

How Does the Parental Test Anxiety Affect the Test Anxiety of the Student: A Cross-Sectional Study in Secondary Schools in Turkey

Ebeveynin Sınav Kaygısı Öğrencinin Sınav Kaygısını Nasıl Etkiler: Türkiye'deki Ortaokullarda Kesitsel Bir Çalışma

Ahmet Büber, Ömer Başay

Pamukkale University Faculty of Medicine, Department of Child and Adolescent Psychiatry, Denizli, Turkey

ABSTRACT

Objectives: In this study, we investigated the test anxiety among secondary school students and the effect of parental test anxiety on children's test anxiety in the two central districts of Denizli, a medium-sized city in Turkey.

Materials and Methods: The study sample was selected randomly from the secondary schools in the province. Students responded to the Test Anxiety Scale for Children and Adolescents (TASCA). Parents responded to the socio-demographic data form and the Exam Anxiety Scale for Parents (EASP). Research forms were filled online between 20.09.2021 and 01.10.2021. Six hundred fifty-eight students and parents were included in the study.

Results: Girls had higher TASCA scores than boys. According to the logistic regression analysis, the increase in EASP scores had an increasing effect on the total score of TASCA; the increase in the student's academic success significantly affected the total score of TASCA. The increase in the TASCA-social sub-dimension score had an increasing effect on the EASP total score. We also found that the increase in the father's educational level had a lowering effect on the EASP total score.

Conclusion: Early recognition of risky groups in terms of the emergence of test anxiety may be beneficial to protecting these individuals. Additionally, interventions with parents with high parental test anxiety could also prevent test anxiety in children.

Keywords: Test anxiety, secondary school, parental test anxiety

ÖZ

Amaç: Bu çalışmada, Türkiye'nin orta büyüklükteki bir ili olan Denizli'nin merkez iki ilçesinde ortaokul öğrencilerinin sınav kaygısını ve ebeveynlerinin sınav kaygısının, çocukların sınav kaygısı üzerindeki etkisini araştırmayı amaçladık.

Gereç ve Yöntem: Araştırmanın örneklemini il merkezindeki ortaokullardan rastgele seçilmiştir. Öğrenciler, Çocuk ve Ergenler İçin Sınav Kaygısı Ölçeği'ne (ÇESKÖ) yanıt vermiştir. Ebeveynler, sosyo-demografik veri formuna ve Ebeveyn Sınav Kaygısı Ölçeği'ne (ESKÖ) yanıt vermiştir. Araştırma formları 20.09.2021 ve 01.10.2021 tarihleri arasında online olarak doldurulmuştur. Çalışmaya 658 öğrenci ve ebeveyn dahil edilmiştir.

Bulgular: Kızların erkeklerden daha yüksek ÇESKÖ puanları olduğu bulunmuştur. Lojistik regresyon analizine göre, ESKÖ puanlarındaki artışın ÇESKÖ toplam puanını artırıcı etkisi olmuş; öğrencinin akademik başarısındaki artışın ÇESKÖ toplam puanını önemli ölçüde düşürücü etkisi olmuştur. Ayrıca baba eğitim düzeyindeki artışın ESKÖ toplam puanını düşürücü, ÇESKÖ-sosyal alt boyut puanındaki artışın ise ESKÖ toplam puanını anlamlı derecede artırıcı yönde etkilediği bulunmuştur.

Sonuç: Sınav kaygısının ortaya çıkması açısından riskli grupların erken fark edilmesi bu bireylerin korunmasında faydalı olabilir. Ayrıca ebeveyn sınav kaygısı yüksek olan ebeveynlere yapılacak müdahaleler de çocuklarda sınav kaygısının ortaya çıkmasını engelleyebilir.

Anahtar Kelimeler: Sınav kaygısı, ortaokul, ebeveyn sınav kaygısı

Introduction

Test anxiety could significantly affect the exam performance of some students and could be seen in students of all grades. Test anxiety can be defined as experiencing fear and anxiety

about the test and test performance before, during, or after the test. Physical symptoms often accompany this condition.¹ Test anxiety may negatively affect students' test performance.²⁻⁴ Also, the possibility of the emergence of different psychiatric disorders (e.g., anxiety disorder, eating disorder, depression,

Address for Correspondence/Yazışma Adresi: Ahmet Büber, Pamukkale University Faculty of Medicine, Department of Child and Adolescent Psychiatry, Denizli, Turkey

Phone: +90 533 433 57 00 E-mail: ahmetbuber@gmail.com ORCID: orcid.org/0000-0001-6293-2565

Received/Geliş Tarihi: 05.04.2022 Accepted/Kabul Tarihi: 18.09.2022

©Copyright 2023 by the Turkish Association for child and Adolescent Psychiatry / Turkish Journal of Child and Adolescent Mental Health. published by Galenos Publishing House.



and sleep disturbance) in students with test anxiety further increases the interest in this subject.^{5,6}

There are different results in studies on the prevalence of test anxiety. It has been reported that the prevalence of test anxiety in England is between 2% and 30%.⁷ In a recent multicenter study conducted in India, the rate of students with higher test anxiety was 18%.⁸ Many studies have reported higher test anxiety in girls than boys.^{7,9,10}

Parents and the family may play a role in the child's anxiety. Parental acceptance, control, and modeling may be associated with anxiety symptoms in children.¹¹ A recent study underlined that parental anxiety control might be necessary, especially in the development of anxiety in the child.¹² Parental anxiety might be a risk factor for the child's anxiety disorder.¹³ Baytemir¹⁴ stated that the parent's anxiety about the test might cause the child to experience test anxiety.

