

Research Article

The effect of students' exam anxiety on high school entrance exam success: The moderator role of parental exam anxiety

Ahmet Genç¹ and Esat Şanlı²

¹Psychological Counselor, Ahmet Sarı Secondary School, Samsun, Türkiye (ORCID: 0000-0002-0948-4756)

²Ondokuz Mayıs University, Faculty of Education, Department of Educational Sciences, Samsun, Türkiye (ORCID: 0000-0001-8227-8097)

This research is a causal study that examines the moderator role of parental exam anxiety in the relationship between eighth-grade students' exam anxiety and high school entrance exam success. Participants of the study consisted of a total of 353 eighth-grade students attending seven different middle schools in the North region of Türkiye. Personal Information Form, Test Anxiety Scale for Parents and Children were used as data collection tools. Pearson Product-Moment Correlation Coefficients were calculated for descriptive analysis of the data. Bootstrap method was used to estimate sampling distributions. In the study, 5000 bootstrap were used and the confidence intervals were determined as %95. Analyses showed that parental exam anxiety played a moderator role in the relationship between children's exam anxiety and high school entrance exam scores.

Keywords: Parents; Test anxiety; High school entrance exam; Moderator

Article History: Submitted 23 May 2022; Revised 21 December 2022; Published online 8 March 2023

1. Introduction

The Turkish education system places a great deal of importance on exams. Millions of students take these exams every year (Ministry of National Education [MoNE], 2021; Student Selection and Placement Center [SSPC], 2021). According to 2021 data, 1,038,492 students took the test, and 168,924 were placed in secondary schools based on their scores (MoNE, 2021). Exam anxiety is largely caused by the fact that only 14% of students who take the exam get into their dream high schools with the scores they get on the central exam, which only accepts students with limited admission numbers. Often, students have to sacrifice their social lives and even their sleep to reach this very difficult percentile. Furthermore, students' anxiety about the exam increases as a result of the difficulties they must face while preparing for the exam, as well as the fact that central exams are highly effective in determining the quality of education they will receive in the future.

As a result, our country conducts academic studies that reflect this situation. In the last five years, more thesis studies have been conducted on students' exam anxiety in our country (Totan, 2018). Parents, teachers, and students of all ages have emphasized getting high grades in these

Address of Corresponding Author

Ahmet Genç, Ahmet Sarı Secondary School, Burhanettin Gazi St., 55040, Samsun, Türkiye.

✉ ahmtgnc@gmail.com

How to cite: Genç, A. & Şanlı, E. (2023). The effect of students' exam anxiety on high school entrance exam success: The moderator role of parental exam anxiety. *Journal of Pedagogical Research*, 7(1), 260-272. <https://doi.org/10.33902/JPR.202316861>

exams as a key to success (Yıldırım & Ergene, 2003), which is another factor contributing to this anxiety. Additionally, studies have shown that exam anxiety can affect not only university students, but also students of all grades, including students who pass primary education into secondary school and those who take the Public Personnel Selection Examination [PPSE] (Baltaş, 2002; Galla & Wood, 2012; Lufi et al., 2004; Yerin, 1993).

Anxiety about learning has been shown to improve performance (Baltaş & Baltaş, 2008; Cizek & Burg, 2006). Mayer (2008) argues that anxiety is not a problem as long as the student is able to study and perform well in the exam regardless of how anxious he/she is. A student with exam anxiety shows negative behavioral changes, and he or she cannot study and is unable to succeed on the exams despite studying. Students' exam anxiety, which can impair the immune system's functionality, can negatively affect their health (Keogh & French, 2001). Furthermore, students with exam anxiety react more intensely to failure situations and decrease their sense of self-efficacy (Ergene, 2003). In cases where students' exam anxiety is severe, their social development weakens, which is negatively affected by social environments, and they feel nervous when they speak in public or participate in discussions. This alienation from the student's social environment may lead them to refuse to attend school as a result (Besharat, 2003; Kurt, 2006; Mayer, 2008).

Researchers have found that irrational beliefs and perfectionism can both affect students' exam anxiety (Güler & Akr, 2013), as well as external influences such as parents' attitudes (Besharat, 2003; Shadach & Ganor-Miller, 2013). In order for students to succeed, especially parents' attitudes play an important role (Yang & Shin, 2008). Several factors have impacted the success of students, including undemocratic/oppressive parental attitudes (Putwain et al., 2010; Salend, 2011), expectations that exceed children's capabilities (Wang & Heppner, 2002), and negative communication styles (Sapp, 1999). In contrast, Peleg-Popko (2004) asserts that strong relationships with mothers reduce students' exam anxiety.

It is not only students who suffer from exam anxiety, but also their families who suffer from it. The process of rearranging a family's economic and social life for their child who will take the test not only affects their children economically, but also negatively affects them psychologically. Family relationships are negatively affected by the exam tension, and parents are anxious as well. Additionally, students' parents also experience anxiety in this exam environment (Kutlu, 2001).

Student exam anxiety may also be caused by family dynamics (Salend, 2011). A parent's anxiety and their parenting behaviors may lead to the development of anxiety in a child (Alisinanoğlu & Ulutaş, 2003; Murray et al., 2009; Rapee, 2001; Shadach & Ganor-Miller, 2013). While anxiety has a hereditary component, it can also be acquired through learning (Alisinanoğlu & Ulutaş, 2003; Beidel & Turner, 1997). A parent with an anxious cognitive style may transfer that style to their children, causing them to develop and maintain anxiety (Field & Cartwright-Hatton, 2008; Shadach & Ganor-Miller, 2013). As a child grows up, he reflects his parents' anxiety in every event and situation, including exam anxiety (Wood et al., 2003). A child's anxiety may also be reinforced by parental strategies that may increase anxiety, such as punishment or reinforcement of addiction (van der Sluis et al., 2015). Exam anxiety can also be caused by parents expecting their children to be perfect (Salend, 2011). Despite all of these, open and clear communication with the child is found to protect children from stressful situations (Margalit & Eysenck, 1990). Children who receive support from their families are able to cope with stress more easily, and their anxiety decreases as a result (Peleg-Popko, 2004). Thus, family anxiety may be one of the variables that should be taken into account when studying students' anxiety about exams.

