



CPSYC 2014

## The moderating effect of gender: Traumatic experiences and depression in adolescence

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### Abstract

Depression may severely affect adolescents in sundry areas. Research demonstrates that girls have greater prevalence of depression than boys since adolescence and that traumatic experiences are predictors of depression. The present study aims to explore if traumatic experiences are predictors of depressive symptoms in adolescence and if gender moderates that relationship. The participants were 319 adolescents aged between 13 and 15 years old, attending the 8th and 9th grade in public schools, who participated in a Portuguese study about prevention of adolescent depression. Self-report questionnaires were used to assess traumatic experiences, measured by the Childhood Trauma Questionnaire (CTQ), and depressive symptoms, measured by The Childhood Depression Inventory (CDI). Results showed that the female gender had higher levels of depressive symptoms and also demonstrated a significant correlation between depressive symptoms, emotional abuse and emotional neglect for both genders. Furthermore, these traumatic experiences were predictors of depressive symptoms and a moderating effect of gender on the relationship between emotional neglect and depressive symptoms was found. This moderating effect suggests that for the same levels of emotional neglect girls showed higher levels of depressive symptoms. These findings emphasize the contribution of the emotional component of traumatic experiences on depression.

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Peer-review under responsibility of the Organizing Committee of CPSYC 2014.

*Keywords:* Depression; Traumatic experiences; Gender; Moderation.

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## 1. Introduction

Adolescence is a stage of development that occurs from puberty to adulthood, characterized by a set of physical, cognitive and emotional changes. It is a normative stage and most young people can go through it without significant difficulties (Alloy, Zhu, & Abramson, 2003), however there is a high prevalence of internalizing and externalizing problems in this stage of development (Wolf & Mash, 2006).

The research of depression in childhood and adolescence has increased and it is recognized that depression may severely affect adolescents in several areas of their lives (Verduyn, Rogers, & Wood, 2009). The feminine gender shows greater prevalence of depression than the male gender since adolescence and biological and psychosocial factors has been pointed out as explanations for these gender differences (Nolen-Hoeksema, 2001). Depression also contributes significantly to a number of other risk behaviors, maladaptive responses and comorbid problems (Alloy et al., 2003). In clinical terms there are some characteristic depressive symptoms of adolescence as hypersomnia, reactivity to rejection, lethargy, loss of appetite, social isolation, suicidal ideation and suicide attempts, dissatisfaction with body image, feelings of guilt, hopelessness and discouragement (Rudolph, Hammen & Daley, 2006). The absence of clinical intervention for depression in adolescents may lead to the prevalence of the disorder in adulthood so a proper diagnosis and treatment as well as prevention of depression in this stage of development is important (Alloy et al., 2003; Rao & Chen, 2009; Rudolph et al., 2006).

Research consistently shows significant differences according to gender in the prevalence and symptomatic manifestation of depression in adolescence. Between 13 and 15 years old the prevalence of symptoms increases significantly in girls while rates remain relatively stable in boys (Galambos, Leadbeater, & Barker, 2004; Twenge & Nolen-Hoeksema, 2002; Nolen-Hoeksema, 2001). Nolen-Hoeksema and Hilt (2009) propose an integrated biopsychosocial model suggesting that adolescents at greater risk of developing depression have risk factors including genetic, neurobiological and psychosocial vulnerabilities. Although boys and girls present similar risk factors, some of them are more common among girls. The feminine gender has more difficulty dealing with changes of puberty which contributes to an increase of depressive symptoms (Nolen-Hoeksema & Hilt, 2009) and is more sensitive to negative events and stress inducers, particularly those involving problems in interpersonal relationships (Rudolph et al., 2006). This sensitivity and the risk for depression may also result from a variety of feminine characteristics that emerge and intensify during adolescence such as hormonal changes, personality traits, attachment styles and maladaptive coping (Hankin & Abramson, 2001; Rose & Rudolph, 2006; Rudolph et al., 2006).

Given these differences, gender has been studied as a moderator in the relationship between depression and other variables such as emotional intelligence (Salguero, Extremera, & Fernández-Berrocal, 2012), obesity (Rosa & Gonçalves, 2011), externalizing behavior (Brensilver, Negri, Mennen, & Trickett, 2011) and cognitive emotional regulation strategies (Duarte, Matos, & Marques, in press).

