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# Familial Relationships Perceived by Parents and Adolescent Depression: Psychosocial Functioning Moderating Effect

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**Abstract**

Depression is considered a health problem associated with significant impairment in psychosocial functioning. The quality of interpersonal relationships between parent and adolescents can be an important protective/vulnerability factor to depression. This study aims to understand if the psychosocial functioning of the adolescent is a moderator variable between the quality of interpersonal relationships perceived by the parents and depressive symptoms of the adolescents. Further, we analyse if gender of adolescents influence the quality of these relationships, and if psychosocial functioning and quality of interpersonal relationships is associated with depression. The sample is constituted by 132 adolescents and their parents, participants integrated in a research project about prevention of adolescent depression (PTDC/MHC-PCL/4824/2012). Self-report questionnaires were used to assess depressive symptoms (*Children's Depression Inventory* – CDI; Kovacs, 1985; Portuguese version: Marújo, 1994) and the quality of interpersonal relationships (*Quality of Relationships Inventory - Parents Perception* – QRI-PP; Pinheiro, Matos, Mota, Marques & Costa, 2015). Adolescent psychosocial functioning and satisfaction were evaluated by *Adolescent-Longitudinal Interval Follow-up* (A-LIFE; Keller et al., 1993; Portuguese version: Matos & Costa, 2011). The psychosocial functioning, global and dimensions (recreation activities and relationships with parents and friends), and functioning satisfaction

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were associated with depressive symptoms. It was found a moderation effect of school performance and satisfaction in the relationship between the support/depth dimension of the relationship parent/children and depressive symptoms. Our findings reinforce the importance of parent/children relationships and psychosocial functioning in the development of adolescent depression and emphasize the importance of the inclusion these variables in the prevention programs of depression.



**Keywords:** Psychosocial functioning; QRI-PP; depression; moderation; adolescence.

## 1. Introduction

It is during adolescence that intense developmental changes occur, that mark the transition between childhood and adulthood. Thus, this step is very important to build the identity of the individual and for the search of his desired independence (Cicchetti & Toth, 2009; Eccles, Lord, & Roeser, 1996).

The majority of adolescents pass through this phase without encountering significant psychological, social or health care problems. However, adolescence is marked by an increase of the incidence and prevalence of psychiatric disorders, one of them being depression (Compas, 2004). Depression rates increase remarkably in this age group, being that one in five adolescents probably will develop depression (Birmaher et al., 1996). In addition, the sooner the manifestation of depression, the more likely is the occurrence of depressive episodes throughout life (Essau, Lewinsohn, Seeley, & Sasagawa, 2010). Studies also refer to the existence of gender differences in the development and manifestation of depressive symptoms in adolescents (Essau et al., 2010; Galambos, Leadbeater, & Barker, 2004), girls presenting a prevalence of about double compared to boys (Saluja et al., 2004).

Depression, characterized by a change in mood that is persistent and severe enough to be considered a disturbance (Kolvin, 2005), is associated with symptoms such as depressed mood and clear decrease of interest in activities, significant weight gain or loss, insomnia or hypersomnia, agitation or psychomotor retardation, fatigue or loss of energy, feelings of devaluation or guilt, diminished ability to think or concentrate and recurrent thoughts about death (American Psychiatric Association, 2013). In adolescence, depression may be manifested through an irritable and unstable mood (Bahls & Bahls, 2002).

Depression presents a lasting nature, and is associated with significant functional losses and with a reduction of long-term quality of life (Bahls, 2002; Fergusson & Woodward, 2002; Greer, Kurian, & Trivedi, 2010). According to the World Health Organization (2008), it could even become the main cause of incapacity, in the most developed countries.

In this way, it becomes urgent to identify which risk factors may contribute to its development. Some of them may be: past depression (e.g. Lewinsohn, Hoberman, & Rosenbaum, 1988); presence of another disturbance (e.g., Sanford et al., 1995); belonging to the female gender (e.g. Block, Gjerde, & Block, 1991); having family members with the same pathology (e.g. Lieb, Isensee, Höfler, Pfister, & Wittchen, 2002); history of early losses (e.g. Slavich, Monroe, & Gotlib, 2011); having troubles at school (e.g. Fröjd et al., 2008); having experienced stressful life events and having low social support from friends and family (e.g., Monroe, Bromet, Connell, & Steiner, 1986); and, having poor psychosocial functioning (e.g. Lewinsohn et al., 1998).

Psychosocial functioning (PF) includes a variety of constructs that relate to achieving developmental tasks that are expected in a given age and context, approaching the concept of competence (Masten & Coatsworth, 1995).

