

# The moderating role of parenting on the relationship between psychopathy and antisocial behavior in adolescence

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## Abstract

We aimed to analyze the impact of several parenting factors on the relationship between psychopathy and antisocial behavior. Nine hundred youths and their mothers reported on parent–youth interactions, and youth self-report measures of psychopathy, delinquency and violent behavior were taken. Multiple regression was used to test for the significance of interactions between parenting and psychopathy scores. In terms of delinquency, linear interactions between psychopathy and the level of conflict with parents and parents' knowledge of their youths' whereabouts/youths' willingness to disclose information were found based on the data reported by the youths. Data reported by mothers indicated a linear interaction between psychopathy and parents' knowledge/youth disclosure, and a quadratic interaction of conflict with parents. For violence, we used logistic regression models to analyze moderation. No interaction effects between psychopathy scores and parenting factors were found. Youths' reports of high conflict with parents and parents' knowledge/youth disclosure showed to have an impact on violence regardless of the level of psychopathic traits. Implications for the prevention and treatment are discussed.

Psychopathy is a complex syndrome characterized by the inability to feel emotions, a lack of remorse or guilt, and an unconcern about the feelings of others (e.g., Forth, Kosson, & Hare, 2003; Frick & Moffit, 2010; Hare & Neumann, 2006). Numerous studies of adolescents have found that psychopathic traits are related to a more severe and aggressive pattern of antisocial behavior. This finding has been replicated over the years in different American and European countries (Asscher et al., 2011) in forensic (e.g., Kimonis, Fanti, et al., 2013; Lindberg et al., 2009; Muñoz, Frick, Kimonis, & Aucoin, 2008; Vaughn, Howard, & DeLisi, 2008), clinic-referred (e.g., Basque, Toupin, & Côté, 2013; Stickle, Kirkpatrick, & Brush, 2009), and community youth samples (e.g., Byrd, Loeber, & Pardini, 2012; Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005; Pardini & Byrd, 2012; Ragatz, Anderson, Fremouw, & Schwartz, 2011). A high level of psychopathic traits remains a strong predictor of delinquency and violence even when other known important risk factors such as ineffective parenting, low self-control, and violent peer behavior are included in the statistical analyses (Flexon & Meldrum, 2013). Some have argued that psychopathy might be the best explanation for criminality (DeLisi, 2009), specifically during adolescence (DeLisi & Vaughn, 2008). Age and gender moderate these relationships, which are stronger during early childhood/middle adolescence than in late adolescence (Asscher et al., 2011). For delinquency, the risk effect is larger in females than in males, while

the relationship between psychopathy and violence might be absent in girls (Edens, Campbell, & Weir, 2007).

Although individual risk factors, such as psychopathic traits, are robustly associated with delinquent and violent behavior, contextual risk factors, such as parenting, have also been identified as playing a key role in the commission of crimes during adolescence (e.g., Johnson, Giordano, Manning, & Longmore, 2011; Kerr & Stattin, 2000; Laird, Criss, Pettit, Dodge, & Bates, 2008). Unresponsive and rejecting parents (Rothbaum & Weisz, 1994), poor parental supervision (Frick et al., 1992; Loeber, Farrington, Stouthamer-Loeber, & Kammen, 1998; Smith & Stern, 1997), and harsh or punitive discipline involving physical punishment (Haapasalo & Pokela, 1999) were all related to antisocial behavior in children and youths. In a large community sample of juveniles aged 14–18 years, Fletcher, Steinberg, and Williams-Wheeler (2004) found that the strongest predictor of involvement in problem behavior was the extent to which parents made decisions regarding a set of areas of adolescents' lives without discussing the decisions with them. The cross-sectional analyses performed in that study indicated that involvement in delinquency was associated with lower levels of parental knowledge. Of course, the extent to which parents are knowledgeable about adolescents' activities is a function not only of their own parenting but also of the characteristics of the juveniles themselves, such as their willingness to disclose information to their parents (Stattin & Kerr, 2000). Free, willing disclosure of information by youths is substantially linked to parents' knowledge and negatively related to youth delinquency (Kerr & Stattin, 2000; Stattin & Kerr, 2000). Adolescents who report low levels of disclosure of their daily activities experience the most adjustment problems

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(Laird, Marrero, Melching, & Kuhn, 2013). Conversely, high parental knowledge of adolescents' whereabouts seems to be protective against youths' delinquent behavior (Caldwell, Beutler, Ross, & Silver, 2006). Youths with high levels of psychopathic traits are less likely to freely give information to their parents (Tilton-Weaver et al., 2010), and parents respond to this closed behavior by reducing their monitoring attempts given their growing experience with a cold adolescent (Muñoz, Pakalniskiene, & Frick, 2011).

