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Examining relations between psychopathology and psychopathy dimensions among adolescent female and male offenders

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Abstract *Aim* This study was performed to investigate relations between psychopathology and psychopathy in adolescent female and male detainees. *Method* We examined 91 male and 123 female adolescent detainees (aged 14–19) for psychopathology -using the Youth Self Report, the Overt Aggression Scale-Modified and a Conduct Disorder Self Report Scale- and for psychopathic dimensions using the psychopathy checklist youth version (PCL:YV). Based on a linear regression analysis we compared the specific associations between psychopathology and psychopathy in both male and female delinquent juveniles. *Results* Our results revealed higher scores for externalizing behavior and psychopathic dimensions in delinquent males, and higher internalizing problem scores in delinquent females. Furthermore, we found a positive relationship between suicidal behavior and the psychopathy

total score as well as the affective, the lifestyle and the antisocial dimension only in girls. No association was found for suicidal behavior in boys. Regarding anxious-depressive behavior, we found a negative relation to the psychopathy total score and to the affective psychopathy factor for the boys. *Conclusion* Expectedly, the population of incarcerated adolescents exhibited a high prevalence of psychopathology. At the same time our results referred to meaningful gender-related differences with respect to associations with psychopathy. The gender-related differences in psychopathological symptoms could indicate varied subtypes of psychopathy in boys and girls.

Key words psychopathy – psychopathology – youth – delinquency – externalizing – internalizing behavior

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Introduction

Delinquency and psychopathology

Recent studies with juvenile delinquents have emphasized the overlap between delinquency and psychopathology, such as depression, suicidality,

anxiety, posttraumatic stress disorder (PTSD), conduct disorder (CD), substance use disorder and attention deficit hyperactivity disorder (ADHD) [72]. Various research groups have not only recognized a high prevalence of Externalizing (Ext) symptomatology, but also Internalizing (Int) psychopathology in delinquent youth [31, 65, 69–71]. Comorbidity of mental health disorder is estimated to be present in

more than half of criminal adolescents [71]. Authors have repeatedly emphasized the need to perform more research on the coexistence of comorbid disorders in adolescents, and on the need for more research on female juvenile delinquents, since female delinquency is a comparatively new phenomenon [51, 53]. The few studies with females have described them as more likely to have a history of previous psychiatric help than criminal males and to be more often referred to mental health services when delinquent [18, 66]. In comparison with male criminal offenders, female delinquents were shown to endure more severe emotional and behavioral problems [38, 67].

■ Psychopathy in youth

An increasing body of literature focuses on psychopathy in incarcerated youth, but to our knowledge none of these studies addresses the relationship of psychopathy and psychopathology comparing males and females. Within the literature on psychopathy, some scholars have postulated that the disorder comprises distinct facets including interpersonal-affective traits (e.g. superficial charm, manipulativeness, lack of empathy) and antisocial traits (like impulsivity and aggression) [15, 34]. Factor analyses have recently examined these latent dimensions and described them as interpersonal (F1), affective (F2), lifestyle (F3), and antisocial features (F4) [25]. Interpersonal and affective features were described as the core factors of the “psychopathic personality” [8, 32] and research with adults suggested that these were the most distinctive and defining aspects of the disorder [13]. Studies with male offenders [5, 13, 14] examined the item response theory (IRT) to test item functioning and concluded that the interpersonal/affective dimension was generally more discriminating and provided more information about the construct than behavioral items. Vincent and Hart utilized the IRT with adolescent boys: Their findings indicated that psychopathy in adolescent boys was a coherent construct and that there were some similarities in item functioning between male adolescents and adults [76]. Corrado et al. [16] showed in their prospective study (average 14.5 months follow-up) with adolescent male offenders that both the two-factor and three-factor model of the PCL:YV significantly predicted general and violent recidivism at a predictive accuracy ranging from 68 to 63%. However, unlike results with adult samples, regression analyses indicated these associations were explained primarily by behavioral psychopathic symptoms rather than interpersonal or affective traits. The study of Murrie et al. [47] yielded consistent evidence that the psychopathy construct has a dimensional latent structure among male ado-

lescents ($n = 757$). Although youth clearly varied in the degree to which they manifested psychopathy-like personality traits they found that there was no natural, discrete class of young “psychopaths”.

