

## The Effect Of School Level And Gender On Test Anxiety

### Okul Düzeyi ve Cinsiyetin Sınav Kaygısı Üzerine Etkisi

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#### Abstract

This study is designed to investigate the effect of school level and gender on the total test anxiety, worry and emotionality sub-scale scores of students. A total of 550 subjects from different school levels (203 elementary, 175 junior high and 172 high school students) participated in the present study. The three separate, 3 (school level) X 2 (gender) ANOVA were conducted on the total test anxiety, worry and emotionality sub-scale scores of the subjects. Results indicated a significant main effect of school level, gender and interaction effect of school level gender on total test anxiety and emotionality sub-scale scores. The significant main effect of school level and interaction effect of gender and school level were also found for the worry sub-scale scores.

*Key words:* Test anxiety, worry, emotionality, school level and gender.

#### Öz

Bu çalışmanın amacı okul düzeyi ve cinsiyetin öğrencilerin toplam sınav kaygısı ile kuruntu ve duyuşsallık alt test puanları üzerine etkisini araştırmaktır. Çalışmanın örneklemini değişik okul düzeylerinden toplam 550 öğrenci (203 ilkökul, 175 ortaokul ve 172 lise) oluşturmuştur. Deneklerin toplam sınav kaygısı, kuruntu ve duyuşsallık alt testlerinden aldıkları puanlara üç ayrı, 3 (okul düzeyi) X 2 (cinsiyet) ANOVA uygulanmıştır. Bulgular, toplam sınav kaygısı ve duyuşsallık alt test puanları üzerinde anlamlı düzeyde okul düzeyi ve cinsiyet temel etkisi ile okul düzeyi ve cinsiyet ortak etkisi olduğunu göstermiştir. Anlamlı düzeyde okul düzeyi temel etkisi ile cinsiyet ve okul düzeyi ortak etkisi ayrıca kuruntu alt test puanları içinde bulunmuştur.

*Anahtar sözcükler:* Sınav kaygısı, kuruntu, duyuşsallık, okul düzeyi ve cinsiyet.

#### Introduction

In today's competitive academic environment, students may experience feelings of anxiety over examinations at all levels of education. The situation seems serious in Turkey where educational opportunities are limited and thousands of students spend enormous amounts of time and energy in preparation for the nation-wide university entrance examination. Unfortunately, each year only 20 % of almost 1 500 000 students who pass that exam, have a chance to attend a university.

#### Test anxiety and its correlates

Anxiety may reflect either a generalized consistent trait of the individual or a more situation-specific state.

In either case, anxiety has been related to a variety of outcomes and processes in academic and non-academic settings.

Test anxiety is considered to be one of the most debilitating types of anxiety that results in performance decrements (Gross, 1990). Therefore, factors that impact test anxiety have been examined in order to develop methods for its reduction that can be implemented by school psychologists. For example, Kirkland (1971) indicated that test anxiety increases with grade regardless of the gender of elementary school children. Other researchers (Payne, B.D., Smith and Payne, D.,

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1983) have obtained similar results. In a comprehensive review by Hembree (1988), ability level, ethnicity, sex, birth order and school environment were also mentioned among the causes and sources of test anxiety. Rubin (1999) found that women seem to experience more test anxiety than men do.

Liebert and Morris (1967) proposed that test anxiety has two components; worry and emotionality. Worry involves the expression of cognitive concern about performance. On the other hand, emotionality refers to physical and affective reactions to the stress of the test situation. Several researchers (Smith, Arnkoff and Wright, 1990) reported a strong positive relationship between the worry component of test anxiety and academic achievement. However, emotionality seems to be unrelated to examination performance because participants report lessening emotionality during the course and following the examinations (Morris and Fulmer, 1976). Furthermore, female students were found to experience higher worry than emotionality, while little difference in worry and emotionality components was found for males (Williams, 1996).