The first significant test that students attend in Turkey is the test that determines at which high school they will continue their education. They take this test at the end of secondary school. The number of students who took this exam in 2022 was around one million.¹⁵ According to their performance in this test, students continue their education in some qualified high schools. The rate of students placed in those schools in 2022 was approximately 19% of the students who took the exam.¹⁵ For this reason, with the transition of some students to secondary school age, they begin experiencing regular exams. The high school entrance exam, which is applied in Turkey at the end of secondary school, differs from America and Europe. For example, there is no exam for transition to secondary education in the USA. Students can attend any school they want.¹⁶ Germany has no central examination during the transition from secondary to high school. Students take the secondary school leaving exam.¹⁷ Similarly, in Italy, an exam that determines diploma qualifications is taken from secondary school to high school.¹⁸

Considering this information, our hypotheses regarding our research are as follows. Since students take the high school entrance exam at the end of the secondary school term, it may be thought that the rate of secondary school students with higher test anxiety scores might be high. Secondly, it can be expected that the test anxiety scores of female students are higher than that of male students. Finally, it has been estimated that factors such as the parent's test anxiety score, educational status, and some variables related to the child (the child's school success, adjustment, family and friend relations) could be factors that may affect the child's test anxiety scores.

In this study, we aimed to investigate the test anxiety of the sixth-eighth-grade students and their parents and investigate the factors affecting the child's test anxiety scores in the two central districts of Denizli, a medium-sized city in Turkey.

Materials and Methods

Our study was a descriptive cross-sectional study. The study sample was selected from the sixth, seventh, and eighth-

grade students at secondary schools in two central districts in the province. The sample calculation was made with a known sample formula. There are 27,451 students and 114 secondary schools in the universe. The incidence of test anxiety was accepted as 48%.¹⁹ The deviation margin for determining the number of students was $d=0.05$ and $d=0.3$ for the number of schools for calculating the sample. We found that at least 378 students from 10 schools had to be included in the study. Ten secondary schools were determined randomly from the central districts. There were 44 public secondary schools, four private secondary schools in the Pamukkale district and 39 public secondary schools, and 27 private secondary schools in the Merkezefendi district. We randomly selected 4 of these schools in the Pamukkale district and 6 in the Merkezefendi district. The total number of students in the selected schools was 4,560. We planned to reach all these students and families online and conduct the study with those who accepted to participate. The study was conducted after the ethics committee permission, dated 22.06.2021 and number 12, obtained from the Faculty of Medicine of Pamukkale University, and written permission from the Denizli Provincial Directorate of National Education.

Procedure

Research forms were filled online between 20.09.2021 and 01.10.2021. Before the survey, brief information about the research was given. Those who agreed to participate in the study were directed to complete the survey. After the parents filled out the socio-demographic data form and the Exam Anxiety Scale for Parents (EASP), students filled out the Test Anxiety Scale for Children and Adolescents (TASCA). The number of people who read the information about the study was 1,029, the number of people who agreed to participate in the study was 957, and the number of people who completed the questionnaires was 682. Since the study was planned to be conducted in the sixth, seventh, and eighth grades, 24 students who did not attend these grades were excluded; therefore, so 658 students were included.

Data Collection Tools

Socio-demographic data form: Researchers created the form, which consisted of 15 questions. It questioned children's gender, age, grade, academic success, the adjustment in the home, parental relations, friend relations and health status, family structure, parental education status, and family income.

TASCA: Tan developed the scale. It is a 30-item, 3-point Likert-type scale (1= No/Never, 2= Sometimes, 3= Yes/Always). There is no reverse item on the scale, and the lowest 30 and the highest 90 points can be obtained. The scale has "Biological", "Psychological", and "Social" sub-dimensions. Validity and reliability were tested for students aged 10-18. The Cronbach's alpha coefficient of the scale was 0.91 for the total, 0.83 for the biological sub-dimension, 0.85 for the psychological sub-dimension, and 0.83 for the social sub-dimension.²⁰ Cronbach's alpha coefficient of the scale was 0.927 in the current study.

EASP: Baytemir and Ilhan²¹ developed this scale to measure parental exam anxiety. The scale consists of 18 items and

a 5-point Likert type (strongly disagree, moderately agree, strongly agree, 1-5). The scale has "Worry" and "Physiological" sub-dimensions. The validity and reliability of the scale were tested. The Cronbach's alpha coefficient of the scale was 0.93 for the total scores, 0.88 for the worry sub-dimension, and 0.91 for the physiological sub-dimension.²¹ Cronbach's alpha coefficient of the scale was 0.927 in the current study.

