
RESEARCH ARTICLE

Cognitive Test Anxiety and Academic Performance of Undergraduate Students in Istanbul

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ABSTRACT

Test anxiety has become a grueling burden, especially for students in the competitive world. As a result, contextualization of anxiety in education has been retaining the attention and demands of educators and psychologists so far. A student's GPA in academic life is one of the crucial and numerical indicators of academic achievement. This present study endeavors to investigate the potential distinctions between the level of cognitive test anxiety of students in English Language Teaching (ELT) and English Language Literature (ELL) departments and their cumulative GPA (out of 4,00). Also, the second goal of this investigation is to delve into the possible significant differences marked between gender and students' cognitive test anxiety levels. This investigation presents some sources to explicate test anxiety and students' GPAs before presenting the main data results from a variety of studies. Finally, the Cognitive Test Anxiety Scale was employed by the researchers, so 60 English Language Teaching students and 46 English Language and Literature students showed their participation (N= 106) on Cognitive Test Anxiety Scale items. Following this part, this research is finalized with the conclusion, which includes an analysis of data results and an examination of relevant research findings. In the conclusion part, it can be seen that Cognitive Test Anxiety scores and students' departments showed salient differences; however, Cognitive Test Anxiety and participants' genders have similar points to each other. Moreover, there was no correlation detected between their GPAs and their levels of Cognitive Test Anxiety. However, both students' GPAs scores and their departments and their GPAs' and genders show some differences.

KEYWORDS

Anxiety, test anxiety, academic performance, grade point of average, cognitive test anxiety.

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1. Introduction

Psychological and affective variables and their influences on learning have always captured the attention of pedagogical experts. Anxiety has grabbed noteworthy scrutiny as it becomes a hampering element in learning (Clark & Fiske, 1982). On the one hand, anxiety now has a gradually higher impact on students, deriving from some social interactions basically because of the effects of the negative environment in which an individual spends time mostly (Tosuncuoğlu, 2022). Phillips et al. 1972 claim that anxiety is a reaction to a variety of environmental variables. It can be experienced among students when they confront a threat connected to external factors (Smith & Lazarus, 1990). Especially undergraduate students have been affected by anxiety in their educational lives, having different levels of anxiety about whether they are willing to succeed or because of what has been expected of them. Anxiety is directly related to the feelings of human beings, and it displays a lack of self-assurance (Sarason, 1984). Specifically, modern life problems bring about anxiety that has been derived from competitive atmospheres, and this situation has a severe influence on students' educational lives. Additionally, tests are one of the stressors for anxiety and broodiness for learners.

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Testing is used to assess learners' progress in their school lives, along with their academic backgrounds. Learners who are not able to cope with test anxiety cannot get good grades on standardized tests, and their distress limits their opportunity to have good marks, which has some consequences for leaving their schools undone (Cizek & Burg, 2006). The era that we are in now has evaluated learners' academic achievement mainly based on test-based performances, which affect students intensely. Testing is a must to evaluate students' knowledge, ability, and background information in the current education system that is applied in many countries.

The objective of this study is to investigate any possible differences between the grade point average (GPA) of the students in English Language Teaching (ELT) and English Language and Literature (ELL) departments and their levels of cognitive test anxiety. Another major aim of this research is an attempt to inquire about a potential relationship between these students' test anxiety levels and gender.

2. Literature Review

Anxiety has commonly been studied by researchers in recent years. It is particularized as two different sections later by Spielberger (1966). These sections: trait and state anxiety. Trait anxiety is an individual inclination to view different statements as threatening and detrimental; conversely, state anxiety refers to the understanding of emotional events as unpleasant in combination with psychological responses related to the automatic nervous system (Spielberger, 1972).

Horwitz et al. (1991) describe test anxiety as a sort of performance anxiety that arises from concern about setbacks in an academic appraisal. The negative sides of test anxiety affect between 10% and 35% of college students and severely diminish their test performance ability (Strumpf & Fodor, 1993; Naveh-Benjamin, Lavi, McKeachie, & Lin, 1997; Zeidner, 1998, as cited in Alibak et al., 2019).

Test anxiety has affected approximately 30% of students at different levels (Shaked, 1996). In addition, Liepmann et al. (1992) connote that test anxiety constructs a mental concern among students due to the low-grade test results, less than their expectations, and it takes place through the early interactions of parental judgments of those learners. Sometimes, students who have test anxiety at all levels of their academic life demonstrate suboptimal outcomes on standardized tests (Everson et al., 1991). Zamir and Hina (2013) conducted research on measuring the test anxiety level of both graduate and post graduate students in Pakistan. According to the research results, a significant negative correlation emerged between the level of test anxiety and academic achievement of university students in Pakistan. They articulated that the level of test anxiety affected students' performance in academic life. Test anxiety causes academic ineffectiveness and decreases the desire to focus. Feelings (affective) and worry (cognitive) connected to anxiety are sources of a decrease in learners' academic performance. In addition, Rana and Mahmood (2010) suggest that teachers, family members, and institutions should support students and enlighten them about exam scope, running of course, and period of semester to reduce their test anxiety. In the Turkish educational system, testing and examination play a significant role, starting to assess learners from primary school until the end of university education. Mostly, the Turkish educational system has also used test-based assessment, which causes anxiety for students and affects them during examinations in a negative way.