■ Psychopathy across gender

The psychopathy construct is believed to exist in male and female adults, moreover there is a controversial discussion about psychopathy in women, and the potential downward extension to girls [57]. The psychopathy checklist-revised (PCL-R) [34] used for adult female offenders found lower means and a lower prevalence of psychopathy in female prisoners than in incarcerated men [54, 55, 79]. In fact, among male offenders it has been demonstrated that psychopathy predicted violent recidivism [27, 33, 41]; in female offenders, however, the PCL-R predicted violent recidivism only moderately [55]. Two recent studies found that among incarcerated adolescent females PCL:YV scores were not predictive of future offending [52, 77]. The study of Welsh et al. [82] examined the predictive and incremental validity in a male and female adolescent sample of three instruments used in youth risk assessments: The structured assessment of violence risk in youth (SAVRY) offered the most incremental predictive validity for general recidivism and violent recidivism whereas the PCL:YV followed closely behind.

■ Psychopathy and psychopathology

Studies with male delinquent adults and adolescents have found that psychopathy carries significant comorbidity with a number of psychiatric disorders, including ADHD [1, 42, 43], depression [45], trauma-related disorders [80] and anxiety [39] and that psychopathy features exhibit divergent phenotypic relations with Int and Ext psychopathology [3, 53]. Prior North American studies with the PCL:YV have shown that incarcerated adolescent males with high PCL:YV scores display an elevated prevalence of a variety of Ext behaviors, including more aggressiveness [28], more CD symptoms, and greater alcohol and substance abuse compared to low-scoring adolescent males [24]. In contrast to Ext disorders Int disorders are often assumed to vary inversely with psychopathic traits. The relationship between suicidal behaviors and adult psychopathy i.e., has been examined only in a few studies. Whereas Cleckley argued that suicidal behaviour in psychopathic individuals was generally manipulative, studies of psychopathic inmates have sometimes reported positive correlations between psychopathy and suicide attempts [63, 73, 74]. To our

knowledge, there is only one study which has examined self-directed aggression and psychopathic traits in adolescents. Grettton et al. [29] reported that offenders with high scores on the PCL:YV were more likely to have a history of self-injury than those with low scores. However, correlations between psychopathic traits and suicidal tendencies were significant only for females.

■ Study hypotheses

This study intends to focus on the specific differences in female and male juvenile offenders regarding the relationship between psychopathy dimensions and concurrent psychopathology. Our hypotheses were: 1.) We expected higher rates of dimensional measurements of internalizing psychopathology in incarcerated girls than in incarcerated boys and higher rates of dimensional measurements of externalizing psychopathology in incarcerated boys than in girls. We predicted (2.) gender differences in the associations between externalizing and internalizing and the underlying psychopathy structure: For boys we expected a positive relation between externalizing and all psychopathy dimensions and no or a negative relation between internalizing and the interpersonal and the affective dimensions (the psychopathy core factors). For girls, we expected a positive relation between externalizing and all psychopathy dimensions, no or a negative relation between internalizing and all psychopathy dimensions; at the same time we hypothesized a positive relation between suicidal behavior and the lifestyle as well as the antisocial dimension (behavioral factors of psychopathy) for girls.

■ Materials and methods

Subjects

The present study was conducted as part of the Cologne GAP-Study (Gewalt = violence; Aggression = aggression; Persönlichkeit = personality), an investigation of personality pathology, violence and aggression in adolescents. The sample for this study consisted of 214 incarcerated juveniles (91 boys and 123 girls), aged 14–19 years. Because in Germany the age of criminal responsibility starts at the age of 14, we selected youth of at least 14 years of age. The boys had a mean age of 17.73 years ($SD = 1.19$; range = 14–19), the girls a mean age of 17.67 years ($SD = 1.30$; range = 14–19). The male and female samples did not differ on age ($T = -0.34$; $P = 0.74$). The participants were incarcerated in two German jails, located in the Cologne-Bonn area, North Rhine

Westphalia, Germany. 68.4% of all participants had been sentenced for committing at least one violent criminal act; while 31.6% had no violent conviction. Broken out by gender, 42.1% of the girls had never been convicted of a violent crime, compared to only 17.6% of the delinquent boys. On average the boys in our sample had 2.3 violent convictions ($SD = 1.9$), while the girls only had 1.2 ($SD = 1.52$, $T = -4.7$, $P < 0.001$). The mean number of prior violent and non-violent convictions in our sample was 3.5 ($SD = 3.2$), and sample members were on average incarcerated for the second time ($SD = 1.7$). Again, the girls differed from the boys, recording 2.5 convictions ($SD = 2.3$, $T = -5.4$, $P < 0.001$) and 1.8 incarcerations, ($SD = 1.3$, $T = -3.3$, $P = 0.001$) compared to 4.9 convictions ($SD = 3.7$) and 2.5 detentions ($SD = 2.0$) for the boys. The juveniles who participated in our study were detained on average for 10.4 months ($SD = 11.6$). The data regarding criminal behavior was based on file information.

