

REVISITING THE PSYCHOMETRIC CHARACTERISTICS OF THE TURKISH
FORM OF THE SPIELBERGER TEST ANXIETY INVENTORY



BİNNUR YETER

BOĞAZİÇİ UNIVERSITY

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THE TURKISH FORM OF THE SPIELBERGER TEST ANXIETY INVENTORY

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Revisiting the Psychometric Characteristics of the Turkish Form of the Spielberger
Test Anxiety Inventory

The thesis of Binnur Yeter

has been approved by:

Assoc. Prof. Deniz Kaymak
(Thesis Advisor)

Assoc. Prof. Bengü Börkan Aydın

Assoc. Prof. Betül Alatlı
(External Member)

April 2025

DECLARATION OF ORIGINALITY

I, Binnur Yeter, certify that

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ABSTRACT

Revisiting the Psychometric Characteristics of the Turkish Form of the Spielberger Test Anxiety Inventory

The initial adaptation and psychometric evaluation of the Turkish version of the Spielberger Test Anxiety Inventory (TAI) were completed about 40 years ago and since then it has been widely used. This study aimed to re-evaluate the validity and reliability properties of the inventory. A total of 1706 participants who were post-high school graduates or students at middle school, high school, or university participated. Confirmatory factor analyses (CFA) supported the two-factorial structure of the original inventory, named as Worry and Emotionality subscales. Significant relationships of the TAI with other anxiety tools provided evidence-based validity. Nevertheless, academic motivation was not found related to test anxiety. Test anxiety levels of preparatory students who were to take a high stakes English proficiency exam and freshman students were comparable. However, post-high school graduates who were to retake the university exam demonstrated higher test anxiety levels compared to 12th-grade students. Although students who paid regular visits to school counseling services did not have higher total test anxiety scores, their Worry scores tended to be high. Cronbach's alpha coefficients indicated high internal consistencies. Test-retest correlations obtained from 50 participants over three weeks' interval indicated high stabilities. Overall, findings suggested that the Turkish version of the TAI remains as a valid and reliable tool for measuring test anxiety levels of middle school, high school, and university students.

ÖZET

Spielberger Sınav Kaygı Ölçeği Türkçe Formunun

Psikometrik Özelliklerinin Yeniden İncelenmesi

Spielberger Sınav Kaygısı Envanteri'nin (SKE) Türkçeye ilk uyarlaması ve psikometrik değerlendirmesi yaklaşık 40 yıl önce yapılmıştır ve o zamandan beri yaygın kullanımdadır. Bu çalışma envanterin geçerlik ve güvenirlik özelliklerini yeniden değerlendirmeyi amaçlamıştır. Araştırmaya lise mezunu ve ortaokul, lise ya da üniversite öğrencisi olan toplam 1706 kişi katılmıştır. Doğrulayıcı etmen çözümlemesi (DEÇ), özgün envanterin Kuruntu ve Duyuşsallık adlarındaki alt ölçekli iki etmenli yapısını desteklemiştir. SKE'nin diğer kaygı araçlarıyla anlamlı ilişkilerde olması kanıta-dayalı geçerlik bulgusu sağlamıştır. Öte yandan, akademik güdülenme sınav kaygısıyla ilişkili bulunmamıştır. Üniversitedeki zorlayıcı İngilizce yeterlik sınavına hazırlanan hazırlık birimi ve birinci sınıf öğrencilerinin sınav kaygısı düzeyleri benzer bulunmuştur. Ancak, yeniden üniversite sınavına hazırlanan mezunlar lise son sınıf öğrencilerinden daha yüksek sınav kaygısı göstermişlerdir. Düzenli olarak okul danışmanlık servislerini kullanan öğrencilerin toplam sınav kaygıları yüksek olmasa da, Kuruntu puanları yüksek olma eğilimdedir. Cronbach alfa katsayıları yüksek iç tutarlılığa işaret etmiştir. Elli katılımcıdan üç hafta arayla elde edilmiş test-tekrar test korelasyonları yüksek durağanlığa işaret etmiştir. Genel olarak bulgular SKE Türkçe Formu'nun ortaokul, lise ve üniversite öğrencilerinin sınav kaygısı düzeylerini ölçmede halen geçerli ve güvenilir bir araç olduğunu göstermiştir.

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ABBREVIATIONS

AEQ	: Achievement Emotions Questionnaire
AMOT	: Amotivation
AMS	: Academic Motivation Scale
AMS-U	: Academic Motivation Scale for University Students
AYDA	: Ayda Test Anxiety Scale
BAI	: Beck Anxiety Scale
CFA	: Confirmatory Factor Analysis
CTAS	: Children Test Anxiety Scale
EFA	: Exploratory Factor Analysis
EFs	: Executive Functions
EMER	: Extrinsic Motivation to External Regulation
EMID	: Extrinsic Motivation to Identified Regulation
EMIN	: Extrinsic Motivation to Introjected Regulation
GPA	: Grade Point Average
IMES	: Intrinsic Motivation to Experience Stimulation
IMTA	: Intrinsic Motivation to Accomplish
IMTK	: Intrinsic Motivation to Know
KPSS	: Public Service Personnel Selection Exam
MEB	: Ministry of National Education
OTAI	: Online Test Anxiety Inventory
RTA	: Revised Test Anxiety Scale
RTT	: Reaction to Test Scales
SBINAREK	: Institute for Graduate Studies in Social Sciences Ethics Sub-Committee

S-REF: Self-Regulatory Executive Function

STAI : State-Trait Anxiety Inventory

STAS : State Test Anxiety Scale

STABS : Suinn Test Anxiety Behavior Scale

T-CTAR: Turkish Form of Cognitive Test Anxiety Scale—Revised Inventory

TAI : Test Anxiety Inventory

TAI-E : TAI-Emotionality

TAI-G : German version of Test Anxiety Inventory

TAI-T : Turkish Form of TAI

TAI-W : TAI-Worry

TAI-5 : Test Anxiety Inventory Short Form

TAICA: Test Anxiety Inventory for Children and Adolescents

TAMA: The Test Anxiety Measure for Adolescents

TACS : Test Anxiety Scale for Children

TAS : Test Anxiety Scale

TAQ : Test Anxiety Questionnaire

AYDA-E Q: Worry-Emotionality Questionnaire

YKS : Higher Education Institutions Examination (Türkiye)

YÖRET : Foundation for Promotion and Advancement of Counseling in Higher Education

CHAPTER 1

INTRODUCTION

Education has an undeniable importance in the times we live. Upward mobility in social status can occur through education in Türkiye. Therefore, students desire to receive the best education to make a good beginning to their careers. There are significant quality differences among schools and it is believed that being a student in a highly achieving school is a shortcut to receive the best education. However, since these quality institutions are limited in number, there is excessive demand for them and this leads to measurement and evaluation processes for student selection. To be among the selected minority, students prepare for numerous exams and nationwide tests for school entry. Preparation for central entry exams tends to last years.

Tests in this system of central selection become the keys to good schools, good education, and good living conditions. Therefore, exams carry heavy weight and lead to heavy pressure on students (Raufelder et al., 2018) and consequently many students suffer from test anxiety (Zeidner, 1998). For this reason, test anxiety has become an important concern in educational settings (Hembree, 1988). It has also been observed that test anxiety prevents students from demonstrating the necessary knowledge and skills in exams, thus negatively influencing their academic performance (Von der Embse et al., 2018). In fact, there is evidence for a serious relationship between test anxiety and success in academic tests among college students (Brady et al., 2018). All these observations imply the need for and importance of efficient and effective interventions for test anxiety in educational

settings. Effective interventions necessitate measurement and evaluation processes of test anxiety (Von der Embse et al., 2013).

Number of studies on test anxiety have increased in the literature since the 1950s when various inventories have been developed to measure test anxiety. Among the many inventories developed, one of the most used inventories has been the Test Anxiety Inventory (TAI) of C. D. Spielberger. Since its development in 1980, TAI has been translated into many languages and various versions have been developed. One of the languages in which TAI was translated has been Turkish. As the thesis advisor shared, Spielberger developed several inventories and test anxiety was one of them. Observing that anxiety has been a common problem among Turkish populations, Necla Öner and her colleague Ayhan LeCompte initiated Turkish translations of Spielberger's general (state and trait) anxiety inventories (STAI) in the late 1970ies (Albayrak-Kaymak, personal communication, December 6, 2023). Studies on anxiety started to flourish once assessment was made possible. As there has been no testing bureau in Türkiye, Öner aimed to raise awareness about the importance of psychometric characteristics of the tools in measurement and became the first Turkish researcher compiling the names and descriptions of the psychological assessments that have been used in Turkish. First, she advised a master's thesis on this (Ramazan, 1988), later expanded its content and finally published them in volumes (Öner, 1997, 2006, 2008).

Test anxiety was thought to be the most common form of performance anxiety in Türkiye, as large numbers of students are exposed to several central exams and these exams could constitute a cornerstone in their lives. Especially high school entrance and university entrance exams are of great importance for students. In accordance with Albayrak-Kaymak's account (personal communication, December

6, 2023), Öner viewed that Turkish central exams are high stakes exams as they play a decisive role in the future lives of thousands of young individuals. Therefore, Öner decided to study the long-term impact of these competitive exams on students' wellbeing, but there were no psychometrically appropriate instruments and for that purpose she planned to adapt some tools into Turkish as outcome measures. One of these measures was the TAI. Öner had already established working relations with Spielberger who agreed to adaptation of his state and trait anxiety measures into Turkish. Öner's previous work resulted in publication of the Turkish manual of the state and trait anxiety inventories (1983). For the longitudinal or impact study she planned, Öner decided to adapt the TAI and advised a master's thesis student's study on measurement of test anxiety which became the translation validity and reliability study of the Turkish form of TAI (TAI-T) (D. Albayrak-Kaymak, 1985). With assistance of Albayrak-Kaymak, Öner further pursued the remaining psychometric studies including the validity of the TAI-T (Öner & Albayrak-Kaymak, 1987) and that resulted in publication of the manual of the inventory (Öner, 1990).

Decades have passed since the 1980ies, but Turkish students still suffer from difficulties with exam anxiety (Yıldırım, 2008). Test anxiety is continuously being measured in various research, educational and clinical settings in Türkiye. Students who suffer from test anxiety ask for help from school guidance and counseling services. As a response to them and in addition to individual support, various group counseling programs have been adapted, developed and implemented to help students cope with test anxiety. Effectiveness of their services need evaluation and therefore, a proper assessment of test anxiety is still of great importance. Assessment is needed not just for studying but also for designing interventions. An inventory that is practical for use, appropriate to the culture and context, and has empirical data

supportive of its validity and reliability is valuable. However, since there is still no testing bureau in Türkiye, researchers as well as practitioners try to access valid and reliable resources mostly through personal and professional communication. Our review indicated that over the years passed, the most commonly used inventory to measure anxiety in Türkiye has still been the Turkish version of the TAI (TAI-T).

After she retired from her faculty position at Boğaziçi University, Öner yielded her copyrights to the Foundation for Promotion and Advancement of Counseling in Higher Education (Yüksek Öğretimde Rehberliği Tanıtma ve Geliştirme Vakfı, YÖRET), that distributes the manual of the TAI-T to a limited cost. For about the past three decades since Öner has declined from active professional involvement, the thesis advisor of this study (who was the author of the thesis that adopted the TAI-T into Turkish and also took responsibilities in some of the validity research of the TAI-T) is being contacted to receive permission to use the TAI for research purposes. As these requests clearly indicate that the TAI-T is still in demand, the thesis advisor felt responsible to update relevant literature and to retest the psychometric characteristics of the TAI and personally assured the permission of Necla Öner.

Spielberger passed away about a decade ago, thus he can no longer overview the content of the test. Similarly, Öner can no longer pursue the research necessary to check the current status of the TAI use. Moreover, the thesis advisor (D. Albayrak-Kaymak) has no longer have an active interest in test anxiety research. Because of these reasons, the aim in this research is kept limited to reexamination rather than restructuring the measure. The author of this study undertook the responsibility to contribute to updating the related literature and collecting and analyzing validity and reliability data on the TAI-T, a task that was being called for several decades.

The immediate focus of the current study is the question of whether the TAI-T is still an effective tool for measuring test anxiety of Turkish students. The ultimate goal would be achieving an updated version of the TAI-T manual, yielding the rights to the same foundation and thus protecting the legacy of several generations of counseling researchers and practitioners.

The questions of this study included construct (factorial) validity (research question 1, 2) and reliabilities (research questions 10 and 11) of the TAI-T. In addition, as based on literature review and observations some relations of the TAI-T with a series of variables were tested as evidence-based (criterion) validity (research questions 3-9). Although the following literature review section includes more foundation to these questions, these relations had the following rationale.

If they measure the same construct, test anxiety instruments are expected to be closely related as a sign of concurrent validity. Likewise, test anxiety and general anxiety measures are expected to be positively related. Therefore, research questions included these expectations. would be related to general anxiety (research questions 3-5). Test anxiety was found to be related to multiple other constructs and variables and one of them has been academic motivation. A study conducted in Türkiye found a positive relationship between motivation and test anxiety (Çelik & Yıldırım, 2019). Therefore, this study tested whether academic motivation relates to test anxiety (research question 6).

In situations where students are to take high-stakes exams, their test anxiety levels can rise more than regular exam situations, because consequences of these exams could be too important to ignore or may even be life changing. This observation is reflected into research questions 7 and 8. One of these high-stake exams was the English Proficiency Exam that has an important role in the lives of

Boğaziçi University students. The language of instruction is English at Boğaziçi University and very few new students who enroll into the university have the English language competency necessary to successfully study in English and their majority fail in the screening test. One year is granted to learn English and competency of most of the English preparatory students is at the beginning level. By the end of the term, students must achieve a passing level of success in the English Proficiency Exam. Depending on the results of this exam students may lose a year to retake the exam (no further education is provided except for a brief summer course) or more before starting their major academic programs. For this reason, students preparing for the English proficiency exam are expected to have more test anxiety than freshman students. As it may influence test anxiety level, this local experience of English preparatory students is included in the current study (research question 7).

Another high-stakes exam is the university entrance exam in Türkiye. This exam determines whether they will be able to have university education as well as which university and major if they do. Some students may choose to prepare for the test again when they do not get the score they aimed, or some 12th graders may even stop studying and complete their exam year relieved from the task of graduating. Retaking the central exam to enter university can be an alternative option for 12th graders, which may influence the level of students' test anxiety. It is expected that exam retaking would increase their anxiety levels. Therefore, this 12th graders experience unique to Turkish students is included in the current study (research question 8).

And finally, regular visit to counselling services in schools may be an indication that students are experiencing emotional or academic difficulties, including test anxiety. Therefore, testing whether test anxieties of students who

regularly attend counselling services with those who do not is addressed as a research question (research question 9).

1.1 Purpose of the study

The aim of the current study is to reexamine the psychometric properties of the Turkish TAI, which was adapted into Turkish in 1985 by Albayrak-Kaymak and has later been used in many studies (Öner,1990) and is still being used (Yavuz et al, 2024). In other words, the main purpose of this study is to review whether the Turkish version of TAI is still a valid and reliable inventory for measuring test anxiety in schools or other related educational institutions. The research questions of the present study are as followed:

Validity of the TAI-T

Validity evidence based on internal structure

1. Is the TAT-T still sufficiently explained by two factorial dimensions, Worry and Emotionality?
2. Are the internal correlations among the two factor scores of the TAI Worry, TAI Emotionality and TAI Total scores sufficiently high?

Validity evidence based on criterion measures

3. Does the TAI-T positively correlate with another test anxiety measure, AYDA?
4. Does the TAI-T positively correlate with Spielberger Trait Anxiety scale?
5. Does the TAI-T positively correlate with anxiety as measured by the Beck Anxiety Scale?
6. Is there a linear relationship between academic motivation and test anxiety?

7. Do students preparing for the English Proficiency Exam at Boğaziçi University have higher levels of test anxiety than freshman students?
8. Are the test anxiety levels of high school graduates who are to retake the central exam different than the 12th graders who are to take the exam for the first time?
9. Do students who apply to receive counseling services in schools have more test anxiety compared to students who have no service application?

Reliability of the TAI-T

10. Internal consistency reliability: Are the item to subscale, item to total score, odd even item, first and second halves correlations and internal consistencies (Cronbach alpha coefficients) of the TAI-T within acceptable limits compared to earlier TAI values?
11. Test-retest reliability: Does the TAI-T yield sufficiently similar scores when retaken after a time period (3 weeks)?

1.2 Significance of the study

Various test anxiety inventories were adapted to use in Turkish over years. Especially, between 2000 and 2020, TAI-T had a rising trend in articles about test anxiety (Alatlı, 2022). In addition to adaptation, studies were conducted to develop Turkish culture-specific test anxiety inventories (Başol, 2017). Nevertheless, the TAI-T has been one of the most commonly used test anxiety inventories in Türkiye (Alatlı, 2022). The reasons why it has been among the most widely used inventory in the field of education in Türkiye can be speculated as in the following:

Sample size: The number of samples used in several other test anxiety scale adaptation studies has been quite limited. For example, the AYDA test anxiety scale, which is developed specifically for Turkish students, was applied to 586 students

(Başol, 2017). Likewise, the Turkish adaptation of the Westside Exam Anxiety Scale, which has been increasingly used in recent years, was done on 373 participants (Totan & Yavuz, 2009). These sample sizes are lower than the sample size of the original TAI-T validity study that included 1151 students. In its norm study, the sample size reached 5,000 (Öner, 1990).

Age range: Another reason why TAI-T is an appealing test anxiety measurement in Türkiye is that it can be applied at almost all age groups over 10. Therefore, the TAI-T could be used in studies with secondary (middle and lycée) school and university student populations. Other test anxiety scales (such as Westside, CTAR and STAS) that were adapted to Turkish have been applied only to university students (Şahin, 2019) or only to children (like CTAS) (Aydın & Bulgan, 2017).

Cross-cultural comparability: TAI has been translated into many languages since its development by Spielberger. In addition to Turkish (Öner, 1990), it was adapted to several different languages including Hebrew (Zeidner et al. 1988), German (Hodapp, 1991), Japanese (Araki et al., 1992), Greek (Papantoniou et al, 2011). The fact that TAI has been adapted to different cultures opens the way to cross-cultural comparison opportunities.

Practicality and content: TAI consists of only 20 items; thus, it can be answered in minutes as it is also easy to understand and these features make the measure easy to implement. In addition, it is easy to score despite its two factorial structure that provides clinically useful information.

Psychometric adequacy: Since there are studies of validity, reliability and norm on the TAI-T, the test has been an important source for Turkish researchers and practitioners from various helping professions. Several other test anxiety scales have

been available over the past 35 years, some of them had validity and reliability studies conducted with Turkish populations, these were summarized in the Literature Review of this thesis. However, what distinguishes TAI-T from other test anxiety scales is that it has norms that makes comparisons possible.

In short, TAI-T has had an important place in the field of anxiety in educational contexts in Türkiye. For this reason, it has continued to be used in many studies since 1990, since the norm studies were completed. It continues to be the most used inventory in Türkiye in the field of test anxiety.

It has been pointed out that many Turkish students suffer from test anxiety (Kavakçı, et.al. 2011) and we may assume that the need for assessment of test anxiety is persisting. Nevertheless, as the first adaptation study was conducted in 1985 and the norm study in 1990, the inventory needs to be reexamined under recent evidence for justification of its continuous use. More than 30 years have passed, Turkish student profiles have changed, and the examination system has undergone several revisions along with certain educational system characteristics. Although centralized nature of the national education system and the selection tests remained the same, one might wonder whether any or the changes in time influenced the validity and reliability of TAI-T. For this reason, it is found essential to revisit the psychometric properties of TAI-T to see whether it still deserves to be extensively used in assessment of test anxiety with Turkish students. Updating the norms of the TAI-T, however, remains beyond the scope of this current study as it necessitates extensive timetable and resources.

