

# Explaining students' test anxiety and depression: The role of family interaction quality

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**Aim:** To examine the relationship between the quality of family interactions and test anxiety and depression in a sample of 4<sup>th</sup> and 7<sup>th</sup> grade primary school pupils.

**Methods:** The Scale of Depression for Children and Adolescents (SDCA, Vulić Prtorić, 2003a), The Subscale for Test Anxiety (STA, Vulić Prtorić, 2004a), and Scale of Interaction Quality within the Family (SIQF, Vulić Prtorić, 2004b) were used.

**Results:** Older pupils were generally more depressed and anxious compared to the younger ones. However, the increase in depression was observed only in female pupils, whereas in male pupils, the levels of depression were generally stable, regardless of age. A similar pattern was found in test anxiety. Overall satisfaction with family, as well as the quality of interactions with mother and father was higher in fourth graders, compared to seventh graders. Female pupils assessed their mothers as more accepting, whereas male pupils assessed their fathers as more accepting than girls did. Maternal rejection was independent of gender, but paternal rejection was more prominent in boys, compared to girls. Higher maternal rejection and lower paternal acceptance were shown to be significant predictors for both depression and test anxiety.

**Conclusion:** Results confirmed our hypothesis that early-adolescents, as well as girls, have more pronounced depressive and test-anxiety symptoms, when compared to younger children and boys. (Pre)-adolescents' perceptions of family dynamics have an important role in explaining depressiveness and test anxiety, which implies their value in prevention of mental health problems in (pre)adolescents.

## Introduction

Mental health problems during childhood and adolescence are coming under increasing scrutiny of researchers and professionals due to their growing prevalence (Mojtabai, Olfson, & Han, 2016; Twenge, 2015), and the progressively earlier age at which they are

first detected. Early intervention is important in preventing long-term consequences and reduce risk factors related to subsequent development of psychopathological symptoms (Fallucco et al., 2016). As many as 9-12% of early and preschool age children display some emotional and behavioural problems, while some of those children may even be discussed in the context of specific psychiatric syndromes (Wichstrom & Berg-Nilesen, 2014). Croatian data for preschool-age children recorded 4.4% of children having emotional problems, and 9.6% having behavioural problems (Boričević Maršanić, Zečević, Paradžik, & Karapetrić Bolfan, 2017). It is important to keep in mind that mental health is a complex construct that does not include merely presence or absence of affective disorders. For the purposes of this study, the focus was placed on depression and anxiety-related disorders, as most common ones during childhood and early adolescence.

Depression syndrome during childhood, though bearing some similarities to adult depression, is specific in its' dominating sense of anger instead of sadness. The anger is usually pointed towards the child itself or towards others. More severe depression is accompanied by an increase in anger, angry tantrums, and often a need to destroy everything. Depression in children is characterised by changes in four areas: mood, motivation, physical function and cognition (Kerig, Ludlow, & Wenar, 2012).

The prevalence of depression during early childhood, preschool and early school periods is around 1-2%, with no significant differences between genders (Egger & Angold, 2006). A significant rise in depression levels occurs with the beginning of adolescence (Cohen, Andrews, Davis, & Rudolph, 2017), with the rates around 4-8%, and a significantly larger share of depression among girls (Rudan & Tomac, 2009; Thapar, Collishaw, Pine, & Thapar, 2012; Kalebić Jakupčević & Reić Ercegovac, 2016). Studies in the US show an even higher prevalence of depression disorder in adolescents, around 11.7% (Merikangas et al., 2010). In Croatian sample, 20.43% of participants scored above-average for depression during pre-adolescence and early/middle adolescence; 5.68% are of clinical significance, with the highest risk being girls in early adolescence who are moving from primary to high school (Kalebić Jakupčević & Reić Ercegovac, 2016).

The comorbidity of depression and anxiety-related symptoms is frequent during the entire life, and it can be found as early as pre-school or school age (Wichstrøm et al., 2012). Anxiety disorders represent the most frequent type of mental health problem during childhood and adolescence periods, with the US data suggesting that almost one third of adolescents suffer from some form of anxiety disorder (Merikangas et al., 2010).

Most pupils experience a mild level of test anxiety before or during oral examination, written tests or other forms of evaluation that occur in a school setting. Test anxiety as a specific form of anxiety typical for school-age children is a state of agitation, tenseness and discomfort related to the situation where the child is being evaluated. It may occur before, during or immediately after the evaluation event. In the case of severe test anxiety, pupils usually do not score well academically, as anxiety impacts their cognitive processes. A meta-analysis of 238 studies of test anxiety during the last 30 years showed a connection between test anxiety and a range of unfavourable academic outcomes, with the pupils' self-efficiency highlighted as a significant predictor (von der Embse, Jester, Roy, & Post, 2018). Studies also pointed to the importance of family attributes in the development of

test anxiety. Very high expectations and parental pressure may stimulate the development of test anxiety in children (Besharat, 2003; Wolfradta, Hempelb, & Miles, 2003). Also, there is an association between test anxiety and perceptions of family interactions (communication, stimulation of personal growth) in individuals of early-adolescent age (Peleg, 2002).