Research demonstrates that traumatic experiences as physical and emotional abuse in childhood constitute risk factors for the development of negative cognitive styles and are significant predictors of depressive symptoms in adolescents (Alloy et al., 2003; Klein, Torpey, & Bufferd, 2008). Child maltreatment can trigger a number of physical, emotional, social, cognitive and behavioral consequences (Alberto, 2006). Five different types of child abuse have been considered which are designated by emotional abuse, physical abuse, sexual abuse, emotional neglect and physical neglect (Bernstein D. et al., 2003). The occurrence of negative events in childhood and adolescence can result in prevalent and harmful negative consequences to development (Alberto, 2006; Heim & Nemeroff, 2001; Alloy et al., 2003).

Emotional neglect and emotional abuse have been reported as main predictors of anxiety, depression and interpersonal problems even when other forms of abuse are present. Thus, it is important to note that much of the consequences result from the emotional or psychological component of abuse (Alloy et al., 2003) which provides negative consequences on emotional regulation, identity formation and relationship with others (Briere & Elliot, 2003)

Rose and Abramson (as cited in Alloy, Zhu & Abramson, 2009) proposed a model in which emotional abuse or neglect may have a more significant influence than the physical abuse on the development of adverse cognitive styles since the abuser directly contributes to the development of child's negative cognition. Supporting that hypothesis are several studies that found a significant relationship between negative inferential styles and depressive

symptoms in adults and their histories of emotional abuse and emotional neglect in childhood (Gibb, 2002; Gibb et al., 2001; Hankin, 2005; Gibb, Butler, & Beck, 2003). So, traumatic experiences in childhood as abuse and neglect are risk factors for the development of negative cognitive styles and vulnerability to depression (Abela & Hankin, 2009; Wolf & Mash, 2006).

The present study aimed to examine the relationship between traumatic experiences and depressive symptoms and test the moderating effect of gender on that relationship.

## 2. Method

### 2.1. Participants and procedure

The sample of this study comprised 319 adolescents from community population (102 boys – 32% and 217 girls – 68%) aged between 13 and 15 years old ( $M = 13.94$ ;  $SD = .69$ ), attending the 8<sup>th</sup> and 9<sup>th</sup> grade in public schools from central region of Portugal. These participants took part of a wider research project entitled “Prevention of depression in Portuguese adolescents: study of the efficacy of an intervention with adolescents and parents”.

First, review and approval of the research project were requested to the responsible entities that regulate research and after that schools were contacted in order to request their participation. In schools that approved the research project the executive board and teachers were contacted to schedule the presence of the researchers to inform the students about the purpose of the study, their role as participants, the voluntary nature of their participation, the confidentiality of data and their single use for research purposes. The adolescents who were willing to take part in this research project gave their informed consent as well as their parents.

The self-report inventories were administered in classrooms with the presence of the researchers to clarify doubts and ensure independent and confidential responses. The lack of complete filling of questionnaires was considered exclusion criteria. For this study participants were between 13 and 15 years because the project where this investigation was integrated aimed to prevent the first major depressive episode that usually happens at 15 years old.

### 2.2. Measures

The *Children Depressive Inventory* (CDI - Kovacs, 1985; Portuguese version by Marujo, 1994) was used to assess depressive symptoms. This instrument is a 27-item self-report inventory that assesses depressive symptoms in children and adolescents aged between 6 to 18 years old. Each item has three response alternatives rated on a scale from 0 (no symptoms) to 2 (definite symptom) and the individuals must select the answer that best describes how they have felt during the last two weeks. In the original version of this inventory, Kovacs (1985) reported a good internal consistency (Cronbach's alpha of .94) as well as good test-retest reliability. The Portuguese version of this inventory found a unifactorial structure and showed good internal consistency (Cronbach's alpha was .80) (Marujo, 1994). Cronbach's alpha in this study for the total scale was .90.