CHAPTER 2

LITERATURE REVIEW

2.1 Anxiety

Anxiety, a primary emotional response, can be recognized as the perception of potential danger in regard to the future. Anxiety encompasses intrusive thoughts, certain physiological responses and unpleasant sensations that emerge in situations which may suggest a threat. According to numerous theories, anxiety comprises two distinct components: State anxiety and trait anxiety (Zeidner, 1998). Although anxiety is generally defined as two different components, state anxiety and trait anxiety are two interrelated conditions. They cannot be evaluated completely separately from each other.

Trait anxiety is relative stability in anxiety levels of individuals. Level and intensity of anxiety vary among different individuals in a given situation depending on their general proneness to elevations in alertness. Specifically, trait anxiety is associated with an individual's perception of threat in a given situation. If an individual possesses high levels of trait anxiety, they are more likely to experience higher anxiety during a testing situation.

State anxiety manifests itself at more situation-specific times. The anxiety that is experienced by an individual when facing with a stressful situation is generally referred to as state (situation specific) anxiety. Test anxiety has been defined in terms of both state anxiety and trait anxiety. Trait test anxiety can be defined as a phenomenon experienced in all evaluative situations, while state test anxiety can be defined as anxiety experienced in certain testing situations (Spielberger & Vagg, 1995a; Zeidner, 1998).

Another distinction regarding anxiety was made by Morris and Liebert (1967). Morris and Liebert claimed that when an evaluative anxiety state occurs, it consists of two different components: Worry and Emotionality. The test anxiety literature especially places great importance on this distinction. While the Worry contains the cognitive elements of anxiety, Emotionality explains the affective side of anxiety.

As anxiety affects many areas of individuals' lives, it also affects students' school lives depending on environmental factors. Evaluative and demanding school environments may expose students to difficulties such as school phobias, math anxiety and exam anxiety. To illustrate, studies indicate a positive correlation between general anxiety and test anxiety (Jung et. al., 2001; Sridevi, 2013). This relationship can negatively affect academic achievement, as general anxiety has been found to have a negative correlation with academic performance (Sridevi, 2013). The various aspects of test anxiety, such as worry, emotional distress, interference, and lack of confidence are closely linked to general anxiety, as both share underlying emotional and cognitive processes that influence individuals' responses to stressful situations.

2.2 Test anxiety

There are numerous definitions of test anxiety found in the literature dating from the 1950s. Mandler and Sarason (1952) offered one of the earliest definitions which posits that test anxiety is a consequence of a motive to succeed and prior experiences of concerns in test conditions. Researchers have proposed other widely accepted definitions after conducting extensive studies on test anxiety (Spielberger & Vagg, 1995a; Zeidner, 1998). Spielberger and Vagg (1995) defined test anxiety as the

anxiety a person encounters in any evaluative setting. They state that cognitive, social, emotional, and motivational factors can be both reasons and cause for test anxiety. Their definition is one of the most prevalent definitions in literature about test anxiety. Alternatively, Zeidner (2005) defined test anxiety as the concern of failure in an evaluative environment and the activation of thoughts about the outcomes of failing. If students believe they are unable to achieve the necessary success in a test and lack the required skills, they may experience test anxiety. Overall, test anxiety can be described as worry/fear or concern experienced by individuals who are evaluated in any testing situation.

Students take exams all through their schooling and centralized testing is common both worldwide and in Türkiye. Therefore, finding that 25-40% of students suffer from exam anxiety is not surprising (Putwain, 2007). In Türkiye, this rate can reach 40% (Kavakçı, et.al. 2011). These findings are critical, because test anxiety has a crucial role in many areas and many students have difficulty related areas such as grade point average (GPA), motivation, and self-concepts due to test anxiety.

Test performance is a critical area impacted by test anxiety. The literature suggests that test anxiety typically has a negative impact on test performance (Von der Embse et.al., 2018). This is because there is commonly a negative correlation between test anxiety and test performance across most studies. Nonetheless, some findings contradict this stance. For instance, a study carried out in Türkiye found a negative correlation between test anxiety and university entrance exam success, whereas students' GPA was found to have a positive correlation with test anxiety (Karatas et al., 2013). In another study, it was determined that there is a negative relationship between test anxiety and test performance, while test anxiety does not predict test performance (Theobald et al., 2022).

Research indicates a correlation between test anxiety and personal factors (Zeidner, 1998). The following factors have been found to be linked to test anxiety: intelligence, motivation, self-efficacy, perfectionism, procrastination and so on. Studies state a correlation between test anxiety and personal factors (Zeidner, 1998). The following factors have been found to be linked to test anxiety: intelligence, motivation, self-efficacy, perfectionism, procrastination and so on.

Research consistently indicates a strong correlation between test anxiety and academic motivation (Adesola & Li, 2018; Ergene, 2011; Rajiah, et al., 2014; Yawa, et al., 2021). Test anxiety is often linked to decreased motivation and increased psychological distress (Rajiah, 2014), which can have negative consequences on academic performance (Ergene, 2011). Nonetheless, some studies have found that the relationship between test anxiety and academic achievement is not universally significant (Yawa et al., 2021). This implies that although test anxiety can have an effect on motivation and psychological well-being, its precise impact on academic performance could be more complex.

One of the areas that test anxiety can affect is intelligence scores. Based on Von der Embse (2018) meta-analysis, there is no high correlation between general intelligence and test anxiety in relevant studies. Intelligence tests that involve evaluative situations may have to do the finding that students with high levels of test anxiety have lower IQ scores. In recent years, research interest has grown in exploring the link between test anxiety and emotional intelligence. While the majority of studies indicate a negative correlation between test anxiety and emotional intelligence (Bayani, 2015; Heidari et al., 2019; Khaledian, 2013), others suggest that such a relationship is not significant (Eruvenkai & Simon, 2021).

Test anxiety can impede success in exams by affecting crucial areas of cognition. A study by Song et al. (2022) showed that high test anxiety has a negative impact on visual working memory. Furthermore, Meijer and Oostdam (2007) suggested that test anxiety also negatively influences reasoning strategies. In addition, Wei et al. (2022) found that students with high test anxiety exhibit weaker attentional control. Meanwhile, literature generally shows that students experiencing high levels of test anxiety exhibit reduced proficiency in problem-solving tasks (Beilock & Carr, 2005). A recent study conducted by Sylvia et al. (2023) indicated that test anxiety does not have a direct impact on reading comprehension. However, it has an indirect effect, as it influences fluid reasoning abilities.

A notable relationship between test anxiety and self-efficacy has been consistently reported in related research. For example, Akbaryboorang and Aminyazdi (2009) reported a strong correlation between the two, with self-efficacy playing a crucial role in improving mental health and academic performance. Moreover, Şanlı's (2020) research emphasized the moderating influence of self-efficacy on the link between task value and test anxiety, indicating that higher levels of self-efficacy can be effective in alleviating test anxiety. Asayesh et al (2018) and Onyeizugbo (2010) demonstrated the predictive power of self-efficacy in reducing test anxiety and improving academic performance. Such findings emphasize the significance of cultivating self-efficacy to reduce test anxiety and boost academic attainment.

Since the inception of research into test anxiety, studies have also looked into the impact of gender on test anxiety. A meta-analysis of 49 studies on test anxiety revealed a strong association between test anxiety and gender (Von der Embse et al., 2018). The same study also indicated that females experience more test anxiety than

males (Von der Embse et al., 2018). Furthermore, consistent findings that females are more likely to experience test anxiety compared to males, were reported across all years (Rezazadeh & Tavakoli, 2009). A study conducted in Türkiye provided a distinct perspective on the subject, revealing gender-based effects on test anxiety (Aydın, 2019). The study also claimed that the causes of this anxiety are multifaceted, extending beyond gender, noted that although test anxiety affects both genders, women exhibit higher levels of anxiety. It was acknowledged that men may also experience test anxiety to some degree, but they have been observed to hold back from discussing test anxiety (Aydın, 2019).

In addition, extensive research has been conducted on test anxiety and perfectionism with a particular focus on multidimensional perfectionism and test anxiety. Recently, multidimensional perfectionism has been defined in two dimensions, one of which pertains to perfectionistic concerns. These concerns include ruminating about mistakes and experiencing fear of failure. Meanwhile, perfectionistic strivings involve setting ambitious goals for oneself and avoiding failure (Eum & Rice, 2011). Numerous studies have revealed significant associations between multidimensional perfectionism and test anxiety (Jafari & Mousavi, 2014). More specifically, a strong relationship has been observed between test anxiety and perfectionist concerns when examining the sub-dimensions of multidimensional perfectionism. However, the link between perfectionistic strivings and test anxiety did not reach statistical significance (Burcaş & Cretu, 2020). This correlation is reinforced by Stricker's et al. (2023) research that apprehension about errors and uncertainties, as well as personal benchmarks, display a positive correlation with both cognitive and affective test anxiety. Nevertheless, the exact effect of perfectionism on test anxiety formation remains uncertain, as some research indicates

alternative variables account for the correlation (Stricker et. al, 2023). Additionally, maladaptive perfectionism, characterized by evaluative concerns, has been found to be related to test anxiety, with avoidant coping style mediating this relationship (Carton & Weiner, 2012).

While there is limited research exploring the link between test anxiety and socioeconomic status and existing ones have mixed results. For instance, a study with a sample of university students did not find a significant relationship between test anxiety and socioeconomic status (Shafiq et al., 2022). Yet, Putwain (2008) conducted a study with high school students preparing for the UK national exam, finding that socioeconomic status moderated test anxiety and academic achievement. However, Geyik's (2015) study with university students in Türkiye found no significant effect of socioeconomic status on test anxiety.

2.3 Test anxiety theories

There is abundance of literature on test anxiety worldwide. Some of these are based on theoretical foundations. We see the weight of theories on test anxiety as drive theory in the 1950s, cognitive theory in the 1960s, and socio-cognitive theories in the 1970s (Pang & Tan, 2023; Weiner, 1990). In the 80s, socio-cognitive theories continued to dominate. In the 2000s, we see that more eclectic studies started to take place in literature. For example, Pekrun et al. (2002a) examined not only the feeling of anxiety but also the relationship between anxiety and other emotions in educational situations. The following section presents a brief review of the major theories of test anxiety listed chronologically.

Drive Theory: Drive theory posits that when drive or arousal is high in specific situations such as exams, the performance may be affected adversely. This

theory was developed by Spence & Spence (1966) as based on Hull's Learning Theory which states that people learn by forming connections between stimuli and responses and these connections become stronger with reinforcement. It also suggests that behavior is influenced by factors like habit strength and motivation (Hull, 1952). Although many years have passed since the Drive Theory was first put forward and many other theories were developed since then, its importance remains due to being the first theory on test anxiety. However, the Drive Theory has been criticized for failing to provide a fuller explanation for anxiety especially its relation to arousal. For example, little has been said about why some individuals are more aroused than others in evaluative situations (Zeidner, 1998).

Cognitive (Attentional) Interference Models: The cognitive interference model states that when there are evaluative threats in testing situations like exams or national tests, worry and irrelevant thinking may appear, and these emotions and thoughts may severely affect the cognitive processes and performance. That is to say, test-anxious students focus on more task-irrelevant stuff during testing so that their performance is impaired. Shortly, this model posits that the performance differences between high-anxious students and low-anxious students stem from attentional focus (Culler & Holahan, 1980; Zeidner, 1998).

Processing Efficiency Theory: The processing efficiency theory proposes that people with high test anxiety have problems related to working memory. That is when an evaluative situation arises, an individual's concern about failing the test comes to the surface. This worry affects individuals' working memory functioning. This means that people with high test anxiety cannot hold the information in the working memory required for tests (Eysenck & Calvo 1992).

Attentional Control Theory: This theory on anxiety and cognition is considered to be a significant advancement of Eysenck and Calvo's (1992) Processing Efficiency Theory. It implies that inhibition function is influenced unfavorably in students who suffer from test anxiety. Because the inhibition function is related to shifting attention when an unrelated thought appears, high-test anxious students have difficulty with uneasy thoughts about failure and distracting themselves from bothersome thoughts (Eysenck et al., 2007).

Skills Deficit Models: According to the skills deficit model, test anxiety arises from the individual's sense of being unprepared for the test and lacking sufficient academic skills (Benjamin et al., 1981). In line with this model, students experiencing test anxiety struggle with encoding and organizing information during the test preparation phase. This model does not establish a causal relationship between test anxiety and academic performance. However, it suggests that test anxiety may be a correlate of student's awareness of poor skills for the test preparation process.

Self-Regulation Model: The self-regulation model asserts that the difference between a student with high test anxiety and a student with low test anxiety is related to how the student responds to the test environment. Whereas a student with high test anxiety is skeptical about his or her performance in the test environment, a student with low test anxiety is more confident that he or she will perform well (Carver & Scheier, 1981).

Transactional Models: The transactional model derives from the transactional theoretical framework established by R.S. Lazarus (1966; Lazarus & Folkman, 1984; Zeidner, 1998). Shortly, Lazarus' model explores individuals' perceptions and responses to stressful events. It emphasizes that a stressor does not inherently cause

stress, but rather it depends on the environmental context in which a person is situated. The transactional model aims to bond both social factors and cognitive components about test anxiety suggesting that personality factors and environmental conditions impact an individual's assessment of the threat and difficulty in evaluative situations. This, in turn, results in test anxiety. This evaluative perspective may give rise to test anxiety. Spielberger's transactional model (Spielberger & Vagg, 1995b), the Self-Regulatory Executive Function (S-REF) processing model (Matthews & Zeidner, 2005), and Control-Value theory (Pekrun et al., 2007) stems from the transactional model.

Self-Worth Model: The self-worth model asserts that high-test anxious students feel more incompetent compared to low-test anxious students in evaluative situations. According to this model high-test anxious students have more negative self-image about themselves. Feeling incapable and achieving poorly cause test anxiety for students having a negative self-image (Covington, 1992).

Transactional Process Model: Spielberger and Vagg (1995) established a test anxiety model called the Transactional Process Model which consists of 4 basic components: personality and environmental factors, the relation of emotional and cognitive periods in testing environments, correlations and outcomes of test anxiety, and intervention kinds that can be helpful for negative outcomes of test anxiety. According to this model, when a student takes an exam, the examination setting might seem less or more daunting to the student. This contrast could be attributable to various differences in personal or environmental circumstances. If the evaluative environment is threatening for the student, their anxiety levels increase.

In this cognitive approach, memory, information storage and retrieval play significant roles (Spielberger & Vagg, 1995b). During an exam, students process

provided items and search for pertinent information to help them answer correctly. Feedback from this process may elicit different ideas and emotions than those that occurred earlier in the reaction chain, which could lead to a re-evaluation of the test scenario as more or less dangerous. The test gets perceived as more stressful if the data required to answer a question correctly are unavailable or cannot be successfully retrieved. As the final stage of the model, formulating a response to a question involves transforming and synthesizing acquired knowledge to answer questions. Transforming and synthesizing information retrieved from memory is necessary to answer questions accurately. If answering a test question at any point in the process, emotional responses and unsettling thoughts arise, they may divert attention and lead to poorer performance. It is likely experiences of worry and emotionality would impact the person's cognitive and physical domains, leading to a negative effect on performance during the test (Stipek, 1997).

Self-Regulatory Executive Function Model: The Self-Regulatory Executive Function Model, developed by Zeidner and Matthews, combines information processing research and Beck's Schema Theory to clarify cognitive-attentional phenomena in emotional disorders (Wells & Matthews, 1996). An evolutionary perspective is then applied to examine the model, with executive functions (EFs) conceptualized as modes of self-regulation that evolved to solve adaptive challenges (Barkley, 2001). The importance of executive functions (EFs) in regulating one's behavior is highlighted, with specific attention on the processes of working memory, inhibitory control, and the ability to switch between tasks (Hofmann, 2012). This theory posits that students with high levels of test anxiety tend to hold more negative beliefs about themselves, which then fuels executive processes and cognitive beliefs that reinforce evaluative tasks as challenging situations.

Control Value Theory: Control Value Theory proposed by Pekrun (2006) focuses on achievement emotions which can be described as emotions related to achievement such as hope, fear, and anxiety. That is while anxiety is one of the areas that the control value theory focuses on, other achievement emotions also have a place in this theory. Moreover, the Control Value Theory emphasizes not only students' achievement emotions but also teachers' achievement emotions. The theory is based on the following assumption: Our feelings in certain situations are universal, but how much depends on culture, gender, in short, individual differences. One of the important differences of the Control Value Theory from other traditional test anxiety theories is that it accepts achievement emotions like test anxiety domain specific. That is, while traditional test anxiety theories assume that high-test anxious individuals experience test anxiety in every evaluative situation, the Control Value Theory contends that test anxiety can arise in specific situations or subjects (Pekrun, 2006).

Biopsychological Model: One of the current multidimensional models is the Biopsychological Model. This model consists of the Biopsychological model of Engel (1977), which argues that the state of health includes all social, psychological, and biological parts. Lowe et al (2008) put forward a biopsychosocial model of exam anxiety, suggesting that exam anxiety has both biological and psychological foundations and is shaped by the social setting. According to this model, factors such as intelligence, social-emotional functioning, academic ability, and self-efficacy increase the perceived threat of upcoming tests. With perceived threat, test anxiety may occur. When test anxiety appears, students' behavioral, emotional, and physiological areas are affected.

2.4 Test anxiety measurement

2.4.1 Test anxiety measurement worldwide

Above twelve theories with various orientations explaining test anxiety are briefly summarized. Some of these theories were used to develop different test anxiety scales at various time periods. Although the current research is based on Spielberger's conceptualization and testing, it is important to have a review of different test anxiety scales. This may allow future researchers critically evaluate the current examination of the TAI-T and may shed light for future studies that may aim test development, revision or adaptation.

Below is a list of brief descriptions of the major test anxiety measures produced since early 1950s. TAI was among the first generation of the measures. Although it takes the 6th place in the chronological list below, it is described under a heading of its own, since it is the main tool of the current study. If these measures were used or adapted in Türkiye, their adaptation studies are also briefly mentioned.

1952 - Test Anxiety Questionnaire (TAQ)

Test Anxiety Questionnaire (TAQ) is the first unitary scale that measures test anxiety. While the first version of the scale contained 42 items, the questionnaire was revised, and the final version was converted into a true/false form with 17 items (Mandler & Sarason, 1952).

1958 - Test Anxiety Scale (TAS)

Sarason created the Test Anxiety Scale in 1958. The first version has 21 true/false items. After some revisions, items were declined 16.

1960 - Test Anxiety Scale for Children (TACS)

Test Anxiety Scale for Children was developed by Sarason et.al in 1960. The scale is suitable for children from grades 1-6. TASC has 30 yes/no items.

1969- Suinn Test Anxiety Behavior Scale (STABS)

Suinn Test Anxiety Behavior Scale was developed in 1969 for the purpose of evaluating test anxiety of students. It has 48 items with a 5- point Likert scale. The scale specifically aims to measure behavioral parts of test anxiety. In some studies, the Suinn Test Anxiety Behavior Scale was labeled as General Test Anxiety Scale (Ugwianyi et.al, 2020).

1969 - Worry-Emotionality Questionnaire (W-E Q)

The Worry-Emotionality Questionnaire was developed by Morris and Liebert (1967). The scale has a total 10 items, which are composed of 5 Worry items and 5 Emotionality items. Items are modified from Test Anxiety Questionnaire (TAQ) by Mandler and Sarason.