2.1 Research Question:

1. Does Cognitive Test Anxiety among ELL and ELT students significantly differ by their gender, GPAs, and departments?

3. Methodology

This study has been designed to determine the potential differences in cognitive test anxiety levels of ELT and ELL students regarding their departments, GPA groups, and their genders. This study employs a qualitative data collection method to explore students' perceptions of cognitive test anxiety levels.

3.1 Participants

There were 106 students from the ELT and ELL departments who participated in the study. Of these participants, 60 were from ELT students, and 46 were from ELL students. The participants, both male and female, were voluntarily included in the research. The questionnaire was conducted in the fall term of 2023-2024 AY, just before students' mid-term examinations weeks, at Istanbul Aydin University.

3.2 Data Collection

The participants in this research eagerly completed the Cognitive Test Anxiety Scale 2nd edition by responding to the questions developed by Cassady (2023). CTAS 2nd edition includes 24 items to be answered by using a Likert scale (from 1 to 4), and 1 refers to not at all typical of me, 2 is somewhat typical of me, 3 is quite typical of me, 4 is very typical of me. The researchers collected

the data personally and offered equal ethical sureties to all participants. Students responded to CTAS 2nd edition using the Google Form link.

4. Results

In this section, the findings of the study and interpretations based on the findings are presented. These findings are explained separately for each sub-problem.

4.1 Psychometric Properties of the Cognitive Test Anxiety Scale

The factor structure of the "Cognitive Test Anxiety Scale" was examined by confirmatory factor analysis. Before conducting the factor analysis, the presence of missing values, outliers and random response patterns in the data set was checked. None of these conditions were found in the data set. A reliability study of the unidimensional scale was conducted. The McDonald ω coefficient for the scale was found to be 0.96. This value proves that the "Cognitive Test Anxiety Scale" gives reliable results. The scores obtained during the scale development process proved to be valid and reliable, with a minimum value of 24, a maximum value of 96, an arithmetic mean of 54.05, and a standard deviation of 18.28. The skewness value of the scale is 0.61, and the kurtosis value is -0.312. These values show that the scale is normally distributed. It is known that the original scale has a single factor and a 4-point Likert scale. The results of the fit of the cognitive test anxiety scale to the model were examined. The fit of the model was tested using RMSEA, CFI, TLI, and SRMR fit criteria. According to the results of the analysis of these criteria, RMSEA=0.77. The RMSEA value close to zero indicates the fit of the model (Tabachnick, 2001: 717; Brown & Cudeck, 1993: 239). For a good model, CFI and TLI values should be close to 1; according to the results obtained from the data, CFI=0.87 and TLI=0.86. SRMR value is 0.05. Although CFI and TLI values should be above 0.90, it can be stated that the data-model fit is generally achieved.

4.2 The Significance of Participants' Cognitive Test Anxiety Levels According to Students in ELL and ELT Departments

Whether the scores obtained from the "Cognitive Test Anxiety Scale" showed a significant difference according to the department the participants studied was analyzed by independent samples T-test. The results of the analysis are given in Table 1.

Table 1
t-Test Results of Cognitive Test Anxiety Scale Scores in Departments

Department	N	Mean	Std. Dev	t	Df	p
ELT	60	49,73	16,77	-2,87	104	0,005
ELL	46	59,69	18,80			

According to Table 1, the level of test anxiety of the participants differs significantly according to the department, $t(-2,87)$, $p < 0,05$. The mean of ELL students ($\bar{X}=59.69$) and ELT students ($\bar{X}=49.73$) are significantly different from each other. According to these results, the test anxiety levels of ELL and ELT students are different from each other.

4.3 The Significance of Participants' Cognitive Test Anxiety Based on Gender

Whether the scores obtained from the Cognitive Test Anxiety Scale showed a significant difference according to the gender of the participants was analyzed by independent samples t-test. The results of the analysis are given in Table 2.

Table 2
t-Test Results of Cognitive Test Anxiety Scale Scores Based on Gender

Gender	N	Mean	Std. Dev	t	Df	p
Male	34	49,76	18,45	-1,67	104	0,097
Female	72	56,08	17,97			

According to Table 2, the level of test anxiety of the participants does not differ significantly according to gender, $t(-1,67)$, $p > 0,05$. The mean of males ($\bar{X}=49.76$) and females ($\bar{X}=56.08$) are not significantly different from each other. According to these results, the test anxiety levels of men and women are similar to each other.

4.4 The Relationship Between Participants' Cognitive Test Anxiety and Their GPAs

The relationship between the scores obtained from the Cognitive Test Anxiety Scale and the GPAs of the participants was tested with Pearson correlation analysis. In addition, the relationship between the scores and GPAs of students studying in ELT and ELL was examined. The results of the analysis are shown in Table 3.