In Turkey, because of traditional child rearing practices and the current educational system, it can be assumed that test anxiety is the form of anxiety which is most frequently experienced by Turkish students. Aydın's study (1993), which indicated that 60 % of 144 elementary school students were test anxious, provides support for this assumption. Some other studies concerning test anxiety have been carried out in Turkey. For example, Yerin (1993) examined the effectiveness of story-based cognitive behavior modification on the test anxiety level of elementary school children. Gündoğdu (1994) investigated the relationship between test anxiety, self-esteem and academic achievement, and Çankaya (1997) studied the relationship between test anxiety and helplessness. However, there is a need for further studies to ascertain the causes and correlates of test anxiety in Turkish culture. Therefore, the aim of the present study is to investigate the effect of school level and gender on test anxiety and its components among Turkish students.

## Method

### *Procedure*

Test Anxiety Inventory (TAI) was administered to the subjects in a classroom setting. Before the inventory was

administered, the purpose of the study was explained to the students by the researcher. It took 15 to 20 minutes for the students to respond the TAI.

### *Subjects*

The subjects were 203 elementary (91 female, 112 male), 175 junior high (92 female, 83 male) and 172 high school students (95 female, 77 male) who were randomly selected from three different schools in middle class districts of Ankara.

### *Instrument*

The Test Anxiety Inventory (TAI) was developed by Spielberger et. al (1980) to measure both worry and emotionality aspects of test anxiety. The Turkish version of the inventory was standardized by Öner and Albayrak-Kaymak (1987) and Öner (1990). The Turkish version of TAI is a 20-item Likert type scale. Twelve of the items measure emotionality and 8 of the items measure worry. The possible emotionality scores range from 12 to 48, worry scores range from 8 to 32 and the total test anxiety score from 20 to 80. In addition, the 1990 version of the inventory, which was used in the present study, supplies norms for different school levels.

Reliability and validity studies in Turkey (Öner, 1986; Öner and Albayrak-Kaymak, 1987) provided satisfactory evidence for the reliability and validity of the inventory. The t-test correlation coefficients were .91 (for the same day), .93 (for one day), .90 (for one week), and .91 (for two weeks).

The internal consistency of the inventory was assessed by Cronbach Alpha, and Alpha coefficient for the total scale was .87 (Öner, 1990).

## Results

Three separate 3 (school level) X 2 (gender) ANOVA were conducted to determine the effects of the three school levels and of the gender on total test anxiety, worry and emotionality sub-scale scores. The results for ANOVA conducted on total test anxiety scores indicated a significant main effect for school level ( $F(2, 544) = 6.94, p < .001$ ) and gender ( $F(1, 544) = 7.07, p < .05$ ). A significant interaction effect between school level and gender ( $F(2, 544) = 5.71, p < .005$ ) was also determined for the total test anxiety scores. Because the interaction between school level and gender was significant, differences between the total test anxiety

scores of females and males at different school levels were also examined. Findings indicated significant differences between the total test anxiety scores of females and males at high school level ( $F(1,544) = 5.56, p < .001$ ), with females having higher total test anxiety scores than males. Follow-up tests were also conducted to evaluate the differences among means for the females and males at different school levels separately. The results did not indicate significant differences between the total test anxiety scores of males at different school levels. However, significant differences were identified for the total test anxiety scores of elementary and secondary school female students ( $F(1,544) = 5.36, p < .001$ ), elementary and high school female students, ( $F(1,544) = 24, p < .001$ ) and secondary and high school female students, ( $F(1,544) = 6.70, p < .001$ ). Table 1 displays the mean scores and standard deviations for test anxiety in different school levels for female and male students.

Table 1.

*Mean Scores and standard deviations for test anxiety in different school levels for girls and boys*

	Elementary		Junior high		High	
	$\xi$	Sd	$\xi$	Sd	$\xi$	Sd
Girls	39.50	8.45	42.85	12.21	46.56	10.56
Boys	40.09	8.47	41.69	9.42	40.42	9.18
Total	39.83	8.45	42.30	10.96	43.81	10.40

A 3 (school level) X 2 (gender) ANOVA applied to worry sub-scale scores of subjects yielded a significant main effect of school level ( $F(2, 544) = 6.65, p < .001$ ) and significant interaction effect of gender and school level ( $F(2, 544) = 3.71, p < .05$ ). Because interaction between gender and school level was significant, differences between the worry sub-scale scores of girls and boys at different school levels were also examined. The results indicated a significant difference between the worry sub-scale scores of boys and girls at high school level ( $F(1, 544) = 6.62, p < .01$ ).