Statistical Analysis

The data were analyzed with the SPSS 25.0 package program. Continuous variables were given as mean \pm standard deviation and categorical variables as numbers and percentages. Significance test of difference between two means and One-Way Analysis of Variance compared independent group differences when parametric test assumptions were provided: When parametric test assumptions were not met, the Mann-Whitney U test and Kruskal-Wallis Analysis of Variance were used to compare independent group differences. Pearson correlation for normally distributed parametric variables and Spearman correlation analysis for non-normally distributed and non-parametric variables were used to evaluate the relationship between the variables. Logistic regression analysis was applied to examine the factors influencing the TASCA and EASP scores. The statistical significance level was accepted as $p < 0.05$ for all values.

Results

Questionnaires filled by 76.4% (n=503) mother, 13.4% father (n=88), 9.6% (n=63) mother and father together, 0.6% (n=4) another caregiver. Six hundred fifty-eight students were included in the study.

Participant's 36.22% (n=238) were in the sixth grade, 31.6% (n=208) were in the seventh grade, and 32.2% (n=212) were in the eighth grade. 50.3% of the children (n=331) were girls and 49.7% (n=327) were boys. The mean age of the children was 12.07 ± 0.87 (10-15 years). Other sociodemographic information about the children participating in the study are shown in Table 1.

The mean score of the TASCA was 52.21 ± 12.29 . The mean score for the biological sub-dimension of the scale was 14.42 ± 4.21 , the mean score for the psychological sub-dimension was 18.49 ± 4.68 , and the mean score for the social sub-dimension was 19.29 ± 5.13 . The distribution of the scale according to the total scores was as follows: 1.1% (n=7) participants with 0-30 points, 73.9% (n=486) participants with 31-60 points, and 25.1% (n=165) participants with 61 points and above.

The mean total score of the EASP was 42.02 ± 14.37 points. The worry sub-dimension of the scale was 26.88 ± 8.80 , and the physiological sub-dimension was 15.15 ± 6.99 .

Comparisons of the TASCA and EASP scores of the participants in terms of gender, family structure, and chronic and psychiatric disorders are shown in Table 2. There were statistical differences in terms of gender and family structure.

Correlations between the TASCA and EASP scores and variables such as the child's age, mother's education level, father's education level, family income and child's academic success, home adjustment, parental relationship, and friend relationship are shown in Table 3. The correlation between the total score of TASCA and the total score for EASP was statistically significant.

The logistic regression analysis examined the factors that affected the TASCA and EASP scores. We found that the increase in EASP-worry sub-dimension and EASP-physiological sub-dimension scores had a significantly increasing effect on the total score of TASCA, and an increase in the student's academic success had a significant lowering effect on the total score of TASCA (Table 4). We found that the increase in the father's education level had a significant lowering effect on the EASP total score, and an increase in the TASCA-social sub-dimension score had a significantly increasing effect on the EASP total score (Table 5).

Discussion

In this study, we investigated the test anxiety of secondary school students and their parents in Denizli, Turkey. According to the results, 25.1% of all students had higher TASCA scores; girls had higher total, psychological, and biological TASCA scores than boys. We also found that the increase in EASP scores had an increasing effect on the total score of TASCA, the increase in the student's academic success had a significant lowering effect on the total score of TASCA, and increase in the educational level of the father had a lowering effect on the total score of EASP. The increase in the TASCA-social sub-dimension score significantly affected the EASP total score in the logistic regression analysis.

Test anxiety is common in school-age children and young people and could be at different prevalence rates.²² The prevalence of test anxiety in secondary school children was examined in England: 16.4% of the students had higher levels of test anxiety.⁷ Although there were many studies on test anxiety among secondary school students in Turkey, there was a limited study on the prevalence of test anxiety. The prevalence of test anxiety was 48% among students who will take the university entrance test in Turkey.¹⁹ In another study conducted with students who will take the university entrance test, the prevalence of students with higher levels of test anxiety was 42%.²³ The data in our study were lower than the high school age in Turkey. Reasons such as children could better evaluate themselves as their age increases and their expectation increases¹ could explain the result of our research. In our study, approximately 1 of 4 students had higher anxiety scores, slightly higher abroad. In the Turkish education system, students who want to continue their education in qualified high schools must be successful in the high-school entrance exam. As students start secondary school, this exam begins taking place in their lives. This may explain why the proportion of students with higher test anxiety scores is high abroad in secondary school-age children. The TASCA scores were higher in girls than in boys in our study. Putwain found that girls had higher test anxiety scores than

