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& Catarina Canário**

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Do Adolescents' Perceptions of Mothers' and Fathers' Parenting Behaviors Predict Academic Achievement and Social Skills?

Orlanda Cruz¹  · Maria Barbosa-Ducharne¹  · Catarina Canário¹ 

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Abstract

This study examines how adolescents' perceptions of fathers' and mothers' parenting behaviors predict outcomes in the domains of academic achievement and social skills, and whether these outcomes differ according to the adolescents' gender. Participants included 168 students enrolled in the 10th (13.14%) and 11th (86.86%) grade in the only two public schools of a small city in the North of Portugal, male (42.26%) and female (57.74%), aged 16 to 19 ($M = 16.76$; $SD = 0.45$). Measures included the adolescents' perceptions of their fathers' and mothers' parenting behaviors, and the adolescents' academic achievement, and social skills. Structural equation modeling was used for data analysis. The models included the adolescents' perception of their fathers' and mothers' parenting behaviors (autonomy granting, warmth, and knowledge) as predictors of academic achievement and social skills. Regarding the outcome academic achievement, the model also included adolescents' age and parents' years of schooling as covariates. Adolescents' academic achievement was negatively predicted by their perception of fathers' warmth, and positively predicted by their perception of fathers' knowledge, whereas adolescents' social skills were positively predicted by their perceptions of mothers' knowledge. Multi-group analysis revealed that the structural equation paths did not differ according to the adolescents' gender. Further analysis identified that moderate levels of fathers' warmth are more related to better adolescents' academic achievement than do high levels of fathers' warmth. Results point out the differential role of perceived parenting behaviors on adolescents' development, with the adolescents' perceived fathers' parenting behaviors showing greater impact on academic achievement, and the adolescents' perceived mothers' parenting behaviors showing a positive effect on social skills.

Keywords Parenting behaviors · Mothers and fathers · Adolescents · Academic achievement · Social skills

✉ Orlanda Cruz
orlanda@fpce.up.pt

¹ Faculty of Psychology and Education Sciences, University of Porto, Portugal, Rua Alfredo Allen, 4200-135 Porto, Portugal

Academic achievement and social skills are two indicators of youth positive psychological functioning in adolescence (Lansford et al. 2018; Lerner et al. 2015), with relevant implications for key developmental tasks such as preparing for their future career, forming and maintaining new and more mature relationships with others, and achieving emotional independence from their parents and other adults (Swanson 2010). For Portuguese adolescents attending secondary education between the ages of 16 and 18, school grades are crucial to successfully apply to higher education programs. Higher grades allow adolescents to access their desired programs and universities; whereas lower grades may prevent that from happening. Academic achievement was included in the current study, given that it represents a significant marker of success for Portuguese adolescents. Older adolescents are more likely to have experienced school failure and grade retention (Eurydice 2011), showing lower academic achievement over time. In Portugal, school failure tends to be higher in male adolescents (DGEEC, 2018). Accordingly, data from the 64 countries integrating the Program for International Student Assessment (PISA), among which is Portugal, show that at the age of 15, male adolescents tend to be low achievers overall, whereas female adolescents tend to be high performers (OECD 2015). Academic achievement is also related to parents' education. Parents with higher education tend to place more value on the education of their children, reinforce academic outcomes, as well as provide more cultural and economic resources and a more stimulant home environment (Bradley 2019; Child Trends Databank 2015; Long and Pang 2016).

The second indicator of youth positive psychological functioning used in the current study was social skills, which refers to a set of socially appropriate behaviors that allow individuals to successfully complete a social task according to the judgement of a social agent (Gresham 2016). Social skills are particularly important, as they are related to youth and adulthood functioning and adjustment (Stepp et al. 2011). Female adolescents have been described as presenting slightly higher social skills when compared to their male peers (Leaper 2015).

Family is viewed as a critical context not only for the child's but also for the adolescent's positive development and functioning. Even though adolescence is a life period marked by multiple changes, parents continue to influence adolescents' relationships, interests, and developmental outcomes (Soenens et al. 2019). Maternal and paternal parenting dimensions are often studied in an undifferentiated way (Laursen and Collins 2009). Nevertheless, there is evidence that mothers and fathers play different roles in promoting adolescents' developmental outcomes (Ratelle et al. 2018; Sorkhabi and Middaugh 2019). The current study examines the contribution of adolescents' perceptions of their mothers' and fathers' parenting behaviors to the adolescents' academic achievements and social skills.