Parental practices play a significant role in the development of children's internalized and externalized problems (Heberle, Krill, Briggs-Gowan, & Carter, 2015; Karreman, van Tuijl, van Aken, & Deković, 2009; Parent, McKee, Rough, & Forehand, 2016). Some data highlights the importance of parental warmth (or hostility) in the development of depression and anxiety-related symptoms in children (Vulić-Prtorić, 2002). However, previous studies rarely explored the separate contribution of the parental dimensions of both parents to test anxiety in adolescents. Furthermore, results of previous research on the relationship between gender and parental acceptance or rejection are inconsistent (Ali, Khaleque, & Rohner, 2015). Thus, the goal of this study was to examine the effect of family interactions, specifically child-parent interactions, on depression and test anxiety in children of pre-adolescent and early-adolescent age. Our hypothesis is that early-adolescent children will express a higher degree of depression and test anxiety compared to pre-adolescents; that female pupils would express a higher degree of depression and test anxiety compared to male pupils; and that the estimated quality of relations with parents would be a significant predictor of depression and test anxiety.

## Participants and methods

A convenient sample of 204 pupils (52% females) participated in the study, 107 of which were pre-adolescent age (4<sup>th</sup> grade of primary school), and 97 were early-adolescent age (7<sup>th</sup> grade of primary school). Study was conducted in two city schools in urban area of Split.

### *Instruments*

General data questionnaire – constructed for the purposes of this study, consisting of two closed-type questions used to acquire data on age (4<sup>th</sup> grade of primary school or 7<sup>th</sup> grade of primary school), and the participants' gender (male or female).

### *Scale of Depression for Children and Adolescents*

This scale (SDCA, Vulić-Prtorić, 2003a) consists of 26 items used to measure the level of depression during childhood and adolescence. The items encompass three groups of symptoms – emotional, physical and cognitive. The participants' task is to evaluate their degree of agreement with each of the items, using a 5-point Likert-type scale (1 – not true at all, to 5 – yes, completely true). The total result is formed as a linear combination of estimates provided for all of the items. In this study, the scale was found to be highly reliable (Cronbach  $\alpha = 0.89$ ), which matches its earlier use (Vulić-Prtorić, 2003a; Kalebić Jakupčević, & Reić Ercegovac, 2016). Higher scores indicate higher degree of depression.

### *Subscale for Test Anxiety*

Test anxiety (STA, [Vulić-Prtorić, 2004a](#)) is one of the eight subscales of the Scale of Children and Adolescents' Fears, and is aimed at examining different fears, symptoms and anxiety syndromes during childhood and adolescence. In this study, only the Subscale for Test Anxiety was used, consisting of 11 items measuring test anxiety related to school-based knowledge exams. The participants' task is to evaluate their degree of agreement with each of the items using a 5-point Likert-type scale (1 – not true at all, to 5 – yes, completely true). Since one item in this study did not have appropriate saturation on a single factor, it was excluded from further analysis. The total result was thus derived as a linear combination of estimates provided for the ten other items, with higher score indicating higher anxiety level. A satisfactory reliability coefficient was determined (Cronbach  $\alpha = 0.86$ ).

### *Scale of Interaction Quality within the Family*

This scale (SIQF, [Vulić-Prtorić, 2004b](#)) was made for examining the quality of maternal and paternal interactions in two dimensions – acceptance and rejection. The scale consists of 55 items divided into five subscales (maternal and paternal acceptance, maternal and paternal rejection, and general estimate of family satisfaction). The participants' task is to evaluate their degree of agreement with each of the items using a 5-point Likert-type scale (1 – not true at all, to 5 – yes, completely true). Reliability coefficients and correlation of items for each of the five subscales are shown in [Table 1](#).

**Table 1.** Psychometric attributes of the Scale of Interaction Quality within the Family (N=204)\*

Subscales	Cronbach $\alpha$	N	r between items
Maternal acceptance	0.83	10	0.38
Maternal rejection	0.87	12	0.38
Paternal acceptance	0.86	10	0.42
Paternal rejection	0.88	12	0.39
Family satisfaction	0.88	11	0.44

\*N – number of items for each subscale; r – average correlation between each subscale's items.

### *Procedure*

The study was performed in February 2015. The ethical justification of the study was confirmed by the Split Faculty of Humanities and Social Sciences' Board of Ethics. After establishing a contact with the school headmaster who allowed the conduct of the study, the pupils were given letters for their parents, in which the research goal, purpose and procedure were explained, along with a note that the parents needed to provide their signature to accept their child's participation in the study. Children who did not bring back written consent were excluded from the study. Afterwards, the teachers were consulted to establish the optimal time for conducting the study itself, which was mainly during the homeroom class. Before filling out the questionnaire, the children were given brief verbal instructions stressing the anonymity of the study, the importance of honest answers, and the right to forfeit further participation in the questionnaire at any time, as well as the

right to skip questions if desired. Following these instructions, the first instrument (out of three) was handed out, and instructions were given with examples provided on the blackboard. Once all the pupils in the class were finished, the second, and then the third instrument were handed out. The entire questionnaire procedure lasted for approximately 30 minutes.

### Data analysis

The collected data was analysed using the STATISTICA12 software (StatSoft, USA). In order to test age and gender differences for dependent variables (depression, anxiety, estimate of quality of family interactions), a two-way analysis of variance was used. Hierarchical regression analysis was used to examine the contribution of family interaction quality to explaining individual differences in depressiveness and test anxiety, controlling for age and gender of the participants.