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Most researches study the relationship between development of depression and deterioration of PF (e.g., Greer et al., 2010; Fried & Nesse, 2014; Harrington & Vostanis, 1995; Lewinsohn, Rohde, Seeley, Klein, & Gotlib, 2003; Mehta, Mittal, & Swami, 2014; Puig-Antich et al., 1993). However, studies like the one from Lewinsohn et al. (1994, 1998) stressed out the importance of assessing psychosocial characteristics of adolescents in risk of developing depression, in order to prevent it. In his longitudinal study on a sample of 1709 teenagers, Lewinsohn et al. (1998) found that adolescents who revealed a functional impairment in regard to health, have a higher risk – about 19.4%- of becoming depressed (showing a risk of approximately more 12% in relation to young people who did not express dysfunctionality). In the same, the study of McCabe, Ricciardelli and Banfield (2011) revealed that children who were classified as being at risk of developing depression, showed problems in their PF.

Impairment can occur globally or in multiple domains, such as at work/school, in recreational activities/hobbies, in satisfaction with life and in interpersonal relationships (Costa, 2011; Fergusson & Woodward, 2002; Goldstein et al., 2009; Greer et al., 2010; Lewinsohn et al., 1994; Mehta et al., 2014). Some studies examine separately the relationship of these dimensions with depression.

According to the studies of Fröjd et al. (2008) and Chen and Li (2000), in a sample of 2329 and 540 students respectively, a poor school performance is significantly associated with depression.

Gledhill and Garralda (2010), highlighted the role of positive life events in reducing depression, mentioning the importance of scheduling pleasant or rewarding activities, in order to promote these events. Satisfaction with life also seems to be associated with subjective well-being, relating negatively with depression (Koivumaa-Honkanen et al., 2001). In a sample of 330 adults, the longitudinal study of Rissanen et al. (2011) revealed that dissatisfaction was strongly related to the development of depression.

Sheeber, Hops, Alpert, Davis and Andrews (1997) reported that depressive symptoms in adolescents are related with the quality of their family relationships. This is in accordance with what is defended by other authors, who report that less social support and more conflict in family relationships, particularly with the father and the mother, seems to be associated with depressive symptomatology (e.g. Cheng et al., 2014; Cole & McPherson, 1993; Lewinsohn et al., 1994; Lee, Wong, Chow, & McBride-Chang, 2006; McFarlane, Bellissimo, Norman, & Lange, 1994; Smojver-žić1 & Bezinović, 2011). Longitudinal studies have shown that when family relationships are positive, adolescents are less likely to develop depression (Cheng et al., 2014; Lewinsohn et al., 1994; Reinherz et al., 1993). Studies in Portugal, found that the support/depth dimension was negatively correlated with depressive symptomatology in adolescents. However, this happened to girls and boys regarding the relationship with the father and just for girls in regard to the relationship with the mother. In female adolescents, conflict in the relationships with the father is also associated with higher levels of depressive symptomatology (Matos, Pinheiro & Marques, 2013; Pinheiro, Matos & Marques, 2013).

According to the study of Greca and Harrison (2005), which featured a sample of 421 adolescents, the relationships with friends and lovers can also be factors of vulnerability/protection for the development of depressive symptomatology.

Some investigations also make reference to the role that the gender may have in the relation of these variables with depression. With regard to school performance, Pomerantz, Altermatt, and Saxon (2002), on a sample of 932 students, mentioned that although the girls had better performances at school, they assessed their performance in a more negative way and worried more about it, being more likely to develop depression. Similarly, Cole, Martin, Peeke, Seroczynski and Fier (1999), noted that that when children are underestimated as to their academic competence (especially girls), they report higher levels of depressive symptomatology.

Gender differences were also reported with regard to satisfaction with life, Goldbeck, Schmitz, Besier, Herschbach and Henrich (2007) revealed that boys consistently showed higher values in this variable.

Given the family relationships, including some dimensions that characterized the quality of relations between parents and children, Matos et al. (2013) and Pinheiro et al. (2013) found differences between genders in support/depth dimension of the Quality of Relationships Inventory. Girls perceived more support/depth in their relationship with the mother, while boys perceived more conflict. Adolescents of the male gender also revealed higher levels of conflict with the father than girls. However, studies of Rueger, Malecki, and Demaray (2008, 2010), on a sample of students revealed that there were no gender differences in the perception of parental support.

When it comes to relations with friends and boyfriends, Neves and Pinheiro (2009) found that girls showed more positive relationships with their best friends, while boys reported more positive relationships with romantic partners. Rueger, Malecki, and Demaray (2008, 2010) e Bokhorst, Sumter and Westenberg (2009), found that girls perceived more support on the part of friends than boys.

Taking into account, in particular, the influence of variables associated with PF and with the quality of interpersonal relationships seem to have on well-being and psychological suffering, this research aims to: i) study existing associations between quality of parents/children relationship, as perceived by the parents, and depressive symptoms of their children; ii) analyze the relationship between psychosocial functioning and symptomatology in adolescents; iii) test the moderator effect of psychosocial functioning in the relationship between the quality of parents/children relationships and depressive symptomatology.