As for the ethnic composition of the sample, racial distribution of participants across sex was equivalent. The sample consisted of 80.8% Caucasian/Germans, 2.3% Turkish/Arabs, 3.7% Russian-Germans, 2.3% Africans, and 8.6% of other ethnic backgrounds (such as Polish, Rumanian, Ukrainian) ($\chi^2 = 8$, $P = 0.24$). Comparing the upbringing and family factors of the delinquent adolescents there was no difference in the frequency of divorce or separation of parents among the female (59.9%) and male (58.3%) adolescents ($\chi^2 = 5.28$, $P = 0.15$). 64.2% of the girls reported a history of having lived in foster care and 19.5% on welfare during upbringing; the boys showed no difference, with 54.9% having lived in foster care ($\chi^2 = 3.62$, $P = 0.46$) and 27.5% having lived on welfare ($\chi^2 = 7.88$, $P = 0.25$).

■ Procedure

Prior to testing, all participants were oriented to the administration protocol and the nature of the procedure. Under German law parental consent is not required with respect to juvenile matters that involve minimal risk; because all participants were 14 years of age or older, the Legal Administration of Data Protection of the University of Cologne waived parental consent, and the Institutional Review Board of the University Clinic of Cologne gave approval for the current study. Verbal and written explanations of the study were provided to youth prior to testing, and youth were advised that study participation was voluntary. All subjects were informed that they could withdraw their informed consent at any time during and after testing. If subjects had difficulty understanding procedures, additional explanation was

provided. After receiving informed consent, subjects were interviewed. Legal information such as the legal status of the participant, the number of convictions and length of stay were collected from file information. The protocol excluded juveniles with a schizophrenic spectrum diagnosis, or who were under the acute influence of alcohol or other drugs, or who had an IQ lower than 70, determined by a standardized German clinical interview for children and juveniles according to ICD-10 (DISYPS) [20] and by subtests of the Wechsler Adult Intelligence Test [81].

■ Measures

Psychopathy checklist youth version (PCL:YV)

The juveniles' personalities were assessed with the PCL:YV [25], a multi-item symptom construct rating scale that measures interpersonal and affective characteristics as well as overt behaviors. Trained observers rate the severity of each item based on a semi structured interview, a review of case history information, and behavioral observation cross-checked with collateral informants. Scores of 0 (consistently absent), 1 (inconsistent), or 2 (consistently present) for each item of the PCL:YV reflect inferences about the consistency of the specific tendency or disposition across different situations. The interview, developed by Forth et al. to assess youth psychopathy, was translated using a forward-backward method and adapted by the authors to the German language, school and legal system [25, 59].

The PCL:YV assessments were carried out by four specially trained professionals with at least master-level education and long-term clinical experience. They received extensive training in giving and rating the PCL:YV before conducting the interviews and assessed at least 5 subjects together with one of the two trainers. Afterwards, interrater reliability was re-examined every 10–15 interviews. It was calculated in several ways. First, we compared the single scores of all 20 items and reached a kappa score between 0.52 and 0.89. Second, PCL:YV total scores were compared, resulting in a kappa score between 0.80 and 0.92. The interrater reliability for the males was also compared with that for the females. The interrater reliability for the males/females regarding the single item scores reached a kappa between 0.66–0.90/0.55–0.79 and for the total score between 0.84–0.93/0.76–0.88. Reliability studies demonstrated similar levels of interrater agreement (e.g., $r = 0.81$ to $r = 0.93$; e.g.) [6, 23, 75]. The internal consistency for the PCL:YV items was high ($\alpha = 0.89$).

Factor analyses have recently examined the latent dimensions that underlie the pattern of correlations

among the PCL:YV item scores (see Table 1). The Hare 4-factor model [34, 35, 78] proposes that the construct of psychopathy can be best understood in terms of dimensions which reflect interpersonal, affective, lifestyle, and antisocial features. It incorporates all three of the Cooke and Michie factors [15], but at the same time includes a robust antisocial factor. Both the three- and four-factor models have been shown to provide good fit for the PCL-R [35], and both models also have proven to have good fit values for the PCL:YV for incarcerated boys and girls and for adolescents in the community [25, 48, 56, 60].