## Results

The average scores for all dependent variables, together with Pearson correlation coefficients between variables, are shown in **Table 2**. A significant negative correlation between family satisfaction and age was found, as well as between pupils' depression levels and family satisfaction. Test anxiety and maternal rejection were positively related, as well as test anxiety and paternal rejection.

Table 2. Correlation between age, gender, depressiveness, test anxiety, and quality of family interactions

Subscales	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Gender	-	-	1.00								
2. Grade	-	-	-0.04	1.00							
3. Family satisfaction	4.50	0.61	0.05	-0.35†	1.00						
4. Maternal acceptance	4.55	0.58	0.22†	-0.35†	0.72†	1.00					
5. Maternal rejection	1.70	0.71	-0.13	0.31†	-0.73†	-0.73†	1.00				
6. Paternal acceptance	4.41	0.67	-0.16*	-0.49†	0.54†	0.50†	-0.49†	1.00			
7. Paternal rejection	1.58	0.68	-0.17*	0.32†	-0.54†	-0.50†	0.70†	-0.58†	1.00		
8. Depression levels	1.88	0.64	0.12	0.14	-0.44†	-0.33†	0.52†	-0.41†	0.40†	1.00	
9. Test anxiety	2.53	0.92	0.07	0.33†	-0.34†	-0.28†	0.43†	-0.41†	0.32†	0.60†	1.00

\*P < 0.05; †P < 0.01.

### Family interactions

General family satisfaction was rated as significantly higher by fourth grade pupils compared to seventh grade pupils. There were no gender differences for the same criteria (**Figure 1**). Interactions with the mother were evaluated for acceptance (**Figure 2**) and rejection (**Figure 3**). Analysis of variance revealed that female pupils assessed maternal acceptance higher than the male pupils. Younger pupils also rated maternal acceptance

higher than older pupils (Figure 2). No significant differences between girls and boys were found in the evaluation of rejection by the mother. Younger pupils estimated their mothers as less rejecting than the older pupils (Figure 3).

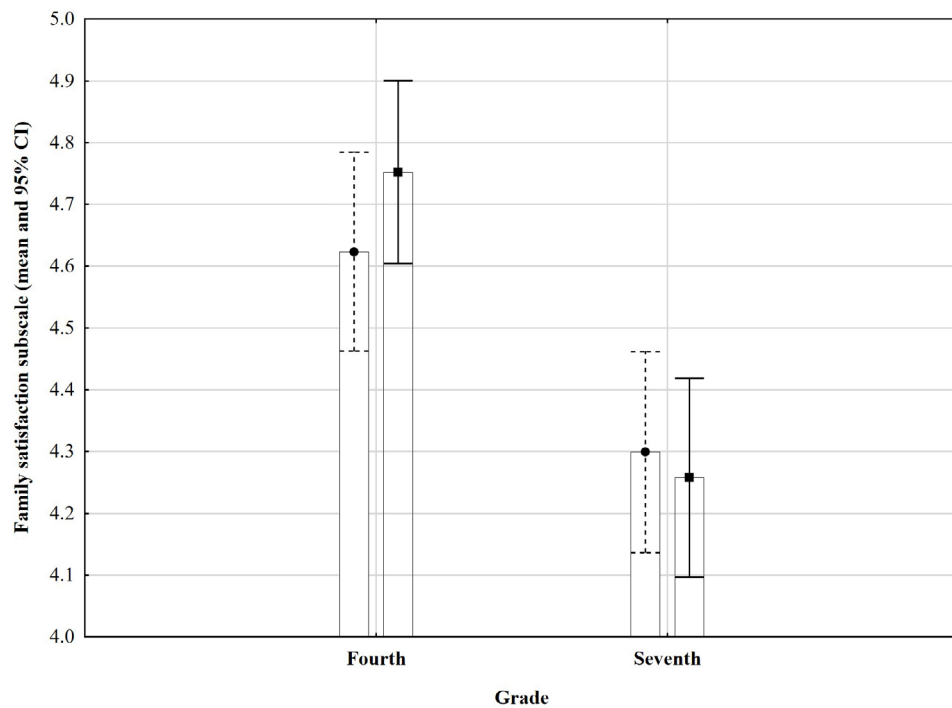


Figure 1. Gender and age differences in family satisfaction among pupils (dots – male pupils; squares – female pupils), range 1 – 5, ANOVA results ( $F_{\text{gender}} = F = 0.30$ ;  $P = 0.586$ ,  $F_{\text{age}} = 26.04$ ,  $P < 0.001$ ).