## 2. Methodology

### 2.1 Participants

The sample consisted of 132 students and their parents, who participated voluntarily and anonymously in the research project "Prevention of depression in Portuguese adolescents: efficacy study of an intervention with adolescents and parents", in which the present study is inserted. In the sample there is a predominance of the female gender, both in young people and in parents. Thus, from the 132 students, 90 are female (68.2%) and 42 are males (31.8%). In respect to parents, 113 are female (85.6%) and 19 are male (14.4%). Student ages ranged between 13 and 17 years ($M$ = 14.48, $SD$ = .82) and age of parents between 28 and 66 ($M$ = 42.84, $SD$ = 6.01).

### 2.2 Instruments

**Children's Depression Inventory** (CDI; Kovacs, 1983; Portuguese version: Marujo, 1984). The CDI aims to assess the level of depressive symptomatology in reference to the last two weeks, which is presented by children and adolescents between 7 and 17 years (Dias & Gonçalves, 1999). It is a self-report measure consisting of 27 items, each with 3 possibilities of response that are classified in a 3-points Likert scale (0 “absence of symptoms” - 2 "definite symptom"). Total score can vary between 0 and 54 (Smucker's, Craighead, Craighead, & Green, 1986; Steele et al., 2006). According to Kovacs (1985), this inventory revealed good values of internal consistency (Cronbach's alpha between .83 and .94) for the total scale, as well as a good test-retest reliability. In the Portuguese version, Marujo (1994) and Dias & Gonçalves (1999), found an internal consistency of .80. In the Portuguese population original structure of 5 factors of the CDI was not replicated and a unifactorial structure was obtained(Days & Gonçalves, 1999). In the present investigation the alpha value was .90 revealing a very good internal consistency.

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**Adolescent - Longitudinal Interval Follow-up Evaluation** (A-LIFE; Keller et al., 1993; Portuguese version: Matos & Costa, 2011). A LIFE is a semi-structured interview that intends to be a complementary diagnostic method and evaluates quantitatively the course of psychiatric disorders in the long run (Keller et al., 1987). The A-LIFE was developed from the LIFE, with the particularity of having been created for adolescents (Costa, 2011). It intends to evaluate the overall situation of the subject having in count the worst week of each month included in the follow-up period (Keller et al., 1987). The A-LIFE is divided into several sections, however this investigation will only consider PF areas (school performance, relationships with family and friends, and recreational activities) and satisfaction with functioning. Classification of PF is made using a 5-point ordinal scale (1 "very good" - 5 "very poor / severe invalidation"). In this study, the overall score was determined by adding the means of the scores obtained in each dimension and dividing by the number of dimensions. In turn, dimensions were obtained through the means of the individual's functioning, in each area, during the follow-up period (6 months). According to Keller et al. (1987), most items from PF presented good correlation coefficients (values between .52 and .98), as well as good inter-evaluator reliability in PF measures.

**Quality of Relationships Inventory - Parents Perception** (QRI-PP) (IQRI-PP; Pinheiro, Matos, Mota, Marques & Costa, 2015). The QRI-PP was developed from the IQRI (Neves & Pinheiro, 2006) and intends to evaluate the lack of support in relationships between parents and children. It consists of 16 items integrated in a bifactorial structure (with 8 items in each). Items are evaluated using a 4-points Likert scale (1 "never or nothing" - 4 "always or a lot"). The score for each factor is calculated by the mean rating of the items that compose it. Conflict dimension aims to measure if parents/children relations are ambivalent or conflicting. Support/depth dimension assesses the degree of availability of the other perceived by the person surveyed, and if the relationship is considered secure, important and positive (Pierce et al., 1991). This instrument obtained Cronbach's alpha coefficients of .89 and .86 for support/depth and conflict, respectively (Pinheiro, Matos, Mota, Marques, & Costa, 2015). In the present study, support/depth factor obtained an alpha of .70 and conflict factor of .85, revealing a reasonable and good internal consistency.

### *2.3 Procedures*

National entities that regulate scientific research authorized this study to students and their parents who have agreed to participate in the investigation. Confidentiality was assured and subjects were asked to sign an informed consent. The parents' assessment protocol was sent home to be filled, while students were evaluated and interviewed at school.

### *2.4 Analytical Strategy*

Data insertion and statistical analyses were conducted using the Statistical Package for Social Sciences (SPSS), version 22.0 for Windows.

In order to study differences between genders, Student t-tests for independent samples were used. Results were considered statistically significant when $p \leq .05$ (Marôco, 2010). To study the relationship between the variables, Pearson correlation coefficients (r) were used –the convention of Pestana and Gageiro (2008) was adopted, which states that a value of $r < .20$ indicates a very low correlation; $.20 < r < .39$ low; $.40 < r < .69$ moderate; $.70 < r < 0.89$ high; $e > .90$ very high.