1981 - The Revised Worry-Emotionality Scale

The Revised Worry-Emotionality Scale was developed in 1981 by Morris and his colleagues. The scale was a revision form of the Worry-Emotionality Scale. The reason for the revision of the scale was to develop an advanced inventory that measures state test anxiety not in a unitary form but in two separate ways: Worry components and Emotionality components by using factorial analytic techniques. The Scale has 34 items that are classified into three parts: Worry, Emotionality, and Lack of Self-Confidence.

1994 - Revised Test Anxiety Scale (RTA)

Benson and El-Zahhar (1994) created a test anxiety instrument that has 4 subscales: Worry, Tension, Test Irrelevant Thinking, and Bodily Symptoms. Revised Test Anxiety Scale (RTA) was developed to effectively measure the test anxiety of students with multicultural backgrounds. It was based on examining, selecting and combining some items from the Test Anxiety Inventory- TAI (Spielberger, 1980) and Reaction to Test Scales- RTT (Sarason, 1984). After focusing on items of TAI and RTT, RTA which includes 20 items, has been obtained.

RTA also was adapted into the Turkish language in 2012 by Akın and his colleagues. The Turkish version of STAS, which was applied on 335 high school students, was found to be a valid and reliable instrument to measure test anxiety in Türkiye (Akın et al., 2012).

1997 - The FRIEDBEN Test Anxiety Scale

The FRIEDBEN Test Anxiety Scale was developed in order to evaluate especially adolescents' test anxiety. A sample of a total of 3858 high school students participated in its development study. The FRIEDBEN Test Anxiety Scale has 23 items combined of three domains: Social Derogation, Cognitive Obstruction, and Tenseness (Bendas-Jacob & Friedman, 1997). Besides high school students, the scale was later implemented for university students for the purpose of evaluating the structural validity (Thomas et al., 2018).

2002 – Cognitive Test Anxiety Scale (CTAS)

The Cognitive Test Anxiety Scale was developed in order to measure cognitive components of test anxiety such as negative beliefs, self-doubts, and irrelevant

thoughts. The cognitive test anxiety scale excludes behavioral components of the test anxiety (Cassady & Johnson, 2002; Pang & Tan, 2023). CTAS is a valid and reliable measure for test anxiety (Bernáth & Németh, 2023), and CTAS was adapted to many cultures, including Türkiye (Bozkurt et al., 2017).

2004 - Test Emotions Questionnaire

Research on test emotions shows that other emotions besides anxiety have significant effects on learning and achievement (Pekrun et al., 2002b, 2002c; Pekrun et al., 2004). For this reason, while developing the Test Emotions Questionnaire, it was aimed to measure not only test anxiety but also other emotions-related tests such as anger, relief, and hope. The scale has both German and English versions. At the same time, the scale measures not only state anxiety but also trait anxiety in test emotions. The Test Emotions Questionnaire may be useful in the field of test anxiety measurement as it differentiates between test anxiety and other test-related emotions (Pekrun et al., 2011).

2004 - Children's Test Anxiety Scale

Children's Test Anxiety Scale was created by Benson and Wren for the purpose of evaluating children's test anxiety with more clear-cut and easier-to-understand items. The study claimed that the scale is suitable for a multi-ethnic school population. The sample for the study consisted of 3-6 grade almost 300 elementary students (Benson & Wren, 2004).

2008- Test Anxiety Inventory for Children and Adolescents (TAICA)

Test Anxiety Inventory for Children and Adolescents (TAICA) was developed by Lowe and his colleagues (2004). It has 45 items which have various kinds of subscales which are: Worry, Social Derogation, Behavioral, Facilitation anxiety, Physiological hyperarousal, and Cognitive obstruction. TAICA aims to measure the test anxiety of elementary and secondary school students. For the validation study, 206 children were included in the sample. The findings state that TAICA has strong internal consistency, reliability and construct validity. However, the study warns that further research is needed for high school students because the study includes only elementary and secondary school students (Lowe et al., 2008).

2009- Westside Test Anxiety Scale

The Westside Test Anxiety Scale was developed by Driscoll in 2007. It has ten items and one single factor. Self-assessed anxiety and performance-impairing cognitions are aimed to be covered by the scale items. The validation criteria were correlations between increases in test performance and the anxiety decrease as indicated by the scale (Driscoll, 2007). For the Turkish version of the scale, the leading target group of the study was chosen to be university students and 373 university students studying at the undergraduate level were used as participants (Totan & Yavuz, 2009). The scale was used to measure the test anxiety of university students in exams such as midterms and finals and test anxiety in KPSS (public service personnel selection exam) which is taken after university. Unlike other test anxiety scales, there were no subscales in both its original and Turkish versions. In other words, the Westside Test Anxiety scale aims to measure general test anxiety. The scale has been evaluated as a

valid and reliable tool in measuring the test anxiety level of university students (Totan & Yavuz, 2009).

2011- Achievement Emotions Questionnaire (AEQ)

Achievement Emotions Questionnaire was developed for the purpose of measuring students' achievement emotions in educational settings. It has a total of 24 scales, which are categorized into 3 parts: Class-related Emotions, Learning-related Emotions, and Test-related Emotions. The Test-related Emotions Scale has 77 items. These items encourage students to report their feelings about the exam by evaluating feelings such as enjoyment, hope, and relief. In addition to these feelings, this scale has an anxiety part, which aims to measure students' anxiety about the tests (Pekrun et al., 2011).

2014 - The Test Anxiety Measure for Adolescents (TAMA)- 2014

The Test Anxiety Measure for Adolescents was specially developed for middle and high school students. It has 44 items comprising five subscales: Cognitive interference, Physiological hyperarousal, Social concerns, Task-irrelevant behavior, and Worry. TAMA was applied to 688 students and the findings of the study indicated adequate validity and reliability, but the study of reliability and validity of TAMA states that further research is required. Because of the fact that the sample. The sample includes fewer male young participants and minorities. This situation may adversely affect generalizability (Lowe, 2014).

2017 – Turkish Version of Children Test Anxiety Scale- CTAS

Another measurement adapted to Turkish is the Children Test Anxiety Scale (CTAS) which was developed by Wren and Benson in 2004. The Turkish version of CTAS was administered to 1100 students in grades 3, 4, 5, and 6. The difference between the CTAS Turkish version is that it only aims to measure test anxiety in children while most other inventories focus on measuring test anxiety in high school and university students. The adaptation study showed that the Turkish version of CTAS is reliable and valid for measuring the test anxiety of children in Türkiye (Aydın & Bulgan, 2017).

2017 - The Cognitive Test Anxiety Scale

The Cognitive Test Anxiety Scale (CTAS) was developed by Cassady and Johnson in 2002 to measure the cognitive dimension of test anxiety. It has been translated into many languages since its development. Its adaptation to Turkish was completed in 2017. Data were collected from 1075 high school students in İzmir. Both TAI and CTAR were given to the students to look at the relationship of T-CTAR with TAI and thus to study the concurrent validity of TAI. Findings showed that the 23-item Turkish version of CTAR has high validity and reliability ($r = .93, p < .001$) (Bozkurt et al., 2017). In addition, it has been determined that the Turkish version of CTAR is a suitable inventory in terms of psychometric properties in measuring test anxiety among university students (Doğan, 2021).

2.4.2 Test anxiety measurement in Türkiye

Although majority of the test anxiety scales used in Türkiye are adapted from other languages, a few were uniquely developed in Türkiye. Below is a list of these

Turkish scales. This list is shorter as they are fewer in number compared to the seventeen measures listed above.

2017- AYDA Test Anxiety Scale

AYDA Test Anxiety Scale, unlike many other exam measurements applied in Türkiye, is not a test of adaptation. Study of AYDA started out with the claim that many adaptations were developed in accordance with Western culture and therefore are not suitable for Turkish students, who can be considered to be from Eastern culture. AYDA Exam Anxiety Scale was developed after examining many test anxiety scales and interviewing people working in the field. It consists of 25 items, was administered to 586 students, majority of whom were university students. There are two sub-dimensions of AYDA, the first is based on the cognitive and physiological domain, while the second considers social factors. TAI and Westside Test Anxiety Scale were used for validity studies. As a result of the research, it was found that AYDA was valid and reliable in measuring students' test anxiety (Başol, 2017).

2019- State Test Anxiety Scale (STAS)

Like AYDA, State Test Anxiety Scale was not an adaptation but a unique scale developed to measure students' immediate test anxiety. An additional aim in its development was to cover psychosocial aspects of anxiety. State Test Anxiety Scale (STAS) was created by examining various scales and taking the opinions of experts working in the field. The scale was developed using the bio-psychosocial model of test anxiety. The final 22 items were administered to 312 university students. The findings showed that three sub-scales were obtained: Cognitive, Psychosocial, and

Physiological. The alpha internal consistency coefficients of the scale were 0.93 for the Cognitive sub-scale, 0.84 for the Psychosocial sub-scale, 0.85 for the Physiological sub-scale, and 0.94 for the entire scale. The findings obtained as a result of the study showed that the STAS test was a valid and reliable measure for measuring anxiety (Şahin, 2019). The English version of STAS was also created by Şahin in 2021 for international studies. The findings showed that the English version of STAS was also valid and reliable (Şahin, 2021).

2.4.3 Test anxiety inventory-TAI

Test Anxiety Inventory is a self-report scale to assess individuals' test anxiety. TAI was developed by Spielberger. The development process of TAI, which started in 1974, continued for five years. In 1980, the manual of the scale was published. The preliminary form of TAI was composed of 32 items. These items came from different sources or forms. The items were adjusted from Sarason's Test Anxiety Scale, Spielberger's A-State scale of the STAI, and Osterhouse's Inventory of Test. Additionally, Spielberger wrote one item for the Test Anxiety Inventory. After some alterations and revisions with the guidance of factor analysis, the number of items decreased. Finally, the most used version of TAI which has 20 items was acquired (Albayrak-Kaymak, 1985).

TAI has two subscales which are suggested by the Worry-Emotionality Theory of Test Anxiety (Liebert & Morris, 1967) as subscales called as Worry and Emotionality. TAI comprises eight Worry items, eight Emotionality items, and four other items that add to Total. Worry is considered as the cognitive side of anxiety, while Emotionality is viewed as an affective component of test anxiety (Goetz et al., 2008). Emotionality is also characterized as an impression of autonomic reactions

triggered by evaluative stress (Goetz et al., 2008). Since the physiological symptoms and cognitive part of anxiety can occur simultaneously, the Total score of TAI has an importance in terms of the general experience of test anxiety.

The TAI is a four-point Likert scale. The four options are (1) almost never, (2) sometimes, (3) often, and (4) almost always. However, the first item is scored in reverse order. Because the replies are weighted from one to four, the minimum TAI Total score is 20 and the maximum is 80. Similarly, the Worry and Emotionality subscales' minimum and maximum allowable values are 8 and 32, respectively.

For the reliability of TAI, test-retest reliability, alpha coefficient and internal consistency were ensured. In the case of test-retest reliability, coefficient values were .80 and .62 for 2 weeks and 6 months respectively. Internal consistency value for TAI Total scale was .92, for TAI-Worry was .88 and .89 for the TAI-Emotionality.

For the validity of TAI, the concurrent validity was provided through Sarason's Test Anxiety Scale (1978) ($r = .82$ for males and $r = .83$ for females). Additionally, correlation between this scale and TAI Worry and Emotionality subscales ranged from .69 to .85.

All the validity and reliability studies were conducted in 1980. Since then, both features of students and the academic landscape changed dramatically, so Szafranski and colleagues (2012) asserted that these findings could be outdated and aimed to investigate the difference of TAI scores of university students and the validity of TAI in 2010. The sample of this study consisted of university students and the results were found similar to findings of Spielberger (1980) despite the passing years and changing student profiles. To illustrate, Spielberger (1980) found internal consistency for the total value of the TAI among university students .95 for females and .94 for males. In this study, the Cronbach alpha value was reported as .95 for

both male and female students. The recent study also used exploratory factor analysis as Spielberger (1980) did and found that while there was no significant change in test anxiety values among male participants whereas there were significant changes among female participants. Szafranski and his colleagues (2012) stated that female undergraduates have significantly higher mean scores in TAI-W, TAI-E, and TAI-Total than Spielberger's research.

2.4.4 Other versions of TAI

TAI has been used in numerous studies to measure test anxiety since 1980 and continues to be used. It has been one of the most used test anxiety inventories worldwide (Chapell, et al., 2005). Different versions of TAI have been created over the years. One of them is the creation of the short version of TAI. The shortened form of TAI was created for the use in cases where the original TAI was not applied due to time restrictions. The short version of TAI was developed after a study on 333 undergraduate university students and resulted in a 5-item short form version (TAI-5). This brief version has similarities to the full form of TAI and TAI-5 has acceptable and comparable validity and reliability. However, if a researcher wants to see the Worry and Emotionality scores separately, the full form of TAI would be more helpful. TAI-5 has no subscales due to a small number of items (Deane & Taylor, 2002).

Another version is Online Test Anxiety Inventory which was developed in 2019. This inventory was developed to measure the test anxiety of students taking online courses. While developing the inventory, two different inventories were studied: Sarason's Test Anxiety Scale and Spielberger's Test Anxiety Scale. After a series of studies, the 18-item OTAI was created. OTAI has three factors:

Psychological, Physiological and Online. Also, a high correlation was found between OTAI and TAI ($r = 0.83$, $p < 0.01$) (Alibak, 2019).

In addition to these versions, TAI has been adapted to many languages. One of these languages was Norweigan (Haqwert, 1984) and its revised version in Norweigan was developed by Øktedalen and Hagtvat (2011). Greek version of TAI produced by Papantoniou in 2011, Chinese version of TAI by Cai and Kang (2003), Korean version of TAI by Kim (1991), Japanese version of TAI by Araki et al. (1992), Urdu version of TAI by Ali and Mohsin (2013), Dutch version of TAI by Van der Ploeg (1984), Romanian version of TAI by Holic (2018), Czech version of TAI by Kubíková et al. (2018). Due to higher number of studies utilizing them, especially two versions are used very frequently in the literature: Hebrew version of Test Anxiety Inventory and German version of Test Anxiety Inventory. The Hebrew version of Test Anxiety Inventory was adapted in 1988 by Zeidner, Nevo and Lipschitz. One of the reasons why the Hebrew version of TAI is so widely used may be that Zeidner actively studies anxiety and does a lot of work in the field of anxiety in Education.

The German version of Test Anxiety Inventory was produced in 1991 by Hodapp. This German version of TAI has 30 items which include 4 subscales: Worry, Emotionality, Lack of confidence and Interference. TAI-G has adequate reliability with Cronbach alphas higher than .70 (Andrew & Harpell, 2012). This version was adapted in 25 languages (Mowbray et al, 2015) including English (Hoferichter et al., 2016), Italian (Ringelise et al., 2020), and Argentinian (Sesé et.al. 2010) adaptations. Moreover, a shortened form of TAI-G was developed in 2008 (Wacker et al., 2008). While the full form of TAI-G includes 30 items, the short form

of TAI-G has 15 items that also comprise 4 subscales (Worry, Excitement, Lack of Confidence, and Interference).

2.4.5 Test anxiety inventory- Türkiye TAI-T

The Turkish adaptation of the Test Anxiety Inventory emerged as a result of a series of studies between 1983 and 1986 and was completed in three stages:

First, the translation and equivalence studies of the inventory were carried out. In the experimental group, participants were expected to fill out both the English and Turkish versions of the scale. High and significant correlations were obtained between the two scales ($r = .85- .94$) (Albayrak-Kaymak, 1985).

Secondly, the reliability of the Turkish version of the Test Anxiety Inventory was investigated. The reliability coefficient obtained from all samples was found to be between .84 and .89. The reliability coefficients calculated by test-retest method via applying the inventory twice with time intervals ranging from the same day to three weeks ranged between .72 and .91 (Albayrak-Kaymak, 1985).

Finally, the validity study of the scale was conducted (Öner, 1986). For the validity study, the correlations of the inventory with anxiety scales, personality scales, and school achievement were analyzed. At the same time, the factor analysis technique was used to examine the dimensions in the Turkish adaptation of the TAI. As a result, a 3-factor form (Worry, Emotionality, and Irritability) was developed. It was determined that while this form may be helpful in deep clinical research, a 2-factor form (Worry and Emotionality) may be more appropriate for cross-cultural comparisons and for analyzing the relationships between test anxiety and academic, cognitive, and emotional variables.

The data for the norm study of the inventory were taken from nearly 5000 elementary, secondary, high school, and university students, consisting of female and male students in İstanbul (Öner, 1990). A more detailed description of the psychometric findings on TAI-T can be found in the Methodology section of this thesis.

2.4.6 Some studies including TAI-T

The first test anxiety scale adapted into Turkish was TAI and it has been used in many studies, articles, and theses since it became available for use. It has been used in many different fields, especially education, specifically in the field of language studies to measure test anxiety among foreign students (Aydın, 2009), in attachment literature (Erzen & Odacı, 2014), and psychopathology (Kaya, 2004).

In Türkiye, TAI-T has been used in various studies to measure the test anxiety of students at all levels. For example, in a study, the effect of attachment styles and self-efficacy on test anxiety of senior high school students preparing for the university exam was measured. In this study, TAI-T was used to measure test anxiety (Erzen & Odacı, 2016). Another study using a high school sample examined the relationship between 10th grade students' study habits, test anxiety, motivation and academic success. Again, TAI-T was used as a tool to measure test anxiety (Ergene, 2011). Another study conducted with high school students, the mediating role of self-esteem and optimism in the correlation between test anxiety and life satisfaction was investigated. This study also used TAI-T to measure test anxiety (Çıkrıkçı et al., 2018). In another study secondary school students were participants and the relationships between intellectual risk-taking, test anxiety levels, and academic achievement in science were examined. The TAI-T was also used in this

study (Bal-İncebacak, Yaman, & Sarışan-Tungaç, 2019). In a different study, the impact of alternative assessment methods on test anxiety of secondary school students was investigated by using the TAI-T as a tool to measure test anxiety (İzgi & Gücüm, 2012).

Furthermore, TAI-T is used in samples of university students as well as K-12 level students. For example, in a study, the relationship between test anxiety and psychiatric symptoms (ADHD, anxiety and depression) of medical faculty students was examined (Kavakçı et al., 2011).

In addition to the use of TAI-T in studies with K-12 and university-aged students, it has also been used as a tool in reliability and validity studies in the field. One of these studies is the adaptation of The Cognitive Test Anxiety Scale–Revised Inventory into Turkish. TAI-T was used to measure the concurrent validity of the inventory. A strong correlation between TAI-T and T-CTAR was found (Bozkurt, 2017). Another study in which TAI-T was used in validity studies is the adaptation of the Academic Motivation Scale into Turkish. There were significant correlations between the Worry and Emotionality subscale and total values of TAI and the Turkish version of the Academic Motivation Scale (Karagüven, 2012).

Over the past 35 years, the age we live in, Türkiye's education system, and students' perspectives on life and exams have changed. At the same time, the academic field has undergone many changes and this change may have influenced the current values of the TAI. Therefore, it was deemed necessary to renew the information on the Turkish version of the currently used Test Anxiety Inventory.

2.5 Literature related to evidence-based validity questions of the thesis

Evidence-based validity of the Turkish form of the TAI was based on a series of questions that were formed by the related literature. Below is a review of this literature.

2.5.1 Relationship between test anxiety and general anxiety

This study examined test anxiety in relation to various factors, one of which is students' general anxiety. This relationship has received substantial attention in the literature outlined below. Most of these studies indicated a significant and positive correlation between general anxiety and test anxiety; students with higher levels of general anxiety tended to exhibit elevated levels of test anxiety as well.

