


# Fathering and children's relational aggression: Moderating effects of children's temperament and gender

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## Abstract

In this exploratory study, we analyzed the contribution of fathering to relational aggression (RA) in middle childhood and the moderating role of children's temperament and gender. Participants ( $N = 234$ ; 46% girls) were attending public elementary school (mean age = 8.15;  $SD = 1.23$ ) in middle-class neighborhoods in two Spanish cities. Fathers provided information about their parenting practices using the Parenting Styles and Dimensions Questionnaire, parents gave data on their child's temperament using the Temperament in Middle Childhood Questionnaire and children provided information about their peers' aggressive behavior using the Mini Direct Indirect Aggression Inventory. Fathering dimensions considered were Authoritative Cold, Authoritative Warm, Physical Punishment, and Insecurity; temperament dimensions considered were negative affect (NA), effortful control (EC), activity (AC), and shyness (SH). Gender, fathering, and temperament dimensions additively accounted for a significant proportion of the variance observed in RA. Several significant interactions suggested that the effect of fathering on RA was moderated by temperament and, in some cases, by children's gender. NA increased the potential risk of Authoritative Cold fathering (CF) and, in boys only, of Insecure fathering, while EC potentiated the protective effect of Authoritative-Warm fathering and, in boys only, buffered the risk effect of CF. SH buffered the risk effect of CF and decreased the protective effect of Authoritative Warm fathering on RA. Lastly, AC also buffered the risk effect of CF on RA. Results are discussed in light of the protective or the vulnerability role of temperament and in relation to models that explain sensitivity differences to environmental contexts.

## KEYWORDS

fathering, gender differences, middle childhood, relational aggression, temperament

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## 1 | INTRODUCTION

During the last decades researchers have increasingly supported the validity of relational aggression (RA) as a subtype of aggression with consistent and negative outcomes including externalizing and internalizing adjustment problems (Tackett et al., 2014). RA is characterized by behavior that damage social relationships; it is used to manipulate others within a social context, such as spreading malicious rumors, peer exclusion, and threatening to end a social relationship (Crick & Grotpeter, 1995). RA develops from overt and direct forms in early childhood, to more indirect ways in middle childhood due to the increases in cognitive abilities related to this type of aggression and the complexity of the developing social context at this stage (Casas & Bower, 2018). Thus, middle childhood represents a critical period for examining the manifestation of RA. Regarding gender differences in RA during middle childhood, findings are mixed and ambiguous. So, when examining the proportion of RA, research shows that girls use this form of aggression more than boys (e.g., Côté, 2007; Vaillancourt, 2013). However, when comparing mean levels of RA, some studies have found that boys exceed girls in RA (e.g., Henington et al., 1998) but some meta-analysis (Card et al., 2008; Scheithauer et al., 2008) consistently show that girls use this form of aggression more than boys, although these differences are significant but trivial and sparse. We suggest that further analyses are necessary to determine whether said differences, when found, depend on an underlying moderator effect. To gain a comprehensive understanding of the development of RA, some authors have underscored the need to study contextual and individual antecedents (Aimé et al., 2018).

From a developmental-ecological framework, interactions between contextual factors and individual characteristics have been implicated in the development and maintenance of childhood aggression (Berg-Nielsen et al., 2002). The idea that parents play a role in determining their children's behavior is not new (for a review see Maccoby & Martin, 1983). Since Baumrind (1966, 1971) noted that parenting styles were differentially associated with various child behavior, there has been considerable empirical evidence demonstrating that parenting is an important predictor of the occurrence and maintenance of child aggression. For example, harsh parenting is concurrently associated with higher levels of aggression in children, and parenting which includes emotional warmth and responsiveness is linked to low levels of aggression (see meta-analyses by Pinquart, 2017, 2021). However, children may be differently affected due to individual characteristics such as temperament or gender. In the research literature on individual factors that moderate the impact of parenting on child development, there are two dominant models explaining differences to environmental influences. The traditional diathesis-stress framework (Monroe & Simons, 1991; Zuckerman, 1999), suggests that some individuals possess characteristics that make them more vulnerable to environmental stressors. The differential susceptibility model, grounded in evolutionary theories, suggests that individuals who are most vulnerable to environmental stressors may also be the ones who benefit most from environmental

support (Belsky & Pluess, 2009). A recent meta-analysis (Slagt, Dubas, et al., 2016), showed that many studies that had found evidence of the differential susceptibility model, pointed out to child temperament as a potential susceptibility marker. From this theoretical perspective, we aimed to explore the moderating role of child's temperament and gender on the effects of father's parenting on childhood RA.

Most studies on the role of parenting behavior in the development of aggression are based on the supposition of the social learning theory (Bandura, 1973) whereby parenting styles and practices influence children's social behavior via modeling. Both, the parenting dimensional approach, focusing on individual dimensions of parental behavior, such as responsiveness (warmth) and demandingness (control), and the parenting categorical approach, that categorizes parents, according to a combination of parenting dimensions, into parenting styles (Baumrind, 1966; Maccoby & Martin, 1983) can be considered complementary and have given rise to studies that strongly support the relation between parenting and childhood aggression. Several longitudinal studies have observed that adverse or negative parenting, characterized by hostility, coercion, and corporal punishment (CP) is positively associated with children's aggression. Conversely, positive parenting, characterized by sensitivity and responsivity, tends to reduce this type of behavior (Pinquart, 2017). Recent meta-analytic reviews show that parenting is consistently, yet modestly, associated with children's RA (Nelson & Hard, 2018). Kawabata et al. (2011) found small associations between harsh control and psychological control with RA. Somewhat larger associations of psychological control with RA were identified in the meta-analysis by Kuppens et al. (2013).