Finally, the possible moderator effect of PF in the relationship between the quality of parents/children relationship and depressive symptomatology was studied. A variable is said to be a moderator if it affects the direction and/or strength of the relation between two variables (Baron &

Kenny, 1986; Holmbeck, 1997). To this end, we proceeded to the standardization of the independent and moderator variables, which allows a reduction of multicollinearity issues (Marôco, 2010). Then the interaction term variables were created, by multiplying the predictor variable (factors of QRI-PP) and the moderator variable (total score or PF areas). Finally, hierarchical multiple linear regressions were conducted, where adolescents' depressive symptomatology was established as a criterion variable. In these regressions, firstly one of the factors of the predictor variable was entered, followed by one factor or the total of the moderator and, finally, the interaction between the two. If the interaction term is significant ($p \leq .05$) we can say that there is a interaction effect.

## 3. Results

### *3.1 Preliminary analysis of the data*

Assumption of normality of variables was analyzed using the Kolmogorov-Smirnov test, which suggests that the sample does not have a normal distribution ((K-S, $p \leq .001$). However, when analyzing the bias relative to the mean through the values of asymmetry ($sk < |3|$) and flattening ($ku < |10|$), it was possible to conclude that there was no serious bias that compromises normal distribution of the data (Kline, 2011). The adequacy of the data to the realization of the hierarchical multiple regression was confirmed.

**Table 1.** Means and Standard Deviations for the total sample (N=132) and genders, with Student's *t*-test for gender differences

| | Total sample | | Females | | Males | | | |
|---|---|---|---|---|---|---|---|---|
| Variables | ***M*** | ***SD*** | ***M*** | ***SD*** | ***M*** | ***SD*** | ***t*** | ***p*** |
| Depressive symptoms (CDI) | 10.09 | 7.41 | 11.13 | 8.12 | 7.87 | 4.95 | -2.839 | .005 |
| Total Psychosocial Functioning | 1.74 | 0.47 | 1.73 | 0.48 | 1.76 | 0.44 | .322 | .748 |
| School performance | 1.53 | 0.63 | 1.47 | 0.54 | 1.67 | 0.77 | 1.523 | .133 |
| Family relationships | 1.71 | 0.64 | 1.74 | 0.72 | 1.67 | 0.43 | -.705 | .482 |
| Relationships with friends | 1.65 | 0.69 | 1.69 | 0.68 | 1.57 | 0.70 | -.913 | .363 |
| Recreational activities | 1.96 | 1.08 | 1.93 | 0.99 | 2.04 | 1.26 | .541 | .589 |
| Satisfaction (A-LIFE) | 1.97 | 0.79 | 2.08 | 0.82 | 1.74 | 0.66 | -2.338 | .021 |
| Support / Depth (QRI-PP) | 3.87 | 0.22 | 3.84 | 0.23 | 3.93 | 0.18 | 2.060 | .041 |
| Conflict (QRI-PP) | 2.17 | 0.43 | 2.18 | 0.45 | 2.14 | 0.40 | -.497 | .620 |

*Note. M* = Mean; *SD* = Standard Deviation; CDI = *Children's Depression Inventory*; A-LIFE = *Adolescent - Longitudinal Interval Follow-up Evaluation*; QRI-PP = *Quality of Relationships Inventory – Parents Perception*; In the dimensions of psychosocial functioning, lower scores correspond to a better functioning.

### *3.2. Gender Differences in depressive symptomatology, in the quality of parents/children relations (perceived by parents) and in psychosocial functioning*

To find out whether there were gender differences, *Student* t-tests for independent samples were computed (cf. Table 1). Girls obtained higher scores of depressive symptomatology. In satisfaction with functioning, significant differences were also found. Given that lower values indicate more satisfaction, we can observe that boys show higher levels of satisfaction. Finally, for the support/depth dimension in parents/children relationships (evaluated by the parents), it was observed that adolescents of the male gender have relationships with greater support/depth.

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*3.3. Study of the relations between the quality of parents/children relationships (perceived by the parents), psychosocial functioning and depressive symptomatology*

Pearson correlations were performed to study the relationship between the variables. Therefore, it might be noted that the CDI correlated with all areas evaluated from PF (with the exception of school performance dimension) and with satisfaction. QRI-PP dimensions did not significantly correlate with depressive symptomatology (cf. Table 2).