Table 1. Socio-demographic characteristics of the participants

	n	%
Family structure		
Nuclear family	542	82.4
Extended family	31	4.7
Divorced/lived separate	70	10.6
One or both parents passed away	15	2.3
Mother education level		
Uneducated	4	0.6
Less than secondary school	268	40.7
High school	222	33.7
University	146	22.2
Postgraduate	18	2.7
Father education level		
Uneducated	1	0.2
Less than secondary school	279	42.4
High school	206	31.3
University	154	23.4
Postgraduate	18	2.7
Family income		
Low	102	15.5
Mid-low	329	50.0
Mid-high	170	25.8
High	57	8.7
Child's chronic illness		
No	593	90.3
Yes	65	9.7
Child's psychiatric illness		
No	626	95.1
Yes	32	4.9
Child's academic success		
Low	13	2.0
Average	149	22.6
Good	334	50.8
Excellent	162	24.6
Child's adjustment at home		
Poor	7	1.1
Average	95	14.4
Good	320	48.6
Excellent	236	35.9
Child's parent relations		
Poor	8	1.2
Average	68	10.3
Good	283	43.0
Excellent	299	45.4
Child's friend relations		
Poor	6	0.9
Average	75	11.4
Good	307	46.7
Excellent	270	41.0

boys in his study.²⁴ In a 2018 meta-analysis, in which thirty years of data were reviewed, it was found that test anxiety in girls was higher than in boys at almost every grade.²⁵ In a study investigating test anxiety in seventh and eighth-grade students in Turkey, test anxiety scores were higher in girls than boys.²⁶ In another study conducted with eighth-grade students in Turkey, the test anxiety scores of girls were higher than boys.²⁷ A reason for this situation may be that girls can express their anxiety easier than boys.¹ Another possible explanation is that

the academic motivation of male students is lower in Turkey.^{28,29} The low motivation of male students may cause them to care less about exam-related situations, and therefore, their anxiety levels may be lower than that of female students.

TASCA total score positively correlated with the EASP total score and the child's age and negatively correlated with the father's educational status, child's academic success, home adjustment, and family and friend relations. As the age of the child increases, the grade will also increase. Students from the sixth to eighth

Table 2. Test Anxiety Scale for Children and Adolescents and Exam Anxiety Scale for Parents scores of the participants

	TASCA psychological	TASCA biological	TASCA social	TASCA total	EASP worry	EASP physiological	EASP total
Gender							
Female	19.3±4.7	15.4±4.6	19.6±5.1	54.4±12.7	26.9±9.0	14.8±6.6	41.7±14.2
Male	17.6±4.5	13.4±3.5	18.9±5.2	50.0±11.5	26.7±8.6	15.5±7.3	42.3±14.5
p	0.000*	0.000*	0.099	0.000*	0.775	0.283	0.688
Family structure							
Nuclear family	18.3±4.5	14.3±4.2	19.2±5.1	51.8±12.1	26.5±8.8	14.8±6.8	41.3±14.2
Extended	18.8±5.3	14.7±4.2	20.0±5.8	53.6±13.8	29.8±9.4	16.9±8.6	46.7±15.6
Divorced/lived separate	19.3±5.1	14.9±4.0	19.1±5.4	53.3±12.8	28.2±8.6	16.4±7.0	44.6±14.3
One or both parents passed away	21.7±6.0	16.5±5.0	20.6±4.9	58.8±14.3	28.7±9.4	16.4±8.7	45.1±17.3
p	0.014* ¹	0.082	0.616	0.115	0.085	0.271	0.041* ²
Child's psychiatric illness							
Yes	19.5±5.0	16.1±5.4	19.7±4.9	55.3±13.2	27.9±9.0	16.2±8.3	44.1±15.7
No	18.4±4.7	14.3±4.1	19.3±5.1	52.1±12.2	26.8±8.8	15.1±6.9	41.9±14.3
p	0.227	0.084	0.652	0.109	0.472	0.756	0.375
Child's chronic illness							
Yes	18.9±4.9	15.0±4.3	19.6±5.2	53.5±12.5	28.7±8.4	16.1±7.2	44.8±14.2
No	18.5±4.7	14.4±4.2	19.3±5.1	52.1±12.3	26.7±8.8	15.1±6.9	41.7±14.4
p	0.461	0.132	0.656	0.376	0.078	0.172	0.079

¹There was a significant difference between the "Nuclear family" and "One or both parents passed away"

²There was a significant difference between "Nuclear family" and "Extended family"

TASCA Psychological: Test Anxiety Scale for Children and Adolescents Psychological sub-dimension, TASCA Biological: Test Anxiety Scale for Children and Adolescents Biological sub-dimension, TASCA Social: Test Anxiety Scale for Children and Adolescents Biological sub-dimension, EASP Worry: Exam Anxiety Scale for Parents Worry sub-dimension, EASP Physiological: Exam Anxiety Scale for Parent Physiological sub-dimension