Although most parenting research has focused on mothers, the available evidence confirms the importance of fathers in children's development (Volling et al., 2019) and there is no dispute that the study of fathering is essential to our understanding of parenting influences. Although there are more similarities than differences between mothers and fathers, and positive parenting characteristics are similar for both, mothers and fathers do tend to have different interactional styles, with fathers being more playful and mothers more nurturing (Wilson & Prior, 2011). Moreover, evidence suggest that mothers and fathers respond differently to their sons and daughters (Chaplin et al., 2005). Although they are not very numerous, some researchers have found that both positive and negative parenting were associated with children's RA. Maternal affect and parental responsiveness were associated with less RA in preschoolers (Brown et al., 2007; Hart et al., 1998). Also, among preschoolers, aversive parenting has been found to be positively correlated with RA (Hart et al., 1998; Nelson et al., 2006) and with an increasing trajectory for RA from ages 2–10 (Vaillancourt et al., 2007). This association between parenting and RA may vary by the sex of the parent (Nelson & Crick, 2002; Underwood et al., 2008); however, in a meta-analysis, Kawabata et al. (2011) pointed out that most studies have examined this association only among mothers. In this meta-analysis, more positive fathering was associated with less RA, and psychologically controlling fathering was associated with increased RA.

In contemporary conceptualizations, structure of temperament has been construed as comprising three domains: effortful control (EC), NA, and surgency (Shiner et al., 2012). EC refers to the child's ability to organize attention and regulate emotions and behavior in accordance with immediate and long-term goals. NA is characterized by emotions such as fear, anger, sadness, and shame. Surgency reflects children's desire to engage with others, their sociability, activity (AC) level, and the pleasure they derive from high-intensity activities. Although negligible gender differences have been found in relation to NA, EC is positively associated with being female and boys tend to be more surgent than girls (Else-Quest et al., 2012). These temperamental traits, that may predispose a child to behavioral problems by itself (Witting & Rodriguez, 2019), may also play a moderating role in the relation between parenting and the child's developmental outcomes (see Slagt, Dubas, et al., 2016 for a review). Several studies have showed moderating effects of temperament in the relation of parenting and childhood RA. Blossom et al. (2016) found that authoritarian parents contribute to increased relational and decreased physical aggression among emotionally well-regulated (high EC) children, with the opposite pattern being observed among emotionally dysregulated children (low EC). Smack et al. (2015) also found that inconsistent discipline was moderated in its association with RA when both adolescent extraversion and openness (poor self-regulatory control) were low. Because fathering may have different effects on RA than mothering (see Nelson & Crick, 2002; Yang et al., 2004), the current study adds to the literature by examining the influence of fathers. Although we have not found any studies that have specifically explored the interaction between fathering and children's temperament on RA, some researchers have studied these effects in relation to behavioral problems. For example, Rabinowitz et al. (2016) found that father's positive parenting interacted with child flexibility (EC) to predict father-reported internalizing and externalizing problems. Children with lower levels of flexibility experienced greater internalizing and externalizing problems than their more flexible counterparts in contexts with less positive parenting. However, among those with higher flexibility, symptom levels were similar regardless of the degree of positive paternal parenting. Ramchandani et al. (2010) found that girls with reactive temperaments, compared to less reactive girls, were more susceptible to father's involvement, engaging in significantly fewer type of problem behavior and more prosocial behavior when fathers were more involved, and more problem behavior and less prosocial behavior when fathers were colder (less warmth); however, boys showed no evidence of differential susceptibility by reactive temperament.

## 1.1 | The present study

In this exploratory study, we examined the contribution of fathering to RA and the moderating role of temperament and gender. We administered both a parenting practice and a childhood temperament questionnaire and applied a principal component analysis obtaining

four dimensions of fathering (Authoritative Cold, Authoritative Warm, Physical Punishment, and Insecurity [IN]) and four dimensions of temperament (NA, EC, AC, and Shyness [SH]). Based on previous literature, we examined if the well-known effects of negative and positive parenting on aggression, were also found with respect to the effect of fathering on RA. Regarding temperament, we expected to find temperamental traits that exacerbated or buffered the effect of fathering strategies on children's RA. We proposed two hypotheses: (1) Physical punishment and IN would be risk factors and authoritative warm fathering would be a protective factor for children's RA and (2) NA would exacerbate the risk effect of negative fathering on children's RA, while EC would buffer this risk. No hypothesis was made about the effects of authoritative cold fathering (CF) on RA nor the moderating role of surgency in this relation. We also expected to find gender differences in the effect of fathering dimensions on RA and on the moderation role of the temperament dimensions, due to differences in baseline temperament and aggression levels among boys and girls, as well as the use of different fathering practices in accordance with children's gender.

## 2 | METHOD

### 2.1 | Participants

Participants were 279 children recruited from 12 third-grade classrooms in eight elementary schools in two Spanish cities. Complete data were available for 234 children (46% girls) with a mean age of 8.15 years ( $SD = 1.23$ ). Of the final sample, 18% were only children and 12% had more than two siblings. Finally, parents had medium income levels and most of them (66%) had post-school qualifications.