Traumatic experiences were assessed by the *Childhood Trauma Questionnaire* (CTQ – Bernstein et al., 2003; Portuguese version by Matos, Cherpe & Pereira, 2012). The CTQ is a self-report inventory that contains 5 factors each one with 5 items, plus a 3-item minimization/denial factor. The factors of CTQ are intended to assess the five forms of abuse suggested by Bernstein et al. (2003): emotional abuse; physical abuse; sexual abuse; emotional neglect and physical neglect. Item responses are scored in a Likert scale from 1 to 5 and reflect the frequency of maltreatment experiences. Original studies reported values of internal consistency for each of the CTQ factors with different magnitudes (Cronbach's alpha between .66 for physical neglect and .92 for sexual abuse) (Bernstein et al., 2003; Grassi-Oliveira, Stein, & Pezzi, 2006). In the present study, Cronbach's alpha was .76 for emotional abuse, .78 for physical abuse, .79 for sexual abuse and for emotional neglect, values that represent reasonable internal consistencies. Cronbach's alpha for physical neglect was .45 which is an inadmissible internal consistency so that factor was excluded from the analysis.

### 2.3. Data analysis

The present study has a transversal design and data analyses were performed using SPSS (Statistical Package for Social Sciences, version 20.0 for Widows).

Student's t-tests for independent samples were conducted to analyse gender differences on the variables.

Pearson's correlation coefficient was performed to examine the relationship between depressive symptoms and traumatic experiences. To analyse the magnitude of correlation it was used as reference values pointed by Pestana and Gageiro (2008): results between .10 and .29 are very low correlations; between .20 and .39 are low correlations; between .40 and .69 are moderate correlations; between .70 and .89 are high correlation and above .90 are very high correlations.

Multiple linear regressions were performed to analyse the predictor effect of traumatic experiences on depressive symptoms. The influence of each independent variable on the dependent variable was estimated by regression coefficients.

To perform the moderation analysis, and because the moderating variable of this study is categorical (gender), a dummy variable was created in order to take the two possible values of 0 and 1 (female – 1; male – 0). After that, variables corresponding to the multiplicative term between the independent variables (each CTQ factor) and the moderator variable (gender) were created. Thus, three terms were obtained: CTQ factor; gender (dummy) and the multiplicative term (each CTQ factor x gender). Hierarchical multiple regression analyses were conducted separately for the CTQ factors that were predictors of depressive symptoms in previous analysis (emotional abuse and emotional neglect). Each CTQ factor was inserted as predictor of depression on first step of regression; gender was inserted as moderating variable (dummy) on second step; the interaction between the CTQ factor and the moderating variable was entered on third step. Finally, a graphic was plotted for better understanding of the moderating findings.

## 3. Findings

### 3.1. Gender differences in depressive symptoms and traumatic experiences

Student's t-test for independent samples was used in order to examine gender differences in the occurrence of traumatic experiences and depressive symptoms. Results showed significant gender differences for the CDI total score,  $t(230.941) = -5.30, p < .001$ , with female gender obtaining higher scores than male gender ( $M = 13, DP = 7.6$  for girls and  $M = 8.7, DP = 6.4$  for boys). As for traumatic experiences results didn't show significant differences in any of the CTQ factors.

### 3.2. Correlation between traumatic experiences and depressive symptoms

Pearson's correlation coefficient (two-tailed) was conducted to examine the relationship between traumatic experiences and depressive symptoms in adolescents. Given the gender differences previously found, separate correlations for each gender were conducted. Results for the total sample showed that depressive symptoms were significantly and moderately correlated with emotional abuse ( $r = .43, p < .001$ ) and depressive symptoms were significant but weakly correlated with emotional neglect ( $r = .33, p < .001$ ) (Pestana & Gageiro, 2008). Similar results were obtained when the correlation analyses were performed separately for boys and girls, only differences in magnitude were observed. For girls results showed a significantly and moderately correlation between the total scale of CDI and emotional abuse ( $r = .46, p < .001$ ) and between the total scale of CDI and emotional neglect ( $r = .42, p < .001$ ). Finally, for boys there was a significant but low correlation between the total scale of CDI and emotional abuse ( $r = .30, p < .001$ ) and between the total scale of CDI and emotional neglect ( $r = .23, p < .001$ ).

