158$)		
	Value	SE	p	Value	SE	p
Means						
CU	0	–	–	−0.332	.117	.004
I/CP	0	–	–	−0.390	.135	.004
Variances						
CU	0.160	.088	.070	0.304	.158	.054
I/CP	0.396	.169	.019	0.567	.258	.028
Correlations						
CU~I/CP	.947	.125	< .001	.645	.100	< .001

Values in italics indicate statistically significant differences between boys and girls ($p<.01$)

As expected, significant but moderate differences between boys and girls in mean factor scores appeared, with girls scoring lower on both CU and I/CP. For boys, the correlation of CU with I/CP was very strong (even suggesting an identity between the concepts of CU and I/CP), and significantly different from the correlations found for girls. This difference in the correlation of both factors reflected a large effect.

Reliability and Construct Validity

The correlations between father and mother ratings of the APSD were all significant at the $p<.001$ level and large for the APSD total score ($r=.60$), and moderate for most subscale scores: CU ($r=.30$), NAR ($r=.48$), IMP ($r=.53$), and I/CP ($r=.56$). Fisher's Z-tests revealed no significant differences by gender. Internal consistency was acceptable for the APSD total score ($\alpha=.77$), NAR ($\alpha=.70$) and I/CP ($\alpha=.74$), but poor for CU ($\alpha=.32$), and IMP ($\alpha=.52$).

As the two-factor model is the preferred model, the CU and I/CP subscale scores, together with the APSD total score were related to the APSD self-report and the Big Five personality dimensions. Steiger's Z tests were first performed to examine whether NAR and IMP had different patterns of correlates with external variables. Except for a significant difference between NAR and IMP in relation to Conscientiousness ($z=−2.69$, $p=.01$, two tailed), there were no systematic differences, which supports the use of the two-factor model.

Means and standard deviations for boys and girls on all measures are presented in Table 3. Independent samples t-tests revealed significant gender differences on all measures except Extraversion. To avoid bias, correlations were run separately for boys and girls. Correlations were also run for all youth tested (see Table 4). As expected, the CU, I/CP and APSD total scores correlated low to moderately positive with their self-report version. Noteworthy are the correlations between parent reported CU traits and self-report ratings, which were stronger for girls than for boys ($z=−2.31$, $p=.021$, two tailed). Also, the association between the APSD total scores was stronger for girls than for boys ($z=−2.17$, $p=.03$, two tailed). By contrast, the correlation for I/CP tended to be stronger for boys than for girls, although Fisher's Z test did not reach significance ($z=1.7$, $p=.089$).

In agreement with expectations, the Big Five dimensions of Agreeableness and Conscientiousness showed significant inverse relationships with CU, I/CP and the APSD total score. This pattern was observed for boys and girls, and for all youth tested. Except for a significant positive correlation between CU and Emotional Stability for boys and all youth tested, no significant correlations were observed for any of the APSD factors with Extraversion, Emotional Stability and Openness.

A final set of analyses examined the association among CU and I/CP with the Big Five dimensions controlling for either factor. The partial correlations are presented in Table 5. Most

Table 3 Means and standard deviations for the APSD and all other measures

Measure	Boys (n=149)		Girls (n=158)		t (305)	p	d
	M	SD	M	SD			
APSD parent-report							
Total score	12.09	4.80	9.97	4.59	3.95	.001	.41
CU	4.52	1.62	3.87	1.72	3.44	.001	.39
I/CP	7.03	3.37	5.72	3.30	3.43	.001	.39
APSD self-report[a]							
Total score	11.19	5.09	7.93	3.22	3.16	.002	.73
CU	3.83	2.18	2.63	1.56	2.65	.010	.61
I/CP	6.38	3.04	4.88	2.54	2.27	.026	.52
Big 5							
Extraversion	5.14	1.14	5.01	1.13	0.93	n.s.	.11
Agreeableness	5.42	0.66	5.62	0.65	−2.61	.010	.30
Conscientiousness	3.81	1.22	4.20	1.26	−2.74	.006	.31
Emotional stability	5.06	0.99	4.47	1.15	4.72	.001	.54
Openness	4.59	1.03	4.87	0.92	−2.50	.013	.29