### 2.2 | Procedure

Participants were attending public elementary school in middle-class neighborhoods (we excluded private schools) in two Spanish cities. The 12 schools in these cities were asked to participate and eight finally accepted. Parents and teachers from third-grade courses of these schools were informed of the research aims in a meeting. Anonymity and confidentiality procedures were explained in the written consent form approved by Commission on Ethics in Research and Teaching at the University of the Basque Country. At the beginning of the academic year, fathers provided information about their parenting practices using the Parenting Styles and Dimensions Questionnaire (Robinson et al., 2001) and parents gave data on their child's temperament using the Temperament in Middle Childhood Questionnaire (Simonds & Rothbart, 2004). Children provided information about their peers' aggressive behavior using a peer estimation version of the Mini Direct Indirect Aggression Inventory (Mini-DIA; Österman, 2010), during the last month of the academic year.

## 2.3 | Measures

### 2.3.1 | Family demographic survey

Parents completed a short sociodemographic survey designed to gather information about the age of the child, number of siblings, and parents' education level.

### 2.3.2 | Fathering

Fathers' parenting practices were assessed using the Parenting Styles and Dimensions Questionnaire (PSDQ; Robinson et al., 2001). This measure yields a separate and continuous score for several dimensions of parenting, with 62 items rated on a Likert-type scale ranging from 1 "never" to 4 "always." Reliability analysis of the original subscales was low ranging from 0.2 to 0.8 with most of them (8 out of 11) below 0.6 and so, a Principal Component Analysis (PCA) using a varimax (orthogonal) rotation was performed on the items with loadings  $\geq 0.50$  to produce the most reliable factor structure. A four-factor solution for the PSDQ emerged with a good matrices indicator (K-M-O = 0.86; Bartlett's sphericity  $\chi^2 [df = 190] = 1259.25, p < .001$ ), accounting for 50.64% of the total variance. Factor 1 was defined as CF and included explanatory, participatory, and sure fathers, but did not imply affection (e.g., I give our child reasons why rules should be obeyed, I talk it over and reason with our child when the child misbehaves). Factor 2 was termed *Authoritative-Warm Fathering* (WF) and referred to fathers who are warm and often show their affection for their children (e.g., I express affection by hugging, kissing, and holding our child, I have warm and intimate times together with our child). Given that these dimensions are two of those that make up the authoritative style, and that in our PCA these factors were independent, we named them by highlighting either reasoning or affect dimensions of the authoritative style. CP (Factor 3) included items reflecting fathers' use of physical punishment with their children (e.g., I grab our child when the child is being disobedient; I use physical punishment as a way of disciplining our child). IN (Factor 4) was related to fathers who are inconsistent, unclear, or contradictory in terms of rules or threats toward their children and who demonstrate a lack of self-confidence (e.g., I am afraid that disciplining our child for misbehavior will cause the child to not like his/her parents, I threaten our child with punishment more often than actually giving it). Cronbach's  $\alpha$  for the fathering factors were .82, .76, .68, and .60, respectively.

### 2.3.3 | Temperament

Temperament was assessed using the Temperament in Middle Childhood Questionnaire (TMCQ; Simonds & Rothbart, 2004). Parents jointly rated the 157 items on a 7-point Likert-type scale ranging from 1 (extremely untrue) to 7 (extremely true). The 157 items are grouped into 17 scales. However, due to some authors (e.g., Kotelnikova et al., 2016) had shown that the higher-order structure of temperament in middle childhood did not bear resemblance to the four-factor structure posited by Simonds and

Rothbart (2004), a Principal Component Analysis (PCA) using a varimax (orthogonal) rotation was performed on these 17 scales, with loadings  $\geq 0.40$ , to obtain a reliable factor structure. The results of the PCA yielded a four-factor solution with a good matrices indicator (K-M-O = 0.76; Bartlett's sphericity  $\chi^2 [df = 136] = 1542.11, p < .001$ ), accounting for 60.1% of the total variance. Factor 1 was defined as NA and included the Soothability/Falling Reactivity (reversed), Sadness, Anger/Frustration, Discomfort, Activation control (reversed), Attentional Focus (reversed), and Impulsivity scales. Factor 2 was termed EC and encompassed the Low-Intensity Pleasure, Fantasy/Openness, Perceptual Sensitivity, Inhibitory Control, and Affiliation scales. Factor 3 was AC, comprising the AC Level and High-Intensity Pleasure scales. Finally, Factor 4 was called SH and encompassed the SH, Fear and Assertiveness/Dominance (reversed) scales. Cronbach's  $\alpha$  for the temperament factors were .92, .85, .87, and .79, respectively.

### 2.3.4 | RA

This form of child aggression was measured using a peer-estimation version of the Mini Direct Indirect Aggression Inventory (Mini-DIA; Österman, 2010), a shorter version of the Direct & Indirect Aggression Scales (DIAS; Björkqvist et al., 1992). Several different research studies endorse this test as a suitable instrument for measuring aggressive behavior in children from a young age (Björkqvist et al., 2001; Valles & Knutson, 2008). The Spanish version of the scale was developed by the authors themselves. The Mini-DIA comprises six items in which each child is asked to rate each of their classmates on a Likert scale for behavior in relation to physical aggression (two items), verbal aggression (two items), and indirect aggression (two items). To assess children's aggression, a structured interview was used. Participants were asked how often-on a scale of 0 (never) to 4 (very often)-each of their peers had engaged in physical (e.g., hitting, kicking), verbal (e.g., yelling, name-calling), or indirect (e.g., talking behind someone's back) aggression. The evaluator first explained in detail and with examples the differences between the three types of aggression and then asked the children, allowing sufficient time for all three to be answered. For the purposes of this research only the scores obtained for indirect aggression were used and transformed to ensure normal distribution.

