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Bidirectional Effects between Psychopathic Traits and Conduct Problems in Early Childhood: Examining Parenting as Potential Mediator

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Abstract

The association between psychopathic traits and conduct problems has been extensively analyzed, with results showing a significant predictive effect of psychopathic traits on later conduct problems. However, some recent research has evidenced some reversed effects, with early-onset conduct problems also showing a significant effect on psychopathic traits. The present study aimed to examine the longitudinal effects (i.e., autoregressive, direct, and bidirectional) between the three psychopathy dimensions (i.e., interpersonal, affective, and behavioral), and conduct problems in two data collections spanning one year (T1-T2). The potential mediation effect from inconsistent parenting and parental warmth was also analyzed. Data were collected, trough parents' reports, in a sample of 1.833 children (48.8% girls; *Mage* = 4.24; *SD* = 0.92), participating in the ELISA study (*Longitudinal Study for a Healthy Childhood*). A cross-lagged path analysis with mediation effects was performed in Mplus. Results showed autoregressive, direct and bidirectional effects between psychopathic traits and conduct problems. Hence, whilst T1 conduct problems predicted all psychopathy dimensions in T2, only callous-unemotional and impulsive/need of stimulation traits measured in T1 predicted conduct problems in T2. Finally, some marginal mediation effects from inconsistent parenting and parental warmth were also observed, particularly in the relationship between interpersonal and affective psychopathic traits, and later CP through parental warmth. Current findings provide relevant implications for developmental models of psychopathic traits, as well as for predictive models and preventive strategies on early-onset conduct problems.

Keywords: psychopathic traits; conduct problems; bidirectional effects; parenting practices; early childhood.

Resumen

Efectos bidireccionales entre rasgos psicopáticos y problemas de conducta en la infancia temprana: Analizando las prácticas parentales como posible mediador. La relación entre rasgos psicopáticos y problemas de conducta ha sido extensamente analizada, constándose un efecto predictivo de los rasgos psicopáticos sobre los problemas de conducta a lo largo del desarrollo. Sin embargo, investigaciones recientes mostraron que los problemas de conducta de inicio temprano también pueden jugar un papel fundamental en el desarrollo de los rasgos de tipo psicopático. El presente trabajo tiene como objetivo principal analizar los efectos longitudinales (i.e., autorregresivos, directos y recíprocos) entre las tres dimensiones de la personalidad psicopática (interpersonal, afectiva y conductual) y los problemas de conducta a largo de un 1 año de estudio (T1-T2), analizando el posible efecto mediador de las prácticas parentales inconsistentes y basadas en el afecto. Se emplearon datos de 1.833 niños/as (48.8% niñas; edad media = 4.24; *DT* = 0.92), proporcionados a través de informes de padres, participantes en el proyecto ELISA (*Estudio Longitudinal para una Infancia Saludable*). Se realizó un diseño longitudinal en panel con efectos de mediación en Mplus. Los resultados mostraron efectos autorregresivos, directos y recíprocos entre problemas de conducta y rasgos psicopáticos. Así, mientras los problemas de conducta en T1 permiten predecir cambios en las tres dimensiones de psicopatía en T2, únicamente los rasgos de dureza emocional e impulsividad/búsqueda de sensaciones en T1, predicen cambios en problemas de conducta en T2. Por último, se evidenció el posible papel mediador de las prácticas parentales, particularmente en la relación entre rasgos psicopáticos de tipo interpersonal y afectivo, y los problemas de conducta a través de las prácticas basadas en el afecto. Los resultados obtenidos permiten extraer importantes implicaciones sobre los modelos de desarrollo de la personalidad psicopática, así como para la predicción y prevención de los problemas de conducta de inicio temprano.

Palabras clave: rasgos psicopáticos; problemas de conducta; efectos recíprocos; prácticas parentales; infancia temprana.

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The relationship between child conduct problems (CP) and psychopathic traits (i.e., interpersonal: grandiose/deceitful; affective: callous-unemotional – CU –; and behavioral: impulsive/need of stimulation traits) has been extensively analyzed in previous research. The interest for investigating psychopathic traits in childhood emerged as a way to define and identify distinctive and meaningful subgroups of problematic children, focusing on those at risk for more severe and persistent CP. In this regard, through a burgeoning line of research, psychopathic traits have been supported as relevant predictors of serious and persistent forms of CP and aggressive behavior, as well as potential identifiers of an etiological and clinically distinctive subgroup of problematic children (Frogner et al., 2018; Frick et al., 2014; López-Romero et al., 2020).