**Table 2.** Pearson correlations (r) between depressive symptoms, adolescent psychosocial functioning and quality of the relationships parents/children (N = 132)

| Variables | **1.** |
|---|---|
| **1.** Depressive Symptoms (CDI) | - . |
| **2.** Total Psychosocial Functioning (A-LIFE) | .35*** |
| **3.** School Performance | .12 |
| **4.** Family Relationships | .34*** |
| **5.** Relationships with Friends | .24** |
| **6.** Recreational Activities | .21* |
| **7.** Satisfaction (A-LIFE) | .50*** |
| **8.** Support/Depth (QRI-PP) | -.14cc |
| **9.** Conflict (QRI-PP) | .12c |

*Note.* * $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$; CDI = *Children's Depression Inventory*; A-LIFE = *Adolescent - Longitudinal Interval Follow-up Evaluation*; QRI-PP = *Quality of Relationships Inventory – Parents Perception.*

*3.4 Analysis of the moderation effects*

Hierarchical multiple regression analyses were made to ascertain if PF has a moderating effect in the relationship between quality of parents/children relationships (perceived by parents) and depressive symptomatology.

There were no significant interaction effects of PF and of satisfaction with the conflict dimension. School performance and satisfaction were also the only significant moderators of the relationship between the factor support/depth in parents/children relationships and depressive symptomatology. Following, we present the analysis in which significant moderating effects were obtained.

*3.4.1 The moderator effect of school performance in the relationship between support/depth (perceived by parents) and depressive symptomatology*

As previously stated, there was a moderator effect of school performance ($\beta$ = -.203, $p < .05$). Examining each of the variables, it was found that both support/depth ($\beta$ = -.140, $p > .05$) as well as school performance ($\beta$ = .126, $p > .05$) were not predictors of depressive symptoms (see Table 3).

**Table 3.** Regression coefficients for the three steps of the hierarchical multiple regression with support/depth, school performance and interaction term (N = 132)

| Model | Predictors | $\beta$ | *t* | *P* |
|---|---|---|---|---|
| 1 | Support / Depth | -.140 | -1.608 | .110 |
| 2 | Support / Depth | -.143 | -1.648 | .102 |
| | School Performance | .126 | 1.460 | .147 |
| 3 | Support / Depth | -.199 | -2.248 | .026 |
| | School Performance | .143 | 1.674 | .097 |
| | Support / Depth * School Performance | -.203 | -2.285 | .024 |

The variables support/depth and school performance showed no significant models in step 1 and 2. However, in the third step (interaction term) a significant model was produced that showed an increase in the percentage of variance explained in relation to depressive symptoms. The interaction (support/depth * school performance) proved to be a significant predictor, explaining 7.3% of the variance in depressive symptomatology (see Table 4).

**Table 4.** Model of the three steps of the hierarchical multiple regression for support/depth, school performance and interaction term ($N$ = 132)

| Model | $R$ | $R^2$ | $F$ | $P$ |
|---|---|---|---|---|
| 1 | .140 | .020 | 2.586 | .110 |
| 2 | .188 | .035 | 2.370 | .098 |
| 3 | .271 | .073 | 3.373 | .021 |

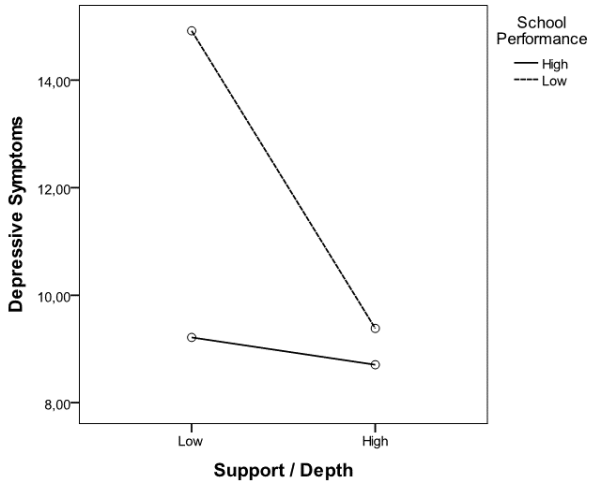


**Fig. 1.** Graphic of the moderating effect of school performance on the relationship between support/depth and depressive symptoms

In Figure 1 the graphical effect of moderation can be observed. Two levels (below and above average) were created for both variables: support/depth and school performance. Looking at the chart, it is possible to observe that when support/depth is lower, lower levels of school performance leads to greater depressive symptomatology, compared with high levels of performance. However, when support/depth is high, depressive symptomatology tends not to differentiate regardless of the school performance levels (high or low) – as it can be seen by the approximation of the lines of the two levels of school performance.

Since significant differences for gender were found in some of the variables under consideration, it was decided to investigate the effects of moderation separately for males and for females.

In this way, it was observed that school performance has a significant moderator effect only for the female gender ($\beta$ = -.279, $p$ < .05). With regard to the effect of each of the variables, it was found that only school performance proved to be a significant predictor ($\beta$ = .298, $p$ < .05).