## 2.4 | Statistical analysis

All statistical analyses were carried out using IBM SPSS Statistics software version 21. To analyze gender differences in relation to the different variables, a one-way analysis of variance was conducted. The associations between the different variables included in the study were explored using the Pearson correlation coefficient. To determine the additive and interactive relations between fathering and children's temperament and RA, hierarchical regression analyses were conducted with children's RA being treated as criterion variable. According to the variance inflation factors, multicollinearity was not a

problem. In each model, children's gender was entered in the first step, followed in the second step by the main effects of the four fathering factors (CF, WF, CP, and IN). In the third step, we entered the main effects of the temperament factors (NA, EC, AC, and SH). The two-way fathering  $\times$  temperament interactions were entered in the fourth step, and the two-way (fathering  $\times$  gender and temperament  $\times$  gender), and three-way (fathering  $\times$  temperament  $\times$  gender) interactions were entered in the fifth step. We examined the two-way and three-way interactions when  $F$  ratio  $>1.0$  and  $p < .25$  for them. According to Belsky and Widaman (2018), the magnitude of the  $F$  ratio for the interaction can provide evidence that the model testing approach is feasible, with an  $F$  ratio  $>1.0$  being a much better criterion for moving to test the interactions than requiring that the interaction be significant at  $p < .05$ .

To probe the interactive effects that met this criterion, we applied Aiken et al. (1991) procedure. Regarding the two-way fathering  $\times$  temperament interactions, simple slopes for fathering in the prediction of children's RA were calculated and presented using standardized scores separately for children who scored either low ( $-1$  SD), medium or high ( $+1$  SD) for the temperament factors. The two-way and three-way gender interactions were probed using the techniques outlined in West et al. (1996). Hierarchical regression analyses were run twice to test these interactions. First, gender was recoded as boys = 0, girls = 1. The regression coefficients that resulted from this regression reflected the effects for boys. Second, gender was recoded as girls = 0, boys = 1, with the resulting regression coefficients showing the effects for girls. This procedure was used and recommended previously by other researchers because the regression coefficient standard error estimates are unbiased (e.g., Lengua, 2008). A post hoc power analysis was conducted utilizing G\*Power (Faul et al., 2007). With an  $\alpha$  level of .05, a sample size of 234, and a medium effect size of .12 (Cohen 1992), the achieved power for the study was .994, .932, and .857 (models 2, 4 and 5, respectively).

### 3 | RESULTS

#### 3.1 | Descriptive statistics

The means and standard deviations for the variables are presented in Table 1 separately for boys and girls. Girls scored higher than boys for WF and lower for CP. Girls also scored higher than boys for the temperament dimensions NA and EC and lower for AC. Finally, boys scored higher than girls for RA.

#### 3.2 | Correlations between fathering, temperament, and children's RA

Table 2 summarizes the correlations among the variables. Only among boys, CF and IN was positively associated with RA. Moreover, among boys but not girls, NA and AC were positively associated with RA; and CF and IN were positively linked to AC. Among girls, EC was

**TABLE 1** Means and standard deviations for the variables, by sex.

Variables	Boys		Girls		F test
	M	SD	M	SD	
Fathering practices					
Authoritative-cold (CF)	0.056	0.982	-0.070	1.022	0.919
Authoritative-warm (WF)	-0.121	1.049	0.151	0.918	4.337*
Corporal punishment (CP)	0.203	1.133	-0.253	0.734	12.601**
Insecurity (IN)	-0.028	0.979	0.035	1.029	0.235
Temperament					
Negative affect (NA)	-0.125	1.014	0.149	0.967	4.667*
Effortful control (EC)	-0.197	1.049	0.233	0.888	11.821**
Activity (AC)	0.124	0.996	-0.147	0.986	4.566*
Shyness (SH)	-0.017	1.008	0.020	0.995	0.086
Relational aggression (RA)	0.647	0.602	0.471	0.412	11.256**

\* $p \leq .05$ ; \*\* $p \leq .01$ .

negatively associated, and AC positively associated with RA; and finally, WF was positively associated with EC. In boys and girls, CP and IN were positively associated with NA.

#### 3.3 | Fathering and RA: The moderating roles of temperament and gender

Following Lengua (2008), the effects of fathering and the moderating effects of temperament were integrated with gender interactions, and when moderation by gender was observed, the effects for boys and girls are presented separately in parentheses (Table 3).

The set of fathering factors explained a significant degree of the variance observed. CF and CP positively predicted RA. The effect of the IN  $\times$  gender on RA suggested a moderation by gender ( $F = 4.95$ ,  $p = .03$ ), with the positive associations observed between IN and RA being significant only for boys.

The set of fathering  $\times$  temperament interactions added a nonsignificant proportion of variance to RA ( $\Delta R^2 = 0.07$ ,  $p = .64$ ). However, several double and triple interactions between fathering, temperament dimensions and children's gender were found to be significant and/or candidates to be tested.