Youth self report (YSR)

The YSR [2] contains a list of 118 specific problems in children and adolescents, has been standardized on a sample between the ages of 11 and 18 years, and consists of two broadband scales that reflect Ext and Int domains [2]. The Int composite consists of the anxious/depressed, somatic complaints, and social withdrawal subscales. The Ext composite consists of the aggressive and delinquent behavior subscales. Internal consistency (>0.90), test-retest reliability (0.86–0.90) and factorial validity were found to be satisfying to good [19, 21].

Overt aggression scale-modified (OAS-M)

The OAS-M [12] is a psychometric measure to assess the severity, type, and frequency of aggressive behaviour as a clinician-administered, semi-structured interview that was adapted from the Overt Aggression Scale [83] for use with outpatients. The OAS-M is comprised of an aggression score, which is the sum of four aggression items (verbal assault, assault against objects, assault against self, assault against others), and assesses irritability (sum of two items), and suicidal tendencies (one item). The OAS-M inquires about the last month prior to testing. The validity and reliability of the OAS-M was determined to be statistically significant and high ($\alpha = 0.91$) [11, 12].

Conduct disorder self report (CD-SR)

Symptoms of conduct problems within the last 6 months were assessed by the Self Report Scale for CD from the diagnostic system for mental disorders in childhood and adolescence (DISYPS-KJ) [20]. The scale consists of 25 items which correspond to the 23 symptom criteria for CD in the DSM-IV and the ICD-10. A total score is calculated based on all 25 items, as are scores on two subscales relating to oppositional aggressive behavior (9 items) and antisocial aggressive behavior (16 items). The internal consistency has

Table 1 The different factor models

Hare 2-factor model		Cooke and Michie 3-factor model			Hare 4-factor model			
Interpersonal/ affective	Socially deviant lifestyle	Arrogant, deceptive interpersonal	Deficient affective experience	Impulsive, irresponsible behavior	Interpersonal (F1)	Affective (F2)	Lifestyle (F3)	Antisocial (F4)
Impression management	Stimulation seeking	Impression management	Lack of remorse	Stimulation seeking	Impression management	Lack of remorse	Stimulation seeking	Poor anger control
Grandiose sense of self-worth	Parasitic orientation	Grandiose sense of self-worth	Shallow affect	Parasitic orientation	Grandiose sense of self-worth	Shallow affect	Parasitic orientation	Early behavior problems
Pathological lying	Lacks goals	Pathological lying	Callous/lacking empathy	Lacks goals	Pathological lying	Callous/lacking empathy	Lacks goals	Juvenile delinquency
Manipulation for personal gain	Impulsivity	Manipulation for personal gain	Failure to accept responsibility	Impulsivity	Manipulation for personal gain	Failure to accept responsibility	Impulsivity	Revocation of conditional release
Lack of remorse	Irresponsibility			Irresponsibility			Irresponsibility	Criminal versatility
Shallow affect	Poor anger control							
Callous/lacking empathy	Early behavior problems							
Failure to accept responsibility	Juvenile delinquency							
	Revocation of conditional release							

been reported to be high to very high for the oppositional ($\alpha = 0.90$) and antisocial ($\alpha = 0.71$) subscales as well as for the total score ($\alpha = 0.89$) [20]. In our juvenile sample internal consistencies were as follows: oppositional, $\alpha = 0.88$; antisocial, $\alpha = 0.83$; and total score, $\alpha = 0.90$.

Results

Data analysis

All data were analyzed with SPSS Version 15.0. The variables of the YSR, the CD-SR and the PCL:YV were distributed normally. Means and standard deviations (SD) were computed for all variables of interest; χ^2 - and t tests were used to evaluate differences between female and male groups on demographic variables. For skewed variables (OAS-M) different statistical tests were carried out, such as the non-parametrical U test. To calculate effect sizes (ES), group differences were divided by the pooled estimate of SD. Regarding the hypotheses, we conducted two sets of analyses. To evaluate sex differences, we first compared psychopathology and psychopathy scores in female and male delinquents, using t tests. Furthermore, regression models using a stepwise method were calculated to evaluate the influence of Ext and Int variables on predicting the psychopathy total score and the four factors for delinquent males and females. In step 1, Ext and Int variables were entered in order to examine independent effects on the PCL:YV total score and on each PCL:YV factor. In step 2, only Int variables were entered. The explained amount of variance (R^2) is given for each model. Overall significance ($\alpha = 0.05$) was adjusted for comparisons.