Similar to findings for adults, psychopathic traits in children are the best predictor of subsequent aggressive and violent behavior during adolescence (Frick, Cornell, et al., 2003; Frick & Moffit, 2010; Frick & Viding, 2009; Rowe et al., 2010) and have been shown to moderate the effect of harsh punishment, poor monitoring and supervision, parental warmth, and parental involvement on antisocial behavior (Hipwell et al., 2007; Oxford, Cavell, & Hughes, 2003; Pasalich, Dadds, Hawes, & Brennan, 2011; Wootton, Frick, Shelton, & Silverthorn, 1997). Researchers have reported that ineffective parenting is less directly associated with antisocial behavior in children with high levels of psychopathic traits, in agreement with the hypothesis that children with psychopathic traits have a unique motivational and affective style that make them less responsive to typical socialization practices (Kochanska, 1993; Lykken, 1995). However, it has recently been suggested that the moderating role of psychopathic traits on the relationship between negative parenting (e.g., harsh parenting) and antisocial behavior is different from that of positive parenting (e.g., parental warmth; Krone-man, Hipwell, Loeber, Koot, & Pardini, 2011). Parental warmth is a notable factor in several studies. For example, in a clinic-referred conduct disorder sample of boys aged 4 to 12 years (Pasalich et al., 2011), parental warmth was strongly negatively associated with antisocial behavior in those with higher levels of psychopathic traits. In these children, the association between low levels of parental warmth and chronic problem behaviors is particularly pronounced (Kroneman et al., 2011). Parental warmth might even have a direct impact on psychopathy. Children who were exposed to parenting practices designed to foster a warm and close parent-child relationship (e.g., involvement and positive reinforcement) exhibited decreases in psychopathic traits during the 4-year follow-up period (Frick, Kimonis, Dandreaux, & Farrell, 2003). Children who perceived their caregivers as low in warmth and involvement exhibited increases in psychopathic traits and antisocial behavior over time (Pardini, Lochman, & Powell, 2007). As Frick (2012) noted, rather than suggesting that parenting is unimportant in children with psychopathic traits, more recent research suggests that different aspects of parenting play a key role in the development and maintenance of antisocial behavior depending on whether the child shows significant levels of psychopathic traits.

Few studies in adolescents have addressed the issue of the impact of psychopathy on the relationship between parenting and antisocial behavior. The studies that have been performed

obtained results consistent with findings in younger children. In a community-based sample, antisocial behavior was more closely associated with harsh punishment and low levels of parental warmth among adolescents with low levels of psychopathic traits compared to those with high levels of psychopathic features (Hipwell et al., 2007). In a high-risk community sample, although behavior control was not more strongly related to antisocial behavior in youths with low levels of psychopathic traits than those who scored higher for these traits, parental efforts to be informed about their youths' activities was more stable and predicted increases in knowledge more strongly in youths with low levels of psychopathic traits (Muñoz et al., 2011). In offenders, harsh and inconsistent discipline predicts antisocial behavior, but only among youths with low levels of the affective dimension of psychopathy (Edens, Skopp, & Cahill, 2008). Despite the consistency of the results reporting interaction between psychopathy and parents' behaviors, the impact of positive parenting on antisocial behavior regardless of psychopathic features has recently been suggested (Kimonis, Cross, Howard, & Donoghue, 2013). Kimonis, Cross, et al. (2013) found that youths high on psychopathic traits who were exposed to low levels of maternal care were at the greatest risk for violence in comparison with those who experienced high levels of maternal care. It is not clear whether what best explains antisocial behaviors in adolescents is an interaction between psychopathy and parenting or whether the effect of parenting exists regardless of psychopathy. Positive parenting factors may contribute to the prevention of antisocial behavior in youths with low levels of psychopathic traits but might contribute to the reduction of antisocial behavior among youths with high levels of these traits.

In light of the above discussion, the following question needs to be asked: is the relationship between psychopathy and delinquency and between psychopathy and violence conditional on the quality of parenting that the youths experienced? Quality of parenting is reported differently by the youths and by the parents (Hoeve et al., 2009). Therefore, the results might depend on who supplies the information about parenting (i.e., youths vs. parents). Family members experience their interactions differently and have dissimilar views of the parent-child relationship (Lanz, Scabini, Vermulst, & Gerris, 2001). Parents are more likely to emphasize the positive characteristics of their family (Steinberg, 2001), whereas adolescents tend to overestimate the negative aspects of parenting because they want to express their uniqueness and independence (Noller & Callan, 1988). Studies in which children reported the level of authoritarian control produced significantly stronger associations between parenting and delinquency than studies in which parents were the informants or in which several different informants reported on this parenting factor (Hoeve et al., 2009). Hoeve et al. (2009) argued that the stronger effect sizes for youth-reported measures might be due to the more negative views of young people who engage in delinquency and not to actual parenting differences per se. In most psychopathy-parenting interaction studies,

findings rely on information provided by a single informant, mainly a parent or primary caregiver. In this study we analyze, in a community sample of adolescents, youths', and mothers' reports on several parenting factors. We aim to analyze what the specific parenting conditions are that determine whether psychopathy is strongly or weakly related to delinquency and violence. Delinquency and violence are two different types of antisocial behavior. While delinquency has been seen almost as a normative behavior during adolescence, violence is more likely to be found among a relatively small number of males whose behavior problems are also quite extreme and persistent through their lifespan (Moffitt, 1993). We tested the following three hypotheses: the relationship between both psychopathy and delinquency and psychopathy and violence is stronger in situations of low conflict than in situations of high conflict with parents; the relationship between psychopathy and delinquency and between psychopathy and violence is weaker in situations of high positive parenting (i.e., parental knowledge/youth disclosure and parental warmth) than in situations of low positive parenting; and differences in the nature of the moderation effect or a different effect sizes are expected depending on who reports on parenting (youths vs. mothers).

## Method

### *Participants and procedure*

This study had a cross-sectional design. Measures of parent-youth interactions, norm-breaking behavior, and personality were obtained from 900 students (56.5% girls) in ninth grade (mean age = 15.6,  $SD = 0.54$ ) in a midsized city in Sweden. Most of the adolescents were born in Sweden (89%) and living in intact families (74.8%). The data collection took place in the schools and was led by trained assistants. Teachers were not present. Parents responded to questions about their children by mailing a questionnaire. The majority of the parent questionnaires were filled out by the mothers (86.7%), and only a small proportion was filled out by fathers or persons other than parents (e.g., stepparents). To avoid informant biases, we analyzed only the questionnaires filled out by mothers. Neither the subjects nor the parents were paid for their participation. Only 8% of the mothers and 6% of the fathers were unemployed, and 43% and 34% of mothers and fathers, respectively, had attained a university degree. The ethics committee of Örebro University approved the study.