### 3.2. Multiple regressions

Given the previous results, a multiple regression analysis (enter method) was conducted in order to understand if the CTQ factors that showed significant correlations with the total scale of CDI (emotional abuse and emotional

neglect) are predictors of depressive symptoms. For the total sample, results showed that a significant model was produced ( $R^2 = .206$ ;  $F(2) = 40.994$ ,  $p < .001$ ) which explained 20.6% of depressive symptoms variance. The emotional abuse scale emerged as the best predictor ( $\beta = .351$ ,  $p < .001$ ), followed by the emotional neglect ( $\beta = .174$ ,  $p = .002$ ). For girls, results showed that a significant model was produced ( $R^2 = .254$ ;  $F(2) = 36.354$ ),  $p < .001$  which explained 25.4% of depressive symptoms variance. Emotional abuse ( $\beta = .333$ ,  $p < .001$ ) and emotional neglect ( $\beta = .246$ ,  $p = .003$ ) also emerged as significant predictors of depressive symptoms. Finally, the results of the analysis for boys showed that a significant model was produced ( $R^2 = .113$ ;  $F(2) = 6.328$ ),  $p = .003$  which explained 11.3% of depressive symptoms variance and only the emotional abuse emerged as a significant predictor ( $\beta = .254$ ,  $p = .012$ ).

### 3.3. The moderating effect of gender on the relationship between traumatic experiences and depressive symptoms

Given the previous findings it was pertinent to explore if gender moderates the relationship between depressive symptoms and both traumatic experiences that emerged as significant predictors of the depressive symptoms (emotional abuse and emotional neglect). In order to study the moderating effect a set of hierarchical regression were conducted. No significant moderating effect was found on the interaction between gender and emotional abuse ( $\beta = .167$ ,  $p > .05$ ).

However, as shown in Table 1, when the independent variable was the emotional neglect the three steps of regression model were statistically significant. Emotional neglect was entered as a predictor in the first step of the regression model and gender was further included as moderator variable in the second step. In both steps the predictors entered produced statistically significant models (Step 1:  $R^2 = .106$ ,  $F(1) = 37.677$ ,  $p < .001$ ; Step 2:  $R^2 = .190$ ,  $F(2) = 37.169$ ,  $p < .001$ ). The interaction term was entered in the third step and produced a statistically significant model ( $R^2 = .204$ ,  $F(3) = 26.933$ ;  $p < .001$ ). Therefore, the interaction term is a significant predictor of depression explaining 20.4% of the depressive symptoms variance. The regression coefficients analysis demonstrated that emotional neglect and gender are both statistically significant predictors in the first two steps of the regression model. In the third step the interaction between these two variables is significant indicating the existence of a moderating effect of gender on the relationship between emotional neglect and depressive symptoms ( $\beta = .317$ ,  $p = .021$ ). This statistically significant coefficient of interaction term indicated that the slope that predicts the change in depression according to the level of emotional neglect differ significantly between male and female gender.

Table 1. Hierarchical Multiple Regression results for moderating effect of gender on the relationship between emotional neglect and depression

Predictor	$R^2$	F	$\beta$
Step 1	.106**	37.677	
Emotional neglect			.326**
Step 2	.190**	37.169	
Emotional neglect			.344**
Gender			.291**
Step 3	.204**	26.933	
Emotional neglect			.317*
Gender			.031
Emotional neglect x gender			.317*

\*  $p < .05$ . \*\*  $p < .001$

To better understand this results a graphic representation of the moderation analyses was plotted (Figure 1). The graphic revealed a positive slope for both genders which means that individuals presenting high levels of emotional neglect exhibit a positive relationship with depression (i.e. higher levels of emotional neglect are associated with higher levels of depression). However, this association is less pronounced among boys so for high levels of

emotional neglect girls showed a more evident association with depression. Therefore, in the moderation analysis the interaction term suggests that for the same values of emotional neglect girls tend to have more depressive symptoms.