Sridevi (2013), for example, examined higher secondary students and found strong correlations among general anxiety, test anxiety, and academic achievement. Another study conducted with high school students concurred high positive relationship between state-trait anxiety and test anxiety (Jung et al., 2001). Similarly, a study with university students demonstrated that test anxiety was positively correlated with both state anxiety and trait anxiety (Mur et al., 2022). Another study demonstrated that university students with high test anxiety trait scores exhibited significantly more anxiety symptoms during exams compared to those with low scores (Ping et al., 2008). A study involving elementary school students also reported a positive relationship between general anxiety and test anxiety (Call et al., 1994) confirmed that students with generally higher anxiety levels experience greater test anxiety.

Similar studies have been widely conducted in Türkiye, yielding comparable findings. One such study conducted by Kavakçı et al (2011) examined the relationship between test anxiety, attention deficit hyperactivity disorder, anxiety,

and depression in a sample of medical students. Participants completed the Beck Depression Inventory, State-Trait Anxiety Inventory and the Test Anxiety Inventory (TAI) and the analyses revealed significant associations between test anxiety and both depression and anxiety. Another study examined the relationship among State-Trait Anxiety, Foreign Language Anxiety, and Test Anxiety at a Turkish public university. The State-Trait Anxiety Inventory (STAI), Foreign Language Classroom Anxiety Scale, and Test Anxiety Inventory (TAI) were administered to preparatory class students (n=435). Results revealed high and significant correlations between the students' responses on the STAI and TAI (Önem, 2010). Similarly, Burhan et al (2020) explored the connection between cognitive test anxiety, general anxiety, and depressive symptoms. The findings revealed that cognitive test anxiety was significantly influenced by trait anxiety and the intensity of depressive symptoms, while state anxiety did not have a predictive effect.

2.5.2 Test anxiety and academic motivation

Another significant relationship explored in this research is the interplay between academic motivation and test anxiety. While numerous studies have investigated this dynamic, the findings often reveal a more nuanced and intricate association rather than a simple, linear connection. Broadly speaking, the evidence points to a complex and multifaceted relationship. For instance, one study highlighted the detrimental impact of test anxiety on academic performance, contrasting it with the positive influence of motivation on academic success. This same study further suggested that motivation serves as a moderating factor in the relationship between test anxiety and academic performance, effectively buffering the negative effects of anxiety (Balogun et al., 2017).

Similarly, Yawa et al (2023) reported significant positive correlations between test anxiety and both intrinsic and extrinsic motivation, suggesting that heightened anxiety levels may coexist with increased motivational drives, albeit in different forms. Moreover, the pivotal role of academic self-concept in academic success was emphasized. Khalaila (2015) found that academic self-concept is directly associated with academic achievement, while test anxiety and intrinsic motivation function as mediators within this relationship by partially explaining the negative impact of low academic self-concept on academic performance. Students with a lower academic self-concept tend to experience higher test anxiety. This highlights the intricate ways in which psychological and motivational factors intersect to shape educational outcomes.

Studies conducted in Türkiye examining the relationship between academic motivation and test anxiety have reached similar conclusions that multiple factors are at play in test anxiety. For example, Acar et al (2022) found that university students with high levels of test anxiety scored higher in self-assertion. Additionally, the group with high test anxiety also scored higher in the "action" subdimension of intrinsic motivation. The group with high test anxiety scored higher in action levels, indicating that as test anxiety increased, the level of motivation to take action for studying also increased.

Dadandı & Koca (2019) conducted a nationwide study in Türkiye targeting high school students. Although the study did not directly examine the relationship between academic motivation and test anxiety, it indicated that academic motivation and test anxiety play a partial mediating role in the relationship between academic self-efficacy and academic achievement. Specifically, academic self-efficacy was positively related to academic motivation, which positively relate to academic

achievement. At the same time, academic self-efficacy was associated with lower test anxiety, likely to help improve academic performance. However, since these variables only partially mediated the relationship, academic self-efficacy still had a direct effect on academic achievement, independent of academic motivation and test anxiety. This suggests that while motivation and anxiety contribute to academic success, self-efficacy remains a key factor influencing students' performance. There were other findings more complex than linear correlation. For example, although Çelik & Yıldırım (2019) found significant positive correlations among test anxiety and factors such as family/teacher expectations, self-expectations, and motivation, contrary to other findings (Pei, 2023) no significant relationship was detected between test anxiety and either intrinsic or extrinsic motivation. Moreover, Ergene (2011) reported that test anxiety and study habits were positively associated with academic achievement, but no relationship was observed between academic motivation and academic achievement indicating that the relationship between academic motivation and test anxiety appears to have a complex structure, varying as based on the type and level of motivation. It has been indicated that these two concepts can influence each other and interact with various other factors. This highlights the need for a nuanced understanding of the interplay between motivation, anxiety, and academic outcomes in the Turkish educational context.

2.5.3 Test anxiety levels of high school graduates retaking the central exam

Turkish education is rather centralized in curriculum as well as in entrance into schools. Centralized exams at nationwide are required to enter into high school and university. Students who prepare for and take these entrance exams in particular, have high stakes. The university entrance exam, known as the YKS (Higher

Education Institutions Examination) is one of these centralized high stakes exams.

This issue becomes even more pronounced among two distinct groups: 12th graders taking the exam for the first time and high school graduates retaking the exam in an attempt to improve their previous results. While 12th graders often experience anxiety stemming from the uncertainty of their first attempt, graduates retaking the exam face additional psychological pressure due to the expectation of performing better as this exam may be their last life changing resort. Stress associated with this process can manifest in various ways, such as a fear of failure, doubts about their ability to improve, and the cumulative burden of prolonged preparation.

Research on test anxiety in Türkiye has identified the profound impact of the highly stressful exams on students. For example, Sarı et al. (2018), highlighted that high-stakes examinations like the YKS can contribute to increased anxiety and reduced self-esteem, particularly among female students. According to data from ÖSYM (Assessment, Selection and Placement Center), over one million high school graduates prepare to retake the YKS annually, making this a widespread phenomenon. However, despite the large number of students affected, there is a notable gap in research directly comparing the test anxiety levels of high school graduates retaking the exam with those of 12th graders taking it for the first time. This gap indicates the need for more in-depth studies to explore the unique stressors and psychological challenges faced by these two groups, thereby contributing to a more comprehensive understanding of test anxiety in Türkiye.

2.5.4 Test anxiety levels of students seeking school counseling services

There is research evidence on effectiveness of counseling services in reducing test anxiety and general anxiety levels among students, particularly in higher education.

Behavioral cognitive counseling, for example, has been shown to significantly alleviate test anxiety (Setyowati et al., 2019). A literature review by Fatima & Khan (2020) emphasized the positive impact of counseling services on mental health and academic anxiety in adolescents. With the growing accessibility of digital resources, online interventions have also emerged as a promising alternative. For instance, a guided internet-delivered counseling program successfully reduced both test anxiety and general psychological distress in university students (Warnecke et al., 2020). These findings collectively underscore the critical role of counseling services in managing test anxiety and promoting mental well-being within educational contexts. Whether delivered through traditional face-to-face interactions or via online platforms, counseling remains a versatile and effective tool for student support.

Research conducted in Türkiye further supports these conclusions, demonstrating similar positive outcomes. For example, a quasi-experimental study revealed that individual counseling sessions significantly alleviated anxiety levels in college students (Tanhan et al., 2020). Similarly, solution-focused brief counseling was shown to effectively reduce test anxiety among high school seniors preparing for university entrance exams (Altundağ & Bulut, 2019). Although not exclusively focused on test anxiety, Terzioğlu (2001) conducted a study involving couples undergoing assisted reproductive techniques and found that counseling services significantly decreased anxiety and depression scores of couples who received counseling compared to a control group that received no counseling. Thus far, the significance of counseling services in combating test anxiety cannot be overstated. However, a critical question arises regarding whether students in Türkiye actively utilize these services. Additionally, the literature lacks extensive findings on the levels of test anxiety among students who seek counseling services.

CHAPTER 3

METHODOLOGY

3.1 Participants

TAI-T is an inventory that can be easily administered to individuals older than 10. Therefore, this study targeted individuals whose ages ranged from 11 to 24. The sample was constituted by three groups: middle (grades 5-8) and high (grades 9-12) school students, high school graduates, and university students who were in their English preparatory or freshman years.

The middle and high school sample was intended to include both public and private schools and all three sample groups were in İstanbul where collaboration for data collection could be established. Thus sampling was based on convenience. To include wider range of schools, however, the researcher utilized the list of schools where Boğaziçi University Guidance and Counseling undergraduate school counseling practicum courses were taking place in addition to her personal contacts with her school counselor colleagues. The middle and high school sample made up of students whose parents approved the consent form. The high school graduate sample came from the institution where the researcher once worked. University student sample were registered English preparatory and freshman students at Boğaziçi University.

The total sample of the study consisted of 1704 participants. Among them, there were 562 (33%) middle and 1014 (59.51%) high school students, 71 (4.17%) high school graduates and 57 (3.35%) (18 English preparatory and 38 freshman) university students. Data from middle school students were collected from six middle schools. Data from high school students were obtained from twelve schools and a

private institution where the researcher works. All other schools from which data were collected are public schools. The list of schools where Boğaziçi University Guidance and Counseling undergraduate school counseling practicum courses were taking place included 2 private and 4 public middle and 7 private and 11 public high schools, however, working collaboration could be established with no middle and only 2 high schools and the rest, particularly private schools were reluctant to participate. Therefore, the school counseling practicum courses had a rather limited role in the recruitment of participants and in the end, the majority of the data were collected through the researcher's own professional contacts with 9 public high schools and 5 public middle schools. Although the researcher aimed to reach at least two classrooms from each grade level within each participating school, some schools granted permission to collect data only from students at specific grade levels and that prevented random representation. Table in Appendix Z provides information on the instruments filled out by participant grade level and gender.

Data collection process involved distributing printed forms to all the allowed classrooms and sending online forms through school counselor networks and institutional contacts. Because the exact number of individuals who received the forms cannot be confirmed, the overall response rate is unknown, but it is estimated to be relatively low, particularly among high school graduates and university students. The final sample size of 1704 participants still reflects a considerable level of engagement given the logistical and institutional constraints. Several factors may have contributed to this limited participation: the voluntary nature of the study, lack of direct incentives, communication difficulties especially in online settings and institutional reluctance, particularly in private schools, to authorize research

activities. Limitations related to participant recruitment and representation are further addressed in the discussion section.

Table 1. presents the descriptive statistics (f, %, mean, standard deviation, minimum, and maximum) regarding the descriptive characteristics of the participants in the study. The descriptive characteristics were obtained from the Demographic Information Form described under the Instruments subtitle below.

Table 1. Demographic Information of the Participants ($N=1\ 704$)

Variables	Categories	<i>f</i>	%
Education Level	Middle School	562	32.98
	High School	1014	59.51
	High School Graduates	71	4.17
	University	57*	3.35
Gender	Woman	1084	63.66
	Man	620	36.34
Are the parents together?	Together	1558	91.44
	Separated	146	8.56
Are the mother and father alive?	Both alive	1664	97.66
	Both passed away	4	0.23
	Mother passed away	5	0.29
	Father passed away	31	1.82
Age	Mean (SD)	15.18 (2.76)	
	Minimum-maximum	10-24	

*The university sample originally consisted of 59 students, however, two of them were older than 25 and therefore, were excluded not to expand the age limit.

Educational levels of the participants were as follows: 32.94% ($f=562$) were middle school students, 59.51% ($f=1014$) were high school students, 4.17% ($f=71$) were high school graduates and 3.35% ($f=57$) were university students. The gender distribution was as follows: 63.66% ($f=1084$) of the students were women and 36.34% ($f=620$) were men. The participants in the study were asked two distinct questions regarding their parents. The first question pertained to the marital status of their parents, specifically whether they were still together or separated. The second question inquired about the living status of their parents. In this study, the students' parents were observed to be together in 91.44% of cases ($f=1558$), while 8.56% were separated ($f=146$). The students' parents were alive in 97.66% of cases ($f=1664$), deceased in 0.29% of cases (mothers) and 0.23% of cases (fathers). The average age of the students was 15.18 (2.76), with a minimum age of 10 years and a maximum age of 24 years. Therefore, the sample was predominantly high school students (64%), women (64%), coming from intact families (91%) with both parents alive (98%) and had an average age of 15.

In addition to these questions, middle and high school students were asked whether they regularly receive services from the school counseling service. Table 2. shows that only 14.6% of middle school students and only 9.9% of high school students reported regular visits to their school services. Therefore, the sample was made up of participants who were not utilizing school counseling services, 85% and 90% of middle and high school students, respectively.

Table 2. School Counseling Utilization ($n=1576$)

	Middle School ($n=562$)		High School ($n= 1014$)	
	<i>f</i>	%	<i>f</i>	%
Yes	82	14.6	100	9.9
No	480	85.4	914	90.1

3.2 Instruments

3.2.1 Demographic information form

A demographic information form was developed for the purposes of this study (Appendix A and B, originally used Turkish form and its translation into English, respectively). This questionnaire includes questions designed to obtain basic personal information about participants. It consists of 5 structured questions. Questions regard gender, age, student numbers of participants (if necessary for matching two forms of the same participants, as in test-retest administration) and basic familial characteristics. This form was applied to all participants, to describe and manage sample characteristics.

3.2.2 Turkish form of the test anxiety inventory

Test Anxiety Inventory (TAI) was originally developed by Spielberger (1980). Albayrak- Kaymak translated it into Turkish and studied its trans literary equivalence of the original English and the Turkish forms and the reliability of the Turkish form as her master's thesis research (1985). Later, Öner completed adaptation studies of the Turkish version of the TAI and published the manual (1990).

Just like the original TAI, the Turkish version of TAI (TAI-T) has 20 items which have a four-point scale ranging 1 (not at all) to 4 (very much so). Respondents

are expected to state the frequency of their experience of specific anxiety symptoms. It has a bifactorial structure; Worry and Emotionality. Two different factor analyses were conducted to determine the basic dimensions and factor structure of the TAI-T. Firstly; exploratory factor analysis was used to investigate how many dimensions the Turkish scale consisted of. A 3-factor (Emotionality, Irritability and Worry) form of the Turkish Test Anxiety Inventory emerged and it was decided that these 3-factors may be useful in deep clinical research, but a 2-factor (Worry and Emotionality) form was found more practical in cross-cultural comparisons as well as while examining relationships of test anxiety with academic, cognitive and emotional variables (Öner, 1990). Therefore, bifactorial structure was followed.

While calculating the scores obtained from the TAI all 20 questions are added into the total test score, therefore the lowest possible score for the entire test is 20, while the highest possible score is 80. Except for the first reverse-scored item, all other items assign a weight of 1 to the "Not at all" response, indicating low test anxiety, while the "Very much so" response carries a weight of 4, representing high test anxiety.

The inventory assesses two main dimensions of test anxiety through subtests: Worry and Emotionality. The Worry subtest consists of 8 items (2, 3, 4, 5, 8, 12, 17, 20) scores ranging from 8 to 32, while the Emotionality subtest consists of 12 items (1, 6, 7, 9, 10, 11, 13, 14, 15, 16, 18, 19) scores ranging from 12 to 48. The individual item scores are summed to calculate Worry, Emotionality, and total exam anxiety score.

Then, confirmatory factor analysis was used to test the existence of the two dimensions identified in the English scale. The first factor (the Emotionality), which contributed 34.5 % to the overall score change of TAI-T, consisted of seven items;

the second factor (Irritability) consisted of five items; and the third factor (the Worry) consisted of eight items. The contribution of the second and third factors to the score change is 6.3% and 5.1%, respectively. Together, these three factors explain 45.9% of the score change in test anxiety (Öner,1990).

Various other scales were used for the validity data of TAI-T. These scales are STAI, Minnesota Counselling Inventory subtests, Piers-Harris Self-Concept Scale, and the Student Problem Identification List (Öner,1990). The correlations of TAI-T scores with trait and state anxiety scores ranged from .39 to .70. The correlations between the Emotionality and the Worry subtests of the TAI-T and trait anxiety scores ranged from .45 to .60 (state condition was not tested). The correlation between state anxiety and Total TAI-T scores ranged from .45 to .55.

In addition to anxiety scales, correlations with personality scales were examined for validity. Moderate and negative ($r = -.31$ to $-.56$) correlations were found between self-concept and test anxiety scores, and moderately positive ($r = .60$ to $.22$) correlations were found between daily problem indicators (Minnesota Counselling Inventory subtests) reflecting adjustment difficulties and test anxiety scores (Öner,1990).

Correlations between test anxiety scores and academic success, as measured by GPA and math grades, were negative and significant, starting from a moderate level limit ($r = -.43$) and decreasing to zero. Additionally, there were negative, low, but still significant correlations between academic success and both the whole test and Worry sub-score of the TAI-T. However, the relationship between GPA and Emotionality sub-score was found to be insignificant (Öner,1990).

Cronbach's alpha obtained was 0.93 for total scores, 0.85 for Worry, and 0.89 for Emotionality sub-scores. Kuder Richardson was used to determine the internal

consistency of the scale items. The alpha values ranged from .89 to .73. The TAI Total scores and the university sample had the highest reliability coefficients (.89-.84). The Emotionality subtest was found to be more reliable than the Worry subtest. The test-retest method was used to measure the invariance of the scores obtained from the inventory. After 3 weeks, the scale was applied again, and the test-retest correlation coefficients were found to be above .90 and .70 (Öner,1990).

Norm studies of TAI-T were conducted on a sample of nearly 5000 students from various socio-economic levels in İstanbul, including 1200 4th and 5th-grade students, 1258 secondary school students, 2000 high school students, and 569 university students. Norms were provided by gender and school level.

As the TAI-T is the major subject of this research, it was applied to all participants and used in answering all the research questions (See Appendix C and D, the Turkish form and its English original).

3.2.3 AYDA test anxiety scale

The Ayda Exam Anxiety Scale (AYDA) is a 24-item scale developed by Başol (2017) for the purpose of assessing exam anxiety. The scale employs a 5-point Likert-type rating system, and its construct validity was evaluated through Exploratory Factor Analysis (EFA). The results of the exploratory factor analysis (EFA) indicate that the AYDA is a two-dimensional scale, with 15 items collectively explaining 51.28% of the total variance. Social Factor-Related Anxiety represents the anxiety stemming from external expectations, including concerns about family, teachers, and peers' reactions to exam performance. Cognitive and Psychological Anxiety, on the other hand, encompasses the cognitive and physiological symptoms of test anxiety, such as excessive worry, negative thoughts, and physical responses

like increased heart rate and sweating. The eigenvalues for the nine-item Cognitive and Physiological Anxiety Subscale are 6.30, and for the six-item second subscale, Anxiety related to social factors, the eigenvalue is 1.91.

The scale's construct validity was evaluated by comparing it with other similar instruments, including the Westside Exam Anxiety Scale and the Spielberger Test Anxiety Scale. Significant correlations were identified, indicating the scale's convergent validity. The internal consistency of the scale was assessed using Cronbach's alpha, and its equivalence was evaluated through the Spearman-Brown split-half reliability coefficient. Both methods demonstrated satisfactory levels of internal consistency. This form was used for the middle and high school samples to answer the third research question. Permission to use this form was granted (Appendix U).

3.2.4 State-trait anxiety inventory

Spielberger (1980) developed a two-part scale for assessing state and trait anxieties. The entire inventory consists of 40 questions, with 20 questions in each part, and is scored on a 4-point Likert-type scale ranging from 1 (almost never) to 4 (almost always). High scores indicate high levels of anxiety. The anxiety scale comprises two types: the state anxiety scale and the trait anxiety scale. The former evaluates the instant anxiety state of the individual and includes statements such as 'I am in a good mood right now,' 'I am anxious right now,' and 'I am worried about what will happen to me.' The latter evaluates the general tendencies of the individual and consists of statements such as 'I am usually happy,' 'I take everything seriously and worry,' and 'I am a sane and decisive person.'