##### 3.3.1 | CF $\times$ temperament

Two-way CF  $\times$  NA interactive effects suggested a possible moderation by NA of the associations between CF and RA ( $F = 1.37$ ,  $p = .24$ ).

**TABLE 2** Correlations between fathering, temperament and children's relational aggression.

	1	2	3	4	5	6	7	8	9
1. Authoritative-cold (CF)		0.035	0.143	-0.029	-0.015	-0.038	0.099	-0.028	0.086
2. Authoritative warm (WF)	-0.010		0.153	-0.048	-0.054	0.507**	0.003	0.032	-0.152
3. Corporal punishment (CP)	-0.100	-0.023		-0.022	0.252*	-0.017	0.044	0.129	0.082
4. Insecurity (IN)	0.029	0.028	0.024		0.204*	-0.046	0.193	0.005	-0.037
5. Negative affect (NA)	-0.107	0.004	0.267**	0.262**		-0.158	0.028	-0.055	0.142
6. Effortful control (EC)	0.067	0.063	-0.160	-0.105	0.056		0.064	0.055	-0.207*
7. Activity (AC)	0.190*	-0.110	0.061	0.238**	0.011	0.006		-0.099	0.367**
8. Shyness (SH)	0.095	-0.014	0.083	0.109	0.039	-0.046	0.086		-0.066
9. Relational aggression (RA)	0.187*	-0.074	0.171	0.265**	0.209*	-0.104	0.454**	0.090	

Note: Intercorrelations are presented separately for girls (above diagonal) and boys (below diagonal).

\* $p \leq .05$ ; \*\* $p \leq .01$ .

Thus, the association between CF and RA was only significant for children with medium and high levels of NA (Figure 1). The  $F$  ratio of the two-way  $CF \times EC$  and the three-way  $CF \times EC \times$  gender interactions ( $F = 2.22$ ,  $p = .14$ ;  $F = 1.53$ ,  $p = .22$ , respectively) suggested that the association between CF and RA may be moderated by EC and Gender. Only among boys, the  $F$  ratio of  $CF \times EC$  interaction on RA ( $F = 2.79$ ;  $p = .09$ ) suggested that the association between CF and RA may be moderated by EC. Specifically, the positive effect of CF on RA was only significant for boys with low levels of EC (Figure 2). The  $F$  ratio of the two-way  $CF \times AC$  ( $F = 3.21$ ;  $p = .07$ ) suggested that the association between CF and RA may be moderated by AC. For children with low or medium levels of AC, CF predicted high levels of RA (Figure 3). Finally, the  $F$  ratio of the two-way  $CF \times SH$  interaction suggested a possible moderation by SH on RA ( $F = 3.37$ ,  $p = .07$ ). Thus, for children with low or medium levels of SH, CF predicted high levels of RA (Figure 4).

### 3.3.2 | WF $\times$ temperament

WF significantly interacted with EC to predict RA, although this effect was only significant in the group of children with high EC (Figure 5). The two-way  $WF \times SH$  interaction suggested a possible moderation by SH of the association between WF and RA ( $F = 1.98$ ,  $p = .16$ ). Thus, among children with low levels of SH, WF negatively predicted RA (Figure 6).

### 3.3.3 | IN $\times$ temperament

The effect of the two-way interaction between IN and all temperament variables on RA was not significant. However, the  $F$  ratio for the three-way  $IN \times NA \times$  gender interaction suggested that the path from  $IN \times NA$  to RA may be moderated by gender ( $F = 3.50$ ,  $p = .06$ ). For boys only, the  $F$  ratio of  $IN \times NA$  interaction on RA ( $F = 3.17$ ;  $p = .08$ )

suggested that the association between IN and RA may be moderated by NA; specifically, IN predicted higher levels of RA among boys with medium and high levels of NA (Figure 7).

## 4 | DISCUSSION

We aimed to explore the effects of fathering on RA in middle childhood, as well as the moderating role of children's temperament and gender in these relations. The results revealed that gender, fathering, and temperament dimensions additively accounted for a significant proportion of the variance observed in RA. Moreover, several significant interactions suggest that the effect of fathering on RA is moderated by temperament and, in some cases, also by children's gender. For example, NA exacerbated the potential risk of IN for RA among boys. The risk effect of CF on RA was also exacerbated by NA in all children, and only for boys, was mitigated by EC. The protective effect of WF on RA was potentiated by EC in all children. SH buffered the risk effect of CF and decreased the protective effect of WF on RA. Lastly, AC also buffers the risk effect of CF on RA.

Before discussing these findings, it is interesting to note that our results also revealed some differences in the parenting strategies used by fathers with their sons and daughters. Fathers were warmer and more affectionate with their daughters and used CP more with their sons. One likely explanation for this may be gender differences in temperament and aggression; indeed, in our study, boys were found to have higher levels of RA and lower levels of EC than girls. This gender differences could increase the use of harsher methods of parenting, including CP. It is also interesting to note that in our study the effect of CP was not moderated by either the temperament or children's gender, showing that CP itself is a risk for children RA. Some authors have given some possible explanation, for example, Choe et al. (2013) pointed out that harsh parental physical discipline provides parents with a power-assertive means of eliciting immediate