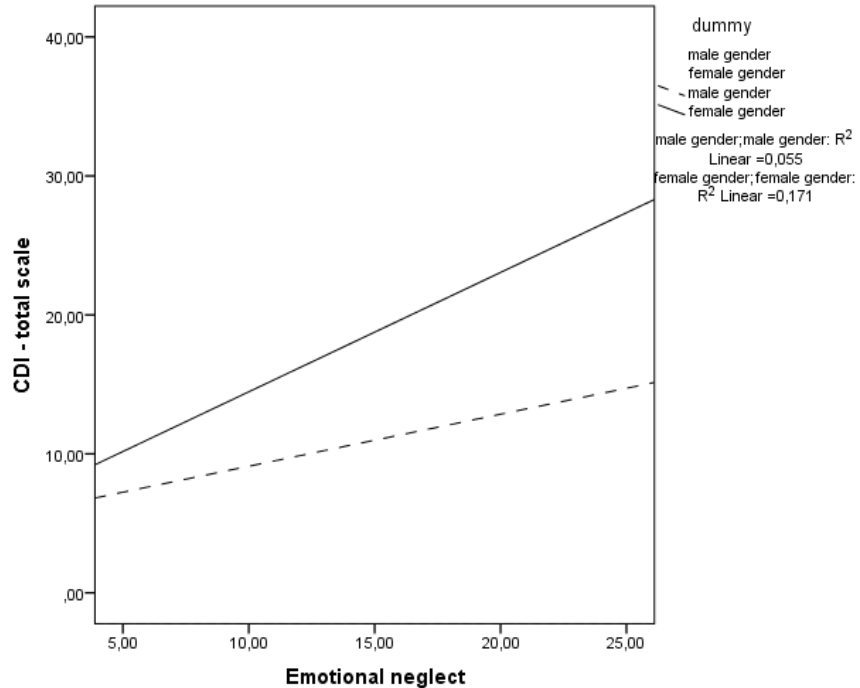


Fig. 1. Graphic representation of the moderating effect of gender on the relationship between emotional neglect and depressive symptoms.

#### 4. Discussion

Traumatic experiences such as abuse and neglect have been identified as significant predictors of depression in adolescence (Alloy, Zhu, & Abramson, 2003; Klein, Torpey, & Bufferd, 2008). Meanwhile, the gender is a variable considered in most investigations about depression since there are significant differences in prevalence and manifestation of depressive symptoms between genders (Nolen-Hoeksema, 2001; Twenge & Nolen-Hoeksema, 2002). The present study aimed to examine the relationship between traumatic experiences and depressive symptoms and also test the moderating effect of gender on that relationship.

The analysis of gender differences showed that girls revealed higher levels of depressive symptoms than boys which is consistent with previous research (Nolen-Hoeksema, 2001; Twenge & Nolen-Hoeksema, 2002; Galambos et al., 2004; Hilt & Nolen-Hoeksema, 2009; Hankin & Abramson, 2001; Rose & Rudolph, 2006; Rudolph, Hammen, & Daley, 2006). In the CTQ factors there were no significant gender differences, pointing out the homogeneity of responses.

Correlation analysis indicated a significant relationship between depressive symptoms, emotional abuse and emotional neglect for the total sample and for both genders. Therefore, the results suggested that adolescents who reported more traumatic experiences, specifically emotional abuse and/or neglect, tend to show higher levels of depressive symptoms. These results corroborate the information provided by literature which indicates that the emotional neglect and emotional abuse are strongly associated with negative consequences, including the development of negative cognitive styles and depression (Alloy et al., 2003; Wolfe & Mash, 2006; Briere & Elliot, 2003).



In addition, the analysis of emotional abuse and emotional neglect as predictors of depressive symptoms showed that emotional component of traumatic experiences explained 20.6% of the variance of depressive symptoms for the total sample, 25.4% for girls and 11.3% for boys. The data suggested that emotional abuse and emotional neglect can have a more significant influence than physical and sexual abuse in the development of negative cognitive styles which is supported by literature (Rose & Abramson as cited in Alloy, Zhu, & Abramson, 2009; Alloy et al., 2003; Briere & Elliot, 2003). Gender differences are also in line with previous evidence suggesting that girls who report histories of abuse or neglect in adolescence have a greater duration and severity of depressive symptoms (Cecil & Matson, 2001).