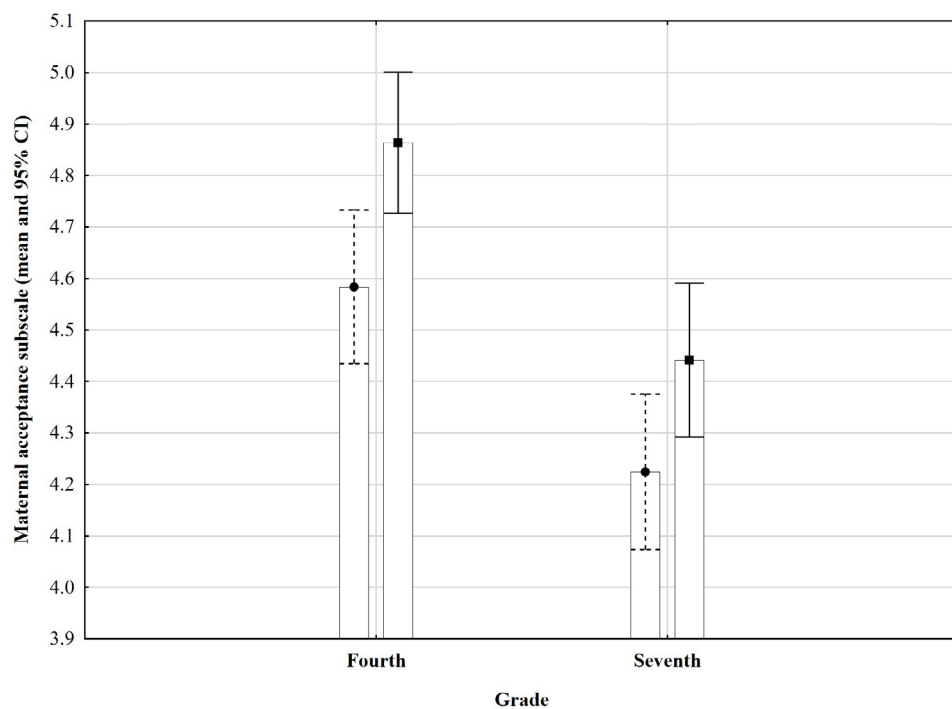
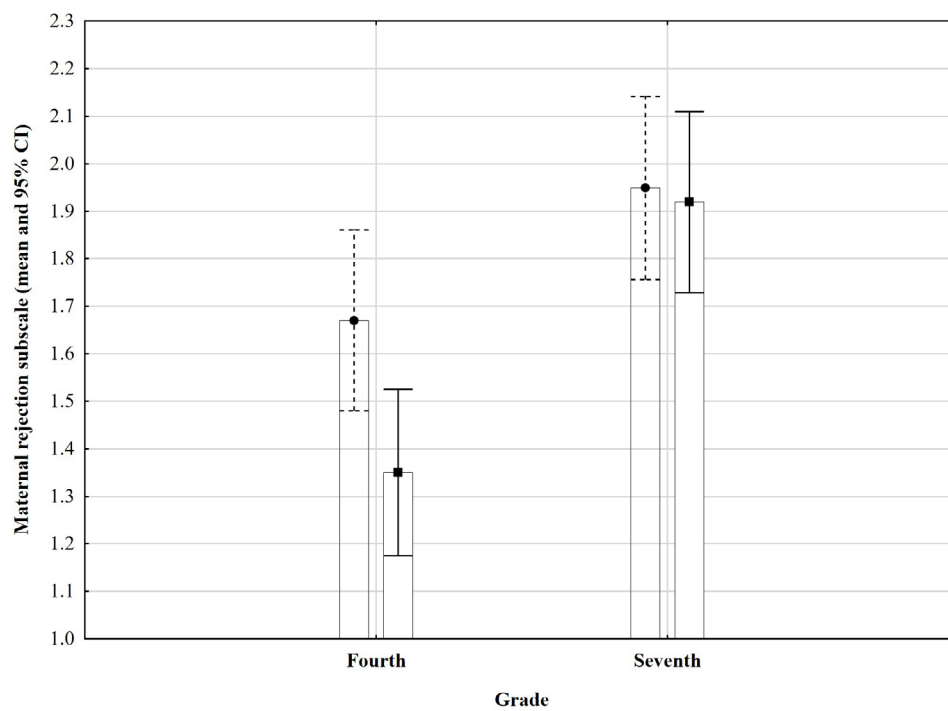
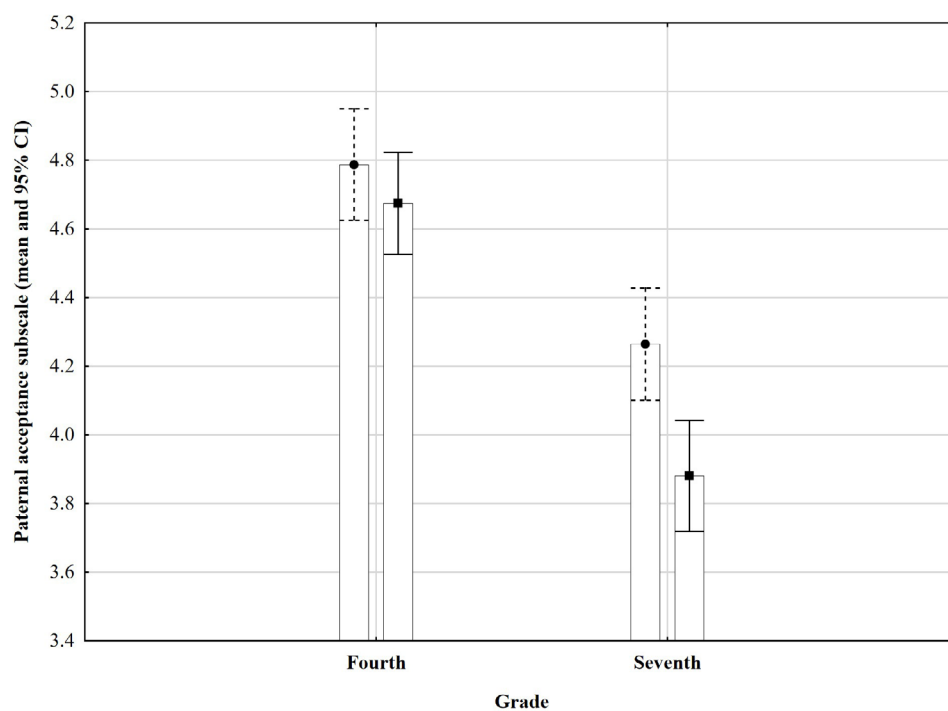