### *Measures*

**Psychopathy.** We used the Youth Psychopathy Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002), which measures psychopathic traits in 50 items. All items were measured on a 4-point scale from 0 = *totally disagree* to 3 = *totally agree*. The reliability for the total score was 0.93.

**Conflict with parents.** Youths were questioned about the frequency with which conflict between them and their mother

and between them and their father arose in the following four situations: when they got up in the morning, about staying out late in the evenings, because they were late leaving for school in the mornings, and because they forgot to do homework or put it off until the last minute. Youths answered on a 5-point scale ranging from *never* to *almost always*. High scores indicated a high level of conflict. The  $\alpha$  reliability was 0.82. The mothers answered three of the four questions with only minor changes in wording where necessary. The  $\alpha$  reliability in this case was 0.70. The correlation between the youths' and mothers' reports of conflict with parents was .43 ( $p < .001$ ).

**Parents' knowledge of daily activities.** Using a 5-point scale, youths answered nine questions about their parents' knowledge of their daily activities. Some examples are as follows: "Do your parents: know . . . what you do during your free time? . . . with which friends you spend your free time? . . . where you go when you are out with friends at night?" Mothers answered the same questions with only minor changes in wording where necessary (e.g., "Do you know what your youth does during his/her free time?"). The  $\alpha$  reliabilities were 0.85 for the youths' report and 0.82 for the mothers' report. The correlation between mothers' and youths' reported parental knowledge was .44 ( $p < .001$ ).

**Youth disclosure of everyday activities.** This measure comprised five items. Examples of the youths' questions are as follows: "Do you usually discuss how school was when you get home (how you did on different exams, your relationship with teachers, etc.)," "Do you keep a lot of secrets from your parents about what you do during your free time?" (reverse score), and "If you are out at night, when you get home, do you discuss what you have done that evening?" Mothers answered the same questions, with only minor changes in wording where necessary (e.g., "Does your youth . . ." instead of "Do you . . ."). Five-point response scales were used. High scores indicated that youths disclosed a great deal about their activities. The  $\alpha$  reliabilities were 0.84 for youths' reports and 0.75 for mothers' reports. The correlation between mothers' and youths reported disclosure was .43 ( $p < .001$ ).

**Parental warmth.** Youths answered seven questions to characterize their parents' behavior toward them. Some examples are as follows: "They praise me for no special reason," "They do small things that make me feel special," and "They always show how proud they are of me." They had to respond using a 3-point scale ranging from 0 = *This statement doesn't describe my parents at all* to 2 = *This statement describes my parents very well*. The mothers answered the same questions with minor changes in wording when necessary (e.g., "Often praise my child for no special reason"). The  $\alpha$  reliabilities were 0.78 for youths' reports and 0.80 for mothers' reports. The correlation between mothers' and youths' report in this variable was not statistically significant ( $r = .18$ ).

*Delinquency.* Youths answered 15 questions about the frequency with which they had engaged in certain behaviors during the previous year. The responses were given on a 5-point scale ranging from 0 = *never* to 4 = *more than 10 times*. The questions were about shoplifting; being caught by the police for something they had done; vandalizing public or private property; taking money from home; creating graffiti; breaking into a building; stealing from someone's pocket or bag; buying or selling stolen goods; stealing a bike and/or a car and/or a motorcycle; being in a physical fight in public; carrying a weapon; not paying at the movies/theatres; leaving without paying at cafes; and stealing something from a car. The  $\alpha$  reliability for this scale was 0.84. Five hundred seventy-three adolescents (63.7%) have self-reported at least one delinquent behavior. Adding the frequency of the delinquent behavior on the 15 items we obtained a mean of 3.29 ( $SD = 4.95$ ), rank minimum 0 to a maximum of 38 offenses. One hundred eighty-two adolescents (20.2%) reported only one type of delinquent behavior, 151 adolescents (16.8%) reported two, and 240 (26.6%) reported three or more.

*Violence.* Youths answered four questions about whether they had engaged in violent behavior toward others in the past year, such as threatening or forcing someone to give them money, cigarettes, or anything else, severely beating someone, hurting someone on purpose, or threatening or forcing someone to do things she or he did not want to do. A dichotomous variable was created such that 0 = *no violent behavior* and 1 = *violent behavior at least once*. One hundred adolescents (11.1%) have reported at least one violent behavior. Adding the frequency reported on the four items, we obtained a mean of 0.21 ( $SD = 0.76$ ), rank minimum 0 to a maximum of 9 violent behaviors. Fifty-one adolescents (5.7%) reported one type of violent behavior, 31 adolescents (3.4%) reported two different types, and 18 adolescents (2.0%) reported three or more different types.