Variables support/depth and school performance showed a significant model in the second step, and in the interaction term. The interaction (support/depth * school performance) proved to be a significant predictor, explaining 15.8% of the variance in adolescents' depression (cf. Table 5).

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**Table 5.** Regression coefficients and model of the three steps of the hierarchical multiple regression with support/depth, school performance and interaction term for females ($n$ = 90)

| | $R$ | $R^2$ | $F$ | $B$ | $t$ | $p$ |
|---|---|---|---|---|---|---|
| Model 1 | .038 | .001 | .129 | | | .721 |
| Support / Depth | | | | -.038 | -.359 | .721 |
| Model 2 | .301 | .090 | 4.321 | | | .016 |
| Support / Depth | | | | -.041 | -.402 | .688 |
| School Performance | | | | .298 | 2.916 | .005 |
| Model 3 | .398 | .158 | 5.383 | | | .002 |
| Support / Depth | | | | -.137 | -1.296 | .198 |
| School Performance | | | | .270 | 2.708 | .008 |
| Support / Depth * School Performance | | | | -.279 | -2.630 | .010 |

A graphic of the moderation effect for the female gender is presented in Figure 2. The resemblance to the earlier graphic regarding the effect of moderation can be noted. Considering the main effect of school performance, lower levels of this variable seem to predict greater depressive symptomatology. However, when support/depth is high, symptomatology tends not to differentiate regardless of the levels observed in school performance (low or high).

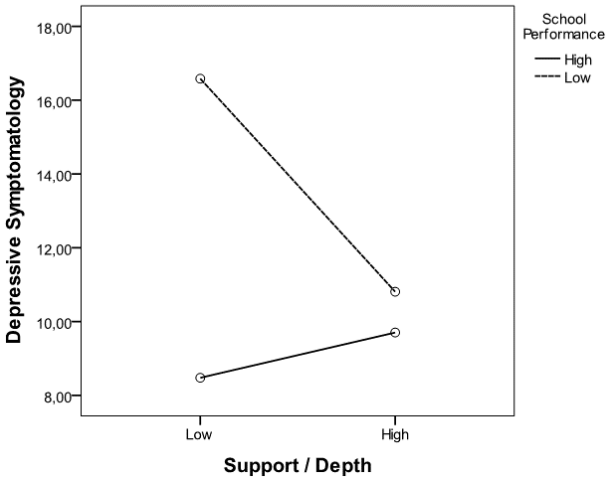


**Fig. 2.** Graphic of the moderating effect of school performance on the relationship with support/depth and depressive symptomatology in females

*3.4.2. Moderator effect of satisfaction with life in the relationship between support/depth (perceived by parents) and depressive symptomatology*

Variable satisfaction also produced a significant moderating effect ($\beta$ = -.183, $p$ < .05). When analyzing each variable separately, only satisfaction turned out to be a significant predictor of depressive symptomatology ($\beta$ = .495, $p$ < .05).

**Table 6.** Regression coefficients for the three steps of the hierarchical multiple regression with support/depth, satisfaction and interaction term ($N = 132$)

| Model | Predictors | $\beta$ | $t$ | $p$ |
|---|---|---|---|---|
| 1 | Support / Depth | -.140 | -1.608 | .110 |
| 2 | Support / Depth | -.123 | -1.625 | .107 |
| | Satisfaction | .495 | 6.553 | .000 |
| 3 | Support / Depth | -.107 | -1.442 | .152 |
| | Satisfaction | .459 | 6.073 | .000 |
| | Support / Depth * Satisfaction | -.183 | -2.404 | .018 |

It was observed that satisfaction generated a significant model in the second step, along with the interaction term in step 3. This interaction (support/depth * satisfaction) proved to be a significant predictor, explaining 29.6% of the variance in depressive symptomatology (cf. Table 7).

**Table 7.** Model of the three steps of the hierarchical multiple regression for support/depth, satisfaction and interaction term ($N = 132$)

| Model | $R$ | $R^2$ | $F$ | $p$ |
|---|---|---|---|---|
| 1 | .140 | .020 | 2.586 | .110 |
| 2 | .514 | .264 | 23.178 | .000 |
| 3 | .544 | .296 | 17.950 | .018 |

In the graphical representation, the two levels for the support/depth remained and three levels were created for satisfaction (low: up to *M*-1 *SD*; medium: between M-1SD and M+1SD; and high: above M+1SD), to better demonstrate the interaction effect. Considering the main effect of satisfaction, lower levels of this variable predict greater depressive symptomatology.

Regarding the interpretation of the interaction effect, it turns out that when support/depth is lower, lower levels of satisfaction are associated with more depressive symptoms, compared with average or high levels of satisfaction. When the support/depth is high, depressive symptomatology tends not to differentiate when there is a low or medium level of satisfaction, with a greater decline when satisfaction level is higher - This effect is observed through the approximation of the two lines of middle and low level of satisfaction, and through the line of high satisfaction that lies further down (cf. Figure 3).