Figure 2. Gender and age differences in maternal acceptance among pupils (dots – male pupils; squares – female pupils), range 1 – 5, ANOVA results ( $F_{\text{gender}} = 11.20$ ;  $P = 0.001$ ,  $F_{\text{age}} = 27.60$ ;  $P < 0.001$ ).



**Figure 3.** Gender and age differences in maternal rejection among pupils (dots – male pupils; squares – female pupils), range 1 – 5, ANOVA results ( $F_{\text{gender}} = 3.38$ ;  $P = 0.067$ ,  $F_{\text{age}} = 19.93$ ;  $P < 0.001$ ).

Paternal acceptance (**Figure 4**) was rated as significantly higher by fourth grade and by male pupils, compared to seventh grade and female pupils. Paternal rejection was significantly higher among older and male pupils (**Figure 5**).



**Figure 4.** Gender and age differences in paternal acceptance among pupils (dots – male pupils; squares – female pupils), range 1 – 5, ANOVA results ( $F_{\text{gender}} = 9.49$ ;  $P = 0.002$ ,  $F_{\text{age}} = 66.39$ ;  $P < 0.001$ ).

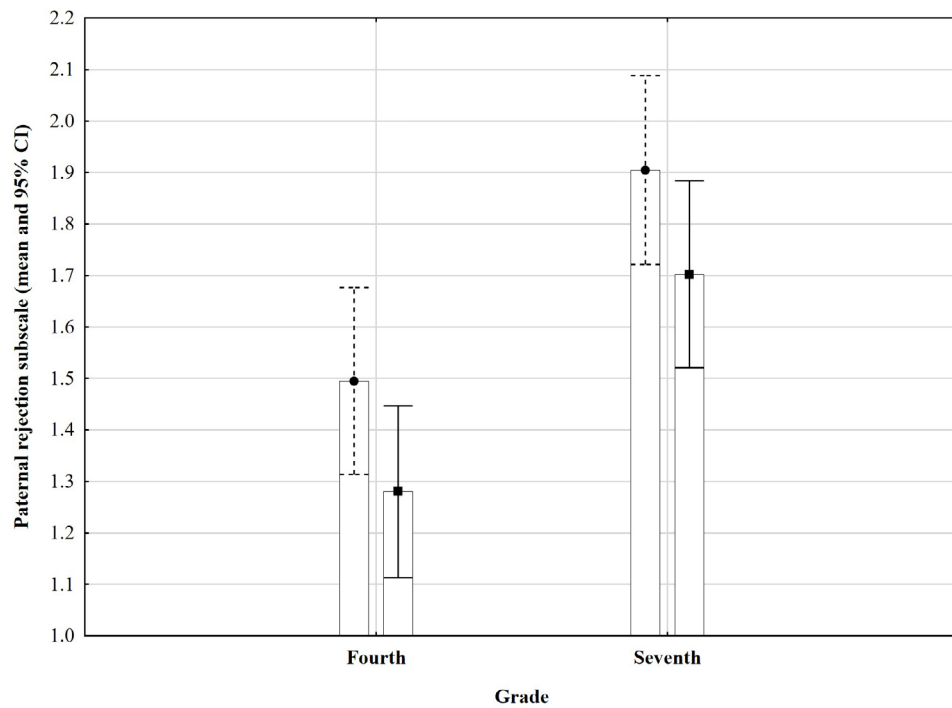


Figure 5. Gender and age differences in paternal rejection among pupils (dots – male pupils; squares – female pupils), range 1 – 5, ANOVA results ( $F_{gender} = 5.30; P = 0.022, F_{age} = 21.10; P < 0.001$ ).

### Depression levels

Depression levels varied significantly by pupil’s gender, while the effect of age was marginally significant. Figure 6 shows that a significant interaction effect of gender and age, implying that the increase in depression levels with age may only be ascribed to female pupils, while for male pupils the depression levels were relatively stable.