Öner and Le Compte (1983) conducted validity and reliability studies of the inventory in Türkiye. The construct validity of both scales was empirically tested within the framework of the two-factor anxiety theory. The fact that state anxiety first increased and then decreased before and after important and stressful events and that there was no significant change in trait anxiety supported the hypotheses derived from the theory and was evaluated as an indicator of the construct validity of the inventories. Alpha coefficients of the scale were found between .83 and .87 for the trait anxiety scale and between .94 and .96 for the state anxiety scale. This form was used for the middle and high school samples to answer the fourth research question (See Appendix G and H, the Turkish forms used and their English original). There was no need to obtain permission to use these measures, since Öner herself granted full rights for the TAI-T and STAI to be used for the purposes of this current study before this thesis was initiated.

3.2.5 Beck anxiety scale

Beck Anxiety Inventory was developed by Beck, Epstein, Brown and Steer (1988) to measure the severity of anxiety symptoms. It consists of 21 items; it is a Likert-type scale that is scored between 0-3 as 0 (none), 1 (mild), 2 (moderate), 3 (severe). The Turkish version of the scale was adapted by Ulusoy, Şahin, and Erkmen (1998). Exploratory factor analysis using principal components revealed two factors, they were named as somatic and subjective. The reliability coefficient was .57. Cronbach alpha internal consistency is .93. The item-total correlation ranged between .46 and .72 (Ulusoy et al.,1998). Permission to use this form was granted (Appendix T). This form was applied to the university sample to answer the fifth research question (See Appendix E and F, the Turkish form used and its English original).

3.2.6 Academic motivation scale

The Academic Motivation Scale was developed by Vallerand in 1992. It aims to measure individuals' academic motivation in terms of intrinsic and extrinsic motivation. It consists of 28 items ranging from 1 (does not correspond at all) to 7 (corresponds exactly). The Academic Motivation Scale has seven subscales which are Intrinsic Motivation to Know, Intrinsic Motivation to Accomplish, Intrinsic Motivation to Experience Stimulation, Extrinsic Motivation External Regulation, Extrinsic Motivation Introjected Regulation, Extrinsic Motivation Identified Regulation, and Amotivation.

The scale was adapted into Turkish by Karagüven (2012). Construct validity was tested using confirmatory and exploratory factor analyses, revealing that the scale has a five-factor structure which are intrinsic motivation, amotivation, self-determination and achievement, extrinsic motivation-regulation and extrinsic motivation-recognition. The goodness-of-fit indices calculated for model-data fit were within an acceptable range, indicating that the construct validity of the scale is supported. Cronbach's alpha coefficients ranged from 0.67 to 0.87, demonstrating high internal consistency. Additionally, item-total correlations and standard error of measurement analyses further supported the reliability of the scale. This form was used for the middle and high school samples to answer the sixth research question (See Appendix I and J, the Turkish form used and its English original). Permission to use this form was granted (Appendix S).

3.3 Procedures

Before the process of data collection, the researcher assured the approval of Boğaziçi University Institute for Graduate Studies in Social Sciences Ethics Sub-Committee

(SBINAREK) (Appendix V). The next step was to apply to the permission of the Ministry of National Education (MEB, Turkish abbreviation) for data collection from the identified schools. For students who are under 18 years old, parental permission was sought before starting to collect data from students (Appendix M and N).

The thesis researcher identified the schools that could collaborate in data collection. For this purpose, she utilized her personal contacts to identify the schools and the institution where she once worked. After establishing the collaborative relations with the related staff in these settings, the researcher distributed parental approval forms to the students and requested that they have their parents sign and return the forms if they consent to participate in the study. The research instruments were given only to the children of parents who approved the consent forms.

Data from the middle and high school students was collected in paper-pen format as most schools do not allow students to use mobile phones within the school. On the other hand, data from the high school graduates and university samples were collected online. Online data were collected via Google Forms.

The scales were distributed to university students via the online platform. While the preparatory students were reached through the researcher's personal contacts at Boğaziçi University, the data were collected from the freshmen students by the lecturers of the mass courses, who sent the scale link to their students via email. The data were collected on a completely voluntary basis. To obtain the data, the mass courses offered in the second semester of the 2023-2024 academic year were identified. The instructors responsible for the mass lectures were requested to email the scale to their respective students. Moreover, the preparatory students of Boğaziçi University were reached through the researcher's personal contacts.

The students who took part in the study completed the TAI-T (State Anxiety Test) and the AYDA (Anxiety Scale) if they were in middle or high school. Those at the university level who took part in the study completed the TAI-T, the BAI (Beck Anxiety Scale), and the AMS (Academic Motivation Scale). All students completed a demographic information form that included the questions related education level, gender, are the parents together, are the mother and father alive, and age. High school students also answered whether they received support from the counseling service. To be able to study Research Question 10, for all three education levels, in settings where close collaboration could be established students were assigned arbitrary research numbers to pair their responses to their first and second taking of TAI-T.

For the test-retest analyses, the scales were administered to a specific group of students again after three weeks. Students from the researcher's former high school and the institution where they are currently employed voluntarily completed the scale twice. The first administration took place on May 10, 2024, and the second on May 30, 2024, thus the time interval was 20 days, to be exact.

3.4 Data analysis

This study utilized quantitative descriptive methodology, as it examined the validity and reliabilities of the TAI-T. The analyses were conducted using the Statistical Package for the Social Sciences-IBM SPSS Statistics 22 (SPSS Inc., Chicago, IL). However, factor analysis was needed to discover whether the TAI-T was still explained by two factorials, Worry and Emotionality. Therefore, AMOS 21.0 package program was used.

The data obtained from 1704 students. Before proceeding to the data analysis stage, skewness and kurtosis values were examined to determine whether the data related to the scale questions were suitable for normal distribution. It was determined that the skewness and kurtosis values for the total score and sub-dimension scores were within the range of ∓ 1.5 , and therefore it was concluded that the data were normally distributed. It was determined that there was no missing value in the data. In the analysis of the data, descriptive categorical data were shown as numbers and percentages, and quantitative data as mean and standard deviation values, skewness, kurtosis, minimum and maximum values.

The first question (Is the TAT-T still sufficiently explained by two factorial dimensions, (Worry and Emotionality) was answered through confirmatory factor analysis. Confirmatory factor analysis (CFA) was applied to examine the primary and secondary level factor analysis of TAI. In CFA, modification was needed to create the appropriate model. When the model goodness-of-fit indices were analyzed, it was concluded that TAI-T is a valid and reliable scale.

Pearson Product Moment Correlation Coefficient analysis was applied for the second and third question (intercorrelations among TAI scores and relationship between academic motivation and test anxiety), the fourth question (Is TAI-T positively related to Spielberger Trait Anxiety Scale?), the fifth question (Is TAI-T positively related to Beck Anxiety Scale?), and the sixth question (Is TAI-T positively related to AYDA?).

For the question seven (Do students preparing for the English Proficiency Exam have higher levels of test anxiety than freshman students?), the question eight (Are the test anxiety levels of high school graduates who are to retake the central exam different than the 12th graders who are to take the exam for the first time?), the

question nine (Do students who apply to receive counseling services in schools have more test anxiety compared to students who have no service application?)

Throughout the question ten (Are the item to subscale, item to total score, odd-even item, first and second halves correlations and internal consistencies (Cronbach alpha coefficients) of TAI-T within acceptable limits compared to earlier TAI values?) and the question eleven (Does TAI-T yield sufficiently similar scores when retaken after a time period (about 3-4 weeks)), reliability values of TAI-T were calculated. Reliability analysis was performed for the scales and Cronbach Alphas were calculated and it was found that the α value for TAI-T was 0.89, the Cronbach Alpha (α) value for STAI was 0.86, α for AYDA was 0.89, α for AMÖ-U was 0.89, and α for Beck anxiety scale was 0.87, that is, the overall scale reliabilities were quite high. In order to test the invariance over time, the TAI-T was administered to people from the same sample group shortly after the first administration for test-retest. The total and factor scores from the pre-test and post-test were compared. In the test-retest, a significant relationship was found between TAI-T, TAI-E and TAI-W scores in all pre-test and post-test scores.

CHAPTER 4

RESULTS

The main objective of this study was to re-examine the reliability and validity of the TAI-T. To this end, a confirmatory factor analysis was conducted to check the factorial structure of the TAI-T. Subsequently, correlation analyses were performed using AYDA Test Anxiety Scale the Spielberger State Anxiety Inventory (STAI), the Beck Anxiety Inventory, and the Academic Motivation Scale for examining the validity evidence based on criterion measures. Group differences in TAI scores between the exam types (high vs moderate stakes), as well as for counseling service use were compared in order to provide additional validity evidence. And finally, Cronbach alpha coefficients and test-retest reliability coefficient were employed to assess the reliability of the TAI-T. The results below first present the descriptive statistics and normality tests of the instruments. Then, the results for the validity and the reliability of the TAI-T are presented following the order of research questions.

4.1 Descriptive statistics and normality tests

Firstly, descriptive statistics of the scale scores were examined in the study. In order to achieve this objective, the scales scores utilized for middle and high school students were analyzed. The table below shows descriptive statistics (mean, standard deviation, minimum, maximum, skewness and kurtosis) for the scale and subscales scores for middle and high school students together.

Table 3. Descriptive Statistics for the Scales and Factors for the Middle and High School Student Sample

Scales and Subdimensions	<i>f</i>	<i>M (SD)</i>	Min-Max	Skewness	Kurtosis
TAI Total	1647*	43.20 (12.17)	20-80	0.21	-0.60
TAI Worry	1647	16.09 (5.40)	8-32	0.46	-0.51
TAI Emotionality	1647	27.11 (7.61)	12-48	0.08	-0.66
AYDA Total	1633*	45.79 (12.99)	9-75	-0.01	-0.66
AYDA Cognitive Anxiety	1633	27.19 (8.89)	6-45	-0.07	-0.65
AYDA Social factors related anxiety	1633	18.59 (5.54)	3-30	0.04	-0.69
STAI Total	1642	46.61 (6.76)	20-76	0.29	1.41

* Differences in frequencies are due to missing data.

As indicated in Table 3. the number of participants (*f*) slightly varies across the scales. This discrepancy is due to missing data, particularly for the AYDA scale. In the paper-based version of the survey, the AYDA scale was placed at the end of the questionnaire. As a result, some students did not complete the final section.

Therefore, the frequencies for the AYDA-related variables are slightly lower than those for the TAI and STAI scales.

Additionally, the descriptive analysis of each scale includes the mean and standard deviation values for the various scales measuring test anxiety and academic motivation. The mean score of the TAI Total Score was 43.20 (12.17), minimum 20, maximum 80, skewness was 0.21, kurtosis was -0.60. The mean TAI Worry Score was 16.09 (5.40), minimum 8, maximum 32, skewness value was 0.46, kurtosis value was -0.51. The mean TAI Emotionality Score was 27.11 (7.61), minimum 12, maximum 48, skewness value was 0.08, kurtosis value was -0.66. The mean AYDA Total Score was 45.79 (12.99), minimum 9, maximum 75, skewness value was -0.01, kurtosis value was -0.66, the mean AYDA Cognitive Anxiety subscale score was 27.19 (8.89), minimum 6, maximum 45, skewness value was -0.07, kurtosis was -0.65, the mean score of AYDA Social Factor Related Anxiety was 18.59 (5.54), minimum 3, maximum 30, skewness was 0.04, kurtosis was -0.69. The mean STAI total score was 46.61 (6.76), minimum 20, maximum 76, skewness value was 0.29, kurtosis value was 1.41. The skewness and kurtosis values for the total scores and the factors of the scale were examined and found to fall between +1.5 and -1.5.

Accordingly, it was determined that the scale scores exhibit a normal distribution.

In addition to the descriptive analysis for the middle and high school student sample reported above, the same analyses were conducted for the university students. The Test Anxiety Inventory (TAI) total score had a mean of 37.50 (SD = 8.85), with a minimum score of 21, a maximum score of 60, a skewness value of 0.49, and a kurtosis value of 0.05. The TAI Worry subscale had a mean score of 13.62 (SD = 3.47), with a minimum score of 8, a maximum score of 24, a skewness value of 0.58, and a kurtosis value of 0.26. The Emotionality subscale of the TAI had a mean score

of 23.86 (SD = 6.49), with a minimum score of 13, a maximum score of 40, a skewness value of 0.74, and a kurtosis value of 0.51. The Beck Anxiety Inventory had a mean of 15.61 (SD = 9.60), with a minimum score of 0, a maximum score of 36, a skewness value of 0.48, and a kurtosis value of -0.55.

The Academic Motivation Scale for university students total score had a mean of 120 (SD = 27.38), with a minimum score of 50, a maximum score of 166, a skewness value of -0.92, and a kurtosis value of 0.73. For the Academic Motivation Scale Intrinsic subscales: The Intrinsic Motivation to Experience Stimulation (IMES) subscale had a mean of 16.71 (SD = 6.09), with a minimum score of 4, a maximum score of 28, a skewness value of 0.01, and a kurtosis value of -0.73. The Intrinsic Motivation to Accomplish (IMTA) subscale had a mean of 16.30 (SD = 6.55), with a minimum score of 4, a maximum score of 28, a skewness value of 0.13, and a kurtosis value of -0.65. The Intrinsic Motivation to Know (IMTK) subscale had a mean of 20.88 (SD = 6.31), with a minimum score of 4, a maximum score of 28, a skewness value of -0.88, and a kurtosis value of 0.07.

Table 4. Descriptive Statistics for the Scales and subscales for the University Student Sample ($n=57$)

Scales and Subdimensions	<i>M (SD)</i>	Min-Max	Skewness	Kurtosis
TAI Total	37.50 (8.85)	21-60	0.49	0.05
TAI Worry	13.62 (3.47)	8-24	0.58	0.26
TAI Emotionality	23.86 (6.49)	13-40	0.74	0.51
Beck Anxiety Inventory Total	15.61 (9.60)	0-36	0.48	-0.55
Academic Motivation Scale Total	120 (27.38)	50-166	-0.92	0.73
Academic Motivation Scale Intrinsic Motivation to Know	20.88 (6.31)	4-28	-0.88	0.07
Academic Motivation Scale Intrinsic Motivation to Accomplish	16.30 (6.55)	4-28	0.13	-0.65
Academic Motivation Scale Intrinsic Motivation to Experience Stimulation	16.71 (6.09)	4-28	0.01	-0.73
Academic Motivation Scale Extrinsic Motivation to Identified Regulation	21.50 (6.06)	5-28	-1.07	0.33
Academic Motivation Scale Extrinsic Motivation to Introjected Regulation	15.52 (6.14)	4-26	0.16	-1.08
Academic Motivation Scale Extrinsic Motivation to External Regulation	19.32 (5.94)	4-28	-0.61	-0.16
Academic Motivation Scale Amotivation	9.74 (5.95)	4-28	1.17	0.60

For extrinsic motivation subscales: The Extrinsic Motivation to Identified Regulation (EMID) subscale had a mean of 21.50 ($SD = 6.06$), with a minimum

score of 5, a maximum score of 28, a skewness value of -1.07, and a kurtosis value of 0.33. The Extrinsic Motivation to Introjected Regulation (EMIN) subscale had a mean of 15.52 ($SD = 6.14$), with a minimum score of 4, a maximum score of 26, a skewness value of 0.16, and a kurtosis value of -1.08. The Extrinsic Motivation to External Regulation (EMER) subscale had a mean of 19.32 ($SD = 5.94$), with a minimum score of 4, a maximum score of 28, a skewness value of -0.61, and a kurtosis value of -0.16. For the Amotivation (AMOT) subscale, the mean score was 9.74 ($SD = 5.95$), with a minimum score of 4, a maximum score of 28, a skewness value of 1.17, and a kurtosis value of 0.60. When the skewness and kurtosis values of the total scale scores and factors were examined, it was observed that the values ranged between +1.5 and -1.5. Accordingly, it was determined that the scale scores exhibited a normal distribution.

4.2 Validity evidence based on the internal structure of the TAI-T

In order to establish more recent validity evidence for the Test Anxiety Inventory-Turkish version (TAI-T), a series of analyses were conducted responding to related questions. One of the key aspects of validity is factorial structure as a reflection of how well an instrument aligns to the underlying constructs or its theoretical foundations. This section delves into the validity evidence for TAI-T, focusing on the factor structure and the extent to which the TAI-T is adequately explained by its two subdimensions, Worry and Emotionality. To evaluate this, Confirmatory Factor Analysis (CFA) was conducted to verify if the data conforms to the hypothesized two-factor model and to assess the appropriateness of the scale's structure. The results from the CFA, including model fit indices and factor loadings, provide insights into the robustness of TAI-T's construct validity.

4.2.1 Is the TAT-T still sufficiently explained by two factorial dimensions, Worry and Emotionality?

To reassess the factorial structure of the Test Anxiety Inventory (TAI), a Confirmatory Factor Analysis (CFA) was conducted. A Confirmatory Factor Analysis (CFA) is a statistical technique employed to ascertain whether the data align with a hypothesized measurement model and to substantiate the factor structure of a scale. This analysis is particularly useful for evaluating the relationships between observed variables and their underlying latent constructs. In the present study, the focus of the CFA was to examine the two-factor structure of the TAI, which encompasses the Worry and Emotionality subdimensions. The model fit indices and factor loadings were employed to assess the scale's validity and its alignment with the theoretical framework.

The Figure 1 below illustrates the factor distribution of the TAI, where the relationships between items and factors were examined. Modifications were made to improve the model fit indices. The model demonstrates an excellent fit, as indicated by the high factor loadings and the logical grouping of items under their respective latent constructs. The strong covariance (.91) between Worry and Emotionality indicates that these dimensions are closely related yet still distinct, thereby supporting the two-factor structure of the TAI.