Psychopathology and psychopathy in delinquent girls and boys

Table 2 displays group differences of psychopathology within the female and male sample. The female sample had significantly higher scores on Int scales ($P = 0.001$; ES = 0.48), while the males had significantly higher scores on Ext scales ($P = 0.034$, ES = -0.29 , see Table 2).

After adjusting for multiple testing, the Anxious-depressive scale differed significantly between delinquent girls and boys ($P < 0.001$; ES = 0.45). Boys reported significantly higher scores on the Ext syndrome scale Aggressive behavior ($P = 0.034$; ES = -0.29), but not with respect to Antisocial behavior ($P = 0.091$). According to overt aggression (OAS-M) and CD, boys scored higher on the Aggression scale ($P < 0.001$; $d = -0.21$), the Irritability scale

($P < 0.001$; $d = -0.70$), the Oppositional Aggressive scale ($P = 0.001$; $d = 0.47$), on Antisocial Aggressive ($P < 0.001$; $d = -0.71$) and on the total score of CD symptoms ($P < 0.001$; $d = -0.67$). There was no difference on suicidal behavior ($P = 0.381$).

Comparing female and male delinquent juveniles on psychopathy, boys scored significantly higher on all four factor scores ($P < 0.001$) and the PCL:YV total score ($P < 0.001$). We found the largest effects, with higher scores in boys than girls, regarding psychopathy total score ($d = -1.24$), the lifestyle ($d = -1.17$) and the affective factor ($d = -1.10$).

Regression models: externalizing and internalizing psychopathology predicting psychopathy

Cross-sectional linear regression models explored prediction of the PCL:YV total score and of the four validated dimensions underlying adolescent psychopathy. First, Ext (Externalizing, Antisocial and Aggressive behavior from YSR; Aggression and Irritability from OAS-M; Oppositional-aggressive, Antisocial-aggressive and CD from CD-SR) and Int scales (Anxious-depressive and Internalizing from YSR; Suicidal behavior from OAS-M) were entered into the models. In a second step, only Int scales (Anxious-depressive and Internalizing from YSR; Suicidal behavior from OAS-M) were entered into the model (See Table 3).

■ Externalizing and internalizing

Different symptoms of Ext predicted scores on the total factor of psychopathy for boys and girls (see Table 3). Irritability, CD, aggressive behavior, negative anxious-depressive behavior and Int remained significant predictors for the psychopathy total score in boys and accounted for 34% of variance, $P < 0.001$. Symptoms of anxious-depressive behavior and Int were not a significant predictor of the psychopathy total score for girls. Ext and Aggression (OAS-M), however, were significant predictors for girls, accounting for 46% of the variance, $P < 0.001$.

Symptoms of Aggressive behavior predicted scores on the interpersonal dimension of psychopathy for boys and girls; however, they accounted for a relatively small proportion of variance (7% for boys, $P = 0.05$; 7% for girls, $P < 0.01$). Moreover, antisocial behavior remained a significant predictor of interpersonal symptoms for girls ($\Delta R^2 = 3\%$, $P < 0.01$). With respect to the affective factor, Irritability, Aggression, negative Anxious-depressive and Int symptoms emerged as significant predictors for boys