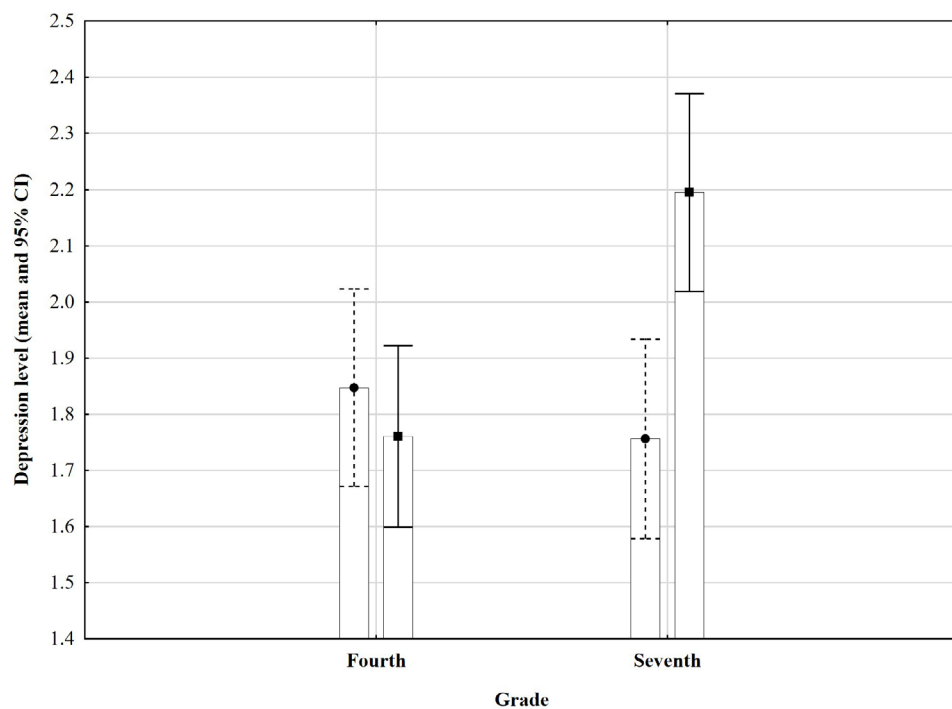
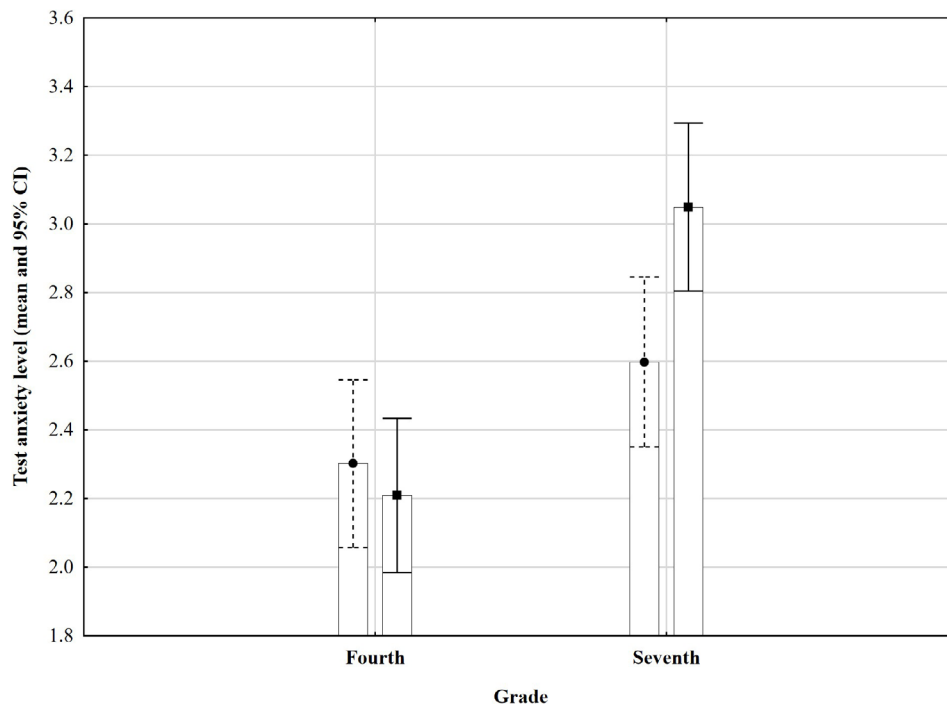


Figure 6. Gender and age differences in depressiveness among pupils (dots – male pupils; squares – female pupils), range 1 – 5, ANOVA results ( $F_{gender} = 4.03; P = 0.046, F_{age} = 3.84; P = 0.050, F_{gender \times age} = 8.96; P = 0.003$ ).



## Test anxiety

Older pupils expressed a higher degree of test anxiety compared to younger ones, which was especially pronounced with female pupils (Figure 7). Female pupils had results similar to male pupils during the fourth grade, while the difference was more pronounced during the seventh grade.



**Figure 7.** Gender and age differences in test anxiety among pupils (dots – male pupils; squares – female pupils), range 1 – 5, ANOVA results ( $F_{\text{gender}} = 2.15$ ;  $P = 0.144$ ,  $F_{\text{age}} = 21.73$ ;  $P < 0.001$ ,  $F_{\text{gender} \times \text{age}} = 4.99$ ;  $P = 0.003$ ).