### Statistical analysis

We proceeded to factor analyze the parent-adolescent relationship items to determine the parenting factors for our study. Youths' and mothers' reports were independently studied in order to be able to test our third hypothesis. Principal components extraction with Varimax rotation was used in an initial run to estimate the likely number of factors from eigenvalues (Tabachnick & Fidell, 2007), excluded cases listwise. The maximum number of factors (eigenvalues larger than 1) was six for youth report and six for mother report. However, sharp breaks in size of eigenvalues were sought using the screen test. In both youth and mother report, eigenvalues for the first three factors were all larger than 2, and after the sixth factor, changes in successive eigenvalues were small. This was taken as evidence that there were probably between three and six factors. A common factor extraction model that removed unique and error variability from each variable was used for the next several runs and the final

solution. Out of the methods for common factor extraction, the principal factor analysis was chosen. Several principal factor analysis runs specifying three to six factors were performed, and finally the optimal solution revealed three factors. The decision between oblique and orthogonal rotation was made by requesting principal factor extraction with oblique rotation of the three factors. Promax was the oblique method employed; we used power = 2 to set the degree of allowable correlation among factors. The highest correlation (-.31) was between Factor 1 and 2. This level of correlation can be considered borderline between accepting an orthogonal solution versus dealing with the complexities of interpreting an oblique solution. The simple, orthogonal, solution was chosen. In sum, the solution that is reported is the one with principal factors extraction, Varimax rotation, and three factors. The values of factor loading for youth and mother reports are provided in online-only Supplementary Tables S.1 and S.2, respectively.

Hierarchical multiple regression was used to examine the moderating effect of parenting factors in the association between psychopathic traits and delinquency. Sex is a dichotomous variable that was dummy coded (0 = *female*, 1 = *male*). We controlled for sex because it was associated with YPI score and delinquency. Separate analyses were conducted for each parenting factor. YPI score and parenting factors were centred as recommended (Aiken & West, 1991). The purpose of the overall set of analyses was to examine whether parenting factors and psychopathy have additive or interactive effects on adolescent delinquency. In Step 1, we entered sex, the main effects of YPI scores, and the parenting factor. In Step 2, we entered the product terms  $YPI \times$  Parenting factor. Our dependent variable was the delinquency mean item score. We identified significant interaction effects by testing whether the slopes of the regression lines at low (-1  $SD$ ) and high (+1  $SD$ ) values of the parenting factors differed significantly from zero (Cohen, Cohen, West, & Aiken, 2003). If both main effect terms were statistically significant in the model first step but no linear interaction effect was found, we tested for significant curvilinear (quadratic) terms. The moderated quadratic relationship was tested through the significance of the interaction between the squared term of the independent variable (YPI score) and the moderator (parenting factor) after all the lower order terms were included in the regression.

Logistic regression was used to examine the moderating role of parenting on the association between psychopathic traits and violence. YPI score and parenting factors were centered. The purpose of the overall set of analyses was to investigate the power of youth- and mother-reported parenting factors to change the relationship between psychopathy and violence. Analyses were conducted with the same logic as described previously. In Step 1, we entered sex, the main effects of YPI score, and the parenting factor. In Step 2, we entered the product term  $YPI \times$  Parenting factor.

We performed a total of 13 regression models to test 12 linear interactions and 1 curvilinear interaction. Testing 13 null

hypotheses, the probability that none will be significant is  $0.95^{13} = 0.51$ . This gives a probability of  $1 - 0.51 = 0.49$  of getting at least one significant result. The expected number of spurious significant results is  $13 \times 0.05 = 0.65$ . Therefore, we applied the Bonferroni correction as recommended (Bland & Altman, 1995). We divided the desired  $\alpha$  level of 0.05 by the number of comparisons ( $0.05/13 = 0.004$ ). We used the number calculated as the  $p$  value to determine significance within the regression models. In sum, we only considered statistically significant  $p$  values below .004.

Finally, we included all statistically significant predictors and interactions in a final model in order to determine which aspects of parenting were uniquely predictive of delinquency as main effects or moderators of psychopathic traits.

## Results

### Preliminary analyses

Table 1 presents descriptive statistics for the dependent and independent variables and the correlations among parental measures, YPI scores, and delinquency and violence.

For both youths' and mothers' reports conflict with parents was positively correlated with delinquency and violence, while knowledge/disclosure was negatively correlated. Correlation values were consistently higher for youths' reports than for mothers' reports. Parental warmth was negatively correlated with delinquency and violence but only using the youths' report. Among all the predictors, correlations ranked from .01 (youths' report of knowledge/disclosure and mothers' report of parental warmth) to .48 (youths' and mothers' report of knowledge/disclosure). Values of zero-order correlations are displayed in online-only Supplementary Table S.3.

We analyzed sex differences and found that, as expected, boys reported more delinquency than girls,  $t(630.955) = 5.340$ ,  $p < .001$ , had higher YPI scores,  $t(783.832) =$

$5.679$ ,  $p < .001$ , and the prevalence of violent behavior was higher among them,  $\chi^2(1, N = 893) = 4.181$ ,  $p = .041$ . Among youth reports of parenting factors, girls reported more knowledge/disclosure,  $t(884) = 3.228$ ,  $p = .001$ , and that parents showed warmer behaviors,  $t(858.125) = 4.616$ ,  $p < .001$ , than boys. Among mother reports, mothers of boys reported more conflict with their children than mothers of girls,  $t(773) = 2.866$ ,  $p = .004$ . In contrast, mothers of girls reported more knowledge/disclosure,  $t(661.242) = 3.975$ ,  $p = .000$ , and more warmth behaviors,  $t(567.420) = 2.855$ ,  $p = .004$ , than mothers of boys.