1 Parenting Dimensions and Adolescents' Developmental Outcomes

Since Baumrind's (1991) pioneering work on the effects of parenting on child development, two key dimensions have been identified and are generally accepted in the parenting research field: warmth, and control (Morris et al. 2013). Parental warmth is a multidimensional construct involving a positive affective climate (Laible and Carlo 2004). Warm parent-child interactions are associated with academic achievement, as adolescents who present higher school grades are more likely to report their parents as

being warmer (Chen et al. 2000; Pelegrina et al. 2003; Pinquart 2016; Supple and Small 2006). Additionally, warm parent-child relationships are associated with social competence, empathy, and prosocial behavior, as they promote the child's ability to empathize and cooperate with others (Barber et al. 2005; Kazemi et al. 2010; Yoo et al. 2013).

Parental control encompasses various components and has been studied under several conceptual labels with different meanings, such as parental monitoring and, more recently, parental knowledge (Morris et al. 2013). Stattin and Kerr (2000) stressed the distinction between what parents do to supervise their children's behaviors and activities (monitoring), and what parents know about those behaviors and activities (knowledge). Parents' knowledge refers to their level of awareness regarding their children's whereabouts, activities, and friendships, and it implies that children allow parents to know where and with whom they are, and what are they doing when their parents are not with them (Stattin and Kerr 2000). Higher levels of parental knowledge have been associated with more positive outcomes during adolescence, such as higher self-esteem, higher grade point average and academic adjustment, fewer behavior problems, and fewer health risk behaviors (Cheung et al. 2013; Criss et al. 2015; Hill and Ming-Te 2015; Jiménez-Iglesias and Moreno 2015; Supple and Small 2006).

In addition to the dimensions of warmth and knowledge, parental autonomy granting is especially relevant in adolescence, because adolescents experience an increase in the time spent away from the supervision of adults, and are expected to manage academic demands and expectations more autonomously. Autonomy granting refers to the encouragement of autonomous decision-making, and personal expression of thoughts, interests, and ideas (Bean and Northrup 2009; Cheung et al. 2016). Particularly in late adolescence, parents significantly increase autonomy granting and autonomy demands (Collins and Steinberg 2006; Soenens et al. 2019). Parents' autonomy granting is positively associated with adolescents' well-being and quality of life (Jiménez-Iglesias and Moreno 2015) and contributes to adolescents' academic achievement, intellectual performance, self-esteem, and psychosocial development (Bean and Northrup 2009; Cheung et al. 2016; Hill and Ming-Te 2015; Pinquart 2016; Vasquez et al. 2016).

Even though previous literature reveals an association between positive parenting and adolescents' positive developmental outcomes, some studies have found surprising results. For instance, adolescents' perceptions of fathers' involvement is negatively associated with school grades (Ratelle et al. 2018), and adolescents' perception of fathers' coercion both positively and negatively correlate to adolescents' academic competence when used, respectively, in the conventional domain (e.g., chores or table manners) or in the moral domain (e.g., lying or sibling fights) (Sorkhabi and Middaugh 2019).

2 Mothers' and Fathers' Parenting Behaviors and Adolescents' Development

Mothers and fathers tend to use similar parenting styles, since medium size correlations have been reported regarding mothers' and fathers' parenting behaviors (e.g., Simons and Conger 2007; Van Lissa et al. 2019). However, when comparing the same parenting dimensions, mothers' acceptance, active involvement, and rigid control, as well as warmth and authoritative behaviors are usually higher than those of the fathers' (Laible and Carlo 2004; Landsford et al. 2014; Lowe and Dotterer 2013; Simons and

Conger 2007; Van Lissa et al. 2019). Mothers tend to be more caring, affective, focused on relationships, and spend more time with their children, whereas fathers tend to spend less time with their children, be more focused on goal achievement, and consulted primarily for information, such as help with homework, and material support (Jeynes 2016; Laursen and Collins 2009; Smetana et al. 2006; Steinberg and Silk 2002).

Despite the relative abundance of research on the effects of parenting dimensions on children's outcomes, the literature examining simultaneously the influence of mothers' and fathers' parenting on adolescents' positive development and functioning is scarce and the findings are not consistent. Some studies point out single unique influences of maternal versus paternal parenting depending on the adolescents' outcomes, namely academic achievement and social skills (Lansford et al. 2018; Sorkhabi and Middaugh 2019).

Regarding adolescents' academic achievement, four studies conducted with culturally-diverse samples illustrate the diversity of associations between parenting and adolescents' outcomes. In a Chinese sample of early adolescents, paternal warmth significantly predicted school achievement, while maternal warmth had no significant effect (Chen et al. 2000). School grades were predicted by mothers', not fathers', harshness among female, not male, adolescents in a sample of Mexican origin families (Dumka et al. 2009). In an ethnically diverse North-American sample, academic competence was influenced by different parenting practices, depending on the parents' gender and domain of parenting practices. For instance, fathers' coercion, but not mothers', influenced academic competence positively in the conventional domain and negatively in the moral domain (Sorkhabi and Middaugh 2019). Finally, Ratelle et al. (2018) found that school grades were predicted by adolescents' perceptions of mothers' autonomy support and by adolescents' perceptions of fathers' autonomy support, involvement, and structure, in a Canadian sample.