## Prediction of depression and test anxiety level

**Table 3** displays the results of hierarchical regression analyses with depression levels and anxiety as criteria. In the first step of the analysis of depression levels, gender and age variables were introduced, explaining only 3% of the criteria variance. Only age had a significant prediction coefficient. In the second step, the variables of family interaction were introduced, which increased the share of the explained variance to the significant 32%. A significant predictor of depression levels was maternal rejection, as well as paternal acceptance as a negative predictor. In the analysis with test anxiety as the criteria, gender and age variables were introduced first, explaining 11% of the criteria variance. The family variables increased the share of the explained variance by a significant 17%, among which maternal rejection and low paternal acceptance significantly contributed to explaining the criteria variance, and may be considered risk factors for test anxiety.

## Discussion

Our results showed that estimates of satisfaction with family interactions did not differ significantly between male and female pupils, even though older pupils expressed a lower

Table 3. Results of hierarchical regression analysis with depression and test anxiety levels as criteria variables

Predictors ( $\beta$ )	Criteria	
	Depression level (1-5)	Test anxiety level (1-5)
<b>1st step</b>		
Gender	0.13	0.09
Age	0.14*	0.32†
	R (R2)	0.19 (0.03)
	F (df)	3.67* (2,201)
<b>2nd step</b>		
Gender	0.12	0.05
Age	-0.09	0.14
Family satisfaction	-0.14	-0.01
Mother – acceptance	0.17	0.17
Mother – rejection	0.51†	0.49†
Father – acceptance	-0.20*	-0.24†
Father – rejection	-0.02	-0.13
	R (R2)	0.59 (0.35)
	$\Delta R^2$	0.32†
	F (df)	14.96† (7,196)

\* $P < 0.05$ ; † $P < 0.01$ .

degree of satisfaction than the younger ones. This may be explained by the transition to adolescence, a period during which the young person begins rejecting authority, especially parental control, growing closer to their peers, and becoming increasingly confrontational towards their parents. In addition, due to rapid, frequent mood changes (Rudan, 2004; Kalebić Jakupčević & Reić Ercegovac, 2016), conflicts with other family members arise. Other studies also point towards the increasing frequency of conflicts with parents after entering adolescence (Collins & Laursen, 2004; Smetana, Campione-Barr, & Metzger, 2006), which contributes to reduced satisfaction with family relationships. Early adolescence is characterized by changes in cognitive capacity, making adolescents question issues and making them less likely to accept facts as absolute truth, compared to the childhood period. That is why they become more capable and eager to engage in opinion disputes with their parents.

Dimensions of maternal and paternal relations revealed similar age patterns, with the younger pupils rating their mothers and fathers as more accepting and less rejecting than older pupils. This also fits into the overall scope of the changes experienced by children within the family as they enter adolescence (De Goede, Branje, & Meeus, 2009). As opposed to the childhood period, when children are mainly looking for affirmation and care from their parents, the importance of peer groups increases during adolescence. Adolescents become more critical towards parents because of the developmental changes and a need to de-idealize parents (Rudan, 2004), also placing a higher value on privacy, as well as expressing a marked need for autonomy. During this developmental phase there is an increased frequency and intensity of negative emotions, as well as distancing from family

(Macuka, 2012). The child-parent relation, which in the earlier phases was infused with warmth and emotionality, changes its features and adapts to the changed roles of both the adolescent and the parent. During the period of their children entering adolescence, parents often experience changes in their own development in the form of a midlife crisis (Freund & Ritter 2009; Keresteš, Brković, & Kuterovac Jagodić, 2011), which can complicate the relations with their child even more. Because of the difficulties in handling their own changes, in addition to an irritable, rebellious adolescent that refuses authority, parents may employ behaviours that adolescents find strict and rejecting.

Although age patterns of changes in the perception of various aspects of family relationships were similar, the patterns of interactions with parents turned out to be different for girls and boys. Female pupils evaluated their mother to be more accepting than male pupils, while boys rated the father as more accepting. For boys, especially after the earliest part of childhood, their father is their primary identification model (Acock & Yang, 1984), as fathers become more involved with their sons than daughters (Pleck, 1997; Raley & Bianchi, 2006). That is probably why boys have a higher need for father's acceptance, and probably have higher expectations from their fathers than girls do. During the (pre) adolescent period, fathers usually spend more time with their sons due to more common interests and activities (Vulić-Prtorić, 2002). Earlier studies have also shown that girls feel more accepted by their mothers (Vulić-Prtorić, 2002), perhaps due to achieving a higher level of intimacy and closeness. Male and female pupils did not significantly differ in their perceptions of maternal rejection.

In this study, boys did not experience a significant increase in depression levels in early adolescence, while the increase was pronounced in girls. Adolescence generally represents a time of special risk for the onset of internalized problems in girls and externalized problems in boys (Macuka, 2012). Previous studies have also shown that the frequency of depressive symptoms generally rises during the transition from childhood to adolescence, but only in girls (Compas, 1997; Hankin et al., 1998; Petersen, Sarigiani, & Kennedy, 1991; Tweng & Nolen-Hoeksema, 2002; Kalebić Jakupčević & Reić Ercegovac, 2016). Furthermore, previous studies pointed to poorer emotional well-being in girls during adolescence (Yeo, Ang, Chong, & Huan, 2007; Wrobel, Finogenow, Szymanska, & Laurent, 2019). These differences may be interpreted in the context of various theoretical models, and some of the interpretations involve the girls' large focus on physical looks and the dissatisfaction with it, which is significantly higher when compared to boys' (Yates, Edman, & Aruguette, 2004). Furthermore, early socialization in which girls are more encouraged towards caring for others, empathy and obedience (Keenan & Hipwell, 2005) makes them less competent in dealing with the challenges of adolescence (Kalebić Jakupčević & Reić Ercegovac, 2016), through which they show affectional vulnerability and emotional reactivity (Hyde, Mezulis, & Abramson, 2008).