Given that gender was related to differences in the parenting measures and covaried with psychopathy and violence, we tested for primary interaction effects Gender  $\times$  Psychopathy and Gender  $\times$  Parenting factor. We conducted regression models for each parenting factor separately introducing the variables gender, YPI, the parenting factor, and both interactions (Gender  $\times$  Psychopathy and Gender  $\times$  Parenting factor) into each model. We applied a Bonferroni adjustment for multiple comparisons and considered statistically significant when  $p < .004$  ( $0.05/12 = 0.004$ ). With this level of statistical power, none of the interactions with gender showed to be significant. The full result of the analyses can be provided by request to the first author.

### Moderating effects of parenting on the association between psychopathy and delinquency

Table 2 shows the results from the regression analyses for youth-reported data and mother-reported data. Multiplicative moderation effects on the association between psychopathy and delinquency were found in youths' reports of conflict with parents and knowledge/disclosure with a 2% increase in  $R^2$  in both models. In mothers' reports of conflict with parents, we found a quadratic moderation effect and a multiplicative effect for knowledge/disclosure with an

**Table 1.** Descriptive statistics for the main study variables and zero-order correlations among adolescents' delinquency, violence, and the parental variables

	<i>n</i>	<i>M</i> ( <i>SD</i> )	<i>r</i> Delinquency	<i>r</i> <sub>pb</sub> Violence
Gender (males)	900	393% (43.7%)		
Youth Psychopathy Inventory	900	1.07 (0.40)	.39***	.25***
Delinquency	900	0.22 (0.33)		
Violence (yes)	893	100% (11.1%)		
Parenting measures youth report				
Conflict with parents	857	0.83 (0.69)	.37***	.22***
Knowledge/disclosure	885	2.90 (0.62)	-.52***	-.30***
Parental warmth	882	1.20 (0.47)	-.16***	-.11**
Parenting measures mother report				
Conflict with parents	775	0.65 (0.75)	.23***	.09**
Knowledge/disclosure	780	3.32 (0.45)	-.34***	-.17***
Parental warmth	768	1.56 (0.32)	-.00	-.05

Note: The values for Youth Psychopathy Inventory, delinquency, and parenting measures are mean item scores. \*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 2.** Hierarchical multiple regression analysis predicting the severity of delinquency using the elevations on the YPI and PF as the two predictors

	Step 1: ME Only			Step 2: ME + Interaction				
	YPI $\beta$	PF $\beta$	$R^2$	YPI $\beta$	PF $\beta$	YPI $\times$ PF $\beta$	Linear $\Delta R^2$	Quadratic $\Delta R^2$
Youth report								
Conflict with parents	<b>0.28</b>	<b>0.29</b>	<b>.23</b>	<b>0.28</b>	<b>0.26</b>	<b>0.12</b>	<b>.02</b>	
Knowledge/disclosure	<b>0.21</b>	<b>-0.43</b>	<b>.32</b>	<b>0.22</b>	<b>-0.40</b>	<b>-0.15</b>	<b>.02</b>	
Parental warmth	<b>0.35</b>	-0.07	<b>.16</b>	<b>0.35</b>	-0.07	-0.03	.00	
Mother report								
Conflict with parents	<b>0.36</b>	<b>0.14</b>	<b>.20</b>	<b>0.36</b>	<b>0.13</b>	0.05	.00	<b>.01</b>
Knowledge/disclosure	<b>0.34</b>	<b>-0.24</b>	<b>.23</b>	<b>0.33</b>	<b>-0.21</b>	<b>-0.11</b>	<b>.01</b>	
Parental warmth	<b>0.37</b>	0.02	<b>.17</b>	<b>0.36</b>	0.02	-0.02	.00	

Note: The results are for the hierarchical regression procedures. In Step 1, delinquency was regressed onto the variable gender and predictors. In Step 2, a linear interaction term was added to the regression equation. When the linear interaction was not statistically significant a quadratic two way interaction was tested. Parameter estimates are all standardized beta coefficients. The bold values are the results in which  $p < .004$ . YPI, Youth Psychopathy Inventory; PF, parenting factor; ME, main effects.

increase of 1% of the explained variance in both models. No unique or interaction effects were found for parental warmth in youths' or mothers' reports. The effect size of product-term interactions tend to be small in terms of incremental addition to  $R^2$ , but the practical effect of such interaction can be very large (Abelson, 1985; Rosenthal & Rubin, 1979). Therefore, we seen as positive the results we obtained and proceeded with the post hoc analysis. Post hoc probing of the significant moderation effects in linear relationships showed that the slopes were significantly different from zero at low and high levels of youths' reported conflict with parents, meaning that psychopathy is associated with delinquency for both low and high levels of conflict with parents in a positive way. However, the interaction is statistically significant, and the slope for high level of conflict is steeper,  $\beta = 0.40$ ,  $t(852) = 9.111$ ,  $p < .001$ , than for the low level,  $\beta = 0.16$ ,  $t(852) = 3.613$ ,  $p < .001$ , indicating that the association between YPI score and delinquency is stronger in high levels of conflict than in low levels. For mothers' reports of conflict with parents, we found a quadratic interaction with YPI score,  $\beta = -0.13$ ,  $F(770) = 34,806$ ,  $p < .001$ , showing that there is a nonlinear impact of this parenting factor on the relationship between psychopathy and delinquency. The change in the direction of the relationship indicates that at high levels of the psychopathy distribution, the risk for delinquency is similar for those with high and low levels of conflict with parents. Plots of the interaction for both youth and mother reports of conflict with parents are displayed in online-only Supplementary Figure S.1.