Students' social environment is an important resource for reducing exam-related anxiety and stress, and their parents are the closest people in this environment to them. Family support is even more important for a student who will take an important exam at the end of the year and is in the eighth grade (Morrison et al., 1997). In terms of preparing a student for the exam, as well as enabling him to trust himself to succeed, parental support, or socio-academic support, is extremely important (Ringeisen & Raufelder, 2015). Nevertheless, since some families do not know how to

help their children and are as concerned as their children, they may increase their anxiety rather than support them (Cüceloğlu, 1991; Mulvenon et al., 2005).

This study suggests that parental exam anxiety may play a moderating role in the relationship between student exam anxiety and high school entrance exam [HSEE] success based on parental anxiety and attitudes, which have been shown to be related to both student anxiety and student success in the literature. As a result, this study investigates whether parental exam anxiety plays a moderating role in the relationship between students' exam anxiety and HSEE scores. Moreover, no direct studies were found in the field survey on how the anxiety of parents about their children's exams affects the performance of the students at their exams. Researchers may be able to gain insight into the effects of parental test anxiety on students and how parents can control their emotions to help them succeed in exams by using the findings of the study. Meanwhile, it is expected to provide insight into how and how much parents should participate in school-based test anxiety intervention studies. Studies to be conducted on this subject are expected to benefit significantly from the present study. Following are the hypotheses developed within the framework of the research objectives:

H1. The test anxiety of the child negatively affects the success of the exam.

H2. Parental test anxiety has a regulatory role in the effect of the child's test anxiety on test success.

1.1 Relations between Variables

Exam anxiety, which is one of the biggest obstacles in revealing the individual's existing potential, has a multifaceted structure. In addition to negatively affecting students cognitively, emotionally and behaviorally (Hong, 1998; Yildırım & Ergene, 2003), exam anxiety also negatively affects the success of many students (Baltaş, 2002; Mulvenon et al., 2005). High exam anxiety leads to a decrease in students' intrinsic motivation and interest in lessons, thus reducing academic success (Cassady & Johnson, 2002). In light of these, the following hypothesis was formed:

Hypothesis 1. There is a significant relationship between child's test anxiety and HSEE success.

The academic success of the student is extremely important for the parents as well as the student and is one of the most important factors that cause anxiety (Yildırım & Ergene, 2003). Studies show that parents have an important role in the academic success of students (Neuenschwander et al., 2007). As parents in our country believe a good high school will result in a good university, and a good university will lead to a good job and a bright future, parents also experience anxiety. Another reason why families experience anxiety is that many families consider themselves responsible for the success of the child (Baltaş, 2002). In light of these, the following hypothesis was formed:

Hypothesis 2. There is a significant relationship between students' and parents' test anxiety.

Studies show that the parents' anxiety as well as the students' negatively affects the success of the student. Studies show that the children of parents with math anxiety also have math anxiety (Soni & Kumari, 2017), and that their math skills decrease as well as math achievement due to anxiety (Dahmer, 2001; Maloney et al., 2015). In addition to these, it was observed in experimental studies that parents' mathematics anxiety was reduced and improvements in mathematics achievement of their children were observed (Berkowitz et al., 2015). In light of these, the following hypothesis was formed:

Hypothesis 3. Parental test anxiety has a moderator role in the effect of the child's test anxiety on test success.

2. Method

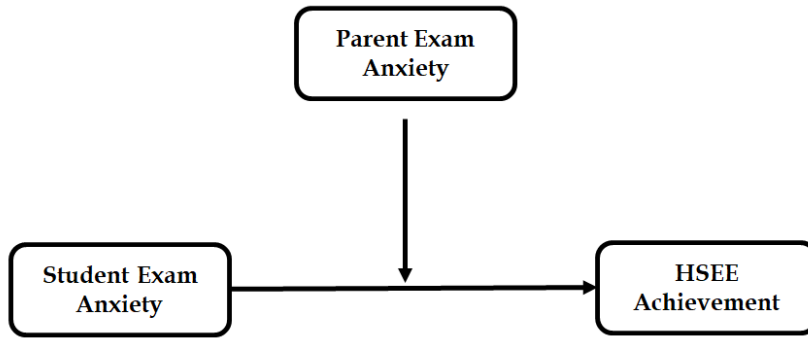
HSEE success and eighth-grade students' exam anxiety will be examined through a causal study to examine the moderator role of parental exam anxiety. Causal research models allow examining

parameters that may affect the result after the result has been revealed, even if independent variables are not controlled from the beginning of the process.

The following schematic illustrates the role of parental test anxiety in the relationship between HSEE achievement and eighth grade students' test anxiety.

Figure 1

Schematic representation of the moderator role of parental test anxiety in the relationship between HSEE achievement and students' test anxiety



2.1. Study Group

Approximately 15,000 students took the HSEE exam in the 2019/2020 academic year in the province in which this study was conducted. According to this universe, the ideal number of samples to be reached with a 95% confidence interval and a 5% margin of error was determined as 375. In this context, 380 students were included for data collection. The forms of 27 participants who filled in the form incompletely or did not take the HSEE exam were excluded. Consequently, the study group of the research consisted of 353 eighth-grade students, 209 (59.2%) girls, and 144 (40.8%) boys, attending seven different secondary schools.