grade participated in our research. In Turkey, the exam was taken at the end of the eighth grade. Since the students closest to taking the exam are the eighth-grade students, it may be expected to be a correlation between the test anxiety scores and the child's age. The father's education level and the child's test anxiety scores were negatively related. In other words, the decrease in the father's educational status was associated with the increase in the child's anxiety scores. Deb et al.³⁰ found that fathers with low education levels can pressure their children to perform better academically in high school. The child must show a higher level of success to continue education in a qualified high school in Turkey's high school entrance exam. This situation may cause the father with a lower education level to pressure the child about the exam and increase the child's anxiety scores. There was also a negative correlation between friend relations and test anxiety. The test anxiety scores of those with more problematic friend relations were increased. In their study, Shanahan et al.³¹ found that friendship difficulties were associated with anxiety disorders. When adolescents face a stressful situation, the support of their peers could be beneficial in coping.³² Students with problematic peer relations may not receive adequate support from their peers and may be experiencing increased anxiety about the exam. A negative correlation was found between family relations, home adjustment, and test anxiety. There was an increase in the test anxiety scores of the students whose family relations and adjustment at home were

problematic. Good family relations cause more positive results in anxiety over a long time, and children with anxiety disorder have lower family relations.³³ The family has a role in children in expressing emotions, handling stress, and coping with anxiety.³⁴ Having problems in family relations may cause the child not to be able to obtain the support of the family regarding a situation where the child may experience anxiety, such as an exam. It may make it difficult for the individual to deal with test anxiety and increase test anxiety scores.

When the variables with a significant correlation were included in the logistic regression analysis, the factors affecting TASCA total scores were EASP worry sub-dimension scores, EASP physiological sub-dimension scores, and child's academic success. The effects of parents' behaviors and parenting styles on the child's development are known.³⁵ Parent's anxiety could cause anxiety in the child.^{36,37} Additionally, situations that the anxious parent might perceive negatively could increase their stress and anxiety, which might indirectly cause the child's anxiety.³⁸ Like our results, in a study by Baytemir¹⁴ on students between the eighth and twelfth grades, it was reported that the parent's test anxiety might cause test anxiety in the child. Parental anxiety about the test might cause the parent not to show appropriate coping skills verbally or behaviorally, and the child might experience test-related anxiety. Another recent study found that parents' test anxiety was negatively associated

Table 3. Correlations of Test Anxiety Scale for Children and Adolescents and Exam Anxiety Scale for Parents scores and other variables

	TASCA-P	TASCA-B	TASCA-S	TASCA-T	EASP-W	EASP-P	EASP-T	Child's age	Mother-EL	Father-EL	Family income	Child's academic success	Child's adj. at home	Child's parent relations	Child's friend relations
TASCA-P	r	1.000	0.706**	0.688**	0.907**	0.331**	0.243**	0.327**	0.134**	-0.101**	-0.035	-0.201**	-0.157**	-0.108**	-0.113**
	p	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.099	0.010	0.374	0.000	0.000	0.006	0.004
TASCA-B	r	1.000	0.586**	0.837**	0.280**	0.249**	0.301**	0.017	-0.002	-0.044	-0.019	-0.097*	-0.102**	-0.097*	-0.059
	p	0.000	0.000	0.000	0.000	0.000	0.000	0.671	0.969	0.262	0.634	0.013	0.009	0.013	0.132
TASCA-S	r	1.000	0.881**	0.395**	0.276**	0.386**	0.386**	0.123**	-0.066	-0.081*	-0.045	-0.143**	-0.141**	-0.118**	-0.087*
	p	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.092	0.038	0.251	0.000	0.000	0.003	0.025
TASCA-T	r	1.000	0.382**	0.287**	0.383**	0.383**	0.109**	0.109**	-0.048	-0.084*	-0.036	-0.170**	-0.155**	-0.125**	-0.098*
	p	0.000	0.000	0.000	0.000	0.000	0.005	0.222	0.222	0.031	0.353	0.000	0.000	0.001	0.012
EASP-W	r	1.000	0.657**	0.956**	0.017	-0.109**	-0.186**	-0.108**	-0.117**	-0.106**	-0.1081*	-0.117**	-0.106**	-0.081*	-0.027
	p	0.000	0.000	0.000	0.670	0.005	0.000	0.006	0.003	0.007	0.038	0.003	0.007	0.038	0.492
EASP-P	r	1.000	0.838**	-0.025	-0.120**	-0.196**	-0.110**	-0.064	-0.064	-0.086*	-0.077*	-0.015	-0.077*	-0.015	-0.015
	p	0.000	0.000	0.525	0.002	0.000	0.005	0.100	0.100	0.028	0.047	0.700	0.028	0.047	0.700
EASP-T	r	1.000	0.009	-0.127**	-0.210**	-0.122**	-0.112**	-0.106**	-0.087*	-0.024	-0.024	-0.024	-0.024	-0.024	-0.024
	p	0.815	0.001	0.000	0.002	0.004	0.006	0.025	0.542	0.025	0.542	0.025	0.542	0.025	0.542
Child's age	r	1.000	-0.033	-0.072	-0.003	-0.134**	-0.082*	-0.076	-0.053	-0.053	-0.053	-0.053	-0.053	-0.053	-0.053
	p	0.397	0.064	0.940	0.001	0.035	0.050	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174
Mother education level	r	1.000	0.565**	0.472**	0.203**	0.203**	0.066	0.028	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019
	p	0.000	0.000	0.000	0.000	0.092	0.471	0.632	0.632	0.632	0.632	0.632	0.632	0.632	0.632
Father education level	r	1.000	0.486**	0.229**	0.085*	0.039	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007
	p	0.000	0.000	0.030	0.324	0.852	0.852	0.852	0.852	0.852	0.852	0.852	0.852	0.852	0.852
Family income	r	1.000	0.158**	0.088*	0.025	0.524	0.606	0.606	0.606	0.606	0.606	0.606	0.606	0.606	0.606
	p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Child's academic success	r	1.000	0.415**	0.291**	0.252**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Child's adjustment at home	r	1.000	0.695**	0.476**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Child's parent relations	r	1.000	0.478**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Child's friend relations	r	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TASCA-P: TASCA Psychological, TASCA-B: TASCA Biological, TASCA-S: TASCA Social, TASCA-T: TASCA Total, EASP-W: EASP Worry, EASP-P: EASP Physiological, EASP-T: EASP Total, Mother EL: Mother Education level, Father EL: Father Education level, Child's adj. at home: Child's adjustment at home