Considering psychopathic traits as a potential precursor of later forms of child maladjustment (e.g., Lynam et al., 2007), they have been increasingly included in theoretical models and empirical studies aiming to understand CP (Frick et al., 2014; Salekin, 2016), with the vast majority of studies examining the association between psychopathic traits and child CP in a unidirectional way. However, some recent studies have evidenced the presence of reversed effects, with early-onset CP also showing a significant effect on later psychopathic traits (Seijas et al., 2020; Waller et al., 2014). More specifically, bidirectional associations between CU traits and oppositional defiant disorder (ODD) were examined in a sample of 758 first grade children, assessed in two occasions through a 3-year period (Seijas et al., 2020). Results showed that, for mother-, father-, and teacher-reports, ODD in the first grade (T1) predicted increases in CU traits in the fourth grade (T2), after controlling for CU traits in T1; surprisingly, CU traits in T1 did not predict increases in ODD in T2 after controlling for ODD in T1. In a similar approach, Waller et al. (2014) intended to examine the bidirectional association between CU traits, behavioral problems and parental warmth, in a high-risk sample of 731 two-year-old children. Beyond the bidirectional associations between CU traits and parental warmth, which were the main focus of the study, results showed a pattern of reciprocal effects between CU traits and CP in a one-year period.

Both studies showed a complex pattern of associations, with either CU traits and CP conferring independent vulnerability to each other in childhood. They also reinforce the conception that overall psychopathic traits, and more specific CU traits, are not immutable and could, therefore, be malleable at early developmental stages (Waller et al., 2013). Even considering the biological underpinnings assumed for psychopathy (e.g., Viding & McCrory, 2012), research has consistently shown that social factors may drive changes in psychopathic traits (e.g., Hawes et al., 2012; Pardini et al., 2007; Waller et al., 2012). Hence, as repeatedly observed for behavioral problems (e.g., Odgers et al., 2008; Patterson, 1982), dysfunctional parenting practices, including inconsistent and coercive practices in addition to low warmth and acceptance, have emerged as relevant factors in predicting changes in overall psychopathic (López-Romero et al., 2012) and more specific CU traits (Pardini et al., 2007; Waller et al., 2013). However, this pattern of relationship was also complex, with both CP and psychopathic traits involved in two-way effects with parent-child interactions (e.g., Burke et al., 2008; Tuvblad et al., 2013). Thereby, it was suggested that the possible role of psychopathic traits in conferring greater risk for developing behavioral problems in childhood, might be derived by uniquely shaping dimensions of parenting practices (Waller et al., 2014).

In sum, prior research has evidenced that parent-child interactions can affect the developmental course of both psychopathic traits and CP. This is particularly true in children at risk due to a fearless temperament and low interpersonal emotion sensitivity (Mills-Koonce et al., 2016; Waller & Hyde, 2018). Developmental models of child psychopathy have suggested that certain temperamental styles, such as behavioral disinhibition or fearlessness, are linked with problems in conscience development, with these associations being critical for understanding the emergence of psychopathic traits (Lykken, 2006; see also Frick et al., 2014). In addition, children characterized by a fearless temperament often seek out novel situations to test limits, and usually do not fear consequences of misbehavior, which place them at greater risk to exhibit severe and stable forms of CP (e.g., Calkins et al., 2007). In this regard, it could be suggested that while temperamental dispositions may affect the initial development of both psychopathic traits and CP, parenting practices would exert greater influence in later development.