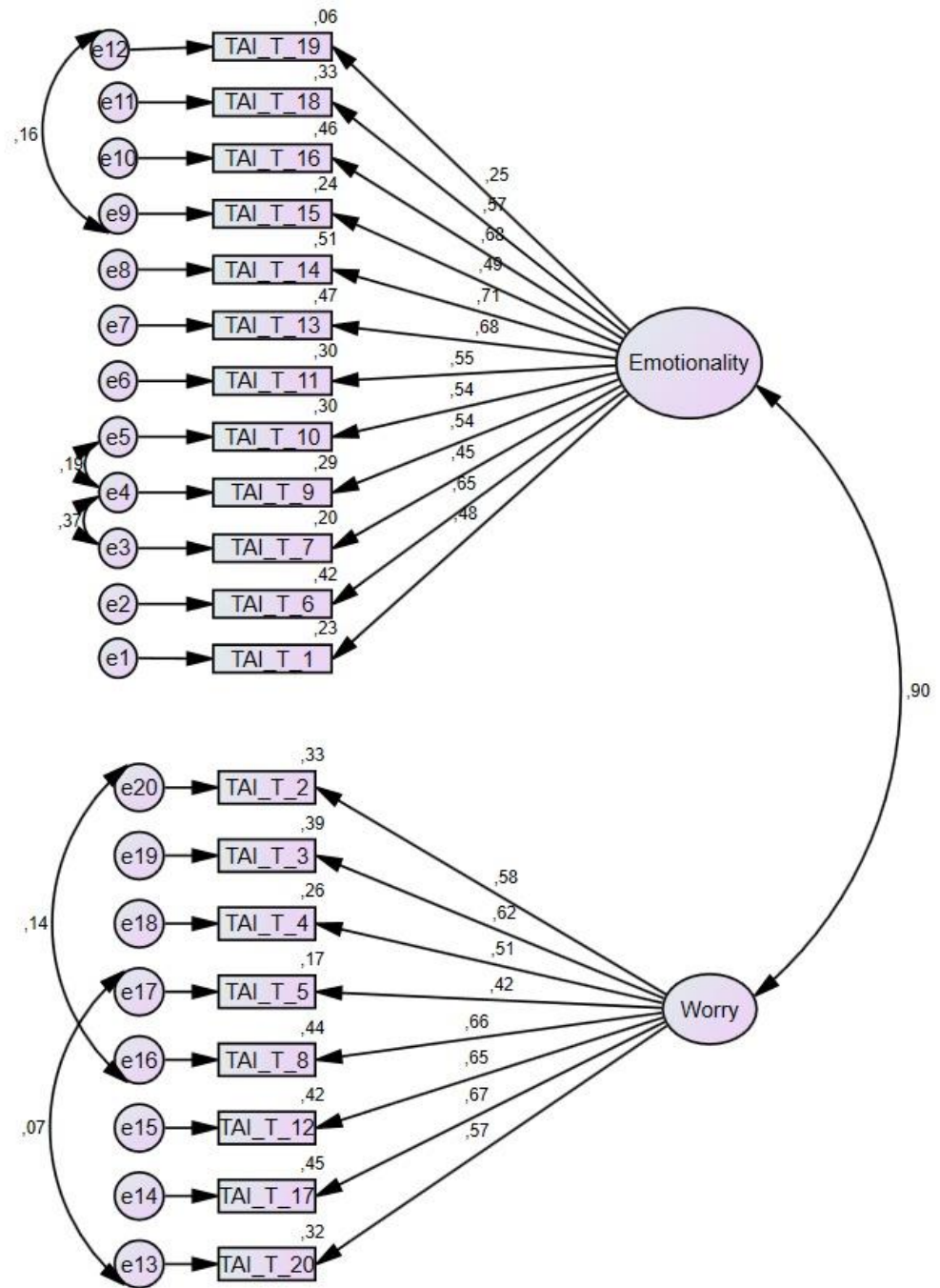


Figure 1. The two factor model factor analysis of the TAI-T

As shown in Table 5. the model fit indices indicate acceptable and good fit values: $\chi^2/df = 40.420 < 5$ (Kline, 2011), GFI = 0.956 > 0.95 (Jöreskog & Sörbom, 1996), CFI = 0.950 > 0.95 (Bentler, 1990), NFI = 0.931 > 0.90, TLI = 0.940 > 0.90 (Tucker & Lewis, 1973), SRMR = 0.035 < 0.05 (Hu & Bentler, 1999), and RMSEA

= 0.046 < 0.05 (Browne & Cudeck, 1993). These results demonstrate that the Chi-Square (CMIN/DF), CFI, NFI, and TLI values fall within the acceptable fit range, while the GFI, SRMR, and RMSEA values indicate a good fit. To improve the model's fit indices, modifications were made by adding covariances between error terms.

Table 5. The Model Fit Indices for the Primary Factor Analysis of the TAI-T

Good Fit	Acceptable Fit	Values
$\chi^2/df < 3$	$\chi^2/df < 5$	4.42
$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI \leq 0.95$	0.96
$0.97 \leq CFI \leq 1$	$0.95 \leq CFI \leq 0.97$	0.95
$0.95 \leq NFI \leq 1$	$0.90 \leq NFI \leq 0.95$	0.93
$0.95 \leq TLI \leq 1$	$0.90 \leq TLI \leq 0.95$	0.94
$0.00 \leq SRMR \leq 0.05$	$0.05 \leq SRMR \leq 0.10$	0.04
$0 < RMSEA < 0.05$	$0.06 < RMSEA < 0.08$	0.05

Another important indicator in confirmatory factor analysis is the significance of the regression coefficients. The Table 6. above presents the standardized regression coefficients for the items in the subdimensions of the TAI. As shown in the table, all items have regression coefficients of 0.25 or higher. Furthermore, the effects of the Worry and Emotionality factors on the latent variable TAI-T are found to be significant and excellent in magnitude.

Table 6. Regression Coefficients for the Model Obtained from the Primary Factor Analysis of the TAI-T

Item	Factor	Regression Coefficient
TAI 1	← Emotionality	0.47
TAI 6	← Emotionality	0.65
TAI 7	← Emotionality	0.45
TAI 9	← Emotionality	0.53
TAI 10	← Emotionality	0.54
TAI 11	← Emotionality	0.54
TAI 13	← Emotionality	0.68
TAI 14	← Emotionality	0.71
TAI 15	← Emotionality	0.48
TAI 16	← Emotionality	0.67
TAI 18	← Emotionality	0.57
TAI 19	← Emotionality	0.25
TAI 20	← Worry	0.56
TAI 17	← Worry	0.67
TAI 12	← Worry	0.65
TAI 8	← Worry	0.66
TAI 5	← Worry	0.41
TAI 4	← Worry	0.50
TAI 3	← Worry	0.62
TAI 2	← Worry	0.57

* $p < 0.001$

The factor analysis revealed that the scale consists of two subdimensions: Worry and Emotionality. The extent to which each item is explained by its respective factor was examined through R^2 values. The explanatory power of the two subtests, Worry and Emotionality, was examined by calculating the average R^2 values for each. The Worry subtest, consisting of items TAI-T 2, 3, 4, 5, 8, 12, 17, and 20,

accounted for approximately 34.6% of the variance in exam anxiety scores. In contrast, the Emotionality subtest, formed by items TAI-T 1, 6, 7, 9, 10, 11, 13, 14, 15, 16, 18, and 19, explained 31.3% of the variance. These results indicate that both subtests provide substantial contributions to understanding the variability in exam anxiety, with the Worry subtest exhibiting a slightly stronger explanatory power.

4.2.2 Are the internal correlations among the two factor scores of the TAI Worry, TAI Emotionality and TAI Total scores sufficiently high?

As part of the internal structural validity, relationships among the TAI-T scores were also examined. Pearson Product Moments Correlation Coefficient analyses were conducted to investigate the relationships between TAI-T, TAI- Worry, and TAI-Emotionality.

Table 7. Interrelationship between TAI Total, TAI Worry and TAI Emotionality dimensions ($N=1704$)

TAI-T	1	2	3
1. TAI Total	1		
2. TAI Worry	0.90*	1	
3. TAI Emotionality	0.95*	0.73*	1

* $p < 0.001$

As Table 7. above shows, the analyses revealed that both the Worry and Emotionality subscales had strong and positive relationships with the total score obtained from the TAI-T, $r = .90$ and $.95$, respectively. Correlations between the subscales was somewhat lower ($.73$) yet still strong ($p < .001$). This was supportive

of the strong internal structure as well as distinct structure of the bidimensional nature of the TAI-T.

4.3 Validity evidence based criterion measures

To establish the validity of the TAI-T (Test Anxiety Inventory), it is essential to investigate how the scale correlates with other established measures of anxiety and related constructs. Validity evidence based on criterion measures helps to determine whether the TAI-T is consistent with other recognized tools used to assess similar psychological constructs. In this section, the relationship between the TAI-T and other anxiety measures, such as the AYDA Test Anxiety Scale, Spielberger's Trait Anxiety Inventory (STAI), and the Beck Anxiety Scale, is examined. Additionally, the link between academic motivation and test anxiety is explored to assess whether the TAI-T can effectively capture the nuances of anxiety in academic contexts.

4.3.1 Does TAI-T positively correlate with another test anxiety measure, AYDA?

To assess the concurrent validity of the TAI-T, its relationship with the AYDA Test Anxiety Scale was analyzed. This analysis helps determine whether the TAI-T, a measure of test anxiety, correlates with another established test anxiety scale, AYDA.

Table 8. The Relationships of AYDA with the TAI Total, TAI Worry and TAI Emotionality Scores among Middle and High School Students ($N=1704$)

TAI-T	AYDA Total (r)
TAI Total	0.68*
TAI Worry	0.64*
TAI Emotionality	0.63*

* $p < 0.001$

As part of concurrent validity, the relationship between the TAI and the AYDA Test Anxiety scores were examined. Table 8. above presents the relationships between the TAI Total, TAI Worry, and TAI Emotionality scores among middle and high school students ($N = 1704$). The results revealed that all the correlations were moderate and positive between the AYDA Total score and the three TAI-T scores. Specifically, the TAI-Total score was moderately positively correlated with the AYDA Total score ($r = 0.68, p < 0.001$). Similarly, both the TAI-Worry score ($r = 0.64, p < 0.001$) and the TAI-Emotionality score ($r = 0.63, p < 0.001$) exhibited moderately positive correlations with the AYDA Total score. These findings suggest that as test anxiety, worry, and emotionality increase, so do the total AYDA scores, all with statistically significant positive relationships.

4.3.2 Does TAI-T positively correlate with Spielberger trait anxiety scale?

To further examine the validity of the TAI-T, its relationship with Spielberger's Trait Anxiety Inventory (STAI) was explored. This analysis helps determine whether test anxiety, as measured by TAI-T, correlates with trait anxiety levels in students.

Table 9. The Relationships of the STAI with the TAI Total, TAI Worry, and TAI Emotionality Scores among Middle and High School Students ($N=1704$)

TAI-T	STAI (r)
TAI Total	0.33*
TAI Worry	0.30*
TAI Emotionality	0.32*

* $p < 0.001$

For an evidence-based validity study, data were collected from middle school and high school students. Initially, the relationship between TAI-T scores and Spielberger's Trait Anxiety Inventory (STAI) scores in middle and high school

students was examined for evidence-based validity. Pearson correlation analyses were conducted to investigate the relationships between TAI-T, TAI Worry, and TAI Emotionality scores among these students. Table 9. above presents the relationships of the STAI scores with the TAI Total, TAI Worry, and TAI Emotionality scores among middle and high school students ($N = 1704$). The results indicate low but positive correlation between the STAI scores and the TAI subscales. Specifically, the TAI-Total score shows a significant positive correlation with the STAI score ($r = 0.33, p < 0.001$). Similarly, both the TAI-Worry ($r = 0.30, p < 0.001$) and the TAI-Emotionality scores ($r = 0.32, p < 0.001$) exhibit significant positive correlations with the STAI scores. These findings suggest that as TAI scores increase among middle and high school students, their STAI scores also increase. In other words, higher levels of trait anxiety and test anxiety are associated with higher levels of total test anxiety, Worry, and Emotionality scores on the TAI-T.

4.3.3 Does TAI-T positively correlate with anxiety as measured by the Beck anxiety scale?

To evaluate the validity of a scale, it is important to examine its relationship with other established measures that assess similar constructs. In this context, in addition to the STAI, the Beck Anxiety Scale was utilized to investigate how it relates to test anxiety, as measured by the TAI-T. This analysis is crucial for understanding whether test anxiety shares common psychological foundations with broader anxiety symptoms.

Table 10. The relationship of the Beck Anxiety Scale with the TAI Total, TAI Worry and TAI Emotionality scores among university students (N=57)

TAI-T	Beck Anxiety Scale (r)
TAI Total	0.43*
TAI Worry	0.33*
TAI Emotionality	0.42*

* $p < 0.001$

Table 10. shows the investigation of the relationship of the Beck Anxiety Scale scores with the TAI Total, TAI Worry, and TAI Emotionality scores among the university students. These relations were low but positive and significant.

Specifically, the TAI-Total score exhibited a significant positive correlation with the Beck Anxiety Scale ($r = 0.43, p < 0.001$), followed by the TAI-Emotionality score ($r = 0.42, p < 0.001$) and the TAI-Worry score ($r = 0.33, p < 0.001$). These findings suggest that higher levels of test anxiety in general, worry, and emotionality specifically are associated with higher levels of anxiety as measured by the Beck Anxiety Scale, all with statistically significant low relationships.

4.3.4 Is there a linear relationship between academic motivation and test anxiety?

Literature review had inconsistent findings on academic motivation and test anxiety relations, thus reassessment of this relation was planned to see whether there was a linear relationship in between as a source of validity of the TAI-T in an evidence-based manner. Table 11. shows the correlations of the Academic Motivation Scale with the TAI Total scores and the TAI Worry and TAI Emotionality subscale scores.

Table 11. The Relationship of the Academic Motivation Scale with the TAI Total, TAI Worry and TAI Emotionality Scores among University Students ($N=57$)

TAI-T	Academic Motivation Scale
TAI Total	0.08
TAI Worry	-0.08
TAI Emotionality	0.16

Pearson correlations were conducted to examine the relationships of the Academic Motivation Scale with the TAI Total, TAI Worry, and TAI Emotionality scores among university students. None of the correlations was significant (ranging from $r = -0.08$ to 0.16 ; $p > .05$). In other words, there was no linear relationship between academic motivation and test anxiety.

4.3.5 Do students preparing for the English Proficiency Exam at Boğaziçi University have higher levels of test anxiety than freshman students?

As part of evidence-based validity studies in the research, certain demographic comparisons were made among participating students. Initially, comparisons were conducted within a university sample. For this purpose, it's examined whether students preparing for the English Proficiency Exam, a high stakes exam, at Boğaziçi University experience higher levels of test anxiety compared to freshman students. Table 12. compares the means of the TAI Total, TAI Worry, and TAI Emotionality scores of the university preparatory and freshman students. Independent samples t-tests were conducted to examine potential differences between the two groups.

Table 12. Comparison of TAI Total, TAI Worry, and TAI Emotionality Scores between University Preparatory ($n = 38$) and Freshmen Students ($n = 19$)

TAI-T	Group	M	SD	t	df	p
TAI Total	Prep	39.78	10.82	1.37	57	.18
	Freshmen	36.42	7.66			
TAI Worry	Prep	13.68	3.14	0.09	57	.93
	Freshmen	13.60	3.65			
TAI Emotionality	Prep	26.10	8.51	1.87	57	.07
	Freshmen	22.80	5.06			

For the TAI-T scores, the preparatory students ($M = 39.78$, $SD = 10.82$) scored slightly higher than the freshmen students ($M = 36.42$, $SD = 7.66$), but this difference was not statistically significant ($t(57) = 1.37$, $p = 0.18$). For the TAI-Worry scores, the preparatory students ($M = 13.68$, $SD = 3.14$) and the freshmen students ($M = 13.60$, $SD = 3.65$) had almost identical mean scores, with no significant group difference ($t(57) = 0.09$, $p = 0.93$). For the TAI-Emotionality scores, however, preparatory students ($M = 26.10$, $SD = 8.51$) scored higher than freshmen students ($M = 22.80$, $SD = 5.06$) and the group difference approached but failed to reach statistical significance ($t(57) = 1.87$, $p = 0.07$). These findings suggest that although one suspects differences between the groups in Emotionality scores of the preparatory and freshmen university students, there was virtually no significant differences in their test anxieties.

4.3.6 Are the test anxiety levels of high school graduates who are to retake the central exam different than the 12th graders who are to take the exam for the first time?

The test anxiety levels of 12th-grade students who were to take the YKS exam for the first time were compared with those of high school graduates who have previously taken the YKS exam in order to see whether high stake exam lead to to higher level of test anxiety. Independent samples t-tests were conducted to examine differences between these two groups. Table 13. presents the means and standard deviations in test anxiety scores as well as the t-values of these group comparisons between 12th-grade students and graduates.

As seen in Table 13. in all TAI-T scores the high school students scored higher than the 12 graders and the difference was larger in the Emotionality score. More specifically, for the TAI-T scores, the high school graduates ($M = 44.85$, $SD = 12.81$) scored significantly higher than the 12th-graders ($M = 40.42$, $SD = 11.95$), with a statistically significant difference ($t(283) = -2.66$, $p = 0.008$). Similarly, for the TAI Worry scores, the high school graduates ($M = 16.64$, $SD = 5.39$) reported higher scores than the 12th-grade students ($M = 15.23$, $SD = 5.07$), and this difference was statistically significant as well ($t(283) = -2.00$, $p = 0.046$).

Table 13. Comparison of TAI Total, TAI Worry, and TAI Emotionality Scores between 12th-Grade Students ($n = 214$) and High School Graduates ($n = 71$)

TAI-T	Group	M	SD	t	df	p
TAI Total	12 th Graders	40.42	11.95	-2.66	283	.008
	Graduates	44.85	12.81			
TAI Worry	12 th Graders	15.23	5.07	-2.00	283	.046
	Graduates	16.64	5.39			
TAI Emotionality	12 th Graders	25.19	7.50	-3.88	283	.004
	Graduates	28.21	8.09			

Regarding the TAI-Emotionality scores, the high school graduates ($M = 28.21$, $SD = 8.09$) also showed higher Emotionality scores compared to the 12th-grade students ($M = 25.19$, $SD = 7.50$), with this difference being statistically significant ($t(283) = -3.88$, $p = 0.004$). These findings indicate that high school graduates report significantly higher levels of test anxiety in both worry and emotionality scores compared to 12th-grade students.

4.3.7 Do students who apply to receive counseling services in schools have more test anxiety compared to students who have no service application?

In the study, the test anxiety levels of middle and high school students who regularly attended their school's counseling services were compared with those who did not.

The students' TAI Total, TAI Worry, and TAI Emotionality scores were compared using an independent samples t-test. Table 14. presents the means, standard

deviations and t-values of these group comparisons. It was clear that the only significant difference was in the Worry scores indicative of higher need for counseling services.

Table 14. Comparison of TAI Total, TAI Worry, and TAI Emotionality Scores between the Students who Sought Support from the School's Counseling Service ($n = 182$) and Those who did not ($n = 1394$)

TAI-T	Group	M	SD	t	df	p
TAI Total	Counseling Support	44.38	11.38	1.52	1645	.128
	No Counseling Support	43.03	12.28			
TAI Worry	Counseling Support	17.19	5.16	3.21	1645	.001
	No Counseling Support	15.93	5.43			
TAI Emotionality	Counseling Support	27.18	7.13	0.16	1645	.872
	No Counseling Support	27.09	7.68			

For the TAI Total scores, the students who sought counseling support ($M = 44.38$, $SD = 11.38$) scored slightly higher than those who did not seek counseling support ($M = 43.03$, $SD = 12.28$), but this difference was not statistically significant ($t(1645) = 1.52$, $p = 0.128$). Likewise, regarding the TAI-Emotionality scores, both groups showed nearly identical scores. The students who sought counseling support ($M = 27.18$, $SD = 7.13$) and those who did not seek counseling support ($M = 27.09$, $SD = 7.68$) exhibited no significant difference ($t(1645) = 0.16$, $p = 0.872$). However,

for the TAI-Worry scores, the students who sought counseling support ($M = 17.19$, $SD = 5.16$) scored significantly higher than those who did not seek counseling support ($M = 15.93$, $SD = 5.43$), with a statistically significant difference ($t(1645) = 3.21$, $p = 0.001$). These findings suggest that students who sought counseling support report significantly higher levels of worry compared to those who did not seek counseling, but there were no significant differences in test anxiety or emotionality between the two groups.

4.4 Reliability of the TAI-T

The reliability of the Turkish Test Anxiety Inventory (TAI-T) was reevaluated in two questions: internal consistencies and test-retest reliabilities of the TAI-T. The internal consistency was tested using Cronbach's Alpha for each of the subscales and for the total scale. Cronbach's Alpha is a widely utilized method for assessing internal consistency, with values exceeding .70 deemed acceptable (Nunnally & Bernstein, 1994). In this study, the Cronbach's Alpha values for the TAI Total (overall test anxiety), TAI Worry, and TAI Emotionality subscales were calculated. Another source of reliability was reevaluating the score stabilities of the TAI-T over about a month interval through test-and-retest correlations between the TAI-T scores. Below findings of these reliability analyses are reported.