[a] The self-report was administered in a subsample (42 boys, 32 girls)

correlations became weaker when partialing out either I/CP or CU, but the overall pattern of correlations didn't change for all youth tested. However, differential associations emerged for the boys' and girls' samples. For boys, CU traits were significantly associated with low Agreeableness and high Emotional Stability (i.e., low Neuroticism) after controlling for I/CP. The I/CP factor did not correlate significantly to any of the Big Five

dimensions after controlling for CU traits. For girls, CU traits correlated significantly to low Agreeableness after controlling for I/CP. The I/CP factor correlated significantly with low Conscientiousness and low Emotional Stability after controlling for CU traits.

Discussion

The purpose of this study was to examine the validity of a Dutch translation of the APSD in a community sample of male and female adolescents. The first aim was to conduct a confirmatory factor analysis, testing both the two- and the three-factor models of psychopathic traits to the data to identify the best fitting model. Results support both the two- and three-factor model of the APSD parent-report. The two-factor model (CU and I/CP) is preferred, however, because it is the more parsimonious model, and there is no compelling evidence that NAR and IMP have differential correlates with external variables. In agreement with previous findings (Frick and Hare 2001), the translated APSD was shown to be gender invariant, indicating that the structure of the psychopathic traits construct is similar across gender. Furthermore, the data support expected gender differences in mean factor scores, with higher scores for boys than girls on CU, I/CP and the APSD total scores.

The second aim was to examine interrater reliability and internal consistency. Correspondence between the two informants was good for all factors and the total score. Internal

Table 4 Intercorrelations of the APSD parent-report and convergent measures

Measure	Boys (n=149)			Girls (n=158)			Total group (N=307)		
	CU	I/CP	APSD	CU	I/CP	APSD	CU	I/CP	APSD
APSD self-report[a]									
CU score	.39*			.59*			.47**		
I/CP score		.37*			.19*			.26*	
APSD total score			.39*			.58*			.41**
Big 5									
Extraversion	.09	.03	.08	−.01	.09	.08	.05	.07	.09
Agreeableness	−.28**	−.21*	−.25**	−.21**	−.17*	−.22**	−.26**	−.21**	−.26**
Conscientiousness	−.24**	−.24**	−.27**	−.20*	−.24**	−.27**	−.24**	−.26**	−.29**
Emotional stability	.21*	.05	.13	.06	−.14	−.09	.16*	−.01	.07
Openness	−.06	−.02	−.02	−.11	−.12	−.15	−.11	−.10	−.11

[a] Correlations with the APSD self-report were run in a subsample (42 boys, 32 girls)

* p<.05, ** p<.01

Table 5 Partial correlations of the APSD parent-report controlling for either CU or I/CP

Measure	Boys (n=149)		Girls (n=158)		Total group (N=307)	
	CU	I/CP	CU	I/CP	CU	I/CP
Big 5						
Extraversion	.08	−.01	−.05	.10	.02	.06
Agreeableness	−.21*	−.09	−.16*	−.11	−.19**	−.11*
Conscientiousness	−.15	−.14	−.12	−.19*	−.15*	−.18**
Emotional stability	.21*	−.05	.12	−.17*	.18*	−.08
Openness	−.06	.01	−.07	−.09	−.08	−.05

* *p*<.05, ** *p*<.01

consistencies were acceptable for the I/CP factor and APSD total score, but poor for CU. However, poor internal consistency has been found previously for the CU scale (Loney et al. 2003; Pardini et al. 2003). The CU scale has relatively few items (5) which can affect internal consistency statistics (Cortina 1993). Furthermore, the CU scale consists of items reflecting personal feelings, and one can wonder how accurately parents can assess their adolescent's feelings. Finally, as the study employed a community sample, the scores obtained on the APSD are rather low with limited variance, which may have affected internal consistency negatively. Overall we found that the Dutch APSD yields moderately reliable ratings of adolescent psychopathic traits.