Despite research evidence regarding the differential effects of mothers' and fathers' behaviors on adolescents' social skills not being abundant, it consistently signals of their differential role. Indeed, in a pioneering study, Laible and Carlo (2004) found that high levels of perceived warmth and low levels of rigid control from North-American mothers, but not fathers, were related to adolescents' reports of social competence. More recently, Sorkhabi and Middaugh (2019) found that mothers' monitoring, but not fathers', was positively related to adolescents' social competence. Other studies also showed the differential effect of mothers' and fathers' parenting behaviors on adolescents' social competence related outcomes such as anti-social behavior, self-esteem, self-control, and withdrawal (Barber et al. 2005; Bean and Northrup 2009; Comino Velásquez and Raya Trenas 2014). More recently, a 4-year longitudinal study which aimed to identify the interplay between mothers' and fathers' behaviors and their children's emotion regulation from mid to late adolescence, showed the unique role played by each one of the parents, which was moderated by the adolescent's gender. As an example, the mothers' support was positively correlated with girls' emotion regulation, but not boys, and less fathers' behavioral control was related to more emotion-regulation in both genders (Van Lissa et al. 2019).

3 The Current Study

The current study evaluates adolescents' perceptions of fathers' and mothers' parenting behaviors as predictors of adolescent's positive psychological functioning. It aims at (1)

understanding how adolescents' perceptions of their mothers' and their fathers' autonomy granting, warmth, and knowledge differently predict their academic achievement and social skills, and (2) determining whether these paths are different according to the adolescents' gender.

In the present study, mothers' and fathers' contributions are analyzed in the same regression model, which is different from other recent studies (Ratelle et al. 2018; Sorkhabi and Middaugh 2019), and addresses previous recommendations in the literature (Ratelle et al. 2018) noting the need to compare, within the same model, maternal and paternal effects on adolescent's outcomes, and allowing to control for shared effects of the adolescents' report of both parents.

4 Method

4.1 Participants and Procedure

Following the approval of the directive boards, all students at the 7th grade ($N = 264$), in the only two public secondary schools of a small city in the metropolitan area of Porto (Portugal), were invited to participate in a broader study on adolescence psychological functioning. Four years later, the same students were invited to integrate the present cross-sectional research. All parents received an introductory letter describing the study, as no inclusion criteria were determined. Students were excluded from the study if they were not living with both parents (mother and father). Students were recruited after obtaining their parents' consent. A total of 175 students agreed to participate; however, 7 were excluded from the sample as they did not meet the criteria of living with both parents. Neither parents nor adolescents received any compensation for their participation. Students were assured of the confidentiality of their answers, and filled out the questionnaires during one class period, in the absence of teachers. Two research assistants assisted students with any doubts about the questionnaires.

The participants were 168 students, 97 (57.74%) female and 71 (42.26%) male, aged 16 to 19 ($M = 16.76$; $SD = .45$), enrolled in the 10th (13.14%) and 11th (86.86%), grade, taking academic (82.73%) or professional (17.27%) courses, and living with both parents. Mothers' years of schooling ranged from 4 to 20 ($M = 10.65$; $SD = 4.60$) and fathers' years of schooling ranged from 3 to 20 ($M = 9.95$; $SD = 4.56$).

4.2 Measures

4.2.1 Adolescents' Perception of Fathers' and Mothers' Parenting Behaviors

The adolescents' perceptions of fathers' and mothers' parenting behaviors were assessed using the Parenting Behavior Questionnaire Revised (Cruz et al. 2018). This self-report questionnaire includes two scales, one regarding the perception of fathers' parenting behaviors, and one regarding the perception of mothers' parenting behaviors. Both scales include the same 15 items, rated on a 4-point scale from 1 (never or almost never) to 4 (always or almost always). Each scale assesses three dimensions of perceived parenting behaviors, namely perceived autonomy granting (six items, e.g., "My Father (My Mother) encourages me to make my own decisions", "My Father (My

Mother) encourages me to express my ideas, even if they do not please other people”), perceived warmth (four items, e.g., “My Father (My Mother) is usually in a good mood”, “My Father (My Mother) usually has fun with me”), and perceived knowledge of behaviors and activities (five items, e.g., “To what extent your Father (your Mother) really knows who your friends are”, “To what extent your Father (your Mother) really knows what you do in your free time”). The study of the psychometric properties of the measure was addressed in a previous manuscript (Cruz et al. 2018). Results from the confirmatory factor analysis revealed a tridimensional factor structure of the measure, comprised by the factors: autonomy granting, warmth, and knowledge, as well as the adequate psychometric properties. Configural and metric invariance were found for fathers’ and mothers’ parenting behaviors, but not scalar or residual invariance. The confirmatory factor analysis of the measure in the current study is presented in the results section. For the current sample, Cronbach’s alpha coefficients for each dimension ranged between .82 and .90 for the perceptions of both fathers’ and mothers’ parenting behaviors scales.