4.4.1 Internal consistencies: Are the item to subscale, item to total score, odd-even item, first and second halves correlations and internal consistencies (Cronbach alpha coefficients) of the TAI-T within acceptable limits compared to earlier TAI values? In this section, the internal consistency of the Turkish version of the Test Anxiety Inventory (TAI-T) is assessed through multiple reliability analyses. Specifically, item-to-subscale, item-to-total score, odd-even item, and first-second half correlations are examined to determine the extent to which individual items contribute to their respective subscales and the overall scale.

Table 15. Summary of Worry Subscale Internal Consistencies

Subcale	Item-Subscale	Item-TAI	Odd-Even	First Half-
Items		Total	Correlation	Second Half
Worry	r	r	r	r
TAI 2	.32*	.53*	.41*	.38*
TAI 3	.38*	.56*		
TAI 4	.36*	.44*		
TAI 5	.24*	.39*		
TAI 8	.39*	.59*		
TAI 12	.33*	.58*		
TAI 17	.40*	.61*		
TAI 20	.26*	.54*		

* $p < .001$

Table 15. presents the internal consistency analyses for the worry subscale of the Turkish version of the Test Anxiety Inventory (TAI-T). The worry subscale score is calculated by summing the responses to TAI 2, TAI 3, TAI 4, TAI 5, TAI 8,

TAI 12, TAI 17, and TAI 20. The item-to-worry subscale correlations (ranging from $r=.24$ to $r=.40$) indicate that each item contributes to the subscale in a moderate manner. The highest correlation was observed for TAI 17 ($r=.40$), while TAI 5 had the lowest correlation ($r=.24$). Similarly, item-to-total score correlations (ranging from $r=.26$ to $r=.49$) suggest that all worry items have moderate associations with the total TAI-T score, with TAI 17 again showing the highest correlation ($r=.49$).

Furthermore, the odd-even item correlation ($r=.41$) suggests adequate internal consistency between alternating items. The first-half to second-half correlation ($r=.38$) also indicates a reasonable level of reliability between the two halves of the worry subscale. The first half of the subscale consists of TAI 2, TAI 3, TAI 4, and TAI 5, while the second half includes TAI 8, TAI 12, TAI 17, and TAI 20. These results are comparable to previous findings reported in studies on the original TAI, supporting the reliability of the Turkish adaptation.

In conclusion, the results demonstrate that the Worry subscale exhibits acceptable internal consistency, with individual items contributing meaningfully to both the subscale and the overall measure of test anxiety.

Table 16. Summary of Emotionality Subscale Internal Consistencies

Subscale	Item-Subscale	Item-TAI	Odd-Even	First Half-
Items		Total	Correlation	Second Half
Emotionality	r	r	r	r
TAI 1	.26*	.43*	.39*	.54*
TAI 6	.43*	.60*		
TAI 7	.28*	.46*		
TAI 9	.36*	.54*		
TAI 10	.33*	.53*		
TAI 11	.35*	.51*		
TAI 13	.51*	.61*		
TAI 14	.48*	.64*		
TAI 15	.37*	.45*		
TAI 16	.43*	.61*		
TAI 18	.40*	.51*		
TAI 19	.09*	.23*		

* $p < .001$

Table 16. presents the internal consistency analyses for the emotionality subscale of the Turkish version of the Test Anxiety Inventory (TAI-T). The emotionality subscale score is calculated by summing the responses to TAI 1, TAI 6, TAI 7, TAI 9, TAI 10, TAI 11, TAI 13, TAI 14, TAI 15, TAI 16, TAI 18, and TAI 19. The item-to-emotionality subscale correlations (ranging from $r = .09$ to $r = .51$) indicate that most items contribute to the subscale in a moderate manner. The highest correlation was observed for TAI 13 ($r = .51$), while TAI 19 had the lowest correlation ($r = .09$). As presented in Table 17. while the item-subscale correlation of TAI 19 ($r =$

.09) reached statistical significance ($p < .001$) due to the large sample size ($N = 1704$), its effect size fell below the conventional threshold for practical significance ($r \geq .30$; Cohen, 1988). Although statistically detectable, this trivial association suggests limited contribution to the subscale's construct validity.

Similarly, item-to-total score correlations (ranging from $r=.11$ to $r=.54$) suggest that Emotionality items generally show moderate associations with the total TAI-T score, with TAI 13 again showing the highest correlation ($r=.54$).

Furthermore, the odd-even item correlation ($r=.39$) suggests adequate internal consistency between alternating items. The first-half to second-half correlation ($r=.54$) indicates a strong level of reliability between the two halves of the emotionality subscale. The first half of the subscale consists of TAI 1, TAI 6, TAI 7, TAI 9, TAI 10, and TAI 11, while the second half includes TAI 13, TAI 14, TAI 15, TAI 16, TAI 18, and TAI 19. These results are comparable to previous findings reported in studies on the original TAI, supporting the reliability of the Turkish adaptation.

In conclusion, the results demonstrate that the Emotionality subscale exhibits acceptable internal consistency, with individual items contributing meaningfully to both the subscale and the overall measure of test anxiety.

To evaluate the internal consistency of the TAI-T, various statistical measures were employed, including item-total correlations and Cronbach's Alpha coefficients. These analyses provide a comprehensive assessment of whether the scale maintains coherence across its items and subscales, reinforcing its robustness as a reliable measure of test anxiety.

Table 17. The Reliability Analyses of the TAI Total, TAI Worry, and TAI Emotionality Scores ($N = 1704$)

TAI-T	Cronbach's Alpha	Mean Item-Total Correlation	Range of Item-Total Correlations
TAI Total	0.89	0.52	0.39-0.64
TAI Worry	0.80	0.53	0.39-0.61
TAI Emotionality	0.84	0.51	0.23-0.64

Table 17. presents the reliability analysis results for the TAI-T, TAI-Worry, and TAI-Emotionality dimensions, based on a sample of 1704 participants. The Cronbach's Alpha for TAI Total is 0.89, indicating excellent internal consistency. The mean item-total correlation is 0.52 suggesting a moderate to strong association between the individual items and the total scale. The range of item-total correlations spans from 0.39 to 0.64, demonstrating that all items contribute to the scale's reliability, though there is some variability in the strength of their correlations with the total score. The analysis of the Test Anxiety Inventory (TAI) reveals strong psychometric properties. Item-means correlations indicate a consistent response pattern across the scale. Standard deviations suggest moderate variability in participant responses, reflecting diverse levels of test anxiety within the population. Item-total correlations are predominantly moderate to high, demonstrating that most items contribute effectively to the overall construct measurement. However, one item- TAI 19 shows a notably low correlation (0.23) with the total score, suggesting that it may be less aligned with the construct compared to the others. Despite this, the overall reliability of the scale remains robust, confirming its suitability for assessing

test anxiety in the studied population. Item to total, standard deviation, correlations if the items deleted can be found Appendix AA.

The Cronbach's Alpha for the Worry dimension is 0.80, reflecting good internal consistency. The mean item-total correlation is 0.53, which is similar to the TAI Total, indicating moderate to strong associations. The item-total correlation range for the TAI Worry is 0.39 to 0.61, suggesting that most items are reasonably well aligned with the construct, although there is slight variability in their correlations. The Cronbach's Alpha for the Emotionality dimension is 0.84, indicating good internal consistency. The mean item-total correlation of 0.51 suggests a moderate strength of relationship between items and the total scale. The item-total correlation range for the TAI Emotionality is from 0.23 to 0.64, with a wider spread, indicating that some items may be more strongly related to the overall emotionality construct, while others show weaker associations.

Overall, all three scores itemwise (TAI Total, TAI Worry, and TAI Emotionality) demonstrate acceptable to good internal consistency. The range of item-total correlations indicates that while most items are contributing meaningfully to the reliability of their respective scales, there is some variation in how strongly individual items are associated with the total score.

4.4.2 Test-retest correlations: Does the TAI-T yield sufficiently similar scores when retaken after a time period (3 weeks)?

One of the fundamental indicators of a scale's reliability is stability of its scores over time. To determine whether the TAI-T produces consistent results across different time administrations, a test-retest reliability analysis was conducted. This assessment provides insight into the robustness and dependability of the instrument in measuring

test anxiety consistently. The time lag in between the two time points was 3 weeks, 20 days to be exact. Table 18. below presents the test-retest correlation coefficients for the TAI Total, TAI Worry, and TAI Emotionality scores.

Table 18. Test and Retest Score Correlation Coefficients

TAI-T	r
TAI Total	0.81*
TAI Worry	0.88*
TAI Emotionality	0.93*

* $p < 0.001$

The correlation between the test and retest scores for the TAI Total is 0.81, indicating a strong and significant positive relationship ($p < 0.001$). This suggests that the overall test anxiety measure is stable over time. The correlation between the test and retest scores for the TAI Worry subscale is 0.88, which is very strong and highly significant ($p < 0.001$). This indicates that the Worry aspect of test anxiety shows excellent stability over time. The correlation between the test and retest scores for the TAI Emotionality subscale is 0.93, which is the highest among the three scales and indicates an excellent and highly significant stability ($p < 0.001$). This shows that emotionality is the most consistent dimension in terms of test-retest reliability. In sum, all three TAI-T scores, namely TAI Total, TAI Worry, and TAI Emotionality demonstrate strong test-retest reliability, with significant positive correlations, indicating that these measures are stable and reliable over time. The Emotionality subscale shows the highest stability, followed by Worry and Total test anxiety.

4.5 Summary of results

This study aimed to reassess the psychometric properties of the Turkish version of the Test Anxiety Inventory (TAI-T) by evaluating its validity and reliability. As to internal validity evidence, confirmatory factor analysis (CFA) results provided strong support for the bifactorial structure of the scale, consisting of the Worry and Emotionality subscales. Intercorrelations of the subscales with the total TAI and between themselves also indicated both convergence and divergence of the two factors. The model fit indices indicated an excellent fit, confirming that the theoretical structure of the scale remains applicable to contemporary student populations.

In terms of validity based on criterion measures, the TAI-T demonstrated significant positive correlations with well-established anxiety measures, including the AYDA Test Anxiety Scale, supporting its concurrent validity, the Spielberger State-Trait Anxiety Inventory (STAI), the Beck Anxiety Inventory. However, no significant relationship was observed between the TAI-T and the Academic Motivation Scale suggesting that test anxiety and academic motivation may operate as distinct constructs or their relations are not linear.

Additionally, a comparison was made between the test anxiety levels of 12th-grade students and those of graduates preparing to retake the university entrance exam expecting that the same exam would be a high stakes exam for the high school graduate group. The results showed that graduates had higher levels of test anxiety. Likewise, a comparison between the test anxiety levels of English Preparatory students (Proficiency being a high stake exam) and freshman regular final exams. The results from these comparisons indicated that no notable differences in anxiety

levels were observed between preparatory students and first-year university students, yet student representation was very limited to draw conclusions.

Another comparison was made between students who utilize school counseling services with those who do not. Students who sought counseling support reported significantly higher levels of worry compared to those who did not seek counseling, but there were no significant differences in terms of overall test anxiety or emotionality responses between the two groups.

Reliability analyses provided comprehensive evidence for the robustness of the TAI-T as a measurement tool. Correlations between individual items and the total score ranged from .23 to .64 for the Emotionality subscale and from .39 to .61 for the Worry subscale. Item-subscale correlations ranged from .09 to .51 for Emotionality and from .24 to .40 for Worry. Odd-even item and first-half/second-half correlations, revealed moderate consistency, further supporting the internal structure of the scale. However, certain items, such as TAI-T 19, showed notably weaker correlations with others, indicating a potential misalignment with the overall construct and suggesting the need for further evaluation in future studies.

For the total score, Cronbach's alpha was found to be 0.89; for the Worry subscale, it was 0.80; and for the Emotionality subscale, it was 0.84, all indicating high internal consistencies. Additionally, test-retest reliability analyses conducted with a three-week interval demonstrated strong score stability, particularly for the Emotionality subscale, reinforcing the consistency of the scale over time.

CHAPTER 5

DISCUSSION

In this section, the results presented in the previous chapter are analyzed in detail. First, the findings are discussed in relation to the relevant literature to contextualize them within existing research. Subsequently, the potential implications of the updated validity and reliability of the TAI-T for the field of education are explored. Finally, the limitations of the study are acknowledged as followed by the recommendations for future researchers.

The Turkish version of the TAI was first adapted into Turkish in 1985. Since its adaptation, it has been used in various educational settings and continues to be widely utilized. Therefore, updating the psychometric properties of the Turkish version of the TAI has become essential.

The present study aimed to reexamine the psychometric properties of the Turkish version of the Test Anxiety Inventory (TAI-T) and assess its continued validity and reliability in the context of contemporary educational settings. Given the pivotal role of precise test anxiety assessment in both research and clinical applications, this reexamination addresses a long-standing need to ascertain whether TAI-T still remains a valid and reliable instrument for Turkish students.

The descriptive statistics for the scales and factors utilized in this study indicated a normal distribution, with skewness and kurtosis values falling within the range of +1.5 to -1.5. These values fall within the acceptable range for normality, thereby supporting the assumption of normal distribution for the data. Similar results have been reported in other studies assessing test anxiety, where the values for skewness and kurtosis fell within the normative range (Spielberger et al., 2010). The

absence of extreme skewness and kurtosis suggests that the data for the TAI-T, and for the other scales, are not significantly biased and are suitable for further statistical analysis, such as factor analysis.

5.1 Discussion based on research questions of the study

5.1.1 Validity results of TAI-T

In the first Turkish adaptation study, both explanatory and confirmatory factor analyses were applied (Albayrak-Kaymak, 1985). In this study, only confirmatory factor analysis was performed. The results of the confirmatory analysis show that the TAI-T retains its bifactorial structure of Worry and Emotionality, consistent with its original validation. This supports the construct validity of the inventory and is consistent with the theoretical framework proposed by Spielberger (1980) and Morris and Liebert (1967). The subscales- Worry and Emotionality continue to capture the cognitive and affective dimensions of test anxiety that are fundamental to understanding students' experiences in assessment settings. In short, it can be said that TAT-T still sufficiently explained by two factorial dimensions, Worry and Emotionality.

The evidence-based validity of the Turkish version of the Test Anxiety Inventory (TAI-T) was investigated in addition to construct validity which assessed using confirmatory factor analysis. The evidence-based validity of Turkish version of TAI was also examined through comparisons with various scales (AYDA Test Anxiety Scale, Spielberger's Trait Anxiety Inventory, Beck Anxiety Inventory and Academic Motivation Scale) and demographic differences.

For the purpose of examining evidence-based validity of Turkish version of TAI, first the concurrent validity of the Turkish version of the TAI was evaluated by

comparing it with another adapted test anxiety scale. For this reason, AYDA test anxiety scale was utilized. And then the relationships between general anxiety scales and the TAI-T were examined using the STAI and Beck Anxiety Scale.

To evaluate the concurrent validity of the TAI-T, the AYDA was administered to middle and high school students. Findings indicated positive correlations between the AYDA test anxiety scale and the TAI-T as expected. More specifically, a significant positive correlation was found between the total scores of the TAI-T and AYDA as well as with subdimensions of the TAI-T, namely Worry and Emotionality. The findings are consistent with the literature. The TAI-T and AYDA are positively correlated. This was confirmed earlier as AYDA's psychometric properties were examined in relation to the existing TAI-T during its development process by Başol (2017) who reported that AYDA exhibited a high level of correlation with TAI-T. Both of these findings further support the concurrent validity of the TAI-T, reinforcing its reliability as a comprehensive measure of test anxiety in line with established assessment tools.

The TAI-T is a scale designed to measure test anxiety. Additionally, it was anticipated that the TAI-T would exhibit a significant positive correlation with inventories measuring general anxiety. Research suggests a positive correlation between general anxiety and test anxiety (Jung et al., 2001; Sridevi, 2013). Various components of test anxiety, including worry, emotional distress, interference, and lack of confidence, play significant roles in this relationship. Studies have shown that each of these dimensions is uniquely associated with general anxiety. The literature has consistently demonstrated significant relationships between anxiety and test anxiety across all educational levels. For instance, a study conducted with elementary school students revealed that those with high levels of general anxiety also exhibited

elevated test anxiety (Call et al., 1994). Similarly, research focusing on high school students found that test anxiety was significantly associated with both trait anxiety and state anxiety (Mur et al., 2022). These findings are consistent in university samples as well, where students with higher general anxiety levels also reported heightened test anxiety (Ping et al., 2008).

This study employed two distinct anxiety scales to investigate the potential positive relationship between general anxiety and test anxiety. The Beck Anxiety Scale was used for the university student sample. And only the trait anxiety component of the State-Trait Anxiety Inventory (STAI) was utilized for middle and high school students. The analysis revealed that a positive correlation between the trait anxiety component of the STAI and both the total score of the TAI-T and its subscales, Worry and Emotionality. Likewise, the Beck Anxiety Scale had positive correlations with both the total score of the TAI-T and its subscales, Worry and Emotionality. In short, these findings align with the existing literature, confirming significant relationship between general anxiety and test anxiety. The results highlight that students with heightened general anxiety consistently demonstrate elevated test anxiety, emphasizing the interplay between these psychological constructs.

Furthermore, the relationship between test anxiety and academic motivation was examined among freshmen and preparatory students at Boğaziçi University. The purpose of this measurement was to test whether there is a linear relationship between academic motivation and test anxiety. Numerous studies in the literature have investigated the connection between academic motivation and test anxiety often revealing complex and multifaceted structures. Academic motivation frequently emerges as a moderating factor in the relationship between test anxiety and academic

performance. This suggests that the motivational level of students can influence the extent to which test anxiety impacts their academic outcomes (Balogun et al., 2017). For example, significant positive correlations between test anxiety and both intrinsic and extrinsic motivation were noted (Yawa et al., 2023). Moreover, a study by Çelik and Yıldırım (2019) conducted in Türkiye reported a positive relationship between academic motivation and test anxiety. Previous studies also generally identified significant relationships between academic motivation and test anxiety (Adesola, 2018; Ergene, 2011; Rajiah, 2014; Yawa, 2021). However, they often incorporated additional psychological or contextual variables, rather than focusing directly on the bivariate relationship between test anxiety and academic motivation. In contrast, the current study specifically aimed to examine this direct relationship. No significant correlation was found between the two constructs in this sample. This result contributes a nuanced perspective to the existing literature and suggests that the interplay between motivation and test anxiety may vary depending on contextual, demographic, or developmental factors.

One potential explanation for this discrepancy, however, could be the limited sample size of university students included in the study ($N = 57$), which may have reduced the statistical power to detect significant relationships. Furthermore, the application of the Academic Motivation Scale to different level of students might produce different outcomes. For instance, this study focused only university students' academic motivation, whereas Çelik and Yıldırım's (2019) research investigated the academic motivation of middle school students. That is to say, academic motivation and its relationship with test anxiety could also vary across educational levels.

In conclusion, the 2024 application of the Turkish adaptation of the TAI to students revealed that test anxiety is influenced by both general anxiety and trait anxiety. However, contrary to the research hypotheses, no significant relationship was found between academic motivation and test anxiety.

The validity analysis explored the associations between the TAI-T, its subdimensions. That is TAI-Worry and TAI-Emotionality. Results from Pearson correlation analysis demonstrated significant positive correlations between the TAI-T and its subscales, Worry and Emotionality, thereby providing further support for the scale's convergent validity.