**TABLE 3** Standardised regression coefficients for relational aggression.

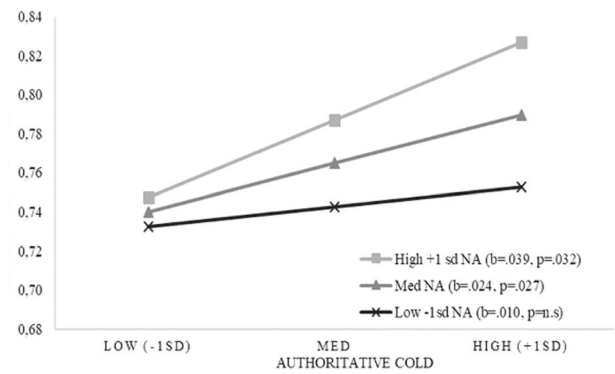
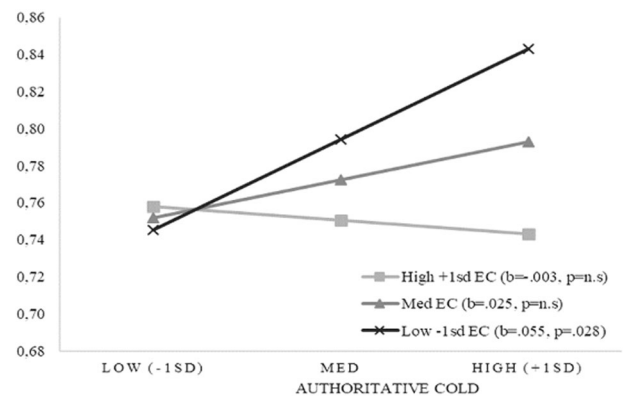
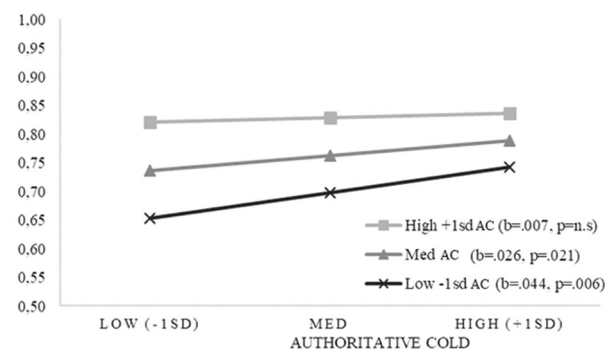
	Relational aggression		
	$\beta$	F	$\Delta R^2$
Step 1:		11.304**	.048**
Children's sex <sup>a</sup>	.219**		
Step 2:		5.806***	.069**
Authoritative-cold	.163*		
Authoritative-warm	-.107		
Corporal punishment	.135*		
Insecurity	.122 (.250*/-.122)		
Step 3:		9.203***	.161***
Negative affect	.143*		
Effortful control	-.147*		
Activity	.378***		
Shyness	-.075 (-.176*/.103)		
Step 4:		4.280***	.071
Authoritative-cold ×			
Negative affect	.072 <sup>b</sup>		
Effortful control	-.093 <sup>b</sup> (-.163 <sup>b</sup> /.020)		
Activity	-.113 <sup>b</sup>		
Shyness	-.113 <sup>b</sup>		
Authoritative-warm ×			
Negative affect	.029		
Effortful control	-.158*		
Activity	.035		
Shyness	.087 <sup>b</sup>		
Corporal punishment ×			
Negative affect	-.030		
Effortful control	-.070		
Activity	.021		
Shyness	.040		
Insecurity ×			
Negative affect	-.002 (.155 <sup>b</sup> /.117)		
Effortful control	-.054		
Activity	-.017		
Shyness	.058		

<sup>a</sup>Children's sex is coded 0 = girls, 1 = boys. In associations moderated by sex, standardised regression coefficients for boys/girls are presented in parentheses.

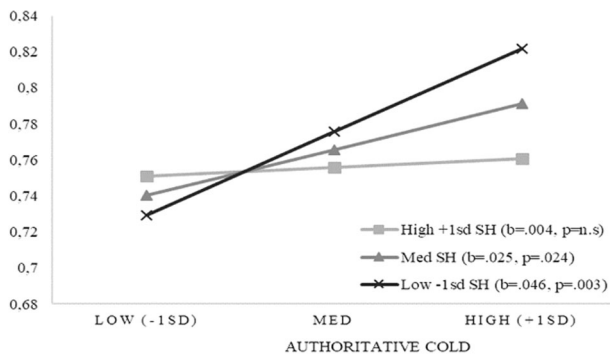
<sup>b</sup> $p < .25$  and  $F > 1$ .

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p = .00$ .

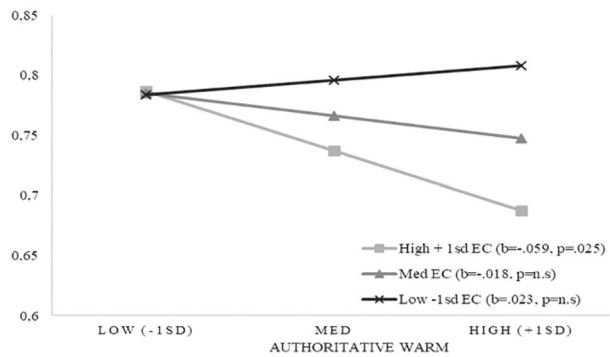
compliance, modeling relational, as well as physical, dominance of their children. In addition, our results revealed that temperament dimensions and gender moderated the associations of IN and authoritative fathering to RA.