Given these findings, it was pertinent to examine the moderating effect of gender on the relationship between the occurrence of traumatic experiences (specifically emotional abuse and emotional neglect) and depressive symptoms. Results of moderating analysis showed that the interaction between emotional neglect and gender produced a significant model which suggests that gender moderates the impact of that specific traumatic experience on depression. Moreover, it showed that girls who reported higher levels of emotional neglect demonstrated a more evident association with depression than boys. Additionally, the graphical representation of data clarified these findings showing that for the same levels of emotional neglect girls tend to have more depressive symptoms than boys. Therefore, findings demonstrated that gender acts as a moderator of the effect of emotional neglect on depression.

These findings are in line with previous research that points to a strong association between emotional neglect and depressive symptoms (Alloy et al., 2003; Briere & Elliot, 2003; Rose & Abramson, 1992; Gibb et al., 2001; Gibb et al., 2003; Hankin, 2005). In this form of neglect the abuser may directly contribute to the development of negative cognitions and a maladaptive inferential style (Rose & Abramson as cited in Alloy et al., 2009). Such results can also be understood in light of the hopelessness theory (Abramson, Metalsky, & Alloy, 1989; Abramson, Haefel, Brazy, & Shah, 2008) since this negative attribution style characterized by the tendency to attribute negative events to internal, stable and global causes can make the person more vulnerable for depressive symptoms (Abramson et al., 1989; Gibb et al., 2002; Abela & Hankin, 2009; Alloy et al., 2009; Hilt & Nolen-Hoeksema, 2009).

The present study may have important clinical implications. A better understanding of the risk factors for depression, the recognition of the importance of emotional component and the existence of gender differences may contribute to design more effective strategies for assessment, intervention and prevention of depression.

Several limitations of the research must be mentioned. The small sample size and the discrepancy between the numbers of participants of each gender constrain the generalization of the findings and may have influenced the results. Furthermore, sample only involves community population. The exclusive use of self-report inventories and the filling time of the research protocol may have contributed to decreasing the adolescent concentration and motivation. Finally, the transversal design of this study limits causal conclusions. Future research should replicate this study using a larger sample with less discrepancy between genders and it would also be important to conduct this study with clinical samples.

The present study emphasizes the contribution of the emotional component of traumatic experiences to the vulnerability to depression. To acknowledge the different forms of traumatic experiences, their risk factors and the relationship between them and depressive symptoms is fundamental for clinical practice (Cook, Peterson, & Sheldon, 2009).

## **5. Conclusions**

The present study aimed to analyze the moderating effect of gender on the relationship between traumatic experiences and depressive symptoms. The sample comprised 319 adolescents (102 boys and 217 girls) aged between 13 and 15 years old.

According to the previous research the occurrence of traumatic experiences during childhood may compromise the healthy development and contribute to the vulnerability for many psychiatric disorders including depression. The gender is an important variable to take into account in studies of depression in adolescence since the higher

prevalence of symptoms in the female gender has been empirically demonstrated as well as differences in the manifestation of symptoms.

Findings showed that girls revealed more depressive symptoms than boys. It was also found that emotional abuse and emotional neglect were significantly related to depression and were also predictors of depressive symptoms. In this sense, adolescents who reported more experiences of emotional abuse and emotional neglect revealed higher levels of depressive symptoms. Finally, a moderating effect of gender on the relationship between emotional neglect and depressive symptoms was found. This moderating effect indicated that for the same levels of emotional neglect girls showed a more evident association with depression than boys.

Overall, these findings emphasized the contribution of the emotional component of traumatic experiences to the vulnerability to depression and the importance of gender differences in the prevalence and manifestation of these symptoms.

## Acknowledgements

The authors would like to express their gratitude to all the participants in this study and to the research project “Prevention of depression in Portuguese adolescents: study of the efficacy of an intervention with adolescents and parents”. This work is funded by ERDF - European Regional Development Fund through the COMPETE Programme (operational programme for competitiveness) and by National Funds through the FCT - Fundação para a Ciência e a Tecnologia (Portuguese Foundation for Science and Technology), within project «PTDC/MHC-PCL/4824/2012».

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