The students were given general information about the scope of the research and they were informed that they may leave forms to the researchers without filling out if they were not voluntary. It took about 15 minutes for the students to fill out the form.

Considering the past years' HSEE success of the elementary schools in this province, it was decided to include the students with high, medium and low achieving students in the study. In this respect, this research took maximum variation sampling model, one of the purposeful sampling methods, into consideration. Purposeful sampling refers to the selection of information-rich situations depending on the purpose of the study. Maximum variation sampling, on the other hand, refers to the selection of samples to include different options in line with the purpose of the research related to the situation examined in the universe.

2.2. Data Collection Tools

2.2.1. Personal Information Form

This form included information such as the gender of the students, the school they attend, the school number, and parent who filled out the form.

2.2.2. Test Anxiety Scale in Children

The Test Anxiety Scale in Children was developed by Wren and Benson (2004) and adapted into Turkish by Aydın and Bulgan (2017). This four-point Likert type scale consists of 3 sub-scales and 30 items. High scores obtained from the scale indicate a high level of anxiety. The Cronbach Alpha reliability coefficients of the scale range from .88 for the entire scale, .82, .72, and .75 for the sub-scales of thought, off-task behaviors, and autonomous responses, respectively. As a result of confirmatory factor analysis, it was determined that the Turkish form of the scale exhibited a three-factor structure as in the original form ($\chi^2/df = 3.97$, RMSEA = .05, SRMR = .05, CFI = .97, GFI = .92, AGFI = .90). The reliability coefficients obtained from the scale within the scope of this

study are .89, .75, .80, and .92 for the sub-scales of thought, off-task behaviors, and autonomous responses, and for the whole scale, respectively.

2.2.3. Parent Test Anxiety Scale

The Parent Test Anxiety scale, which was developed by Baytemir and İlhan (2018) to evaluate the anxiety experienced by parents about the exams their children will take, consists of 2 sub-scales and 18 items. As a result of the exploratory factor analysis, it was seen that the two dimensions of the scale explained 55.44% of the total variance. The confirmatory factor analysis results showed that the model had sufficient fit indices ($\chi^2/df = 2.2$, RMSEA = .058, CFI = .98, NFI = .97, TLI = .98). The Cronbach's Alpha reliability coefficient obtained for the entire scale was calculated as .91, while it was .88 and .91 for the anxiety and physiological sub-scales, respectively. The reliability coefficients obtained within the scope of this study were determined as .89, .90, and .92 for the anxiety and physiological sub-scales, and for the whole scale, respectively.

2.3. Data Analysis

In the study, the moderator role of parental test anxiety in the relationship between students' test anxiety and HSEE scores was examined. After descriptive analyses of all variables have been conducted, the relationships between variables were determined using Pearson correlation analysis. For the descriptive analyses, IBM SPSS Statistics 24 package program was used. Hayes's (2018) Process Macro plugin version 3.3 was used for moderator effect analysis.

3. Findings

3.1. Descriptive Statistics and Correlations

The descriptive statistics results of the research are presented in Table 1.

Table 1
Descriptive Statistics

	Mean (SD)	Skewness	Kurtosis
1. HSEE	285.23 (72.46)	.50	-.25
2. Physiological	16.38 (7.93)	1.03	.11
3. Anxiety	29.04 (8.70)	.26	-.85
4. PEAS Total	46.58 (14.94)	.50	-.58
5. Thoughts	34.97 (8.55)	-.03	-.49
6. Off-task Behaviors	16.61 (4.91)	.55	-.15
7. Autonomous Responses	17.97 (6.08)	.76	-.04
8. CEAS Total	69.54 (16.80)	.36	-.19

Note. PEAS: Parent Exam Anxiety Scale; CEAS: Child Exam Anxiety Scale

Table 1 indicates that all the variables meet the assumption of normality of the distribution according to the skewness and kurtosis values.

In order to examine the relationship between Parental Exam anxiety, Child Exam anxiety and HSEE scores, Pearson Correlation Coefficients were calculated and the results are presented in Table 2. As can be seen in Table 2, there is a negative significant correlation between HSEE scores and physiological reactions, parental exam anxiety, thoughts, off-task behaviors, and exam anxiety of student (-.30, -.26, -.28, -.14, -.21, respectively). In addition, it seems that there is positive and significant relationships between physiological reactions with exam anxiety of student, anxiety and parental exam anxiety (.23, .28, .27, respectively), physiological reactions with autonomous reactions, anxiety and parental exam anxiety (.16, .23, .19, respectively), off-task behaviors and physiological reactions, anxiety and parental exam anxiety (.17, .13, .18, respectively), thoughts and physiological reactions, anxiety and parental exam anxiety (.24, .31, .29, respectively).