Table 2 YSR scales, OAS-M, CD-SR and PCL:YV for delinquent girls and boys

	YSR		OAS-M			CD-SR		PCL:YV								
	Anxious-depressive	Internalizing behavior	Antisocial behavior	Aggressive behavior	Externalizing	Aggression	Irritability	Suicidal	Opp. aggress.	Antisocial CD total	Interpersonal factor	Affective factor	Lifestyle factor	Antisocial factor	Total score	
Girls (<i>n</i> = 123), <i>M</i> (<i>SD</i>)	11.5 (6.1)	19.3 (9.4)	10.7 (4.5)	12.9 (7.3)	23.5 (10.9)	83.7 (231.8)	4.0 (2.7)	0.5 (1.6)	8.7 (6.8)	9.6 (7.6)	18.3 (13.2)	3.9 (1.89)	3.6 (1.76)	5.5 (2.1)	5.6 (2.64)	1.6 (.62)
Boys (<i>n</i> = 91), <i>M</i> (<i>SD</i>)	8.9 (5.4)	15.1 (7.7)	11.6 (3.7)	14.8 (5.9)	26.4 (8.8)	132.1 (234.9)	5.7 (2.0)	0.3 (.8)	11.9 (6.7)	15.4 (8.9)	27.4 (14.0)	5.2 (1.8)	5.4 (1.39)	7.7 (1.48)	7.7 (1.53)	2.4 (.59)
<i>T</i> -value, <i>U</i> -value*	3.2	3.5	-1.70	-2.10	-2.10	3919.5*	3424.5*	5290.0*	-3.22	-4.82	-4.61	-4.91	-8.28	-8.96	-7.4	-8.86
<i>P</i> -value girls vs. boys	<0.001	0.001	0.091	0.034	0.034	<0.001	<0.001	0.381	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<i>ES</i>	0.45	0.48	-0.21	-0.28	-0.29	-0.21	-0.70	0.15	0.47	-0.71	-0.67	-0.68	-1.10	-1.17	-0.95	-1.24

M mean, *SD* standard deviation, *ES* Effect size, typed in bold: significant differences

*U-Value

Table 3 Psychopathological factors predicting psychopathy total score and factors in delinquent juveniles

DV: PCL-score	Delinquent boys				Delinquent girls			
	B	SE	β	R ²	B	SE	β	R ²
1. External and internal factors								
OASM-irritability	1.02***	0.26	0.40	0.16***	—	—	—	—
CD	0.08*	0.04	0.24	0.21***	—	—	—	—
Anxious-depressive	−0.20*	0.09	−0.22	0.26***	—	—	—	—
Internalization	0.32*	0.15	0.52	0.30***	—	—	—	—
Aggressive behavior	0.24*	0.11	0.29	0.34***	—	—	—	—
Externalizing	—	—	—	—	0.40***	0.04	0.66	0.44***
OASM-aggression	—	—	—	—	0.01*	0.01	0.16	0.46***
2. Internal factors								
Suicidal behavior	—	—	—	—	1.18**	0.34	0.27	0.07**
DV: interpersonal factor								
1. External and internal factors								
Aggressive behavior	0.08*	0.03	0.27	0.07*	0.07**	0.04	0.27	0.07**
Antisocial behavior	—	—	—	—	−0.06*	0.01	−0.26	0.10**
2. Internal factors								
—	—	—	—	—	—	—	—	—
DV: affective factor								
1. External and internal factors								
OASM-irritability	0.21*	0.08	0.31	0.1**	—	—	—	—
Anxious-depressive	−0.09**	0.02	−0.36	0.21***	—	—	—	—
Internalization	0.1*	0.04	0.57	0.27***	—	—	—	—
OASM-aggression	0.01*	0.01	0.29	0.33***	—	—	—	—
Externalizing	—	—	—	—	0.05**	0.01	0.31	0.09**
2. Internal factors								
Anxious-depressive	−0.07***	0.06	−0.28	0.07*	—	—	—	—
Internalizing	0.10*	0.04	0.57	0.13**	—	—	—	—
Suicidal behavior	—	—	—	—	0.21*	0.10	0.19	0.03*
DV: lifestyle factor								
1. External and internal factors								
CD	0.03	0.01	0.4	0.16***	—	—	—	—
OASM-irritability	0.15	0.07	0.23	0.21***	—	—	—	—
Antisocial behavior	—	—	—	—	0.29**	0.03	0.69	0.45***
OASM-aggression	—	—	—	—	0.01*	0.01	0.16	0.47***
2. Internal factors								
Suicidal behavior	—	—	—	—	0.31*	0.12	0.23	0.05*
DV: antisocial factor								
1. External and internal factors								
CD	0.04***	0.01	0.41	0.41***	—	—	—	—
OASM-irritability	0.21**	0.08	0.30	0.49***	—	—	—	—
Externalizing	—	—	—	—	0.16***	0.02	0.66	0.66***
2. Internal factors								
Suicidal behavior	—	—	—	—	0.26*	0.15	0.21	0.05*

DV dependent variable

*** $p < 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$

($R^2 = 33\%$, $P < 0.001$). Symptoms of Ext behavior contributed to predicting affective scores only in girls ($R^2 = 9\%$, $P < 0.01$). In boys, CD and Irritability predicted scores on the lifestyle factor of psychopathy, accounting for 16 and 5% of the variance ($P < 0.001$). In girls, antisocial behavior and aggression showed an association with the lifestyle factor (45 and 3% of the variance, $P < 0.001$). Finally, with respect to the antisocial factor, CD and Irritability emerged as significant predictors for boys ($R^2 = 41\%$; $R^2 = 8\%$, $P < 0.001$). Furthermore, only the contribution of Ext symptoms remained significant for girls ($R^2 = 66\%$, $P < 0.001$).