4.2.2 Academic Achievement

Adolescents’ grades were collected at the end of school year directly from the students’ records. In Portugal, the scale used by high school teachers for grading school subjects is from zero to 20 points. An overall score of academic achievement was created by averaging the grades in all school subjects. Cronbach’s alpha coefficient was .93, considering the total number of school subjects and their respective grades for each participant.

4.2.3 Social Skills

Adolescents’ social skills were assessed through the Portuguese version (Mota et al. 2011) of the Social Skills Questionnaire (student form, Grades 7 to 12), which is part of the Social Skills Rating System (Gresham and Elliott 1990). The Social Skills Questionnaire is a self-report questionnaire, consisting of 39 items regarding two parameters: the frequency and the importance of each behavior. Each item is rated on a 3-point scale both on frequency (0: never, 1: sometimes; 2: many times) and on importance (0: not important, 1: important, 2: very important). Only the frequency parameter was used in this study, as the expected outcome measure was the adolescent’s social skills, as estimated by their reported frequency of behaviors. According to Gresham and Elliott (1990), the 39 items are organized in four dimensions: cooperation (10 items), assertiveness (nine items), empathy (10 items) and self-control (10 items). Additionally, the total score represents the sum of all items (Cronbach’s alpha coefficient was .80), with higher scores pointing out more frequent social skills related behaviors. The confirmatory factor analysis of the measure in the current study is presented in the results section.

4.2.4 Socio Demographic Characteristics

Adolescents reported their gender, age, and parents’ years of schooling. Parents’ years of schooling was computed by averaging mothers’ and fathers’ years of schooling, as both variables were positively correlated, $r = .72, p < .001$.

4.3 Analytic Plan

Analyses were performed using the software IBM SPSS v.23 (IBM Corp. Released 2014) and IBM SPSS Amos v.24 (Arbuckle 2014). Mothers' and fathers' differences regarding the adolescents' perceptions of autonomy granting, warmth, and knowledge were tested through paired-samples *t*-tests. An independent sample *t*-test was performed to assess adolescents' gender differences on the study's outcome variables. Bivariate correlations (Pearson correlations coefficients) were performed to assess the associations between the adolescents' age, social skills, academic achievement, and perceptions of mothers' and fathers' autonomy granting, warmth, and knowledge, and parents' years of schooling.

Different structural equation models were performed to assess the measurement models of adolescents' perceptions of fathers' and mothers' parenting behaviors and social skills. Regarding the perceived parenting behaviors, two measurement models were performed, one regarding the perception of fathers' and the other the perception of mothers' parenting behaviors. Additionally, measurement invariance regarding these models was evaluated through confirmatory factor analysis multi-group comparison, comparing the adolescents' perceptions of fathers' parenting behaviors and mothers' parenting behaviors. Invariance was considered when the chi-square difference between models was non-significant (Cheung and Rensvold 2002). A multiple regression analysis was then performed using maximum likelihood estimation, which included the adolescents' perceptions of parenting behaviors for mothers and fathers (factor score weights) as predictors of social skills (factor score weights) and academic achievement. The model also included the adolescents' age and parents' years of schooling as covariates for the outcome variable academic achievement. Lastly, multi-group comparison was performed to test whether the paths in the model were different according to the adolescents' gender. Model fit was evaluated using the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). To have an adequate model fit, the CFI value should be higher than .90, the SRMR should be .08 or less (Hu and Bentler 1999), and the RMSEA value should be inferior to .08 (MacCallum et al. 1996).

5 Results

5.1 Preliminary Analyses

In the current study, as preliminary analyses, confirmatory factor analyses were performed to assess the measurement model of adolescent's perception of fathers' and mothers' parenting behaviors, and social skills.

5.1.1 Adolescent's Perception of Fathers' and Mothers' Parenting Behaviors Measurement Models

In the current sample, two confirmatory factor analyses were performed to explore the three dimensions in each scale, regarding the perception of fathers' and mothers' parenting behaviors. The measurement models regarding adolescents' perceptions of

fathers', $\chi^2(87) = 123.17$, $p = .01$, $CFI = .97$, $SRMR = .05$, $RMSEA = .05$, and adolescents' perceptions of mothers', $\chi^2(87) = 167.92$, $p < .001$, $CFI = .92$, $SRMR = .07$, $RMSEA = .08$, parenting behaviors, revealed a good fit to the data. Measurement invariance of the perceptions of fathers' and mothers' parenting behaviors scales was also tested in the current sample using confirmatory factor analysis multi-group comparison. Results revealed configural invariance, $\chi^2(174) = 291.04$, $p < .001$, $CFI = .95$, $RMSEA = .05$, and metric invariance, $\Delta\chi^2(12) = 17.92$, $p = .12$. Achieving metric invariance reveals equal factor loadings for both scales, which implies that adolescents calibrate their measures of fathers' and mothers' parenting behaviors in the same way.