Table 3
The Correlation Between Cognitive Test Anxiety Scale Scores and GPA

		Total	GPA
	Total	1	-0,16
	GPA	-0,16	1
Department=ELT	Total	1	-0,08
	GPA	-0,08	1
Department=ELL	Total	1	-0,01
	GPA	-0,01	1

* $p < 0,05$ ** $p < 0,01$

According to Table 3, there is no significant relationship between the participants' level of test anxiety and their GPAs. Accordingly, there is no relationship between the level of test anxiety and the GPAs of the participants ($r=-0.16$, $p=0.102$). Also, there is no significant relationship between the Cognitive Test Anxiety Scale scores of the students studying in the ELT department and their GPAs ($r=-0.82$, $p=0.532$). In addition, there is no significant relationship between the Cognitive Test Anxiety Scale scores of the students studying in the ELL department and their GPAs ($r=-0.11$, $p=0.942$). A correlation coefficient of 1.00 represents a positive and perfect relationship; -1.00 represents a negative and perfect relationship. If the correlation coefficient is between 0.70-1.00 in absolute value, it is defined as a high relationship; between 0.70-0.30 as a medium relationship; between 0.30-0.00 as a low relationship (Büyüköztürk, 2014).

4.5 The Significance of Participants' GPAs Regarding Their Departments

Whether the GPA scores of the participants showed a significant difference according to their department was analyzed by independent samples t-test. The results of the analysis are shown in Table 4.

Table 4
t-Test Results of GPA Scores Regarding Their Departments

Department	N	Mean	Std. Dev	T	df	P
ELT	60	3,09	0,41	5,14	104	0,001
ELL	46	2,60	0,55			

According to Table 4, the GPAs of the participants differ significantly according to the department, $t(5,14)$, $p<0,05$. The mean of those who study ELT ($\bar{X}=3,09$) and those who study ELL ($\bar{X}=2,60$) are significantly different from each other. According to these results, the GPA levels of ELT and ELL students are different from each other.

4.6 The Significance of Participants' GPAs Based on Gender

Whether the GPA scores of the participants showed a significant difference according to their gender was analyzed by independent samples t-test. The results of the analysis are shown in Table 5.

Table 5
t-Test Results of GPA Scores According to Gender

Gender	N	Mean	Std. Dev	t	df	P
Male	34	2,72	0,49	-2,04	104	0,043
Female	72	2,95	0,54			

According to Table 5, the GPAs of the participants show a significant difference according to gender, $t(-2,04)$, $p < 0,05$. The mean of men ($\bar{X}=2,72$) and women ($\bar{X}=2,95$) are significantly different from each other. According to these results, the GPA levels of men and women are different from each other.

5. Conclusion

High levels of anxiety can cause many problems in the acquisition, retention, and production of language, which ultimately affects students' language proficiency compared to those free from it. Ma et al. (2018) investigated English language learning anxiety levels of 293 Chinese EFL high school students, and the researchers evaluated the levels of their test anxiety by employing some questionnaires. As a result of that, they find a higher level of test anxiety between students. The researchers considered the gender, major, and grade of students. Based on gender, it is detected that male students' test anxiety levels are higher than female students in this high school, especially in communicative anxiety. Also, Cassady and Johnson (2001) conducted an investigation to explore the test anxiety and academic performance regarding gender, emotionality components, and procrastination of 168 undergraduate students (female = 114, male = 53, unspecified gender = 1). In the end, they reported that students with higher levels of cognitive test anxiety showed lower test scores on three course examinations. Also, they remarked that gender difference within this study was found; however, this difference did not have a significant impact on participants' academic performance on the courses' examinations.

In this study, indicators placed in tables demonstrate that levels of Cognitive Test Anxiety can have differences between ELT and ELL students. Students in the ELL department show higher degrees of cognitive anxiety compared to students in the ELT department. Also, cognitive test anxiety levels of females and males have been determined at similar levels. Moreover, no correlations were detected between students' GPAs regarding both departments and their cognitive test anxiety levels. However, there is a significant difference between students' GPAs groups and the departments in which they have been studying. ELT students' GPAs are much higher than ELL students' GPAs. Moreover, there is a salient disparity based on their genders. Female participants showed higher levels of GPAs than males, but it must be taken into consideration that there is an imbalance of male and female participation, considering the total numbers of both departments.

5.1 For Future Studies

This study was conducted with only one questionnaire and added demographic questions with continuous data. Researchers detected the cognitive test anxiety levels and total GPA based on students' self-reported. For future study, it will be much more convenient to employ an interview to understand their feelings about their test anxiety levels and coping strategies if they have. Nonetheless, this study chose participants randomly from two departments only. These two departments' concepts are different but have some similarities, or the same selective courses can be taken by both ELT and ELL students. In an upcoming investigation, researchers can dig into the potential correlations or differences among departments which do not have any common points. Please note that English is a foreign language in this country, Türkiye, where we conducted this study, and these two departments have similar contexts to a limited extent.

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