Knowledge/disclosure buffered the relationship between YPI score and delinquency in both the youths' and mothers' reports. Among youths' reports of high levels of knowledge/disclosure, the relationship between psychopathic traits and delinquency is weaker than for low levels of knowledge/disclosure. Although the slopes are significantly different from zero for both levels, the slope at high level is milder,  $\beta =$

0.08,  $t(880) = 1.999$ ,  $p = .046$ , than at low level,  $\beta = 0.35$ ,  $t(880) = 8.796$ ,  $p < .001$ , and the interaction effect is significant ( $\Delta R^2 = .017$ ,  $p < .001$ ). The same occurs with the mothers' reports of this measure; the slope for low and high levels of knowledge/disclosure are different from zero, but the slope at high level is milder,  $\beta = 0.22$ ,  $t(775) = 4.796$ ,  $p < .001$ , than at the low level,  $\beta = 0.45$ ,  $t(775) = 9.889$ ,  $p < .001$ . The interaction effect is also significant ( $\Delta R^2 = .014$ ,  $p < .001$ ). Plots of the interaction for both youths' and mothers' reports of knowledge/disclosure with YPI score are displayed in online-only Supplementary Figure S.2.

Youths' and mothers' reports of parental warmth did not interact with YPI score nor show a unique effect for delinquency.

In sum, we observed that the association between psychopathy and delinquency is significantly different across levels of both youths' and mothers' reports on conflict with parents and across levels of knowledge/disclosure. Depending on who reported on conflict with parents, a differences in the nature of the moderation effect was found. For knowledge/disclosure the youths' report and mothers' reports slopes of interaction with psychopathy were compared. We tested the null hypothesis  $\beta_1 - \beta_2 = 0$  and  $t(1,661) = 3.872$ ,  $p = .000$ . This result indicates that the interaction effect on youths' reports is stronger than on mothers' reports.

Results of the final model, which includes the significant predictors and interactions, are provided in Table 3, which summarizes the difference between youths' and mothers' reports. The final model with the significant interaction terms explains 37% of the variance in delinquency when youths reported and 28% when mothers reported.

#### Moderating effects of parenting on the association between psychopathy and violence

The results for the violence outcome are presented in Table 4. The YPI score is the most prominent risk factor for violence

**Table 3.** Linear regression with all the predictors and statistically significant interaction terms with delinquency as outcome variable

	Step 1: ME Only		Step 2: ME + Interactions	
	$\beta$	$R^2$	$\beta$	$\Delta R^2$
Youth report				
YPI	0.17***	.34***	0.18***	.03***
conflict with parents	0.19***		0.15***	
Knowledge/disclosure	-0.38***		-0.36***	
YPI $\times$ Conflict With Parents			0.08**	
YPI $\times$ Knowledge/Disclosure			-0.11***	
Mother report				
YPI	0.26***	.27***	0.26***	.01**
Conflict with parents	0.25***		0.26***	
Knowledge/disclosure	-0.17***		-0.15***	
YPI <sup>2</sup> $\times$ Conflict With Parents			0.04*	
YPI $\times$ Knowledge/Disclosure			-0.10**	

Note: ME, main effects; YPI, Youth Psychopathy Inventory.  
 \*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 4.** Hierarchical logistic regression analyzes predicting violent behavior using the elevations of the YPI and PF as the two predictors

	Step 1: ME Only			Step 2: ME + Interaction			
	YPI	PF	Nag. $R^2$	YPI	PF	YPI $\times$ PF	Nag. $\Delta R^2$
	OR (95% CI)	OR (95% CI)		OR (95% CI)	OR (95% CI)	OR (95% CI)	
Youth report							
Conflict with parents	<b>4.87</b> (2.69, 8.84)	<b>2.00</b> (1.49, 2.68)	.157	<b>4.62</b> (2.46, 8.66)	<b>1.91</b> (1.35, 2.69)	1.23 (0.56, 2.72)	.001
Knowledge/disclosure	<b>4.04</b> (2.14, 7.64)	<b>0.24</b> (0.16, 0.34)	.248	<b>5.17</b> (2.59, 10.31)	<b>0.19</b> (0.12, 0.30)	2.13 (0.92, 4.93)	.006
Parental warmth	<b>6.08</b> (3.40, 10.86)	0.61 (0.39, 1.02)	.116	<b>6.52</b> (3.59, 11.83)	0.54 (0.32, 0.92)	2.02 (0.68, 6.21)	.003
Mother report							
Conflict with parents	<b>6.96</b> (3.77, 12.85)	1.18 (0.90, 1.56)	.125	<b>7.22</b> (3.89, 13.42)	1.30 (0.94, 1.80)	0.69 (0.33, 1.46)	.002
Knowledge/disclosure	<b>5.93</b> (3.21, 10.93)	<b>0.45</b> (0.29, 0.70)	.156	<b>5.79</b> (3.09, 10.83)	<b>0.48</b> (0.72, 0.83)	0.79 (0.21, 2.95)	.000
Parental warmth	<b>6.24</b> (3.17, 12.30)	0.72 (0.32, 1.63)	.107	<b>7.10</b> (3.45, 14.58)	0.59 (0.25, 1.40)	2.92 (0.46, 18.56)	.004

Note: The results are for the logistic regression procedures. In Step 1, violent behavior was regressed onto the variable gender and predictors. In Step 2, the interaction term was added to the regression equation. The bold values are the results in which  $p < .004$ . YPI, Youth Psychopathy Inventory; PF, parenting factor; ME, main effects; OR, odds ratio; CI, confidence interval; Nag.  $R^2$ , Nagelkerke  $R^2$ .

in both youths' and mothers' reports. However, youths' reports of high conflict with parents increased the odds for violent behavior regardless of YPI score. This effect was not found for mothers' reports. Knowledge/disclosure was a strong protective factor against violence over and above YPI score consistently through youths' and mothers' reports. As was the case for delinquency, parental warmth showed no unique effect on violence. No interaction effects between YPI score and parenting factors were found to explain violent behavior.