5.1.2 Social Skills Measurement Model

A measurement model of social skills was performed, including parcels (total score) of the dimensions cooperation, assertiveness, empathy, and self-control, which revealed an adequate fit to the data $\chi^2(2) = 16.13$, $p < .001$, $CFI = .91$, $SRMR = .08$, $RMSEA = .20$. The RMSEA value for the social skills measurement model suggests poor model fit; however, according to Kenny et al. (2015), in models with small degrees of freedom, as is the case, the RMSEA can falsely indicate poor model fit (even with moderate sample sizes).

Following the confirmatory factor analysis for the measurement models, factor score weights were used to score the adolescents' perceptions of fathers' and mothers' parenting behaviors (autonomy granting, warmth and knowledge), and adolescents' social skills.

5.1.3 Descriptive Statistics, Mean Differences, and Correlations

Means, standard deviations, and range for all variables are reported in Table 1. No significant differences were found between the adolescents' perceptions of fathers' and mothers' warmth, $t(167) = -1.97$, $p = .05$. However, adolescents reported a higher perception of mothers' autonomy granting, $t(167) = -3.19$, $p = .002$, and knowledge, $t(167) = -7.80$, $p \leq .001$, when compared to fathers'. Additionally, adolescents' scores

Table 1 Descriptive statistics

	<i>M</i>	<i>SD</i>	<i>Min, Max</i>
Adolescents' age	16.76	0.45	16.00, 19.08
Parents' years of schooling	10.36	4.23	4, 18.50
Perception of fathers' autonomy granting	3.12	0.74	1, 4
Perception of fathers' warmth	3.04	0.71	1, 4
Perception of fathers' knowledge	2.95	0.69	1, 4
Perception of mothers' autonomy granting	3.29	0.61	1.17, 4
Perception of mothers' warmth	3.15	0.63	1.25, 4
Perception of mothers' knowledge	3.34	0.52	2, 4
Adolescents' social skills (frequency of related behaviors)	1.40	0.17	0.95, 1.82
Adolescents' academic achievement	13.72	2.58	7.83, 20

on academic achievement, $t(166) = -0.75, p = .45$, and on social skills, $t(166) = -1.41, p = .15$, did not differ according to gender.

Table 2 presents correlation coefficients among adolescents' age, parents' years of schooling, adolescents' academic achievement and social skills (factor score weights), and adolescents' perception of their mothers' and fathers' parenting behaviors (factor score weights). The adolescents' perceptions of mothers' and fathers' autonomy granting, warmth, and knowledge presented medium size correlations within parents' dyad. The adolescents' perceptions of their mothers' and fathers' parenting behaviors presented small to medium size correlations with their social skills (frequency of related behaviors). The adolescents' perceptions of their fathers' knowledge and mothers' warmth, as well as their age, and parents' years of schooling presented small to medium size correlations with their academic achievement.

5.2 Testing Adolescents' Perception of Mothers' and Fathers' Parenting Behavior as Predictors of Academic Achievement and Social Skills

A structural equation model was performed to identify the predictors of academic achievement and social skills, including the adolescents' perception of mothers' and fathers' parenting behavior (autonomy granting, warmth, and knowledge) as predictors. The model also included adolescents' age, and parents' years of schooling as covariates of the outcome academic achievement. The model presented a good fit to the data, $\chi^2(3) = 3.50, p = .32, CFI = .99, SRMR = .02, RMSEA = .03$, explaining 24% of the variance of academic achievement and 14% of the variance of social skills among participants (see Table 3). Adolescents' perceptions of fathers' warmth, $\beta = -.45, p < .001$, and knowledge, $\beta = .34, p = .01$, predicted academic achievement, whereas the adolescents' perceptions of mothers' knowledge, $\beta = .23, p < .001$, predicted social

Table 2 Correlations among variables

	1	2	3	4	5	6	7	8	9	10
1. Adolescents' age (years)	1	-.02	-.07	-.18*	-.10	-.04	-.08	.03	.04	-.17*
2. Parents' education (years of schooling)		1	.09	-.02	.13	.02	-.12	.03	.11	.30***
3. Perception of fathers' autonomy granting			1	.81***	.73***	.48***	.36***	.14	.19*	.05
4. Perception of fathers' warmth				1	.68***	.37***	.41***	.18*	.17*	-.09
5. Perception of fathers' knowledge					1	.28***	.26**	.41***	.21**	.19*
6. Perception of mothers' autonomy granting						1	.72***	.39***	.25**	-.10
7. Perception of mothers' warmth							1	.38***	.23**	-.18*
8. Perception of mothers' knowledge								1	.34***	.05
9. Adolescents' social skills (frequency of related behaviors)									1	.004
10. Adolescents' academic achievement										1