This study

Based on the foregoing, the present study aimed to further examine the bidirectional associations between psychopathic traits and CP in a large sample of preschool children, who were followed-up in a one-year period. Because most of previous research only focused in the affective dimension of psychopathic traits, namely CU traits, the present study will add to the literature by including all psychopathy dimensions, which have proved to be of great relevance for better understanding CP in childhood (Colins et al., 2014; Frogner et al., 2018; López-Romero et al., 2020). It was expected that reciprocal effects would emerge between all psychopathic traits and CP. In addition, in order to delve into the complex pattern of associations between psychopathic traits and CP, two common factors, relevant for their development and later maintenance, were also included in the analyses. Thus, bidirectional effects will be examined while controlling for fearless temperament – in addition to child's gender, age and family SES -, which are expected to concurrent and prospectively affect psychopathic traits and CP. Finally, because parenting practices might drive effects in the association between psychopathic traits and CP (e.g., Waller et al., 2014), both inconsistent parenting and parental warmth will be included as potential mediators of the analyzed associations. Based on previous literature, it was expected that psychopathic traits, and more specifically CU traits, would drive some effects on later CP trough parental warmth, whilst CP would directly and indirectly affect later psychopathic traits by shaping inconsistent parenting (Burke et al., 2008; Waller et al., 2014).

Method

Participants

Data for the present study were collected in waves 1 and 2 of the *Estudio Longitudinal para una Infancia Saludable* (Longitudinal Study for a Healthy Childhood; [ELISA]), a prospective longitudinal study conducted in Galicia (NW Spain) with the aim of better understanding the behavioral, emotional, personality, and psychosocial development from early childhood to adolescence. Parents' reports (87.2% mothers) provided the information for the present study in an initial sample of 2,266 children (48.5% girls), aged three to six (*M*age = 4.25; *SD* = 0.91) from 72 public (79.2%), charter (18.1%), and private (2.8%) schools. The schools were located in predominantly working-class communities, with no diversity in terms of ethnicity (93.9% of children were Spanish). According to parents' academic level, 23.7% of

mothers and 39.8% of fathers, respectively, completed compulsory education, 47.4% and 31.2% completed higher education, and 28.9% and 29% completed vocational training studies. At the time of data collection, 77.2% of the mothers and 92.4% of fathers were working outside home.

A follow-up assessment was conducted one year later (T2). The level of attrition between T1-T2 participants was 11.43%. Comparisons among participating children and children who missed the follow-up revealed no significant differences in terms of gender χ^2 (1) = 0.50, p = .479; age t (2465) = -0.40, p = .691, and the initial (T1) levels of CP reported by parents t (2228) = 0.17, p = .867. There were differences according to SES t (83.77) = -2.79, $p < .01$, with lower levels of SES for non-participating families. For the purpose of the current study, children were selected for whom complete baseline data were available for the main study variables, being psychopathic traits, CP (T1 and T2) and parenting practices (T1), resulting in a final sample of 1,833 children (48.8% girls; *M*age = 4.24; *SD* = 0.92).

Measures

Covariates (T1)

Socioeconomic status (SES). SES was indexed through a set of questions about 1) parental level of education, 2) family economic level and 3) the family financial solvency to face daily overheads. Level of education was based on the average of the father's and mother's educational level rated on a six-point scale ranging from 1 (*without basic studies*) to 6 (*postgraduate; e.g., PhD.*). Family economic level was based on parents' reports of family income rated on a four-point scale from 1 (*serious problems to make ends meet*) to 4 (*well off*). Family financial solvency to face daily overhead was rated on a five-point scale ranging from 1 (*never worried*) to 5 (*worried basically every day*). A composite SES was computed by first transforming all three aforementioned variables into z-scores. The mean of three z-scored variables was then computed as the total SES composite (α = .66).

Fearlessness. A scale consisting of six items (α = .85; e.g., "He/she does not seem to be afraid of anything") was used to assess fearlessness (Colins et al., 2014). Parents scored each item on a four-point scale, ranging from 1 (*does not apply at all*) to 4 (*applies very well*). Previous studies conducted in the Spanish context provided evidence for construct validity of this scale (e.g., López-Romero et al., 2019).