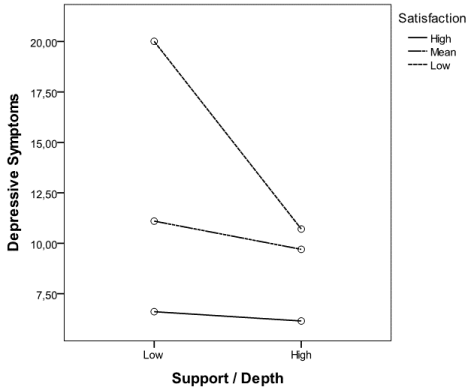


**Fig. 3.** Graphic of the moderating effect of satisfaction on the relationship with support/depth and depressive symptoms

When we studied the moderator effect separately for male and female, it was observed that there

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was a moderator effect meaningful only to the male gender (β = -.373, p < .05). When variables were analyzed separately, only the support/depth factor seemed to predict depressive symptomatology (β = -.425, p < .05) (cf. Table 8).

The variables support/depth and satisfaction generated a significant model in step 1, along with the interaction term in the third. The interaction term (support/depth * satisfaction) proved to be a significant predictor, explaining 35.6% of the variance in depressive symptomatology (cf. Table 8).

**Table 8.** Regression coefficients and model of the three steps of the hierarchical multiple regression with support/depth, satisfaction and interaction term for males ($n$ = 42).

| | $R$ | $R^2$ | $F$ | $\beta$ | $t$ | $p$ |
|---|---|---|---|---|---|---|
| **Model 1** | .425 | .181 | 8.830 | | | .005 |
| Support / Depth | | | | -.425 | -2.972 | .005 |
| **Model 2** | .473 | .223 | 5.607 | | | .007 |
| Support / Depth | | | | -.403 | -2.836 | .007 |
| Satisfaction | | | | .207 | 1.460 | .152 |
| **Model 3** | .597 | .356 | 6.997 | | | .001 |
| Support / Depth | | | | -.323 | -2.412 | .021 |
| Satisfaction | | | | .226 | 1.721 | .093 |
| Support / Depth * Satisfaction | | | | -.373 | -2.796 | .008 |

Observing the graph obtained for the male gender, and considering the main effect of support/depth, lower levels of this variable predict greater depressive symptomatology. When support/depth is high, the symptomatology tends no to differentiate. Regarding the interaction effect, it reproduces what was already observed in the previous figure; high levels of support/depth seems to work as a protection factor of depressive symptoms, not seeming to be relevant the effect of satisfaction (approximation of levels of satisfaction low, medium and high when support/depth is high). In turn, when support/depth is low, low satisfaction levels (compared to high or medium) lead to greater depressive symptomatology (cf. Figure 4).

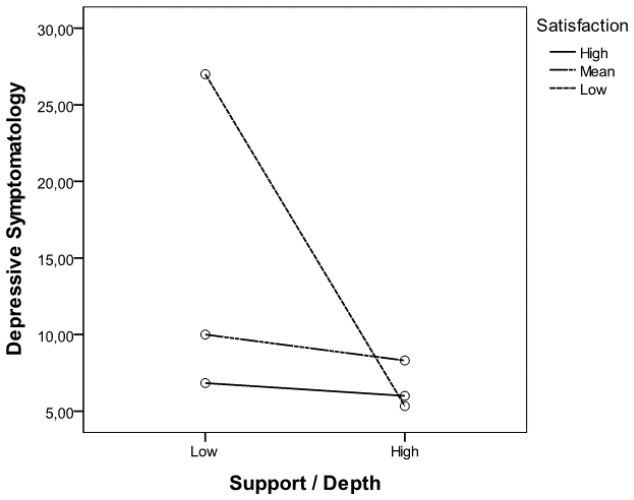


**Fig. 4.** Graphic of the moderating effect of satisfaction on the relationship with support/depth and depressive symptoms in males

## 4. Discussion

Literature has demonstrated an association between low social support and high conflict in parental relationships with the development of depression (Cheng et al., 2014; Cole & McPherson, 1993; Lewinsohn et al., 1994; Lee et al., 2006; McFarlane et al., 1994; Smojver-Ažić1 & Bezinović, 2011). In this regard, studies have shown that positive family relationships can act as protective factors in the onset of depressive symptomatology (Cheng et al., 2014; Lewinsohn et al., 1994; Reinherz et al., 1993). In this investigation, specific characteristics existent in the relationships between adolescents and their parents were studied. This was the first study to analyze existing associations between the dimensions support/depth and conflict, evaluated by the parents (through the QRI-PP), and depressive symptoms in adolescents. In this study, these dimensions are not significantly associated with depressive symptomatology, contrary to what happened in previous studies, where they were evaluated by children's perception, using the QRI (Matos et al., 2013; Pinheiro et al., 2013).