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 3 Multiple predictors of adolescents' academic achievement and social skills: standardized regression weights and percentage of explained variance

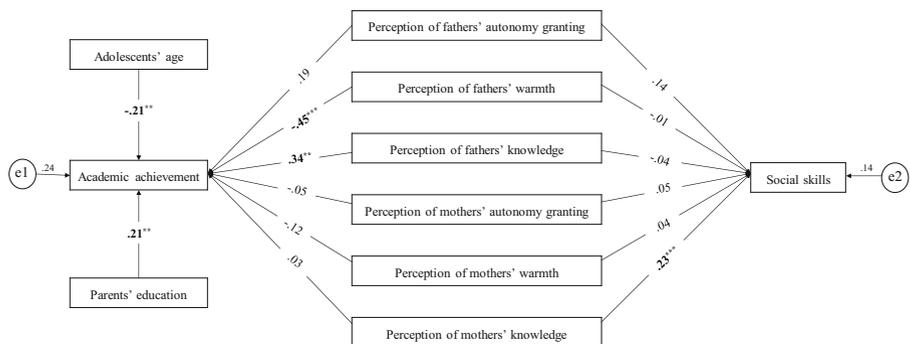
	Academic achievement	Social skills
Intercept (estimate and standard error)	32.38 (6.77)***	0 (0.01)
1. Perception of fathers' autonomy granting	.19	.14
2. Perception of fathers' warmth	-.45***	-.01
3. Perception of fathers' knowledge	.34**	-.04
4. Perception of mothers' autonomy granting	-.05	.05
5. Perception of mothers' warmth	-.12	.04
6. Perception of mothers' knowledge	.03	.23***
Explained variance (%)	24%	14%

Adolescent's age and parents' education were included in the model as covariates of academic achievement
 ** $p < .01$; *** $p < .001$

skills (see Table 3 and Fig. 1). Significant covariance was found among the adolescents' perception of mothers' and fathers' parenting behaviors, as displayed in Table 4.

A multi-group comparison analysis compared the structural equation model presented in Fig. 1 to understand whether the paths differed according to adolescents' gender. The comparison between the unconstrained and the constrained models revealed model invariance, $\Delta\chi^2(14) = 11.10, p = .69$, pointing out that the paths in the equation are not different according to adolescents' gender.

To further explore the negative association found between the adolescents' perceptions of fathers' warmth and academic achievement, a hierarchical multiple regression was performed including academic achievement as a dependent variable, and, as independent variables in a first model, the linear effect of adolescents' perceptions of fathers' warmth, and, in a second model, the quadratic effect of adolescents' perceptions of fathers' warmth (the variable was multiplied by itself). As can be seen in Table 5, the relation between adolescents' perceptions of fathers' warmth and academic



** $p < .01$; *** $p < .001$

Fig. 1 Multiple predictors of adolescents' academic achievement and social skills: standardized regression weights and squared multiple correlations

Table 4 Covariances among predictor variables

	1	2	3	4	5	6	7	8
1. Perception of fathers' autonomy granting	1							
2. Perception of fathers' warmth		1						
3. Perception of fathers' knowledge			1					
4. Perception of mothers' autonomy granting				1				
5. Perception of mothers' warmth					1			
6. Perception of mothers' knowledge						1		

Adolescent's age and parents' education were included in the model as covariates of academic achievement

* $p < .05$; ** $p < .01$; *** $p < .001$

achievement is better explained by a quadratic model, rather than a linear model, $R^2_{change} = .047$, $F_{change}(1165) = 8.27$, $p = .01$. Figure 2 depicts that low to moderate-low levels of fathers' warmth relate to a slight increase in academic achievement, and that moderate-low levels of fathers' warmth relate to higher academic achievement. The moderate-low level of fathers' warmth seems to be the optimal level related to adolescents' academic achievement. From that point onwards, for each unit increase in fathers' warmth, a steep decline in academic achievement takes place.

6 Discussion

The purpose of the current study was to examine whether adolescents' perceptions of mothers' and fathers' parenting behaviors (autonomy granting, warmth, and knowledge) differently predicted adolescents' academic achievement and social skills, and whether these paths were different according to the adolescents' gender. The findings globally support previous research that reveal the differential associations between mothers' and fathers' behaviors and adolescents' academic achievement and social skills.