Main study variables: Psychopathic traits and conduct problems (T1 and T2)

Psychopathic Traits. Parents rated the 28 items of the *Child Problematic Traits Inventory* (CPTI; Colins et al., 2014), a questionnaire designed to assess psychopathic personality traits in children aged 3 to 12 years, and previously validated in the Spanish context (López-Romero et al., 2019). Eight items intend to measure the interpersonal psychopathy component [Grandiose-deceitful (GD); e.g., "Thinks that he or she is better than everyone on almost everything"], 10 items intend to measure the Callous-unemotional psychopathy component [Callous-unemotional (CU); e.g., "Never seems to have bad conscience for things that he or she has done"], and 10 items intend to measure the behavioral psychopathy component [Impulsive-Need of stimulation (INS); e.g., "Provides himself or herself with different things very fast and eagerly"). The rater is instructed to assess each item based on how the child usually and typically behaves rather than based on how he or she behaves at the moment, using the following response scale: 1 = *does not apply at all*; 2 = *does not apply well*; 3 = *applies fairly well*; and 4 = *applies very well*. In the current sample, Cronbach's alpha for the three CPTI component scores in T1 / T2, respectively, were 0.81 / .83 for GD, 0.84 / .88 for CU, and 0.81 / .84 for INS.

Conduct problems. Parents rated a conduct problem scale (Colins et al., 2014) consisting on 10 items that were closely based on DSM-IV (APA, 1994) criteria of ODD and CD. Examples of items are: "Has been very angry", and "Has beaten, torn, shoved, kicked, or thrown something on others without a reason". Items were scored using a 5-point response scale ranging from 1 (*never*) to 5 (*very often*). Previous studies conducted in the Spanish context supported the usefulness, internal consistency and construct validity of the scale (e.g., López-Romero et al., 2019; López-Romero et al., 2020). In the current study, Cronbach's alpha values were .86 and .87 in T1 and T2 respectively.

Mediation variables: Parenting practices (T1)

Inconsistent parenting. The Inconsistent parenting subscale from the Alabama Parenting Questionnaire-Preschool revision (APQ-Pr; Clerkin et al., 2007; dela Osa et al., 2014) was used. It consisted on 7 items (a = .69; "Punishment you give your child depends on your mood", "You let your child out of punishment early"), scored by parents in a 5-point response scale (1 = *never* to 5 = *very often*).

Parental warmth. Parents rated 6 items (a = .83; e.g., "You express affection by hugging, kissing, and holding your child", "You have warm, close times together with your child") based on the Warmth subscale from the Child Rearing Scale (CRS; Paterson & Sanson, 1999; see also, Zubrick et al., 2014). Items were scored in a 5-point score scale (1 = *never* to 5 = *very often*). Of note, higher scores were indicative of high levels of parental warmth.

Procedure

The study was approved by the Bioethics Committee at the Universidade de Santiago de Compostela, and the Spanish Ministry of Economy and Competitiveness. Firstly, we contacted the heads of 126 public, charter and private schools in order to obtain school collaboration for the study. Once the school accepted the conditions and agreed to be part of the study, families were then contacted and invited to participate in the study. An active consent form was filled out by the families who agreed to participate in the study (rate around 25-50% per school), and collected by the preschool teachers. Participants had one month to complete and return the questionnaire. For those who were late, reminders were sent, first by the preschool teacher and then directly by the ELISA staff via email. Neither teachers nor parents received any compensation for their participation. Instead, all the participating schools received at the end of the first wave data collection (T1) a set of educational games for pre-schoolers as a reward for study participation.

Statistical Analyses

First, Pearson product moment correlations were calculated to display the bivariate relationship among the study variables, in IBM SPSS Statistics 20. Second, longitudinal effects (i.e., autoregressive, direct and bidirectional) between psychopathic traits and CP were examined through cross-lagged path analyses in Mplus 7.4. Path analysis was selected because it allows examining complex models including the direct and indirect (mediated) effects across a set of observed variables. As third step, the mediating role of inconsistent parenting and parental warmth was also examined. Child's age, gender and fearlessness, measured in T1, as well as family SES, were included as covariates. The model was estimated by the robust maximum likeli-

hood (MLR) method, which corrects for lack of normality in indicators. Global model fit was assessed with the root-mean-square error of approximation (RMSEA; study criterion ≤ .05), the comparative fit index (CFI; study criterion ≥ .95), and the standardized root mean square residual (SRMR; study criterion ≤ .05).

Results

Descriptive Statistics and Correlations

Descriptive information and correlations between main study variables are presented in Table 1. Results showed high levels of relative stability in all psychopathy dimensions (GD, CU, and INS) and CP from T1 to T2. In addition, there were significant correlations between psychopathic traits in T1 and CP in T2, and vice versa. Finally, both fearlessness and parenting practices were significantly correlated with psychopathic traits and CP in T1 and T2.