Internalizing

Symptoms of Int were not a significant predictor of psychopathy total score for boys (see Table 3). However, suicidal behavior was a significant predictor of psychopathy total score for girls, accounting for 7% of the variance, $P < 0.01$. With respect to the interpersonal factor, symptoms of Int were not a significant predictor neither for boys nor for girls. In boys, anxious-depressive symptoms emerged as significant negative predictor on the affective factor, accounting for a relative small portion of the variance (7%, $P = 0.05$). However, Int behavior only predicted

scores regarding the affective factor in boys ($R^2 = 6\%$, $P < 0.01$). In girls, suicidal behavior showed a significant influence on the affective psychopathy factor ($R^2 = 3\%$, $P = 0.05$). Regarding the lifestyle and the antisocial factor, symptoms of Int were not a significant predictor for boys. In girls, suicidal behavior predicted scores on the lifestyle ($R^2 = 5\%$, $P = 0.05$) and on the antisocial factor ($R^2 = 5\%$, $P = 0.05$).

Discussion

The aim of this study was to examine the relationship between psychopathology and psychopathic traits in incarcerated adolescents. By including female and male delinquent juveniles, we addressed gender aspects. Moreover, the present study, the Cologne GAP-Study, was the first to test the applicability of the PCL:YV in a German forensic adolescent sample of both sexes. In accordance with other findings, our results demonstrated gender-based differences regarding the mean Ext psychopathology scores of all measurements used (hypothesis 1). Furthermore, we found differences in the mean scores of the psychopathic dimensions; boys had significantly higher scores on psychopathy, both for total and factor scores. This finding is consistent with past research indicating that males tend to score higher than females on all psychopathic dimensions [22, 79]. Overt aggression defined as physical acts of violence, such as hitting and kicking, was more prevalent among boys, consistent with other investigations [17, 51]. As predicted, the YSR Int profile of incarcerated females compared to males was characterized by a significantly higher Int total score and anxious-depressive behavior. This result is in accordance with earlier investigators' findings, whereupon delinquent girls tended to express more Int, e.g. self-harming behavior [67], referring to a development of more Int problem symptoms in girls as compared to more Ext behavior in boys [7].

Regarding hypothesized gender differences (2), we found different relationships between psychopathology and psychopathy in delinquent girls compared to delinquent boys. As predicted, for boys we found a positive relation between Ext and all psychopathy dimensions, at the same time a negative relationship between anxious-depressive behavior and the affective dimension as well as the total score of psychopathy. Dating back to Cleckley's clinical description of the adult psychopath, "the absence of 'nervousness' or psychoneurotic manifestations" has often been considered a core characteristic of the psychopathic individual. In Cleckley's account, the absence of anxiety has usually been interpreted as one aspect of a general absence of emotional experience [9]. Other

authors have argued that fearlessness or the absence of behavioral inhibition is a central disposition underlying psychopathy [10, 26, 44], a perspective sometimes referred to as the low-fear hypothesis [46]. Insofar, our results underpin this theory by indicating a negative association between one of the core symptoms of psychopathy (affective) and the total score of the PCL:YV.

In discordance with our hypothesis, we found a positive relation between the YSR subscale Int and the affective dimension as well as the psychopathy total score for the boys. This finding could be explained by the composition of the Int syndrome scale based on physical problems and social withdrawal, phenomena which are associated with psychopathy [25].