Table 5 Multiple regression assessing linear and quadratic relations between adolescents' perceptions of father's warmth and academic achievement (Unstandardized estimate and standard error)

	Model 1	Model 2
Constant	13.72 (.20)	14.13 (.24)
Linear (<i>Adolescents' perceptions of fathers' warmth</i>)	-.35 (.30)	-.90 (.35)
Quadratic (<i>Adolescents' perceptions of fathers' warmth</i>) ²	-	-.94 (.33)
R^2	.008	.056
Adjusted R^2	.002	.044
F	1.38	4.86**
ΔR^2	-	.047**

$R^2_{change} = .047$, $F_{change}(1165) = 8.27$, $p = .01$

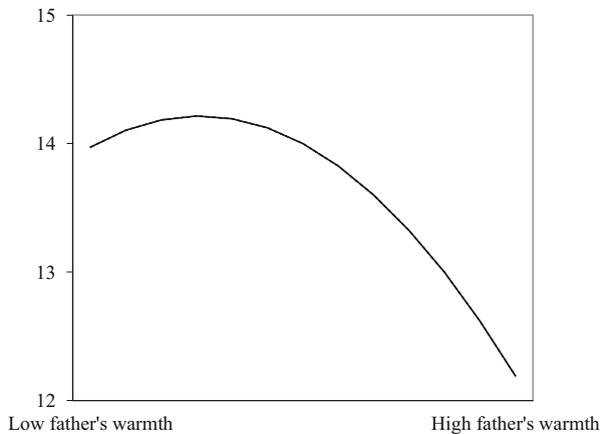


Fig. 2 Quadratic relation between adolescents' perceptions of father's warmth and academic achievement

In the current study, adolescents perceived their mothers as granting more autonomy and as having more knowledge of their whereabouts than fathers. These results are in line with previous studies that report that adolescents' perception of mothers' parenting behaviors are higher than fathers' parenting behaviors (Cruz et al. 2018; Laible and Carlo 2004; Simons and Conger 2007). Indeed, the mothers in the present sample tend to be the primary caregivers, and are the parent that spends more time and are more readily-available to the children, as described in the literature (Jeynes 2016).

Regarding academic achievement, adolescents' perceptions of fathers' knowledge and warmth, but not mothers' parenting behaviors, were found to be significant predictors, in a model including adolescents' age and parents' years of schooling, as covariates. Adolescents who see their fathers, but not their mothers, as having more knowledge of their whereabouts present better school grades. These results showed the major role played by the fathers in promoting adolescents' academic achievement and are in line with the studies that pointed out fathers as being more focused on goal achievement, as the ones primarily asked for help with homework, and as the provider for material support (Laursen and Collins 2009; Smetana et al. 2006; Steinberg and Silk 2002). Although we have no information regarding the specific content of fathers' knowledge behaviors, our results suggest that fathers-adolescents' conversations tend to be focused on school and achievement-related topics.

Fathers' warmth, but not mothers', was found to have a negative effect on adolescents' academic achievement. This was an unexpected finding. Further analysis showed a quadratic relation between the adolescents' perception of fathers' warmth and academic achievement. When adolescents' perceptions of fathers' warmth increases from low to moderate, there is an increase in academic achievement. However, when adolescents' perceptions of fathers' warmth increase from moderate to high, there is a decrease in academic achievement. An interesting interpretation for this finding may relate to the items' content. The items of the warmth dimension refer to positive mood, being fun, optimistic, and cool. In the current study, excessively joyful, optimistic, and cool fathers have lower academically achieved children. Nevertheless, a moderate level of adolescents' perceptions of fathers' warmth is related to better school

achievement outcomes. It is important to consider that the participant adolescents were going through a demanding period, mostly characterized by strain and pressure as the final exams were approaching, and the possibility of entering a high education program was determined by their school grades. The perception of a fathers' excessive positive mood can be (mis)understood as a permissive, less demanding attitude towards academic tasks and duties, resulting in lower grades. We do not know if these results would replicate in other, less stressful, school periods. There is evidence in the literature which shows that a positive parents' affect does not always have a positive effect in academic achievement and that a negative parents' affect may have a positive effect. Some examples are: students perception of fathers' involvement predicted lower school grades (Ratelle et al. 2018), mothers' harshness predicted high female adolescents' school grades (Dumka et al. 2009), and fathers coercion in the conventional domain predicted higher academic competence (Sorkhabi and Middaugh 2019).