Examining Longitudinal and Reciprocal Associations between Psychopathic Traits and CP

Results from cross-lagged path analysis (RMSEA = .03; CFI = .99; SRMR = .01) are presented in Figure 1. Psychopathic traits and CP were significantly correlated at each time point. According to covariates, child's temperamental fearlessness showed a significant association with all psychopathic traits and CP in T1 and T2, with stronger associations in T1. In addition, higher levels of CU and INS traits in T1, and CP in T1 and T2 were observed for boys. For GD in T1, higher levels were observed in older children, whilst there was higher levels of CP T1 in younger children. Finally, family SES affected INS traits in T2, with higher levels of INS showed by children from families with lower SES.

After accounting for covariates, all psychopathic traits and CP showed the expected strong autoregressive effects from T1 to T2. There were also significant longitudinal associations between the analysed variables, including some relevant bidirectional effects. More specifically, CP T1 predicted all psychopathy dimensions in T2 after controlling for the initial levels of each psychopathic trait, whilst only CU and INS traits measured in T1 predicted CP in T2, after controlling for CP in T1.

Testing the Potential Mediation Effect of Parenting Practices

Results from cross-lagged path analyses, including mediation from parenting practices, (RMSEA = .03; CFI = .99; SRMR = .01) are presented in Figure 2. Results from covariates, autoregressive and bidirectional effects between psychopathic traits and conduct problems did not differ from those observed in Figure 1. According to direct effects from T1 variables to parenting practices (also measured in T1), results showed a negative association between GD and CU traits with parental warmth. The effect was significantly positive between INS and CP with inconsistent parenting. Conversely, parental warmth showed a direct negative effect on CU traits and CP in T2. The effect was positive from inconsistent parenting and GD in T2.

Table 2. Standardized Indirect Effects of Psychopathic Traits and Conduct Problems T1 on Psychopathic Traits and Conduct Problems T2, through Inconsistent Parenting and Parental Warmth

	β	95% CI
GD T1 – Warmth – CP T2	.02*	.01, .04
CU T1 – Warmth – CP T2	.03**	.01, .06
CP T1– Inconsistent – GD T2	.01*	.01, .02

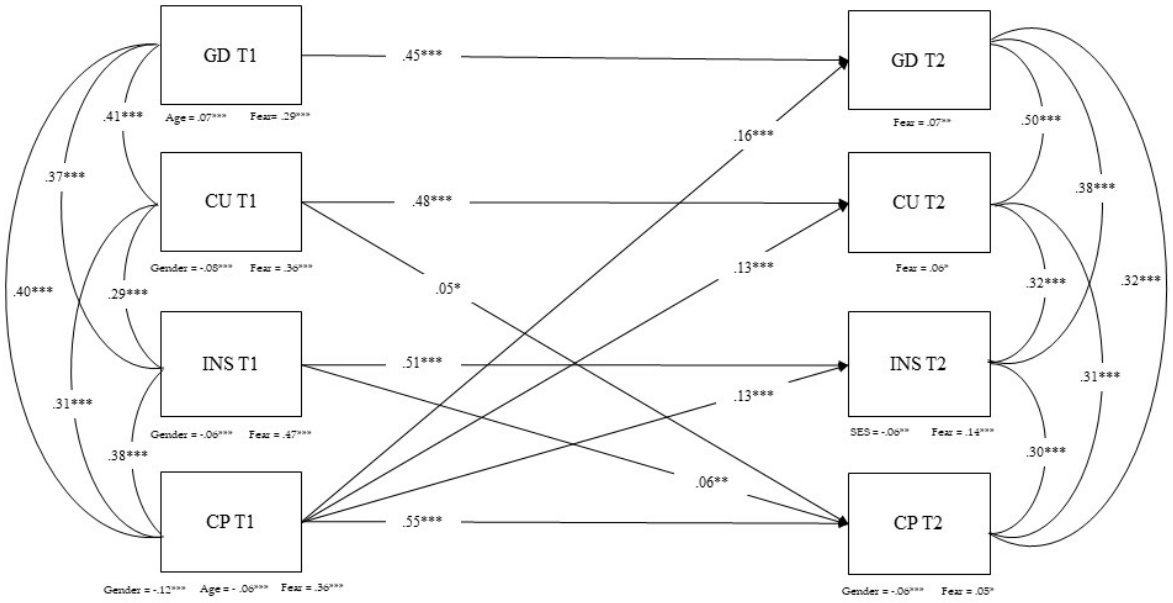
*Note. CI = Confidence interval; GD = Grandiose-deceitful; CU = Callous-unemotional; CP = Conduct problems. Only significant standardized indirect effects are presented.*p < .05 **p < .01 ***p < .001*