The final aim of our study was to examine construct validity by relating the APSD parent-report to its self-report version and to a self-report measure of personality. Consistent with earlier findings (e.g., Falkenbach et al. 2003), the current data demonstrate moderate associations between APSD parent- and self-report ratings. Noteworthy is the stronger association between both CU scales for girls compared to boys, indicating gender differences in the assessment of psychopathic traits. CU traits reflect inner thoughts and feelings of guilt, remorse and empathy, which are difficult to observe by outsiders. Because girls are more inclined to share emotional experiences than boys (e.g., Cross and Madson 1997), CU traits may be better observable in daughters than in sons. Alternatively, it is possible that boys have more problems reflecting on their inner feelings than girls (e.g., O'Kearney and Dadds 2010). Hence, gender differences in the assessment of psychopathic traits, as observed in the current community sample, could be a result of gender differences in emotional expression.

The personality measure also demonstrated the hypothesized relations. The Big Five personality dimensions of Agreeableness and Conscientiousness showed significant negative relationships

with both the CU and I/CP factors. The CU factor is thought to reflect an interpersonal affective style, characterized by a lack of empathy, callousness, and egocentricity, whereas the I/CP factor represents impulsivity and antisocial behaviour. The opposite of Agreeableness (e.g., low tender-mindedness, low trust, low altruism) and Conscientiousness (e.g., low control, low order and competence) capture these core characteristics of psychopathy. In agreement with earlier findings (e.g., Lynam et al. 2005), both personality dimensions show the strongest and most consistent correlations with the CU and I/CP factors. The associations with Extraversion and Openness were not significant.

Noteworthy, however, is the significant and positive correlation between the CU factor and Emotional Stability for boys, indicating that those with high CU traits show high Emotional Stability, that is, low Neuroticism. This finding is in agreement with the hypothesis that primarily Factor 1 represents low Neuroticism (Lynam et al. 2005), and with empirical studies suggesting that Factor 1 and CU traits relate negatively to measures of trait anxiety (Frick et al. 1999), negative emotionality (Hicks and Patrick 2006) and internalizing problems (Blonigen et al. 2010). The former studies also demonstrate positive associations between all measures and Factor 2, suggesting that the two psychopathy factors assess different poles of Neuroticism (Lynam et al. 2005). In the current study, differential associations among Emotional Stability, I/CP and CU traits emerged across boys and girls after controlling for either factor. For boys, CU traits related significantly and *positively* to Emotional Stability after controlling for I/CP. For girls, I/CP related significantly and *negatively* to Emotional Stability after controlling for CU traits. These findings further confirm that boys and girls may differ in their manifestations of psychopathic traits, and highlight the importance of reporting correlations by gender in research on psychopathic traits.

In the present study, confirmatory factor analyses (CFAs) were completed on a community sample of Dutch adolescents. As screening instruments for psychopathic traits are typically used in mental health and juvenile justice settings, further research is needed to examine whether these findings extend to clinical and forensic samples of Dutch youth. Future research should also focus on the item functioning of the APSD, and examine possible differences between the APSD and other measures of adolescent psychopathy. Recently, Dillard et al. (2013) demonstrated gender differences in the most discriminating items of the APSD self-report version, and differences in item functioning between the APSD self-report and the PCL:YV. In research and clinical practice it is of course important to know what regions of psychopathy are covered by the various measurement tools.

In conclusion, the current findings support the two- and three-factor models of the APSD parent-report. The two-factor model (CU and I/CP) is preferred, however, because it is the more parsimonious model. Convergence with a self-report version of the APSD, divergence with the Big Five personality dimensions of Agreeableness and Conscientiousness, and expected gender differences in mean APSD scores reproduce findings obtained in American samples, supporting the cross-cultural validity of the APSD.

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