Table 4. Logistic regression analysis for the total score of the Test Anxiety Scale for Children and Adolescents

Independent risk factors	Beta	t	p	95.0% confidence interval for B	
				Lower bound	Upper bound
EASP worry	0.289	6,090	0.000*	0.273	0.533
EASP physiological	0.106	2,251	0.025*	0.024	0.350
Father's education level	0.011	0.285	0.776	-0.891	1.193
Child's academic success	-0.093	-2,291	0.022*	-2.850	-0.219
Child's adjustment at home	-0.029	-0.538	0.591	-2.339	1.333
Child's parent relationship	-0.058	-1,123	0.262	-2.779	0.756
Child's friend relationship	-0.024	-0.570	0.569	-1.892	1.040

EASP worry Exam Anxiety Scale for Parents Worry sub-dimension, EASP Physiological: Exam Anxiety Scale for Parents Physiological sub-dimension

Table 5. Logistic regression analysis for the total score of the Exam Anxiety Scale for Parents

Independent risk factors	Beta	t	p	95.0% confidence interval for B	
				Lower bound	Upper bound
Mother education level	-0.001	-0.018	0.986	-1.512	1.485
Father education level	-0.155	-3,311	0.001*	-4.073	-1.040
Family income	-0.027	-0.634	0.526	-1.939	0.992
Child's academic success	0.009	0.209	0.835	-1.383	1.713
Child's adjustment at home	-0.031	-0.591	0.555	-2.728	1.466
Child's parent relationship	0.011	0.210	0.834	-1,802	2.233
TASCA Psychological	0.061	1,039	0.299	-0.166	0.539
TASCA Biological	0.096	1,885	0.060	-0.014	0.667
TASCA Social	0.255	5,082	0.000*	0.439	0.991

TASCA Psychological: Test Anxiety Scale for Children and Adolescents Psychological sub-dimension, TASCA Biological: Test Anxiety Scale for Children and Adolescents Biological sub-dimension, TASCA Social: Test Anxiety Scale for Children and Adolescents Biological sub-dimension

with perfectionism.³⁹ Perfectionism in parents could also cause anxiety in children.⁴⁰ This situation might be a possible explanation for our results. Our study found that the decrease in academic success had an increasing effect on the TASCA scores. Test anxiety in children was associated with decreased academic achievement.^{41,42} The decrease in academic success might also cause children to feel pressure to perform better on the test and increase their anxiety.

When the variables with a significant correlation were included in the logistic regression analysis, the factors affecting the EASP total scores in the model were TASCA social sub-dimension score and the father's education level. TASCA social sub-dimension score investigates the effect of family and environment on the anxiety experienced by the child.²⁰ Our study found that the increase in the TASCA social sub-dimension scores had an increasing effect on the EASP scores. The increase in the social sub-dimension score could be interpreted as the child being more worried about the family and environment. Our study also found that the increase in the EASP scores affected the TASCA scores. A recent study showed a bi-directional relationship between the child and the parent in terms of anxiety, and the child's anxiety affected the parent's anxiety.⁴³ The result of our study could be evaluated in a similar context, an increase in the parent's anxiety might affect the child's anxiety, and an increase

in the child's anxiety might affect the parent's anxiety. Bjelland et al.⁴⁴ stated that higher education might have a protective effect on anxiety throughout life. Similarly, in another recent study, anxiety symptoms were higher in individuals with low education levels.⁴⁵ Our result, as the education level of the father increases, the decrease in EASP scores was consistent with these data.

Study Limitations

Our study should be evaluated within several limitations. The data for the research was collected shortly after the opening of the schools when the children were coming out of the holiday season. This situation might have affected the choices of the participants. Another limitation was that the data were obtained through questionnaires. We did not conduct clinical interviews with children and families. This situation made it difficult for us to understand the extent of the anxiety level. Finally, most of the parents in our study were mothers. This situation could also be considered as a limitation. The strength of our research was that the sample was selected randomly from secondary schools in the district where the research was conducted. In this respect, it could provide an idea about the test anxiety of secondary school students and their parents in Turkey.