Table 2

Correlation Values between HSEE scores, Child Text Anxiety, and Parental Exam anxiety Scale

	Correlations							
	1	2	3	4	5	6	7	8
1. HSEE	-							
2. Physiological	-.30**	-						
3. Anxiety	-.07	.46**	-					
4. PEAS Total	-.26**	.87**	.76**	-				
5. Thoughts	-.28**	.24**	.31**	.29**	-			
6. Off-task Behaviors	-.14**	.17**	.13*	.18**	.56**	-		
7. Autonomous Responses	-.08	.16**	.23**	.19**	.64**	.57**	-	
8. CEAS Total	-.21**	.23**	.28**	.27**	.91**	.78**	.86**	-

Note. (* $p < .05$, ** $p < .01$); PEAS: Parent Exam Anxiety Scale; CEAS: Child Exam Anxiety Scale

3.2. Moderator Analyses

The main purpose of this study is to examine the moderator role of parental exam anxiety in the relationship between 8th grade students' exam anxiety and HSEE success. For this purpose, a series of moderator analyzes were conducted to reveal the moderator role of parental exam anxiety. In the moderation model, the moderator effect of parental exam anxiety and its sub-scales was examined in the relationship between the child exam anxiety scale and its sub-scales and HSEE scores.

3.2.1. The moderator role of the anxiety sub-scale of the parental exam anxiety in the relationship between child exam anxiety and HSEE scores

The results obtained from the analyzes carried out to examine the moderator role of the anxiety sub-scale of parental exam anxiety in the relationship between child exam anxiety and HSEE scores indicate that both the general model ($R^2=.59$, $F(3, 349)=6.44$, $p < .05$) and the interaction effect ($B=14.29$, $SD=5.86$, $t=2.44$, $LLCI=2.77$, $ULCI=25.81$, $p < .05$) shows that it is statistically significant. Table 4 shows how the moderator role of anxiety sub-scale of parental exam anxiety changes in this relationship in different child exam anxiety levels.

Table 3

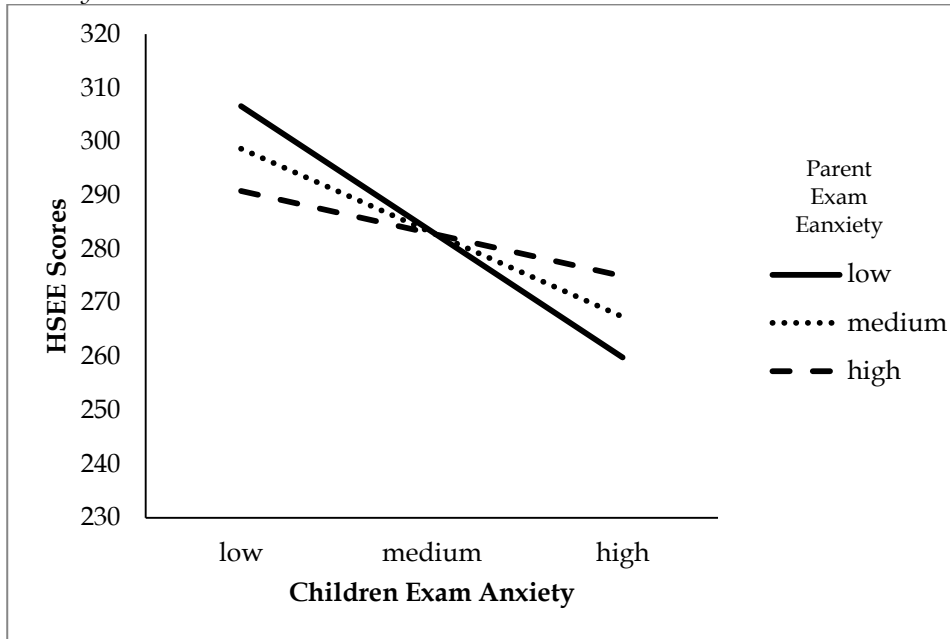
The Effect of Anxiety Sub-scale of Parental Exam anxiety on HSEE Scores at Different Child Exam anxiety Levels

Parental Exam Anxiety, Anxiety Sub-Scale Levels	B	SD	t	p	LLCI	ULCI
-1 SD	-41.75	9.94	-4.20	.00	-61.30	-22.19
M	-27.94	7.17	-3.90	.00	-42.04	-13.84
1 SD	-14.14	8.24	-1.72	.09	-30.35	2.08

As can be seen in Table 3, when the parental exam anxiety anxiety sub-scale scores are low (-1 SD), the effect of the child's exam anxiety on HSEE scores is significant, when the anxiety sub-scale scores of parental exam anxiety are at a moderate level (M), the effect of the child's exam anxiety on HSEE scores is significant. Finally, when the anxiety sub-scale scores of parental exam anxiety are high (1 SD), the level of effect of the child's exam anxiety on HSEE scores is not significant. The results of the regression analysis performed are presented in a line graph (Figure 2).

Figure 2

The moderator role of anxiety sub-scale of parental exam anxiety in the relationship between child exam anxiety and HSEE scores



3.2.2. The moderator role of anxiety sub-scale of the parental exam anxiety in the relationship between thought sub-scale of the child exam anxiety and HSEE scores

The results obtained from the analyzes carried out to examine the moderator role of anxiety sub-scale of parental exam anxiety in the relationship between the thought sub-scale of the child exam anxiety and HSEE scores were found to be consistent with the general model ($R^2=.09$, $F(3, 349)=10.23$, $p <.05$) and also showed that the interaction effect ($B=11.43$, $SD=5.15$, $t=2.22$, $LLCI=1.31$, $ULCI=21.56$, $p <.05$) was significant. Table 5 shows how the moderator effect of anxiety sub-scale of parental exam anxiety changes in different thought scores of child exam anxiety in this relationship.