Results of the further analysis carried out to investigate the differences between the worry sub-scale scores of girls at different school levels indicated significant differences between the worry sub-scale scores of secondary school and elementary school girls ( $F(1, 544) = 8.37, p < .005$ ), high school and elementary

school girls, ( $F(1, 544) = 6.98, p < .05$ ). There were no significant differences between the worry sub-scale scores of secondary and high school girls. Table 2 shows mean scores and standard deviations for the worry sub-scale in different school levels for girls and boys.

One final analysis was conducted to investigate the differences between the worry sub-scale scores of boys at different school levels. The significant mean differences were identified between the worry sub-scale scores of elementary and secondary school boys ( $F(1, 544) = 4.74, p < .005$ ), secondary school and high school boys ( $F(1, 544) = 8.96, p < .005$ ).

Table 2.

*Mean Scores and standard deviations for worry scores for girls and boys in different school levels*

	Elementary		Junior high		High	
	$\xi$	Sd	$\xi$	Sd	$\xi$	Sd
Girls	14.89	4.17	16.84	5.94	16.66	4.42
Boys	15.58	4.02	17.02	4.70	14.85	3.89
Total	15.27	4.09	16.93	5.37	15.85	4.27

A 3 X 2 ANOVA conducted to evaluate the effect of gender and school level on emotionality sub-scale scores of subjects revealed a significant effect of gender ( $F(1, 544) = 11.64, p < .001$ ), school level ( $F(2, 544) = 12.69, p < .001$ ) and a significant interaction effect of gender and school level ( $F(2, 544) = 5.18, p < .05$ ). Because the school level and gender interaction was significant, further analyses were carried out to investigate the mean differences between the emotionality sub-scale scores of girls and boys at different school levels. The results showed a significant difference between boys and girls at the high school level ( $F(1, 544) = 18.65, p < .001$ ) with girls having significantly higher emotionality scores than the boys.

Means and standard deviations of the emotionality sub-scale scores at different school levels for girls and boys are given in Table 3.

Further investigation of the emotionality sub-scale means also revealed significant differences between the emotionality sub-scale scores of secondary school and high school girls ( $F(1, 544) = 1.94, p < .001$ ), and elementary school and high school girls ( $F(1, 544) = 32.36, p < .001$ ). However, there were no significant differences between the emotionality sub-scale scores of boys at different school levels.

Table 3.  
*Mean Scores and standard deviations for emotionality scores for girls and boys in different school levels*

	Elementary		Junior high		High	
	ξ	Sd	ξ	Sd	ξ	Sd
Girls	24.46	5.77	25.76	7.01	29.71	7.17
Boys	24.47	5.61	24.38	5.74	25.54	6.32
Total	24.45	5.66	24.10	6.45	27.84	7.10

### Discussion

One of the findings of the present study was that girls showed significantly higher levels of test anxiety than boys. This finding is consistent with the previous research findings, which reported females to be more test anxious than males (Spielberger, 1972; Rubin, 1999; Hembree, 1988).

In discussing gender differences, it is also important to note that in the present study female students were found to experience higher emotionality than male students but they did not worry more than male students did. Although this finding similar to the findings of the Furst, Tenenbaum and Weingarten (1985) which indicated that female students were more emotional than male students, it differs from the findings of some previous studies such as Williams (1996) which reported that females experience higher worry than emotionality, Gjesme (1983) which demonstrated that sex difference in test anxiety comes from the worry scores of subjects and the cognitive attentional model of test anxiety (Wine, 1980) which states that the emotionality component of test anxiety plays a minor role in test anxiety. However, it is also important to note that the findings of the present study indicated that for the male subjects the worry component seemed to play a major role in their test anxiety. This situation brings focus to the issue of providing different types of treatment procedures to male and female students in helping them to reduce their test anxiety.