**Discussion**

It has been suggested that parenting is less able to explain the antisocial behavior of children with high levels of psychopathic traits compared to children with low levels of these personality features (e.g., Oxford et al., 2003; Pasalich et al., 2011; Wootton et al., 1997). The purpose of the present study was to uncover parenting factors that might influence the relationship between both psychopathy and delinquency and psychopathy and violence in adolescents from the commu-

nity. Specifically, we examined (a) the moderating effect of conflict with parents and factors of positive parenting in the relationship between psychopathic traits and delinquency and (b) the impact of these parenting factors on the relation between psychopathy and violent behavior. We hypothesized that the relationship between psychopathy and antisocial behavior would be buffered by the quality of parenting in different ways, depending on the parenting factor and who reported on these measures. Five main findings were obtained.

First, the relationship between psychopathy and delinquency is conditional on the level of conflict with parents, and on the level of parents' knowledge and youth willingness to disclose information. Although juveniles with psychopathic traits are at an increased risk for delinquency, the risk level depends on characteristics of the parent–youth relationship. Previous research showed that psychopathic personality is related to disrupted parental bonding (Gao, Raine, Chan, Venables, & Mednick, 2010), and adolescents with psychopathic traits who are exposed to emotionally cold and uninvolved parenting might be at a greater risk for severe antisocial behavior (Kimonis, Cross, et al., 2013). Our findings add to this previous research that when the level of psychopathy increases, the youth perspective of high daily conflict with their parents exacerbates the risk for delinquency. Therefore, the quality of parenting is of importance not only for youths with low levels of psychopathic traits but also for those with high levels of these traits. However, this effect occurs only when the youths are the informants of parenting. In relation to positive parenting, previous research showed that harmonious communication, mutual cooperation, and positive emotional ambience can serve as potent factors that decrease the probability of antisocial development of children who are at risk due to elevated psychopathic traits (Kochanska, Kim, Boldt, & Yoon, 2013). Our findings suggest that it is the youths' willingness to disclose information and the high level of parental knowledge about their youths, most likely developed in the context of a positive emotional ambience, that prevent delinquency in adolescents with high levels of psychopathic traits. These findings provide us with key information for prevention and treatment that must focus not only on decreasing levels of conflict between parents and youths but also on promoting environments in which youths feel comfortable to disclose information about themselves and therefore increase the parents' knowledge.

Second, differences in youths' and mothers' reports on the level of conflict between them lead to different results for the interaction of this factor with psychopathy to explain the severity of delinquent behavior. Most of previous research on the interaction between parenting and psychopathy is based only on one informant: the youth or a parent. However, our study found that who the informant is, is a key variable when analyzing the relationship of a negative parenting factor such as conflictive relationships with psychopathy and delinquency. Of course, adolescents and parents have dissimilar views about their relationships (Lanz et al., 2001). The level of authoritarian parenting reported by the children

is more strongly related to delinquency than the level of authoritarian parenting reported by the parents (Hoeve et al., 2009). Youths are more likely to indicate negative characteristics, whereas parents tend to overestimate the positive characteristics of their parenting behavior (Noller & Callan, 1988). We found that regardless of the level of conflict that mothers' report, there is a high risk for delinquency in youths with high psychopathic traits. This finding is consistent with other studies in which the informant on parenting is the parent/caregiver and in which children high on psychopathic traits exhibit a significant number of antisocial behaviors independent of the quality of parenting they experienced (Hipwell et al., 2007; Oxford et al., 2003; Pasalich et al., 2011; Wootton et al., 1997). Maybe this result is due to a ceiling effect, as has been suggested previously (Wootton et al., 1997), and the adolescents with high psychopathic traits always tend to show high rates of antisocial behavior. Adolescents who characterize their parents as relatively higher in hostility are more likely to exhibit increases in delinquency (William & Steinberg, 2011), and our findings suggest that high hostility potentiates the association between psychopathy and delinquency. Unfortunately, the cross-sectional nature of our data does not allow us to propose a direction of causality. Perhaps conflict with parents arises for adolescents who are committing offenses, and this is more likely in adolescents high in psychopathic traits in comparison with those with low levels of these traits. Conversely, the results may indicate that high psychopathic traits are related to delinquency especially in cases of youths who experience high levels of hostility in their homes. Longitudinal research in which both parents' and youths' reports are collected is needed in order to better address this issue. To collect information from parents and youths is also important for treatment, because different treatment outcomes might depend on who the informant is.