Table 1. Descriptive Statistics and Correlations between Main Study Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
T1 Variables														
1. Gender	-													
2. Age	-	-												
3. SES	-	-	-											
4. Fearlessness	-.07**	-.04	-.17***	-										
5. GD	-.02	.06*	-.05*	.29***	-									
6. CU	-.10***	.01	-.10***	.37***	.48***	-								
7. INS	-.08**	-.02	-.10***	.48***	.46***	.42***	-							
8. CP	-.15***	-.08***	-.05*	.38***	.45***	.43***	.49***	-						
9. Inconsistent	-.01	.03	-.06*	.16***	.20***	.23***	.25***	.32***	-					
10. Warmth	-.01	-.06**	-.01	-.06*	-.17***	-.16***	-.08***	-.18***	-.16***	-				
T2 Variables														
11. GD	-.02	-.07**	-.07**	.25***	.57***	.34***	.34***	.39***	.21***	-.13***	-			
12. CU	-.09***	.29***	-.10***	.29***	.36***	.57***	.30***	.38***	.20***	-.13***	.58***	-		
13. INS	-.09***	.44***	-.14***	.43***	.35***	.32***	.66***	.44***	.22***	-.08***	.50***	.44***	-	
14. CP	-.16***	.33***	-.06**	.33***	.38***	.37***	.43***	.73***	.27***	-.15***	.49***	.47***	.52***	-
Mean	48.8% girls	4.24	0.04	1.78	1.41	1.42	2.33	1.76	1.99	4.70	1.40	1.37	2.27	1.75
SD	-	0.92	0.69	0.66	0.45	0.44	0.55	0.51	0.50	0.39	0.46	0.46	0.58	0.51
Range [Min-Max]	1 (boys) 2 (girls)	3-6	-2.28-1.32	1.00-3.83	1.00-3.36	1.00-4.00	1.00-4.00	1.00-4.20	1.00-4.29	1.00-5.00	1.00-3.38	1.00-3.70	1.00-4.00	1.00-4.40

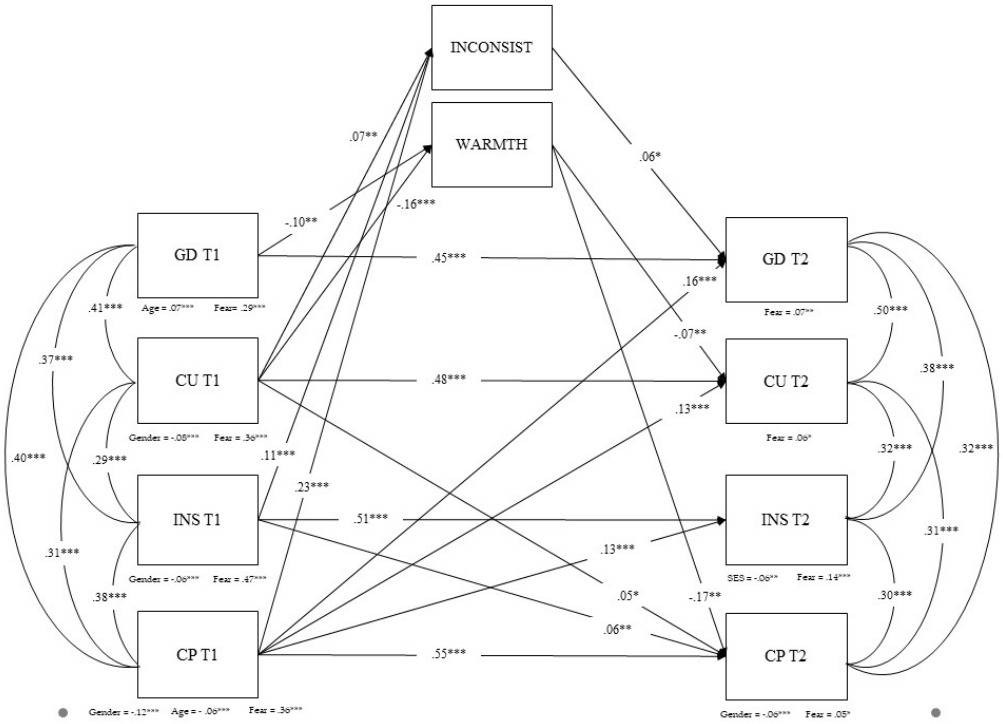
*Note. Mean scores were computed for all variables, except gender. T1 = Wave 1; T2 = Wave 2; SES = Socioeconomic status; GD = Grandiose-deceitful; CU = Callous-unemotional; INS = Impulsive-need of stimulation; CP = Conduct problems. *p < .05 **p < .01 ***p < .001*