Conclusion

In our study, test anxiety scores were higher in almost one out of every four students of secondary school age. Girls and students with lower academic success may also have higher test anxiety scores. Parental test anxiety, which could affect test anxiety in children, should not be overlooked, and interventions for parents might also influence test anxiety in children.

Acknowledgments

The authors would like to thank the parents and children who participated in this study. The authors would also like to thank Denizli provincial directorate of national education for their help.

Ethics

Ethics Committee Approval: The study was conducted after the ethics committee permission, dated 22.06.2021 and number 12, obtained from the Faculty of Medicine of Pamukkale University, and written permission from the Denizli Provincial Directorate of National Education.

Informed Consent: Patient consent was obtained.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: A.B., Ö.B., Design: A.B., Ö.B., Data Collection or Processing: A.B., Ö.B., Analysis or Interpretation: A.B., Ö.B., Literature Search: A.B., Ö.B., Writing: A.B., Ö.B.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

- McDonald AS. The prevalence and effects of test anxiety in school children. *Educ Psychol*. 2001;21:89-101.
- Cassady JC, Johnson RE. Cognitive Test Anxiety and Academic Performance. *Contemp Educ Psychol* 2002;27:270-295.
- Putwain DW. Test anxiety and GCSE performance: The effect of gender and socio-economic background. *Educational Psychology in Practice*. 2008;24:319-334.
- Eum K, Rice KG. Test anxiety, perfectionism, goal orientation, and academic performance. *Anxiety Stress Coping*. 2011;24:167-178.
- Putwain D. Examination stress and test anxiety. *Psychologist*. 2008;21:1026-1029.
- The NSPCC. *Childline Annual Review 2013/14: Under Pressure*; 2015.
- Putwain D, Daly AL. Test anxiety prevalence and gender differences in a sample of English secondary school students. *Educational Studies*. 2014;40:554-570.
- Lohiya N, Kajale N, Lohiya N, Khadilkar A, Khadilkar V, Gondhalekar K, Agarkhedkar S. Test Anxiety among School-Going Children and Adolescents, Factors Affecting and Impact on Quality of Life: A Multicenter Study. *Indian J Pediatr*. 2021;88:892-898.
- Rahafar A, Maghsudloo M, Farhangnia S, Vollmer C, Randler C. The role of chronotype, gender, test anxiety, and conscientiousness in academic achievement of high school students *Chronobiol Int*. 2016;33:1-9.
- Sarı SA, Bilek G, Çelik E. Test anxiety and self-esteem in senior high school students: a cross-sectional study. *Nord J Psychiatry*. 2018;72:84-88.
- Wood JJ, McLeod BD, Sigman M, Hwang WC, Chu BC. Parenting and childhood anxiety: Theory, empirical findings, and future directions. *J Child Psychol Psychiatry*. 2003;44:134-151.
- Xu F, Cui W, Lawrence PJ. The Intergenerational Transmission of Anxiety in a Chinese Population: The Mediating Effect of Parental Control. *J Child Fam Stud*. 2020;29:1669-1678.
- McClure EB, Brennan PA, Hammen C, Le Brocque RM. Parental Anxiety Disorders, Child Anxiety Disorders, and the Perceived Parent-Child Relationship in an Australian High-Risk Sample. *J Abnorm Child Psychol*. 2001;29:1-10.
- Baytemir K. "Ebeveynler De Sınav Kaygısı Yaşıyor Mu? Sınav Kaygısının Yordayıcıları Olarak Mükemmeliyetçilik, Akılcı Olmayan İnançlar ve Ebeveyn Sınav Kaygısı," III INES International Education and Social Science Congress, Antalya, Turkey, 2018.
- Suna HE, Özçelik H. 2022 Liselere Geçiş Sistemi (LGS) Kapsamında İlk Yerleştirme Sonuçları. 2022;1-44.
- Baş G. American Education System: A Comparative Study. *J Educ Sci*. 2013;1:63-93.
- Eker S. Introduction of the education system of the federal republic of germany and its comparison with the turkish education system. *Sosyolojik Düşün*. 2020;5:113-126.
- Mazlum MM. Türkiye ve İtalya Eğitim Sistemlerinin Karşılaştırılması. *Van Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Derg*. 2017;14:1141-1177.
- Kavakci O, Semiz M, Kartal A, Dikici A, Kugu N. Test anxiety prevalence and related variables in the students who are going to take the university entrance examination. *Dusunen Adam*. 2014;27:301-307.
- Tan C. Development of test anxiety scale for children and adolescents using biopsychosocial model and examination of its psychometric properties. *Fatih Sultan Mehmet Vakıf University Master's Thesis*. 2020.
- Baytemir K, İlhan T. Development of the exam anxiety scale for parents: A validity and reliability study. *Electron J Res Educ Psychol*. 2018;16:223-241.
- Ergene T. Effective interventions on test anxiety reduction: A meta-analysis. *Sch Psychol Int*. 2003;24:313-328.
- Yıldırım İ. Depression, Test Anxiety and Social Support Among Turkish Students Preparing for the University Entrance Examination. *Eurasian J Educ Res*. 2007;29:171-184.
- Putwain DW. Test anxiety in UK schoolchildren: Prevalence and demographic patterns. *Br J Educ Psychol*. 2007;77:579-593.
- von der Embse N, Jester D, Roy D, Post J. Test anxiety effects, predictors, and correlates: A 30-year meta-analytic review. *J Affect Disord* 2018;227:483-493.
- Çakmak A, Şahin H, Akıncı Demirbaş E. 7. ve 8. Sınıf Ortaokul Öğrencilerinin Sınav Kaygısı ve Benlik Saygısı Arasındaki İlişkinin İncelenmesi. *Kafkas Üniversitesi, e-Kafkas Eğitim Araştırmaları Derg*. 2017;4:1-9.
- Bacanlı F, Sürücü M. İlköğretim 8. Sınıf Öğrencilerinin Sınav Kaygıları ve Karar Verme Stilleri Arasındaki İlişkilerin İncelenmesi. *Educational Administration: Theory and Practice*. 2006;45:7-35.
- İLTER İ. The Relationship between Academic Amotivation and Academic Achievement: A Study on Middle School Students. *Kuramsal Eğitimbilim Dergisi [Journal of Theoretical Educational Science]*. 2021;14:389-410.
- Karaman MA, Vela JC, Eşici H. Middle school students' academic motivation in Turkey: Levels of perfectionism and self-efficacy. *Middle School Journal*. 2020;51:35-45.
- Deb S, Strodl E, Sun J. Academic stress, parental pressure, anxiety and mental health among Indian high school student. *Int J Psychol Behav Sci*. 2015;5:26-34.