Some studies report that a poor global PF relates to depressive symptoms (Lewinsohn et al., 1994; Lewinsohn et al., 1998; McCabe, et al., 2011). Other authors have studied more specifically the relationship between some fields of the PF, such as school performance (Chen & Li, 2000; Fröjd et al., 2008), the quality of the relationships with the family (Matos et al., 2013; Pinheiro et al., 2013) and friends (Greca & Harrison, 2005) and recreational activities (Gledhill & Garralda, 2010), and satisfaction functioning in various areas of life (Koivumaa-Honkanen et al., 2001; Rissanen et al., 2011) and depressive symptoms in adolescence. This investigation the PF global and its various areas was studied, finding that the depressive symptoms are associated with PF global and with satisfaction with functioning, as with almost all dimensions of PF (relationships with family and friends and existence of recreational activities). These relations suggest that higher levels of functioning and satisfaction are associated with fewer depressive symptoms in adolescence. These data meet results obtained in other studies (Costa, 2011; Goldstein et al., 2009). A significant relationship between school performance and depressive symptoms was not found, unlike what Fröjd et al. (2008) obtained. In fact, family relations correlated with depression in the dimensions of the PF, contrary to what occurred in the QRI-PP, which can be explained by the fact that more relationships are included in these (not just father and/or mother) and because we are dealing with different information sources.

Significant differences in depressive symptoms for gender were also found, with girls having higher values of depression, what meets findings in literature (Essau et al., 2010; Galambos et al., 2004; Saluja et al., 2004). Boys reported more satisfaction with functioning than girls, which confirms the results obtained by Goldbeck, et al. (2007). With respect to parents' perception of support/depth in the relationships with the children, it was found that these values were higher in boys.

The possible interaction effects were explored, and a moderator effect of school performance and satisfaction in the relationship between parents/children relationships – parents' perception (support dimension/depth) and depressive symptomatology. When effect of school performance was tested for the total sample, results showed a predictor effect of support/depth and of the interaction term. Thus, having high levels of support/depth seems to work as a protection factor of depressive symptomatology, since, regardless of academic performance levels, no significant differences in depressive symptoms are found. The same is not true when support/depth of the relationship is low, since when school performance is low, there is an increase in depressive symptoms. Analyzing this effect of moderation for the two genders, only a significant moderator effect was found for females. Thus, and considering the main effect of school performance, similar results to those obtained for the total sample were found: lower levels on this variable seems to predict greater depressive symptomatology. However, when support/depth is high, the symptoms tend no to differentiate, whether school

performance is low or high..

With regard to the moderator effect of satisfaction for the total sample, one can say that satisfaction and the interaction term were predictors of depressive symptoms. It was observed that having high levels of support/depth seems to work as a protective factor of depressive symptomatology when satisfaction is low or medium; and seems to contribute to a smaller development of depressive symptoms when satisfaction is high. When support/depth is low, the same is not observed: when satisfaction is low or medium, there is a significant increment in depressive symptoms - stressing that the satisfaction, when support/depth is smaller, plays an important role in predicting this symptomatology. Analyzing this effect of moderation for the two genders, we found a significant interaction effect only in the male sample. Thus, having high levels of support/depth seems to work as a protector factor of depressive symptomatology in males. In turn, when support/depth is low, low satisfaction levels (compared to high or medium) lead to greater depressive symptomatology. These results suggest, that in adolescents, school performance and satisfaction with functioning, as well as the support/depth in parents/children relationships, can act as protective factors for the development of depressive symptoms, interacting with each other. It was interesting to note the existence of a gender effect: school performance acts as a moderator just for girls while satisfaction with life assumes this role in boys. In future studies it is intended to deepen the sociocultural influence on gender and its role in relations that are established between parents and children and vulnerability/protection for the development and maintenance of depressive symptoms in adolescence.

This research has some limitations that should be taken into consideration in the interpretation of the results: the small size of the sample, as well as its constitution (mostly female, both in students and in parents). We must be aware that other variables may have influenced the responses obtained in self-report instruments, such as social desirability, fatigue and demotivation, that may have been due to the extension of the research protocol used, which consists of various scales. In the future, it would be relevant to develop studies with larger samples, more balanced in terms of gender and covering other age groups (e.g. children and the elderly). Longitudinal research and clinical samples should also be developed.

It should be noted that this research is an innovative study by studying PF moderator effect and taking into account the perspective of the parents in the assessment of the quality of the relationships that they have with their children. These relationships can be important mechanisms of depression in adolescence. We also highlight the importance of developing strategies to improve PF in general, as well as relationships with family and friends, recreational activities, school performance and satisfaction, in the prevention and treatment of relapse in depression during adolescence.

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