As for the boys, expectedly, our results confirmed a positive relation between Ext and all psychopathy dimensions among girls. Moreover, we replicated the finding of a positive association between suicidal tendencies and the lifestyle as well as the antisocial psychopathy dimensions for girls and of a negative association with interpersonal features, previously reported in adult incarcerated females [73, 74]. This result indicates differing relations between psychopathy and psychopathology in boys than in girls. Cleckley maintained that individuals exhibiting primary traits of psychopathy are characteristically immune to committing suicide, and he included "suicide rarely carried out" (p. 359) as one of the key characteristics of primary psychopathy. Other researchers have approached this issue by positing two distinct kinds of antisocial individuals: primary and secondary psychopaths. They [4, 43, 62] have characterized the primary subtype by low anxiety and antisocial behavior due to a lack of conscience, and the secondary subtype by negative affect and impulsivity due to a neurotic conflict. Our results could be used as indicator that girls may be elaborate to the secondary subtype. Relative to primary, secondary psychopaths manifest more features of psychopathology, including anxiety and mood disorders [68], and fewer affective deficits [30]. Similarly, Newman and his colleagues have often argued that psychopathic individuals characterized by a lack of anxiety or negative affectivity exhibit cognitive deficits and other anomalies that psychopathic individuals with these traits do not [49, 50]. They have theorized that primary and secondary psychopathy may differ in etiology with the former arising from a constitutional or genetic disposition, and the latter as a manifestation of environmental influences (e.g. parental rejection, abuse, poor socialization). Other theorists posited that primary psychopaths have more pronounced traits of emotional detachment linked to the interpersonal and affective features [40, 45], secondary psychopaths display more impulsivity, hostility and social deviance

[45], more “hot headed” and reactive behavior [37] linked to the lifestyle and antisocial psychopathy dimensions. The gender difference found in our study—low anxiety in boys and high influence of suicidal behaviour in girls—could indicate that psychopathy in boys corresponds to the primary subtype whereas psychopathy in girls might match with the secondary. Recent cluster analyses of adults have reported that measures of anxiety contribute to differentiation between groups of so-called primary psychopaths and secondary psychopaths [36, 61, 64, 68]. Skeem and colleagues found in their sample of 367 adult male prison inmates that secondary psychopaths manifested more borderline personality features, poorer interpersonal functioning (e.g. irritability, withdrawal, poor assertiveness), more symptoms of major mental disorder, greater trait anxiety, and fewer psychopathic traits than primary psychopaths, but levels of antisocial behaviour that were comparable to theirs [62].

Because the PCL:YV includes criteria such as impulsivity, irresponsibility, and need for stimulation, some researchers have warned that such criteria are almost normative among adolescents, making it difficult to distinguish “psychopathic traits” from common adolescent behavior [58]. Same researchers concluded the possibility that behavioral items compartmentalized in the lifestyle and the antisocial factor could artificially inflate psychopathy scores for adolescent girls [52, 55]. Moreover, it was interpersonal feature of psychopathy, followed by affective features, which provided greater levels of information than behavioral features for the girls. Further research with girls is needed in order to clarify the specific structure of psychopathy in girls and the differentiation from male psychopathy.

In summary, our research suggests some differences in the correlates of the PCL:YV factors for incarcerated boys compared with incarcerated girls. Although adequate reliability and internal consistency for psychopathy in women and girls is proven, boys seem more likely to show core characteristics of psychopathy with regard to the lack of suicidality and a negative relation between anxious-depressive

behavior and psychopathy than girls. In accordance with the literature relationships between psychopathic traits and Int disorders (diagnoses, symptoms, and traits) in youth are much less consistent than relationships between psychopathic traits and externalizing disorders.

Future follow-up research is needed that focuses on the issue of comorbid psychopathology and re-offending in female and male adolescents in order to investigate possible gender differences regarding the psychopathy construct and these predictors or protective factors in criminal girls especially. Understanding the etiology of psychopathy, the comorbidity, the patterns of stability and the concomitant neurocognitive impairments separately for boys and girls is not merely of theoretical interest, but will also have treatment and public policy implications. As therapeutic intervention is rare and expensive—especially in prison—targeted treatment for different subtypes of individuals with antisocial behavior will maximise the chances of successful outcome and ensure that scarce resources are allocated most effectively.

■ Limitations

There are several limitations to the present study. First, the study was cross-sectional, and findings relied mostly on retrospective reports of suicidality. Second, no information was available regarding the circumstances surrounding participants’ suicidal behavior (i.e. desire to die or cry for help). Third, the findings of Int and Ext psychopathology relied on information from self-reports for two of the four measurements (YSR and CD-SR). In addition, due to the incarceration it was not possible to obtain information from parents or teachers. Fourth, the effect of legal involvement cannot be excluded when psychopathology is investigated during incarceration. Fifth, the cross-sectional nature of the study does not permit the drawing of conclusions about any causal linkage between variables or about the stability of these traits.

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