Table 4

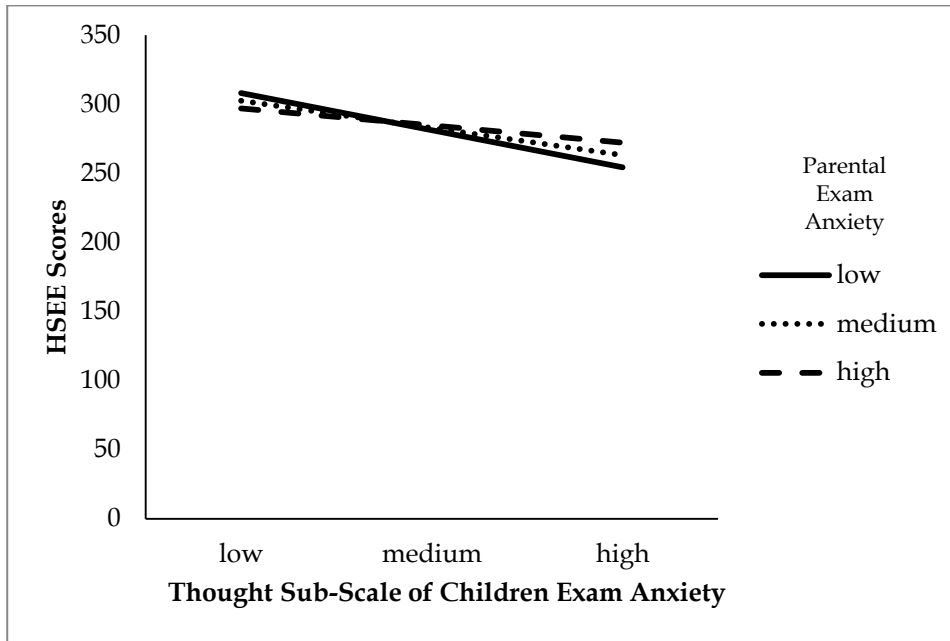
The effect of anxiety sub-scale of the parental exam anxiety on HSEE scores in different thought sub-scale scores of child exam anxiety

Parental Exam Anxiety, Anxiety Sub-Scale Levels	B	SD	t	p	LLCI	ULCI
-1 SD	-40.99	7.70	-5.32	.00	-56.13	-25.84
M	-29.94	6.13	-4.89	.00	-41.99	-17.89
1 SD	-18.90	8.08	-2.34	.02	-34.78	-3.01

As can be seen in Table 4, if the anxiety sub-scale scores of parental exam anxiety are low (-1 SD), the level of effect of the thought sub-scale scores of the child's exam anxiety on HSEE scores is significant. When the anxiety sub-scale scores of parental exam anxiety are at a moderate level (M), the effect of the thought sub-scale scores of the child's exam anxiety on HSEE scores is significant, and finally, when the anxiety sub-scale scores of parental exam anxiety are high (1 SD), the level of effect of the thought sub-scale scores of the child's exam anxiety on HSEE scores is significant. The results of the regression analysis performed are presented in a simple slope graph (Figure 3).

Figure 3

The moderator role of anxiety sub-scale of parental exam in the relationship between child exam anxiety and HSEE scores



In general mean, the results showed that only the anxiety sub-scale of parental exam anxiety had a moderating role in the relationship between HSEE scores and child exam anxiety. A summary of moderation analyzes can be seen in Table 5.

Table 5

Summary of results on the moderator role of parental exam anxiety in the relationship between child exam anxiety and HSEE achievement

Independent Variable	Moderator	Dependent Variable	Moderation	Confidence Interval
CEAS Total Point	PEAS Total Point	HSEE Score	No	Non-significant
CEAS Total Point	PEAS Physiological Sub-scale	HSEE Score	No	Non-significant
CEAS Total Point	PEAS Anxiety Sub-scale	HSEE Score	Yes	Significant
CEAS Off-task behaviors Sub-scale	PEAS Total Point	HSEE Score	No	Non-significant
CEAS Off-task behaviors Sub-scale	PEAS Physiological Sub-scale	HSEE Score	No	Non-significant
CEAS Off-task behaviors Sub-scale	PEAS Anxiety Sub-scale	HSEE Score	No	Non-significant
CEAS Autonomous Sub-scale	PEAS Total Point	HSEE Score	No	Non-significant
CEAS Autonomous Sub-scale	PEAS Physiological Sub-scale	HSEE Score	No	Non-significant
CEAS Autonomous Sub-scale	PEAS Anxiety Sub-scale	HSEE Score	No	Non-significant
CEAS Thoughts Sub-scale	PEAS Total Point	HSEE Score	No	Non-significant
CEAS Thoughts Sub-scale	PEAS Physiological Sub-scale	HSEE Score	No	Non-significant
CEAS Thoughts Sub-scale	PEAS Anxiety Sub-scale	HSEE Score	Yes	Significant

Note. PEAS: Parent Exam Anxiety Scale; CEAS: Child Exam Anxiety Scale

4. Discussion and Conclusion

The aim of this study is to examine the moderator role of parental exam anxiety in the relationship between student's exam anxiety and HSEE success. The results show that parents' anxiety about the exam their children has a moderating role in the relationship between general exam anxiety and thoughts about the exam, and HSEE scores. When parents are anxious about their children taking the exam, HSEE scores of children with exam anxiety and negative thoughts decrease. As a result, children who have exam anxiety and negative thoughts about taking the exam have a slower decline in their scores as their parents are anxious about the exam. According to the results obtained, parental test anxiety buffers the relationship between children's test anxiety and their thoughts about the test and HSEE success.