Figure 1. Cross-lagged path analysis testing the bidirectional effects between psychopathic traits and conduct problems



*Note. T1 = Wave 1; T2 = Wave 2; Fear = fearlessness; SES = Socioeconomic status; GD = Grandiose-deceitful; CU = Callous-unemotional; INS = Impulsive-need of stimulation; CP = Conduct problems. *p < .05 **p < .01 ***p < .001*

Figure 2. Cross-lagged path analysis testing the potential mediation effect of inconsistent parenting and parental warmth



*Note. T1 = Wave 1; T2 = Wave 2; Fear = Fearlessness; SES = Socioeconomic status; GD = Grandiose-deceitful; CU = Callous-unemotional; INS = Impulsive-need of stimulation; CP = Conduct problems. *p < .05 **p < .01 ***p < .001*

As observed in Table 2, there were some significant indirect effects, albeit they were small. Thus, GD T1 showed an indirect effect on CP T2, which was totally mediated by parental warmth. Similarly, the association between CU traits T1 and CP T2 was partially mediated by parental warmth. Finally, the association between CP T1 and GD T2 was partially mediated by inconsistent parenting.

Discussion

The present study intended to examine the bidirectional effects between psychopathic traits and CP in early childhood, including all psychopathy dimensions, and testing the potential mediation effect of inconsistent parenting and parental warmth. Results overall supported the presence of reciprocal effects between each psychopathy dimension and CP. More specifically, CP in T1 predicted increases in all psychopathic traits in T2, whilst only CU and INS traits in T1 directly predicted increases in CP in T2. In addition, marginal mediation effects were observed for parenting practices, particularly in the relationship between interpersonal (GD) and affective (CU) traits, and later CP through parental warmth.

As observed in previous studies, both psychopathic traits and CP showed high levels of relative (or rank-order) stability, which were particularly high for CP (Andershed, 2010; Seijas, 2020; Waller et al., 2014). As hypothesized by Seijas et al. (2020), it may suggest that CP may develop and stabilize at an earlier age than some psychopathic traits (i.e., CU traits) and, therefore, CP could easily confer a risk for the later development of psychopathic traits. The presence of common underlying factors, including temperamental dispositions (e.g., fearlessness), could also explain the presence of shared vulnerabilities that model the transition to later psychopathic traits and CP. It would suggest the need to develop integrated models that may help to explain, from a developmental perspective, the emergence, maintenance and covariation of both psychopathic traits and CP. To this end, it would be necessary to further identify common and unique etiological process, potential mediators and later outcomes (Seijas et al., 2020). Nevertheless, given the novelty of these results much more research is needed to investigate how psychopathic traits, including all its dimensions, covariate with CP across time.

More expected were the unique effects observed between CU and INS traits in T1, and CP in T2. The association between CU traits a CP has been extensively analyzed for the past two decades. When the study of psychopathy was downward extended to childhood, CU traits, representing the affective dimension of the construct, were considered as a key factor in predicting serious forms of later maladjustment, and identifying a high-risk profile of children with more serious and persistent CP (see Frick et al., 2014). As a result, CU traits have become increasingly included in developmental models of CP, and a CU-based specifier was recently added for the diagnosis of conduct disorder (CD) in diagnostic classification systems (i.e., DSM-5 and ICD-11). According to INS traits, current results reinforce the potential core role of impulsivity and sensation seeking as risk factors for externalizing behavioral problems in very young children (Martel et al., 2017), being considered as relevant indicators of the initiation and explanation of child CP (Salekin, 2016).