Adolescents who perceive their mothers, but not their fathers, as having more knowledge of their whereabouts report higher levels of social skills. These results are in line with other studies that pointed out the major role of the mothers' parenting behaviors when compared to fathers', on the development of adolescents' social and emotional competence (Barber et al. 2005; Laible and Carlo 2004; Sorkhabi and Middaugh 2019). Typically, mother-adolescent interactions are more focused on social and emotional issues, such as friends, social relationships, both with peers and with teachers (Smetana et al. 2006). Mothers are more likely to help children in developing their social skills (Jeynes 2016). Our findings suggest that within the context of the interactions with their adolescent children, mothers have the opportunity to foster adolescents' social skills. Again, although we have no information about the specific content of mothers' knowledge behaviors, it seems that adolescents-mothers' (but not fathers') conversations are related to relevant social skills related issues.

The way the adolescents' perceptions of mothers' and fathers' parenting behaviors influenced their academic achievement and social skills was not different for male and female adolescents. This finding is in line with Pinquart's meta-analysis (2016) which found that adolescents' gender was not a moderator of the association between parenting styles/dimensions and academic achievement.

Overall, these results suggest that, from the adolescents' point of view, regardless of their gender, both mothers and fathers play a unique role on their developmental outcomes. Mothers' influence seems to impact mostly the social dimension, whereas the fathers' influence seems to lie on the instrumental dimension of adolescents' functioning. Mothers' and fathers' parenting behaviors have a different impact on different adolescents' outcomes. It is important to study the effect of both mothers' and fathers' parenting behaviors on children's development, instead of analyzing only one of them, or using a composite variable of both mother and father parenting behaviors.

It should be noted that, considering the three parenting behaviors, adolescents' perception of fathers' and mothers' knowledge was a predictor of the two adolescents' functioning outcomes addressed in the current study. Mothers' knowledge predicted adolescents' social skills while fathers' knowledge predicted academic achievement. Previous research showed that parental behavioral control, and, particularly, parental

knowledge, were strong negative predictors of children's antisocial behavior (Barber et al. 2005; Cheung et al. 2013; Hill and Ming-Te 2015; Supple and Small 2006). Our results provide new data and expand previous research by pointing out the relevance of parental knowledge both for academic achievement and social skills, depending on the specific parental figure that displays this behavior. It is possible that specific parental knowledge behaviors may be performed differently by mothers and fathers in their interactions with children, as, according to our results, mothers' and fathers' knowledge seem to have different consequences on adolescents' functioning. Some authors argue that parental knowledge is not so much a parental dimension, since it corresponds to the voluntary disclosure of information by adolescents rather than the active solicitation of information by parents (Barber et al. 2005; Stattin and Kerr 2000). Thus, adolescents may disclose different information to mothers and fathers. Even though some studies suggest that adolescents disclose more information to mothers than to fathers, particularly regarding personal issues (Smetana et al. 2006), further research should address and clarify this issue.

6.1 Limitations

Although this study stems from the idea well supported in the literature that parents have a key importance in the determination of their children's functioning (cf. Laursen and Collins 2009), the design of this study is correlational which prevents us from drawing any causal relationships between parenting behaviors and adolescents' academic achievement and social skills. Using social skills total score instead of each subscale score can also be seen as a limitation. However, social skills total score provided a more reliable measure than would each subscale score. Nevertheless, future studies should address the effect of parenting behaviors in each subscale of social skills. Another limitation concerns the use of adolescents as a single reporter both for social skills (adolescents' self-reports) and for parenting behaviors (adolescents' perceptions). Not having used an instrument that assesses the parents' perception of parenting behaviors can be noted as a limitation. Nevertheless, the adolescents' perception of parenting behaviors provides their interpretations of parents' behavior, developed through their daily interactions. Some evidence exists suggesting that adolescents' perceptions of parenting may be more reliable than actual parents' reports, as adolescents' perceptions are less prone to bias due to social desirability (Morsbach and Prinz 2006), and have been identified as better predictors of adolescents' development and adjustment (Cheung et al. 2016; Pelegrina et al. 2003; Pinquart 2016).

6.2 Strengths

The current study has some noteworthy strengths. First, the inclusion of the adolescents' perceptions of parenting behaviors for both parents, rather than just one of them, assessed through a measure found to be invariant between mothers and fathers. Second, the focus on positive youth development assessed through academic and social functioning. Third, mothers' and fathers' parenting behaviors were included and analyzed in a unique model which allowed for the identification of its relative contribution to adolescents' academic achievement and social skills. Moreover, the use of structural equation modeling provided information about the covariance matrix of the measures and error measurement,

allowed to control the shared effects of the adolescents' report of both mother and father, as well as to compare the model according to the adolescents' gender.

7 Conclusion

This study reveals the importance of assessing both mothers' and fathers' parenting behaviors regarding adolescents' functioning in the same model. The individual mothers' and fathers' parenting behaviors make unique contributions to adolescents' functioning with mothers' parenting behaviors having a greater impact on social skills and fathers' parenting behaviors on academic achievement, regardless of the adolescents' gender.

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