The significant increase in girls' test anxiety scores with increasing grade level is also supported by the literature. In a comprehensive review, Hembree (1988) concluded that sex difference, which appears in early school years, increases to peak grades between 5-10. Contrary to the findings of the present study, Hembree (1988) also stated that sex difference declines through upper high school and college.

Another finding of the present study, that the test anxiety scores of students increase with grade level, is also consistent with the literature (Hembree, 1988). As presented in the result section, high school students reported more test anxiety compared to elementary and junior high school students. It is possible to explain this finding by taking into account the unique characteristics of Turkish culture. In the first place, as Öner and Albayrak-Kaymak (1987) noted, culture plays an important role in determining the frequency with which anxiety occurs, its form and expression. Turkish education does not recognize individual differences and needs. Moreover, school learning and achievement are two major objectives of formal education. When students get good grades, pass courses and are promoted for graduation, education objectives are fulfilled. Personal, psychological and social characteristics are supposed to develop naturally, given that school success is attained. In other words, because of the Turkish educational system which emphasizes cognitive development and achievement starting from elementary school, students may express apprehension, worry, tension and fear over school matters and may become test anxious (Öner, 1994). In Turkey, girls, who are usually considered as more emotional and sensitive than boys therefore, as the findings of the present study indicated, may become more test anxious.

Secondly, as was stated before, being a university graduate is highly valued in Turkey and a large number of high school graduates each year apply to a limited number of universities. Due to the large number of applicants, a tough nation-wide university entrance examination is offered. Therefore entering higher education requires exhaustive academic preparation starting almost from elementary school. This situation makes students increasingly anxious to the extent that the achievement status obtained in the university entrance examination is almost viewed as the indicator of one's value as a person (Aydın and Yerin, 1994).

A third factor is that the subjects of this study were selected from middle class districts of Ankara. In Turkey, parents from the middle class seem to believe that being an university graduate would ensure the future of their children, therefore, they do whatever they can within their limited financial resources to help their children to prepare for the exam. For these children,

being successful in the university entrance exam may mean both securing their future and meeting their parents expectations. This situation may make them more anxious as the exam date approaches. Girls from the middle class may also feel more anxious compared to boys, because lack of success in the university entrance exam may also mean loss of the freedom that being an university graduate or having an occupation would bring to them as a female in the future.

Finally, future orientation which is defined as a personality trait in terms of a person's capacity to feel involved in, anticipate, and engage in events ahead of time (Gjesme, 1983) might be one of the reasons for students' test anxiety. A high future orientation, which is a strong capacity to foresee and anticipate future events, seems to reduce both worry and emotionality connected with anxiety at school. However, as explained before, the Turkish educational system does not give students an opportunity to be highly future oriented. Because Turkish students, who are the victims of this system, learn not to feel involved in, not to engage in and not anticipate the events in their life. Besides, from time to time the University Selection and Placement Center make changes to the system. These changes are beyond the control of parents and students and this situation may make both parents and students anxious.

Interest in test anxiety research in Turkey started in 1986 with the adaptation of Spielberger 's (1980) Test Anxiety Inventory to Turkish culture by Öner (1986). Test anxiety remains a pervasive problem that threatens the mental health of Turkish students. It is evident that researchers and counselors cannot directly change the education system. However, through developing and implementing anxiety reduction intervention and preventive measures they can contribute to the well-being of students and may prevent test anxiety before it becomes a serious emotional problem.

As a result of the present findings, several implications can be drawn for future research. First, extensive research studies could be carried out to obtain the unique cultural features and correlates of test anxiety in Turkey. Second, while developing culturally relevant treatment procedures for Turkish children, differences between the test anxiety levels of students at different educational levels, and differences between the test anxiety levels of female and male students should be taken into account. Because, contrary to the previous models which

emphasize the role of the negative thoughts in test anxiety and gender differences, in Turkey the emotionality component of test anxiety seems to play a more important role than the worry component, especially for the girls. Finally, training programs could be offered to parents and teachers to assist them to become aware of the possible impact of their anxiety-evoking behaviors. These implications may also be valid for other cultures, which may have similar child-rearing practices or education systems.

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