Interpersonal or GD traits, however, were not directly related with later CP, although there was an indirect effect through parental warmth, a result also observed for CU traits. In both cases, higher levels of GD and CU in T1 were related to lower parental warmth, which, in turn, increased the likelihood to show higher levels of CP in T2. There were also an indirect effect between CP in T1 and GD traits in T2, through inconsistent parenting. These results are of great importance since they highlight the potential role of well-documented parenting practices (Hawes et al., 2011) as potential mechanisms of change in the development of both psychopathic traits and CP. Although the observed effects were small, they were still significant after controlling for the initial levels of all psychopathic traits and CP, and for fearlessness, a temperamental variable considered as a potential precursors of psychopathic traits, particularly CU and INS (Lykken, 2006), and later CP (Calkins et al., 2007). Reciprocal effects between parenting and CP/psychopathic traits have also been documented in previous research (Burke et al., 2008; Waller et al., 2014), suggesting that much more research is needed to disentangle the complex pattern of associations between the analysed constructs.

When practical implications are prioritized, the identification, assessment, and management of those factors able to enhance, maintain, or restrain such developmental processes gain more relevance. In this regard, the role of parenting practices should be further examined, and included in prevention and intervention strategies specifically tailored to the specific needs of children with CP and psychopathic traits. In fact, some promising results from the applied context have shown that focusing on improving parental warmth, and declining inconsistent parenting, has clinical value not only in reducing problematic behavior in children with high psychopathic traits, but also in favoring a significant reduction in all affective, interpersonal, and behavioral features of psychopathic personality (e.g., Kimonis et al., 2019; McDonald et al., 2014).

Finally, it should be noted that current results only showed the unique effect from each psychopathic trait to CP, and vice versa. It has important implications for the conceptualization of the psychopathy construct, since all dimensions and not only CU traits, through direct and indirect effects, are linked to increases in later CP (Salekin, 2016). However, many scholars are suggesting that to cover the full picture of psychopathic personality in childhood, all psychopathy dimensions should be considered as a constellation of interpersonal, affective and behavioral traits, which have shown an increased value than CU traits alone, or other trait configuration, in the prediction of later maladjustment (Colins et al., 2014; López-Romero et al., 2020). As was previously stated, future research should, therefore, examine the co-occurrence and reciprocal influence of all psychopathy dimensions and CP across different developmental periods.

Limitations and Future Lines of Research

First, relying on parent-reports may have raised the possibility that observed effects were partially due to shared method variance, raising the need of additional multi-informant approaches. Second, given the nature of the current sample (i.e., community based), the mean levels of the analyzed variables could not be representative of high levels of CP and psychopathic traits, suggesting the importance of replication analyses in high-risk and clinic-referred samples. Third, because there were only two waves of assessment, parenting practices were measured cross-sectionally with T1 psychopathic traits and CP, which may have restricted the power of the mediated effects. Finally, although gender was also included as a covariate, differences across gender groups could be expected in the observed effects. Thus, further research accounting by gender, as well as other potential mediators/moderators (e.g., child's age, psychopathic traits in parents), should be encouraged.

Conclusions

Bidirectional effects have been observed between psychopathic traits and CP, suggesting that they confer risk to each other at early developmental stages. Even considering they are quite stable constructs; some malleability can be assumed. In this regard, inconsistent parenting and parental warmth seem to be important factors in driving effects in the association between psychopathic traits and CP. Theoretical and practical implications can be derived, suggesting the need of a common developmental model that helps to delineate the common and unique factors influencing both CP and psychopathic traits. In addition, reducing inconsistent parenting and, more interesting, improving parent-child warm interactions, among others (e.g., reducing coercive or punitive parenting) should be essential targets in prevention and intervention strategies oriented to promote behavioral and socioemotional adjustment in children with CP, when psychopathic traits are also present.

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