In line with the results obtained, no study has been found in the literature on the moderator role of parental exam anxiety in the relationship between students' exam anxiety and HSEE success. However, it is possible to compare the findings of the current study with studies using similar variables and methods. For example, Dahmer (2001) revealed in his study that the relationship between parents' math anxiety and children's math achievement is negative. Similarly, although it is an indirect interpretation, Soni and Kumari (2017) revealed in their study that the math anxiety of the parents increased the anxiety of the children, and the math success of the children whose math anxiety increased decreased. In another study, Berkowitz et al. (2015) stated that as the math anxiety of the parents decreases, the math achievement of the children increases. Similarly, Maloney et al. (2015) revealed that parents' math anxiety negatively affects children's math skills. Study results show that children whose parents experience test anxiety have lower test scores. It is however found that the decline in the scores of the children decreases as the anxiety of the parents increase.

There may be several reasons for the decrease in children's test scores as parents' exam anxiety increases. One of them may be that anxious parents are aware of the lack of exam preparation and exam motivation for their children, and therefore they worry and reflect this anxiety on their children. Parents, who are aware of the deficiency in their children, may prevent the decrease in success by taking more responsibility for the increase of their children's success in order to close this deficiency. In general, it is thought that children's academic success will be positively affected when parents help their children with their academic studies (Maloney et al., 2015; Vukovic et al., 2013). There is also the possibility that parents' anxiety creates the impression that the child should accept anxiety as a normal state, making it easier for them to accept it. The child who accepts the anxiety may be able to control it more easily and prevent his anxiety from affecting his exam performance. At the same time, anxious parents may create more academically supportive environments by better understanding their children's experiences without putting pressure on them. In other words, a constructive anxiety situation may arise between the parent and the child regarding the exam (Baltaş & Baltaş, 2008; Cizek & Burg, 2006; Mayer, 2008). For this reason, in future studies, studies to determine how parents with exam anxiety help their children, how and to what extent they participate will contribute to the clarification of the subject.

In light of the results obtained, it can be said that anxiety to a certain level is beneficial for families as well as students (Baltaş & Baltaş, 2008; Cizek & Burg, 2006). For this reason, it is considered important to include families in the studies on exam anxiety conducted by guidance services. It is thought that the inclusion of families of anxious children in intervention programs to be implemented by guidance services will contribute to a more effective process. These programs can be designed as programs in which families and children participate together or only family members should participate without the children. It is also possible to organize several additional sessions to be attended by family members separate from the children in parallel with the children's programs.

In addition, results of the current study have shown that it is perfectly normal and even beneficial for families to be a little worried about the exam. For this reason, families can be made aware of taking advantage of anxiety instead of trying to eliminate their anxiety. Anxiety can

contribute to a better understanding of a child's situation and more psychological and academic support for the child. In summary, parents can be taught that managing anxiety instead of fearing anxiety will be helpful for them and their children. Moreover, studies show that parental involvement and support affect student success positively (Fan & Chen, 2001; Ginsburg & Bronstein, 1993; Satır, 1996), and healthy interaction with family reduces high exam anxiety (Peleg-Popko, 2002). However, since exam anxiety is a process that continues after the exam as well as before the exam (Kuzgun, 1983), the support to be given to the families will seriously contribute to the students' high school preferences and career choices after the exam in a healthier way, away from anxiety.

The effects of parents' exam anxiety on students' anxiety need to be studied more. Research on this subject will be guided by determining the behaviors that explain the relationship between parents' exam anxiety and their children's academic success. The subject will be developed through qualitative studies, especially parent-child interviews. Clinically diagnosed individuals can be used as samples in future studies. Personality traits are also thought to affect the results. It is believed that attachment styles can also affect the process, along with variables such as introversion and extrovert personality traits.

5. Limitations

This study has some certain limitations that should be considered. Among them is the fact that all of the schools included in the study are public schools. As exam preparation also has a financial component, families whose children attend private schools are likely to feel different levels of anxiety. In addition, the children of such families may perceive the exam differently. Therefore, future studies can include private schools. It is also important to consider the study period during which the data were collected. Data for the present study were collected approximately one month before HSEE. Students and families may have evaluated the anxiety experienced at that moment rather than a generally accepted exam anxiety during this time period, which is regarded by families and students as the most intense exam anxiety period (Baltaş & Baltaş, 2008; Kidson & Hornblow, 1982). Therefore, their anxiety scores may have been higher than average during this period. In future studies, comparing and evaluating data collected at different time periods will contribute to healthier outcomes. As a final point, the fact that the study was conducted in regional schools may have affected the findings. Thus, village schools should be included in future studies to make the results more generalizable.

Acknowledgements. We would like to thank Tamer Ocağ, Ömür Kılıçarslan, Kerem Babacan and Gamze Yılmaz for their assistance and guidance in this research.

Author contributions: All authors have sufficiently contributed to the study, and agreed with the results and conclusions.

Ethics declaration: Author declared that the study was approved by the Ethics Committee in Social and Human Sciences of Ondokuz Mayıs University on 08.27.2021 with approval code: 2021/709.

Funding: No funding source is reported for this study.

Declaration of interest: No conflict of interest is declared by authors.

References

- Alisinanoğlu, F. & Ulutaş, İ. (2003). A study on the relationship children's anxiety levels and their mother's anxiety levels. *Education and Science*, 28, 65-71.
- Aydın, U. & Bulgan, G. (2017). Adaptation of children's test anxiety scale to Turkish. *Elementary Education Online*, 16(2), 887-899. <https://doi.org/10.17051/ilkonline.2017.304742>
- Baltaş, A. (2002). *Öğrenmede ve sınavlarda üstün başarı* [Outstanding achievement in learning and exam]. Remzi Publishing.