**FIGURE 1** Interactions between authoritative-cold fathering and negative affect (NA) for predicting relational aggression.**FIGURE 2** Interactions between authoritative-cold fathering and effortful control (EC) for predicting relational aggression in boys.**FIGURE 3** Interactions between authoritative-cold fathering and activity (AC) for predicting relational aggression.

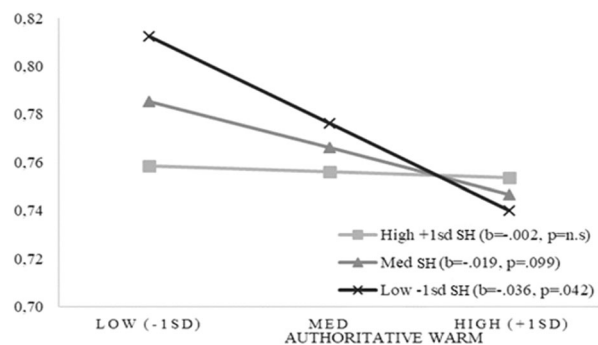
Father's IN was found to impact RA only among boys. Although some researchers (e.g., Stocker, 2000) have related insecure mothering to RA among adolescents, others (e.g., Sandstrom, 2007) have found that mothers' inconsistency is linked to RA only among preadolescent girls. Our results are similar to those reported by Casas et al. (2006), who found a relation between insecure fathering and RA in boys, although in toddlers. These findings seem to suggest that the effects of



**FIGURE 4** Interactions between authoritative-cold fathering and shyness (SH) for predicting relational aggression.

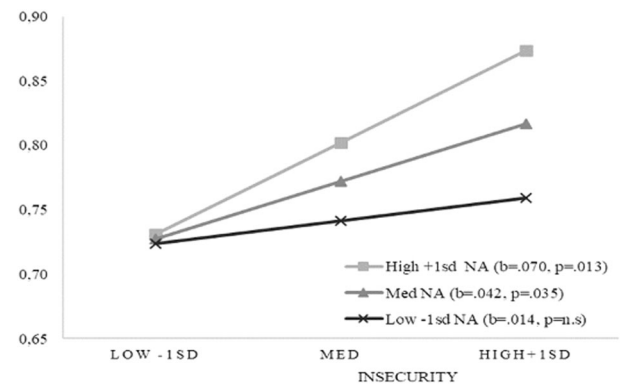


**FIGURE 5** Interactions between authoritative-warm fathering and effortful control (EC) for predicting relational aggression.



**FIGURE 6** Interactions between authoritative-warm fathering and shyness (SH) for predicting relational aggression.

parenting are magnified when the parent and child is the same gender, since modelling is stronger with same-gender dyads (Deckard & Dodge, 1997). However, we agree with Gershoff (2002) that same-gender imitation is likely too simplistic an explanation and that there is not much evidence to support this hypothesis. In any case, child's gender seems to be a relevant moderator of the association between father's IN and aggression. Our findings provide no evidence that temperament moderates these associations, with only NA appearing to enhance the effect of insecure fathering on RA among boys.



**FIGURE 7** Insecurity and negative affect (NA) for predicting relational aggression in boys.

Regarding authoritative fathering, our results revealed that CF was a risk factor for RA. It is important to note that while cold authoritative fathering include mostly reasoning practices, affection is mostly present in the authoritative-warm style. This affective component in parenting has repeatedly been linked to low levels of child aggression and the lack of affection has been linked to increased aggression in children (Zahn-Waxler et al., 2008). The fact that CF was associated with RA may be related to the fact that this type of aggression requires certain sociocognitive and communication skills (Carreras et al., 2014) that may be enhanced by an authoritative-cold style that is characterized by the use of reasoning to ensure compliance with social norms.

Furthermore, in our study, the risk of CF for RA was exacerbated by NA and buffered by EC, although, in this last case, only among boys. Although there is sufficient evidence of a direct association between these temperament traits and RA (Tackett et al., 2014), their moderating role in the relation between negative parenting and RA has not been explored in earnest (Smack et al., 2015). It is not surprising that NA (fear, frustration, sadness, discomfort, and anger) enhances the urge toward aggressive behavior, including RA when children have the social skills required for this type of behavior. Indeed, researchers have found that NA reinforces the impact of inappropriate parenting on RA in girls and boys (Aimé et al., 2018). Regarding EC, previous research has found that girls exert more EC than boys (Else-Quest et al., 2012). However, in early childhood, while higher levels of EC were found to be linked to less aggression in boys, they were not significantly associated with aggression in girls (e.g., Smith & Day, 2018). In our study, which focused on middle childhood, the beneficial effects of EC on RA were similar in both sexes. Moreover, even though boys had lower levels of EC than girls, this temperament trait was also found to have an additional benefit for boys only in the reduction of the harmful effect of authoritative fathering on RA.

Regarding the moderating role of AC and SH on the associations between authoritative fathering and aggression, it is important to consider that AC and sociability have been construed by some as two aspects of a broader construct termed surgency (De Pauw



et al., 2009). The fact that our results revealed these traits to be independent factors enables us to distinguish the role played by each dimension of surgency (AC and SH—the opposite element to sociability) in the association between authoritative fathering and aggression. Thus, our results revealed that associations between authoritative fathering (cold and warm) and RA were weaker among shy children. This is consistent with others who found that SH mitigated the association between parenting and aggression (e.g., De Haan et al., 2010). In our study, AC was found to attenuate the effect of authoritative–cold fathering on aggression. It seems that, although probably for different reasons, children with high AC levels and those who are very shy are less sensitive to the effects of authoritative parenting. In our study, SH was inversely related to aggression, while with AC this association was positive. It is likely that, among these children, temperament traits are a stronger predictor of aggression than authoritative fathering.