Third, in contrast to the discordant findings between youths' and mothers' reports discussed above, for indicators of positive parenting such as parents' knowledge and youth disclosure of information, both youths' and mothers' reports converged on the same pattern of linear interaction between this factor and psychopathy to explain the severity of delinquent behavior. As we hypothesized, the relationship between psychopathy and delinquency is buffered when parents have more knowledge and youths' willingness to disclose is higher, which bolsters the argument that positive qualities in early relationships are a potent factor that can decrease the likelihood of antisocial behavior for children who are at risk due to elevated psychopathic traits (Kochanska et al., 2013). In effect, monitoring deters adolescent involvement in problem behavior by enhancing parental knowledge of adolescents' activities, whereabouts, and associates (Fletcher et al., 2004), and can serve as a powerful instrument to deflate the relationship between psychopathy and delinquency. This is true even during adolescence, when it is supposed parental knowledge of their offspring's activities starts to decrease (Wang, Dishion, Stormshak, & Willet, 2011); parents are likely to reduce their monitoring behaviors, and youths are



less likely to freely give information to their parents because of their psychopathic traits (Muñoz et al., 2011; Tilton-Weaver et al., 2010). Waizenhofer, Buchanan, and Jackson-Newson (2004) reported that parents who are more integrated in their adolescent's world, who know their routines, who talk to people outside the family who interact with their adolescent, and who actively inquire about the adolescent's activities and behavior, are on the whole more knowledgeable about the adolescent's daily experiences. Finding ways to increase adolescents' willingness to disclose information to their parents is therefore important not only to decrease the likelihood of delinquency for juveniles with low levels of psychopathic traits but also to deter delinquency in those with high psychopathic traits.

Fourth, parental warmth did not moderate the association between psychopathy and delinquency. Parental warmth also did not show a unique effect to protect against delinquency. Other studies reported that parental warmth is more strongly negatively associated with antisocial behavior in children high in psychopathic traits (Kimonis, Cross, et al., 2013; Pasalich et al., 2011) and that antisocial behavior is more closely associated with low levels of parental warmth among adolescents with low versus high levels of psychopathic traits (Hipwell et al., 2007). These results, inconsistent with findings in our study, might be a measurement artifact. By parental warmth, we meant unconditional love and care reported by youths and their mothers, while Kimonis, Cross, et al. (2013) assessed parental warmth with a youth-reported measure of maternal bonding, Pasalich et al. (2011) used parents' thoughts and feelings regarding their child and how they get along, and Hipwell et al. (2007) used a unidirectional measure of low levels of parental warmth rated by parents. Differences in findings between studies may also be due to differences in age, sex, and other characteristics of the participants. Kimonis, Cross, et al. (2013) analyzed a sample of male adolescent offenders, while Pasalich et al. (2011) analyzed a clinic-referred sample of preadolescent boys, and Hipwell et al. (2007) analyzed a sample of preadolescent girls. We analyzed a mixed-gender sample of youths from the community. The effect of parental warmth in decreasing the level of both psychopathic traits and antisocial behavior (Pardini et al., 2007) might be more visible during preadolescence. Adolescents' relationship with their parents is more symmetric than that of preadolescents in terms of youths becoming more autonomous and independent from their parents (Collins & Laursen, 2004).

Fifth, in the community sample that we analyzed, parental factors did not moderate the association between psychopathy and violence. In general, psychopathy was a robust predictor of a significant increase in the risk for violence in accordance with previous evidence (Christian, Frick, Hill, Tyler, & Frazer, 1997; Edens, Skeem, Cruise, & Cauffman, 2001; Frick, 1995; Frick, O'Brien, Wootton, & McBurnett, 1994; Gretton, Hare, & Catchpole, 2004; Lynam, 1998). Although the great majority of studies that address the association between psychopathy and violence in adolescents have been performed in

forensic and clinic-referred samples (for a revision, see Blais, Solodukhin, & Forth, 2014; Edens et al., 2001), studies of community (Flexon & Meldrum, 2013) and college student samples (Edens et al., 2001) reported similar results; psychopathy is a robust predictor of violent juvenile behavior, net of other germane delinquency predictors. Nevertheless, some parenting factors had an effect regardless of the level of psychopathy. While parental knowledge and youth disclosure are protective against violent behavior, conflict with parents uniquely increased the risk for violence based on youths' reports. In sum, parenting behaviors can offer both risk and protection for youth violent behavior (Stoddard, Zimmerman, & Bauermeister, 2012) independent of the level of the youths' psychopathic traits. Persistent discord and high conflict in family relationships increases the risk for violence among youths (Borum & Verhaagen, 2006). However, positive parenting, such as parental expectations of efficacy and connectedness with parents (Resnick, Ireland, & Borowsky, 2004) and parental knowledge and youth willingness to disclose information, are protective against perpetration of violence.

Our findings should be viewed in light of several strengths and limitations of the study. Conversely to previous studies, we decided to focus on psychopathic traits as foci and parenting as moderator because this provides a better understanding of how the relationship between psychopathy and antisocial behavior varies depending on the quality of parenting youths receive. We were able to study a large community sample of adolescents and included both mothers' and youths' reports of several parenting variables. However, the cross-sectional nature of this study precludes any inferences regarding whether parenting factors interacting with psychopathic personality lead to delinquency or are a consequence of the adolescent behavior (i.e., delinquency) promoted by the youths' personality features (i.e., psychopathy). It is possible that psychopathic traits may confer some risk for the chronic trajectories of antisocial behavior by shaping increasingly inconsistent patterns of discipline, which is an established risk factor for antisocial behavior per se (Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999). Given the low base rates and dichotomous nature of violence as an outcome, an alternative explanation of our results is that there was no moderation due to a lack of statistical power. Finally, we were not able to study fathers' reports, and results might differ depending on who provides information about parenting (i.e., mother vs. father). Mothers seem to know more about their adolescents' daily activities than fathers and are more likely to obtain this knowledge by active supervision or voluntary disclosure from the child, while fathers are more likely to receive information about their adolescents' activities from their spouse (Waizenhofer et al., 2004). Future research should address this issue.

### Supplementary Material

To view the supplementary material for this article, please visit <http://dx.doi.org/10.1017/S0954579415001121>.

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