- Baltaş, Z. & Baltas, A. (2008). *Stres ve başa çıkma yolları* [Stress and ways to cope]. Remzi Publishing.
- Baytemir, K. & İlhan T. (2018). Development of the exam anxiety scale for parents: a validity and reliability study. *Electronic Journal of Research in Educational Psychology*, 16(1), 223-241. <https://doi.org/10.25115/ejrep.v16i44.1945>
- Beidel, D. C. & Turner, S. M. (1997). At risk for anxiety: I. psychopathology in the offspring of anxious parents. *Journal of American Academy of Child and Adolescent Psychiatry*, 36(7), 918-924. <https://doi.org/10.1097/00004583-199707000-00013>
- Berkowitz, T., Schaeffer, M.W., Maloney, E.A., Peterson, L., Gregor, C., Levine, S. C. & Beilock, S. L. (2015). Math at home adds up to achievement in school. *Science*, 350(6257),196-198. <https://doi.org/10.1126/science.aac7427>
- Besharat, M. A. (2003). Parental perfectionism and children's test anxiety. *Psychological Reports*, 93, 1049-1055. <https://doi.org/10.2466/PR0.93.8.1049-1055>
- Cassady, J. C. & Johnson, R. E. (2002). Cognitive test anxiety and academic performance. *Contemporary Educational Psychology*, 27, 270-295. <https://doi.org/10.1006/ceps.2001.1094>
- Cizek, G. J. & Burg, S. S. (2006). *Addressing test anxiety in a high-stakes environment*. Corwin Press.
- Cüceloğlu, D. (1991). *İçimizdeki çocuk* [The inner child]. Remzi Publishing.
- Dahmer, S.L. (2001). *What are the relationships between math anxiety and educational level in parents and math achievement in their children?* [Unpublished doctoral dissertation]. Tennessee State University, Nashville.
- Ergene, T. (2003). Effective interventions on test anxiety reduction: A meta-analysis. *School Psychology International*, 24(3), 313-328. <https://doi.org/10.1177/01430343030243004>
- Fan, X. & Chen, M. (2001). Parental involvement and students' academic achievement: A meta analysis. *Educational Psychology Review*, 13(1), 1-22. <https://doi.org/10.1023/A:1009048817385>
- Field, A. P., Cartwright-Hatton, S., Reynolds, S. & Creswell C. (2008). Future directions for child anxiety theory and Treatment. *Cognition and Emotion*, 22(3), 385-394. <https://doi.org/10.1080/02699930701842270>
- Galla, B.M. & Wood, J. J. (2012). Emotional self-efficacy moderates anxiety-related impairments in math performance in elementary school-age youth. *Personality and Individual Differences*, 52(2), 118-122. <https://doi.org/10.1016/j.paid.2011.09.012>
- Ginsburg, G. & Bronstein, P. (1993). Family factors related to children's intrinsic/extrinsic motivational orientation and academic performance. *Child Development*, 64, 1461-1471. <https://doi.org/10.1111/j.1467-8624.1993.tb02964.x>
- Güler, D. & Çakır, G. (2013). Examining predictors of test anxiety levels among 12th grade high school students. *Turkish Psychological Counseling and Guidance Journal*, 4(39), 82-94.
- Hanımoglu, E. & İnanç B. Y. (2011). The analysis of the relation among test anxiety, perfectionism and the attitudes of parents of the secondary students who will pass placement test (SBS). *Journal of Çukurova University Institute of Social Science*, 20(1), 351-366.
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.
- Hong, E. (1998). Differential stability of individual differences in state and trait anxiety. *Learning and Individual Differences*, 10(1), 51- 69. [https://doi.org/10.1016/S1041-6080\(99\)80142-3](https://doi.org/10.1016/S1041-6080(99)80142-3)
- Keogh, E. & French, C. C. (2001). Test anxiety, evaluative stress, and susceptibility to distraction from threat. *European Journal of Personality*, 15, 123-141. <https://doi.org/10.1002/per.400>
- Kidson, M. & Hornblow, A. (1982). Examination anxiety in medical students: experiences with the visual analogue scale for anxiety. *Medical Education*, 16, 247-250. <https://doi.org/10.1111/j.1365-2923.1982.tb01259.x>
- Kurt, İ. (2006). *Sorularla kaygı ve sınav kaygısı* [Anxiety and test anxiety with questions]. Asil Publishing.
- Kutlu, Ö. (2001). Adolescent anxiety caused by university entrance examination. *Education and Science*, 26(121), 12-23.
- Kuzgun, Y. (1983). Benlik ve ideal benlik kavramlarının tercih edilen meslek kavramları ile ilişkisi [The relationship of self and ideal self concepts with preferred profession concepts]. *Ankara University Journal of Faculty of Educational Science*, 16, 1-10.
- Lufi, D., Okasha, S. & Cohen, A. (2004). Test anxiety and its effects on the personality of students with learning disabilities. *Learning Disability Quarterly*, 27(3), 176-184. <https://doi.org/10.2307/1593667>
- Maloney, E. A., Ramirez, G., Gunderson, E. A., Levine, S. C. & Beilock, S. L. (2015). Intergenerational effects of parents' math anxiety on children's math achievement and anxiety. *Psychological Science*, 26(9), 1480-1488. <https://doi.org/10.1177/0956797615592630>