Finally, our results contribute to models that explain individual differences in sensitivity to environmental influences. The temperament dimensions included in our study may render children more vulnerable to the adverse effects of negative fathering (diathesis–stress hypothesis), more sensitive to the benefits of positive fathering (vantage-sensitivity hypothesis), or both simultaneously (differential susceptibility hypothesis). At first glance, when considered together, the interactive effects found in our study do not seem to be completely consistent with any of these theoretical models. Thus, NA was found to be a characteristic that was associated with more vulnerability to the adverse effects of CF on RA, and for boys in particular, they were more vulnerable to the risk effects of insecure fathering on the same type of aggression. In this case, NA seems to act as a marker of vulnerability. EC was revealed as an advantageous characteristic in children in relation to the beneficial effects of WF on RA with EC acting as a marker of vantage-sensitivity. Previous research has suggested and confirmed that traits such as NA or a difficult temperament (combination of high NA and low EC) may serve as markers of differential susceptibility in infants. For example, a meta-analysis by Slagt, Dubas, et al. (2016) found that before 1 year of age, these traits moderated the effects of the quality of parenting on the child's development, which are consistent with the differential susceptibility hypothesis. Regarding EC, research findings have been mixed, with some studies showing that toddlers with low self-regulation respond more strongly to parenting (Poehlmann et al., 2011) and others showing stronger responses among infants with high self-regulation (Halpern et al., 2001). Still others (Slagt, Semon Dubas, et al., 2016) have suggested, as indeed our results indicate, that in middle childhood, EC may operate as a vantage-sensitivity factor, since children with moderate levels of EC seem to benefit most from supportive parenting.

The trends that emerged in our results in relation to SH are also worth discussing. Children with low levels of SH tended to benefit more than others from WF (supportive environment), while at the same time being hurt more than others by CF (unsupportive environment due to the absence of warmth). That is, SH appears to be a susceptibility factor. A review examining how temperament

(including SH) interact with family environment in the prediction of externalizing behavior found that the results of most studies assessing temperament in childhood supported the differential susceptibility model, while those assessing temperament in adolescence supported the diathesis–stress model (Rioux et al., 2016).

Our findings support the idea that the beginning of the middle childhood may be a transition stage in which NA and EC, gradually (and at a different pace), change from being indicators of susceptibility in infancy to being vulnerability (NA) or vantage-sensitivity (EC) markers in middle childhood. However, during this period, low SH still seems to act as a susceptibility factor and it may be only later, in the transition to adolescence, that this temperament trait becomes an indicator of vulnerability to adverse environments. This idea could be considered within the differential susceptibility framework. From an evolutionary perspective, Ellis and Del Giudice (2019) pointed out that, although it is well-known that early childhood is a critical sensitive period, as children grow older, they undergo other different sensitive periods, including key developmental transitions such as the beginning of middle childhood and the onset of puberty. Temperamental traits may operate in a different way in each of these sensitive periods. So, physiological self-regulation and negative emotional reactivity seem to be susceptibility markers during the early sensitive period, but they are not later during development, when it would be other temperamental traits that capture this susceptibility. Whereas in early adolescence, sensory processing sensitivity is a temperament trait that has been widely studied as a marker of susceptibility (Aron et al., 2019), our findings point to low SH as a possible candidate for this at the beginning of middle childhood.

#### 4.1 | Strengths, limitations, and future studies

Our study contributes to the scarce body of knowledge regarding the effects of fathering on RA in children with different temperament. First, the study focused on the role of fathers in childrearing; most parenting studies do not include fathers nor do they control for fathers' effects on children's outcomes. Moreover, when fathers are included, measures of fathering are often derived from assessments made by mothers. Second, PCA analyses of temperament and fathering enabled us to distinguish two dimensions of surgency (SH and AC), as well as two dimensions of authoritative fathering (cold and warm). This in turn allowed us to differentiate the effects of these dimensions of temperament and fathering on RA.

Several limitations warrant caution in the interpretation of some findings. The most important is related to the sample size. In this exploratory study, whenever an interactive effect was found, following the suggestion by Belsky and Widaman (2018), it was explored by evaluating the pattern of the interaction. Although the evaluation of regions of significance could be helpful in understanding the relations between variables, the sample size was not large enough to generate statistically significant results.

Second, caution should be exercised when generalizing the findings reported here, due to the characteristics of the study sample,

which was community-based with a low prevalence of aggression. Third, the use of questionnaires for measuring fathering, temperament and aggression may be susceptible to social desirability biases. However, we were able to reduce rater bias by combining different informants, with children's temperament being measured by mothers and fathers jointly, and aggression being rated by peers.

In future studies, researchers should continue to explore the relations between fathering and RA in middle childhood, as children progressively replace other types of aggression with their relational counterpart (Björkqvist, 1994). Furthermore, these studies should adopt longitudinal designs to enrich our understanding of the developmental processes involved, as participants move from infancy into childhood, and from there into adolescence.

### CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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