31. Shanahan L, Copeland W, Jane Costello E, Angold A. Specificity of putative psychosocial risk factors for psychiatric disorders in children and adolescents. *J Child Psychol Psychiatry*. 2008;49:34-42.
32. Howard MS, Medway FJ. Adolescents' attachment and coping with stress. *Psychol Sch*. 2004;41:391-402.
33. Jongerden L, Bögels SM. Parenting, Family Functioning and Anxiety-Disordered Children: Comparisons to Controls, Changes After Family Versus Child CBT. *J Child Fam Stud* 2015;24:2046-2059.
34. Ginsburg GS, Siqueland L, Masia-Warner C, Hedtke KA. Anxiety disorders in children: Family matters. *Cogn Behav Pract*. 2004;11:28-43.
35. Sahithya BR, Manohari SM, Vijaya R. Parenting styles and its impact on children – a cross cultural review with a focus on India. *Mental Health, Religion & Culture*. 2019;22:357-383.
36. Lawrence PJ, Murayama K, Creswell C. Systematic Review and Meta-Analysis: Anxiety and Depressive Disorders in Offspring of Parents With Anxiety Disorders. *J Am Acad Child Adolesc Psychiatry*. 2019;58:46-60.
37. Burstein M, Ginsburg GS, Tein JY. Parental anxiety and child symptomatology: An examination of additive and interactive effects of parent psychopathology. *J Abnorm Child Psychol*. 2010;38:897-909.
38. Platt R, Williams SR, Ginsburg GS. Stressful Life Events and Child Anxiety: Examining Parent and Child Mediators. *Child Psychiatry Hum Dev*. 2016;47:23-34.
39. Baytemir K. Perfectionism, Irrational Beliefs, Need for Social Approval and Gender as Predictors of Parent Exam Anxiety. *Bartın University Journal of Faculty of Education*. 2019;8:161-178.
40. Affrunti NW, Woodruff-Borden J. Parental Perfectionism and Overcontrol: Examining Mechanisms in the Development of Child Anxiety. *J Abnorm Child Psychol*. 2015;43:517-529.
41. von der Embse NP, Mata AD, Segool N, Scott EC. Latent Profile Analyses of Test Anxiety: A Pilot Study. *J Psychoeduc Assess*. 2014;32:165-172.
42. Chapell MS, Blanding ZB, Takahashi M, Silverstein ME, Newman B, Gub A, McCann N. Test anxiety and academic performance in undergraduate and graduate students. *Journal of Educational Psychology* 2005;97:268-274.
43. Silverman WK, Marin CE, Rey Y, Jaccard J, Pettit JW. Directional effects of parent and child anxiety 1 year following treatment of child anxiety, and the mediational role of parent psychological control. *Depress Anxiety*. 2021;38:1289-1297.
44. Bjelland I, Krokstad S, Mykletun A, Dahl AA, Tell GS, Tambs K. Does a higher educational level protect against anxiety and depression? The HUNT study. *Soc Sci Med*. 2008;66:1334-1345.
45. Liao W, Luo Z, Dong X, Wu X, Mei Y, Cui N, Kang N, Lan Y, Liu X, Huo W, Wang F, Wang C. Associations between depressive symptoms, anxiety symptoms, their comorbidity and health-related quality of life: a large-scale cross-sectional study. *BMC Public Health*. 2021;21:1911.