- Margalit, M. & Eysenck, S. (1990). Prediction of coherence in adolescence: Gender differences in social skills, personality and family climate. *Journal of Research in Personality*, 24, 510-521. [https://doi.org/10.1016/0092-6566\(90\)90036-6](https://doi.org/10.1016/0092-6566(90)90036-6)
- Mayer, D. P. (2008). *Overcoming school anxiety: How to help your child deal with separation, tests, homework, bullies, math phobia, and other worries*. Amacom.
- Ministry of National Education [MoNE]. (2021). *Eğitim analiz ve değerlendirme raporları serisi, No:18* [Series of Educational Analysis and Evaluations Reports, No: 18]. Author.
- Morrison, G. M., John, L., Stephanie, S. M., Douglas, C. S. & Keith, W. (1997). Sources of support for school-related issues: Choices of Hispanic adolescents varying in migrant status. *Journal of Youth and Adolescence*, 26(2), 233-251.
- Mulvenon, S. W., Stegman, C. E. & Ritter, G. (2005). Test anxiety: a multifaceted study on the perceptions of teachers, principals, counselors, students, and parents. *International Journal of Testing*, 5(1), 37-61. https://doi.org/10.1207/s15327574ijt0501_4
- Murray, L., Creswell, C. & Cooper, P. J. (2009). The development of anxiety disorders in childhood: an integrative review. *Psychological Medicine*, 39, 1413-1423. <https://doi.org/10.1017/S0033291709005157>
- Neuenschwander, M. P., Vida, M., Garrett, J. L., & Eccles, J. S. (2007). Parents' expectations and students' achievement in two western nations. *International Journal of Behavioral Development*, 31(6), 594-602. <https://doi.org/10.1177/0165025407080589>
- Peleg-Popko, O. (2002). Children's test anxiety and family interaction patterns. *Anxiety Stress and Coping*, 15(1), 45-59. <https://doi.org/10.1080/10615800290007281>
- Peleg-Popko, O. (2004). Differentiation and test anxiety in adolescents. *Journal of Adolescence*, 27, 645-662. <https://doi.org/10.1016/j.adolescence.2004.06.002>
- Putwain, D. W., Woods, K. A., & Symes, W. (2010). Personal and situational predictors of test anxiety of students in post-compulsory education. *British Journal of Educational Psychology*, 80, 137-160. <https://doi.org/10.1348/000709909X466082>
- Rapee, R. M. (2001). The development of generalised anxiety. In Vasey, M.W. & Dadds, M.R. (Eds.), *The Developmental Psychopathology of Anxiety* (pp. 481-503). Oxford University Press.
- Ringeisen, T. & Raufelder, D. (2015). The interplay of parental support, parental pressure and test anxiety - gender differences in adolescents. *Journal of Adolescents*, 45, 67-79. <https://doi.org/10.1016/j.adolescence.2015.08.018>
- Salend, S. J. (2011). Addressing test anxiety. *Teaching Exceptional Children*, 44, 58-68. <https://doi.org/10.1177/004005991104400206>
- Sapp, M. (1999). *Test anxiety: Applied research, assessment, and treatment interventions*. University Press of America.
- Satır, S. (1996). *Views of parents related to the academic success of the students of private Tevfik Fikret High School and determination of education requirements of parents* [Unpublished master's thesis]. Ankara University, Ankara, Turkey.
- Shadach, E. & Ganor-Miller, O. (2013). The role of perceived parental over-involvement in student test anxiety. *European Journal of Psychology of Education*, 28, 585-596. <https://doi.org/10.1007/s10212-012-0131-8>
- Soni, A. & Kumari, S. (2017). The role of parental math anxiety and math attitude in their children's math achievement. *International Journal of Science and Mathematics Education*, 15, 331-347.
- Student Selection and Placement Center [SSPC]. (2021). *2021 Lisans Yerleştirme Sınavlarına İlişkin Sayısal Bilgiler* [Quantitative Information Regarding Undergraduate Placement Exam for 2021]. Author.
- Totan, T. (2018). Investigation of test exam on middle and high school students: the Westside test exam scale. *Western Anatolia Journal of Educational Sciences*, 9(2), 143-155.
- van der Sluis, C. M., van Steensel, F. J. A. & Bögels, S. M. (2015). Parenting clinically anxious versus healthy control children aged 4-12 years. *Journal of Anxiety Disorders*, 32, 1-7. <https://doi.org/10.1016/j.janxdis.2015.03.002>
- Vukovic, R. K., Roberts, S. O. & Green-Wright, L. (2013). From parental involvement to children's mathematical performance: The role of mathematics anxiety. *Early Education & Development*, 24, 446-467. <https://doi.org/10.1080/10409289.2012.693430>
- Wang, L. F. & Heppner, P. P. (2002). Assessing the impact of parental expectations and psychological distress on Taiwanese college students. *The Counseling Psychologist*, 30(4), 582-608. <https://doi.org/10.1177/00100002030004006>

-
- Wood, J. J., McLeod, B. D., Sigman, M., Hwang, W. C. & Chu, B. C. (2003). Parenting and childhood anxiety: theory, empirical findings, and future directions. *Journal of Child Psychology and Psychiatry*, 44(1), 134-151. <https://doi.org/10.1111/1469-7610.00106>
- Wren, D. G. & Benson, J. (2004). Measuring test anxiety in children: Scale development and internal construct validation. *Anxiety, Stress & Coping*, 17(3), 227-240. <https://doi.org/10.1080/10615800412331292606>
- Yang, S. & Shin, C. S. (2008). Parental attitudes towards education: What matters for children's well-being?, *Children and Youth Services Review*, 30(11), 1328-1335. <https://doi.org/10.1016/j.childyouth.2008.03.015>
- Yerin, O. (1993). *The effect of cognitive behavior modification technique on test anxiety level of elementary school students* [Unpublished master's thesis]. Middle East Technical University, Ankara, Turkey.
- Yıldırım, İ. & Ergene, T. (2003). Social support, submissive acts, and test anxiety as predictors of academic achievement among high school students. *Hacettepe University Journal of Educational*, 25, 224-234.