A similar pattern was established in regards to test anxiety. Older pupils expressed a higher degree of test anxiety than younger pupils, which was especially pronounced in female pupils. With girls, the number of fears doubles with entry into the adolescence period, as opposed to boys, in whom such a change has not been noted (Vulić-Prtorić, 2002). Girls generally experience more of the negative aspects of puberty-related changes linked to their

bodily self-image (Yates et al., 2004) and reduced self-confidence (Robins & Trzesniewski, 2005; Vulić-Prtorić, 2003b), which may contribute to a higher level of anxiety. Since they are, as opposed to boys, more encouraged to express their emotions and fears (Brody & Hall, 2008), it is possible that girls pay more attention to their own symptoms of anxiety. They are more dependent on positive social relations, and more sensitive to loss of friendship and other social interactions, but also to social evaluation, which may also increase test anxiety. It is possible that boys, due to socialization factors related to encouraging resilience, strength and minimizing emotional expressiveness (Brody, 1999), simply disregard symptoms of anxiety, leading to them not being reported during the study.

We found significant correlation between the evaluation of interactions with the mother and the father, which was also proven in regards to acceptance and rejection. These results are in line with the systemic approach to family research (Schaffer, 2000; Wagner, 2008), according to which family sub-systems affect each other, thus making the parenting styles of both parents become similar to each other. Furthermore, a significant contribution of maternal rejection and low paternal acceptance towards explaining individual differences in depression levels found in (pre)adolescents shows implies that a high quality of interactions with parents could be a protective factor in the development of depression-related problems during adolescence. Previous studies have likewise shown that children who perceive rejection from both parents are significantly more depressed (Vulić-Prtorić, 2002), or rather, that parental support is important during the period of forming one's own identity and successfully adapting during adolescence (Macuka, 2012). Considering that low paternal acceptance and high maternal rejection are predictors of depression, different roles of mother and father may be discussed in the explanation of depression levels, but also in the explanation of test anxiety. Since mothers spend more time interacting with children throughout the entire period of childhood and adolescence (Altenburger, Schoppe-Sullivan, & Kamp Dush, 2018), a (pre)adolescent's perception of rejection by the mother may trigger a stronger episode of depression. In most families, the mother is still viewed as the primary source of care and concern for the child's emotional well-being; therefore, an impression of maternal rejection has a significant negative impact on a (pre)adolescent's welfare (Table 3). On the other hand, it is exactly a low degree of paternal acceptance, but not paternal rejection, that showed to be important in explaining levels of depression and test anxiety (Table 3). The father obviously plays a specific role during (pre)adolescence, which is, as it usually is in more traditional families, primarily focused on cognitive development, educational aspirations, the child's interactions with the outside world, and instrumental support (Cvrtnjak & Miljević Riđički, 2015). Perhaps that is why father's acceptance might play an important role in adolescents' psychological well-being, during adolescent's search for their own identity, exploring various options, developing interests and professional aspirations. Similar to depression level scores, we showed that maternal rejection and low paternal acceptance are important in explaining test anxiety (Table 3). A higher degree of test anxiety was displayed by (pre)adolescents who perceived a higher degree of maternal rejection and a lower degree of paternal acceptance. A lower degree of paternal acceptance as a significant predictor of test anxiety may be linked to the academic pressures that children feel, and which are most often imposed by parents with the goal of achieving the best academic results possi-

ble. In a situation where children begin facing the challenges of adolescence and when the interest in school, academic activities and academic success begins to wane (Koludrović & Kalebić Jakupčević, 2017; Reić Ercegovac, Koludrović, & Mišurac, 2019), test anxiety may appear as a reaction to the impossibility of fulfilling parental pressures. As the results of this study also suggest, the adolescent's perception regarding low paternal acceptance and maternal rejection plays an important role in this process.

The shortcomings of the conducted study pertain to the relatively small number of participants, and the evaluation method in which the participants were simultaneously rating both their own problems (depressiveness and test anxiety), as well as the quality of their family interactions. Thus, any follow-up studies should cover the quality of family interactions through multiple sources, especially by including parents. Furthermore, considering the developmental attributes of depression and anxiety, the findings of this study should be checked via a longitudinal approach, controlling for other factors that contribute to the symptoms of depression and anxiety during the transition to adolescence.

In conclusion, this study confirmed the hypothesis of early adolescents displaying more severe problems than pre-adolescents, as well as female pupils displaying more severe problems than male pupils. Also, the results pointed to the important role that family dynamics, especially the perception of interactions with parents, play as significant factors in explaining depressiveness and test anxiety, which implies their value in preventing mental health problems in (pre)adolescents. Further research is needed to explore the mechanisms underlying the relationship between parent-child interactions and internalized problems in adolescents.

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