As part of the validity analysis, a comparison was conducted to examine differences in test anxiety levels between preparatory and freshmen students. It was expected that preparatory students would exhibit higher levels of anxiety since they have a rather difficult English Proficiency exam. In Türkiye, the test anxiety levels of English preparatory students have been studied in several research efforts. These studies have generally compared the anxiety levels of preparatory students as a group, evaluating the test anxiety levels of preparatory students within their own group (Sarısu & Büyükkarcı, 2018). No study has been identified that specifically measures and compares the anxiety levels of preparatory students and freshmen; therefore the current study differs from other research by comparing the test anxiety levels of preparatory students and freshmen. Interestingly, results from the independent samples t-test revealed no significant differences in test anxiety levels between the two groups at Boğaziçi University. Similarly, no significant differences were found in the subdimensions of the TAI-T, specifically TAI-Worry and TAI-Emotionality, between preparatory and first-year students. It is believed that this finding may result from very limited sample size as only nineteen preparatory

students participated the study to compare with forty freshmen students, both too limited compared to their population sizes. Therefore, the comparisons limited the ability to detect meaningful differences between the groups.

The central university entrance exam (Higher Education Institution Exam, YKS in Turkish) plays a critical role in the lives of Turkish youth, with many 12th-grade students preparing rigorously to secure admission to prestigious universities. Many students fail and some students who fail at first taking choose to retake the exam to try their chances to gain entry into their desired institutions. The process of rePreparing for the exam all over can impose significant psychological pressure, leading to the expectation that the second time they should succeed as they are already graduates with little else to do but to prepare for the YSK. The current study, therefore, expected heightened test anxiety among graduate candidates compared to first-time candidates. With a similar concern for graduate candidates, Korhan and his colleagues (2021) conducted a study during the pandemic period in Türkiye. They examined the differences in test anxiety levels between 12th-grade students who were preparing to take the university entrance exam (YKS) for the first time and students in the graduate group who were retaking the exam, but found no significant difference in test anxiety levels between the two groups. The current study intended to retest this expectation and the results indicated that graduates indeed exhibited significantly higher levels of test anxiety than the first-time candidates providing validity evidence for the TAI-T. This was evident in the TAI-T total score as well as in the subdimensions of Worry and Emotionality, highlighting the increased psychological burden faced by graduates. These elevations in test anxiety may be explained by several factors. Previous unsuccessful exam attempts can increase fear of failure and self-doubt, which heighten anxiety during subsequent preparations.

Graduates often experience intensified pressure from family expectations and social comparisons, adding to their psychological burden. Furthermore, the prolonged period of exam preparation can lead to fatigue and reduced motivation. Concerns about uncertain academic and career prospects may also contribute to their increased levels of anxiety.

Another comparison conducted to assess the evidence-based validity of the study involved examining whether middle and high school students regularly sought support from their school counseling services. The study asked whether students who utilized counseling services would exhibit higher levels of test anxiety. This question was based on an expectation that students already experiencing anxiety, including test anxiety, are more likely to seek assistance from school counseling services. The literature, including studies specific to Türkiye, contains relatively few investigations directly examining the relationship between test anxiety and regular visits to counseling services. However, existing research generally suggests that counseling services play a role in reducing test anxiety (Tanhan et al., 2020).

Although a student's visit to a school counseling service could have multiple reasons, this study specifically investigated whether test anxiety was one of these reasons. When the differences in test anxiety levels between middle and high school students who regularly visit school counseling services and those who did not were compared however, the results indicated no differences in the TAI-T and the TAI-Emotionality scores. The only significant difference was identified in the TAI-Worry subscale. Students who regularly visited counseling services reported significantly higher levels of worry compared to their peers who did not utilize these services.

The study revealed that the majority of students did not regularly utilize the school's counseling services. Among the participants, 1,394 students (88.45 %)

reported not making regular use of these services, compared to only 182 students (11.55%) who stated they did. This significant disparity limits the interpretation of the results by highlighting that many students who may be experiencing anxiety might not be consistently benefiting from available counseling resources. Students' reasons for regularly visiting the existing services were however, beyond the scope of the current study. These findings might be suggesting that while counseling services may attract students who experience greater cognitive worry about tests, they may not fully alleviate the emotional aspects of test anxiety, or students with lower anxiety levels may be less likely to seek help. The lack of difference in emotionality scores could also reflect the effectiveness of counseling in managing emotional distress. Perhaps more importantly, limited utilization rate of counseling services points to potential barriers such as stigma, lack of awareness, or accessibility issues that prevent many students from seeking support. Future research should aim to identify the common reasons in student applications as well as the barriers to applications. In the end, it is of significant importance to explore how counseling interventions can better target different kinds of anxiety. Longitudinal studies would be valuable to assess how counseling impacts anxiety levels over time and whether increased utilization leads to improved outcomes.

In conclusion, despite the fact that not all expectations in the research were fulfilled, the essential findings of this study support the robustness and relevance of the Turkish version of the Test Anxiety Inventory (TAI-T) as a valid and reliable tool for measuring test anxiety across different student populations. The observed positive correlation between general anxiety and test anxiety aligns with existing literature, reinforcing the interconnectedness of these constructs. The lack of a significant relationship between academic motivation and test anxiety in the university sample

suggests that motivation's role may be more complex and context-dependent than previously assumed. Notably, the elevated anxiety levels among students retaking critical exams highlight the additional psychological pressures faced by this group, underlining the need for targeted support strategies. The findings regarding counseling services reveal a gap between the availability and utilization of mental health resources, suggesting possible barriers such as stigma or lack of awareness that need to be addressed to improve student well-being. Together, these results contribute valuable insights to the field, emphasizing the importance of multifaceted approaches to understanding and alleviating test anxiety.

5.1.2 Reliability of the TAI-T

To assess whether the Turkish version of the Test Anxiety Inventory (TAI-T), originally developed and validated in the 1980s, remains a reliable and valid instrument for contemporary use, a comprehensive psychometric evaluation was conducted. This included not only examining the validity the TAI-T but also reliability of TAI-T through several key measures. First, the Cronbach's Alpha values were calculated for the TAI-T total score and its subscales, TAI-Worry and TAI-Emotionality, to determine internal consistency. Additionally, item-total correlation values were analyzed to assess how well individual items contributed to the overall scale. Finally, to evaluate the scale's stability over time, a test-retest method was employed, comparing participants' scores across two time points. These analyses collectively aimed to analyze whether the Turkish version of the TAI-T remains a robust tool for measuring test anxiety in contemporary contexts.

The Cronbach's Alpha values for the Turkish version of the TAI were calculated as 0.89 for the total scale, 0.80 for the Worry subscale, and 0.84 for the

Emotionality subscale. These values exceed the commonly accepted threshold of 0.70, indicating excellent internal consistency for the scale and its subdimensions (Nunnally & Bernstein, 1994). This suggests that the Turkish version of the TAI is a reliable instrument for assessing test anxiety and its components.

Furthermore, an item-total analysis was conducted by systematically removing individual items and examining their item-total correlations and the corresponding Cronbach's Alpha values. The results demonstrated that items contributed meaningfully to the overall structure of the scale, with no item negatively impacting its reliability. This finding reinforces the robustness of the Turkish version of the TAI in capturing test anxiety dimensions effectively.

However, the findings reveal that Item 19 ('My stomach gets upset during exams') exhibited a statistically significant but practically negligible correlation with the Emotionality subscale ($r = .09, p < .001$), falling below the conventional threshold for meaningful item-scale relationships ($r \geq .30$; Cohen, 1988). This suggests only a limited contribution to the subscale's construct validity. Notably, removing Item 19 may actually increase Cronbach's alpha, indicating its potential to compromise internal consistency. The item's weak performance may reflect cultural differences in somatic anxiety expression—where stomach-related symptoms are less central to test anxiety experiences in Turkish samples compared to autonomic symptoms such as sweating, trembling. Alternatively, the phrasing ('upset stomach') might lack sensitivity to capture milder, culturally relevant gastrointestinal distress like 'butterflies'. While retained to preserve the original scale structure, future revisions should consider rewording or replacement with a more discriminative item. This underscores the need to evaluate somatic items in culturally adapted measures beyond statistical criteria alone.

To evaluate the stability of the scales, the test-retest method was employed. The TAI-T, along with its subscales, TAI-Worry and TAI-Emotionality, was re-administered to a sample of 50 students which are 11 and 12 grades three weeks after the initial test. Scores from the pre-test and post-test were compared to assess consistency over time. The results revealed highly significant relationships between the pre-test and post-test scores for TAI-T, TAI-Worry, and TAI-Emotionality, indicating strong test-retest reliability confirming the scale's stability across a three-week interval.

Given the increasing prevalence of exam-related stress in educational environments, the continued psychometric robustness of the Turkish TAI underscores its relevance and applicability for contemporary use. However, future research should aim to retest the questions that did not fulfill the expectations perhaps due to methodological limitations, replicate these findings in larger and more diverse samples, and explore the relationship between test anxiety and other psychological constructs such as emotion regulation and academic performance.

5.2 Comparison of previous TAI-T and new TAI-T

Between 1990 and 1995, under the guidance of Necla Öner, the Test Anxiety Inventory (TAI) was adapted into Turkish for the first time. The validity and reliability of the Turkish version were extensively examined, compiled in a manual to ease its use and the following studies supported that the scale was an effective tool for measuring test anxiety in schools and various other settings in Türkiye. However, overall, these comparative findings over the years highlight the necessity of periodic reevaluation of psychological instruments to capture dynamic changes in the constructs they measure. Therefore, with the passage of time and changing societal

conditions, the psychometric properties of the Turkish version of the TAI needed a series of reanalyses to determine whether it still remains a suitable measurement tool. In the following major conclusions regarding the validity and reliability of the Turkish version of the TAI conducted at two different time points are briefly compared. Comparison overall suggests that the Turkish version of the TAI has retained its psychometric robustness over the decades.

In both studies, factor analysis was initially employed. In the first version, two types of factor analysis were conducted. First, an exploratory factor analysis was used to investigate the number of dimensions in the scale. Subsequently, confirmatory factor analysis was performed to test the existence of the two dimensions. In the current factor analysis of the Turkish version of the TAI, only confirmatory factor analysis was utilized. The results of the confirmatory analysis indicated excellent fit for the two factors under the latent variable of TAI. This confirms that the Worry and Emotionality subscales of the Turkish version of the TAI remain valid subdimensions.

Both the adaptation study conducted in the 1980s and this current reexamination study conducted in 2024, the validity of the scale was assessed. In the first adaptation study, test anxiety scores showed positive relationships with Trait Anxiety via Spielberger Trait Anxiety Scale, State Anxiety before the test, subtests of the Minnesota Counseling Inventory, and problem areas identified in the Student Problem Checklist, with correlations ranging from moderate to low. Additionally, a negative relationship was found with Self-Concept Scale scores, showing moderate correlations. In the reexamination study, test anxiety scores were examined in relation to AYDA Test Anxiety Scale, State Anxiety before the exam, the Beck Anxiety Inventory, and the Academic Motivation Scale. Furthermore, the

relationship between test anxiety and certain demographic variables within the framework of evidence-based validity was explored. STAI Trait Anxiety Scale, AYDA Test Anxiety Scale, and Beck Anxiety Scale seen to have significant and positive relationships with TAI-T. However, academic motivation as measured by the AMS-U had no linear relation with the TAI-T. This may be suggesting a potential shift in how students internalize performance pressure, possibly pointing to increased emotional and cognitive strain rather than motivational decline.

In both studies, the reliability of the TAI was assessed using Cronbach's alpha coefficients and test-retest analyses. The Cronbach's alpha values were found to be consistently high in both studies, indicating strong internal consistency. Similarly, the test-retest analysis in both adaptations demonstrated that TAI scores remained relatively stable over time. This level of score stability supports the scale's reliability over time.

The comparison between the earlier adaptation of the TAI in the 1990s and the recent validation study reveals both continuity and change in the scale's psychometric properties and its relationships with relevant constructs. While both studies demonstrate high internal consistency and temporal stability, confirming the Turkish version's enduring reliability, differences emerge in the patterns of validity evidence, particularly regarding academic motivation. The initial adaptation showed moderate correlations between test anxiety and related anxiety measures, as well as self-concept, reflecting a more integrated view of anxiety within broader emotional and cognitive domains. While the recent study found no significant association between academic motivation and test anxiety it suggested that contemporary students' experiences of test anxiety may be more independent of motivational factors or other factors mediate the relationships.

When comparing the data from 1985 and 2024 for the TAI-T, notable changes in the psychometric properties of item 19 are observed. According to the 1985 data, the item demonstrated moderate alignment with the overall scale, showing correlation values of .49 for university students, .46 for high school students, and .41 for middle school students. However, the 2024 data reveal a substantial decline in this item's correlation, dropping to as low as .23, which negatively impacts the reliability of the scale. This decline suggests that the item may have lost its measurement validity over time and may be replaced by another item with more current relevance. The change observed over this 40-year period is particularly striking. While the item demonstrated acceptable correlations across all age groups in 1985, by 2024 it has become nearly unrelated to the scale. This raises the possibility that the original wording of the item is now interpreted differently by today's student population or that cultural shifts have led to a loss of meaning. Moreover, this change highlights the necessity of periodically reviewing and updating psychological scales to ensure their continued relevance and accuracy.

5.3 Strength of the study

This study re-examined the psychometric properties of the Turkish version of the Test Anxiety Inventory (TAI-T), a widely used instrument in research within the Turkish educational context. Much of the study demonstrates a number of strengths across a range of dimensions.

One of primary strengths lies in its comprehensive approach to psychometric evaluation. Validity was evaluated through a number of rigorous methods, including construct validity, evidence-based validity, and concurrent validity. The use of

diverse and reliable measures ensured a robust and thorough validation process for each of these approaches.

A particularly noteworthy aspect of the study is its use of a wide range of complementary scales to evaluate the validity of the TAI-T. For example, general anxiety was assessed using the Beck Anxiety Scale and Spielberger's Trait Anxiety Inventory, while test anxiety was evaluated using the AYDA Test Anxiety Scale. The employment of both general and specific anxiety measures allows for a nuanced and multifaceted perspective on the validity of the TAI-T. This inclusive methodology serves to reinforce the evidence for the instrument's validity while also underscoring its relevance in capturing the distinct dimensions of anxiety related to academic performance.

Furthermore, the confirmation of the TAI-T's construct validity through confirmatory factor analysis serves to reinforce the instrument's alignment with the theoretical framework of test anxiety. This validation confirms that the Turkish version of the TAI-T effectively measures both the cognitive (Worry) and emotional (Emotionality) dimensions of test anxiety, thereby providing additional support for its applicability in a range of educational and research contexts.

In addition to a comprehensive evaluation of the instrument's validity, the study also employed multiple approaches to assess the reliability of the Turkish version of the TAI-T. The total scale and its subscales exhibited high Cronbach's alpha values, indicating excellent internal consistency. This finding demonstrates that the items within the scale are cohesive and that they measure the intended constructs in a reliable manner.

Furthermore, the study employed a test-retest method to evaluate the stability of the TAI-T over time. The results demonstrated a robust correlation between scores

from the initial and retest administrations, providing compelling evidence for the temporal stability of the scale. These findings confirm that the TAI-T produces consistent results when administered at different time points, thereby further solidifying its reliability.

The inclusion of participants from various educational levels, such as middle school, high school, and university, is a significant strength of this study as it broadens its scope and enhances the generalizability of the findings. By incorporating different age groups and educational stages, the study ensures that its results are applicable to a wide range of students experiencing test anxiety.

This inclusive and comparative approach enhances the rigour of the study in educational contexts and facilitates a more comprehensive understanding of test anxiety. It emphasises the necessity of developing interventions that are tailored to the specific requirements of different student groups. The findings offer valuable insights for educators, counsellors, and policymakers in the development of more effective strategies for the management and reduction of test anxiety in students.

Another notable strength of the study is the inclusion of a high school graduate group who prepare for retaking the university entrance exam. Their inclusion in the study is a unique aspect. They provide contributing valuable insights into this specific context.

Regardless of their statistical significance in relation to test anxiety investigating factors such as academic motivation and the utilization of counselling services, offers a more detailed understanding of the variables that influence the academic life of students. These supplementary elements permit a more comprehensive examination of the variables surrounding test anxiety, elucidating the

manner in which diverse personal and external factors interact to influence lives of students. This can also be considered a strength of the study.

5.4 Limitations of the study and lessons learned for future research

The current study has several limitations. Random selection of the sample was not a possibility, and therefore, the first and the foremost limitation has to do with representation as the sample was selected based on convenience. And directly related to this sample limitation, all participants were students studying in İstanbul only and the university students were from a single university. These restrictions reduce generalizability of the findings. For normative studies random representation would be needed and for broader representation students from different cities or regions would need to be included. Students could exhibit varying levels of test anxiety due to differences in geographical locations, educational policies, school types, socio-economic conditions, and several other cultural factors. Future studies could aim to include a more diverse sample from multiple regions to enhance the external validity of the results.

Representation of the current sample was also limited in relation to school type and sociometric status. It was initially aimed to include both private and public schools to ensure wider representation. However, private schools were generally reluctant to collaborate, which made it difficult to recruit participants from those institutions. This lack of participation may have meant lack of a more heterogeneous sample that could capture the potential differences in test anxiety in students from different educational settings. Future research could explore alternative strategies for increasing participation from private schools to gain a more comprehensive understanding of the phenomenon.

Additionally, size of the sample in some of the analyses were rather small. University sample in particular had this problem. Small sample size limits the statistical power of the study and resulting in leaving some potential effects of test anxiety undetected. Moreover, sample size in group analyses (as in utilization of school counseling services (users vs. non-users) were not comparable; some are much smaller in number, which may have influenced the results. Future studies are advised to use statistical mean to constitute more comparable cell size in group comparisons where some groups are larger than the other.

Other limitations of the study are related to measurement methodology. First, self-report that is open to social desirability influences was the major data collection method. Counseling service use and academic motivation could have been measured by other means like examination of records, ratings of counselors or teachers. However, the methodology was largely restricted with survey method. Future studies could increase different sources of data.

Again related to measurement, this study utilized a rough categorical measure as students who regularly visit school counseling services and those who do not, regardless of the problem type, product and process variables of the services provided. Although a significant difference in Worry levels was observed between the two groups, the specific reasons why some students chose to seek counseling while others did not remain unknown. Factors such as individual coping mechanisms, perceived stigma, accessibility of counseling services, and the severity of anxiety symptoms may have influenced students' decisions to seek or refrain from seeking support. Given these uncertainties, future research should incorporate more specific methods, as well as qualitative measures such as in-depth interviews or focus groups, to gain a more nuanced understanding of the underlying reasons for seeking

counseling. This approach would provide deeper insights into the relationship between test anxiety and help-seeking behavior, ultimately contributing to the development of more targeted and effective intervention strategies.

Finally, the current study was limited in inclusion of various demographic variables and psychological assessment means. For example, in the initial adaptation study of TAI-T conducted in the 1980s, the relationship between TAI-T and personality scales was also examined. These scales explored aspects such as family relationships, social interactions, and school adjustment in relation to TAI-T. However, none of these dimensions were included in this current study. Future researchers may wish to expand their perspectives to provide a fuller picture of variables that may relate to test anxiety.

5.5 Future directions in test anxiety research

In today's conditions of limited public resources but large young populations with limited economic means, examinations remain to be an undeniable reality for Turkish youth. Middle school students work intensively to gain admission to reputable high schools, while high school students strive to enter prestigious universities. This situation does not end at the university level, either. Even after entering university, students are constantly faced with exams such as proficiency tests, midterms, and finals. And as they near graduation, they start preparing for exams that are used to select candidates for career positions. The exams students face at an early age tend to lead a number of problems including anxiety. Research and daily observations show that a significant number of students in Türkiye struggle with test anxiety during the preparation process as well as during the exam. suffer from test anxiety and need to develop coping strategies. Lower performance and failure in

exams are likely to lead to lowered self-esteem. Therefore, studying test anxiety will keep needing attention of counselors as researchers and practitioners. This study shed some light onto future directions for test anxiety research in addition to the above recommendations that could eliminate the limitations that this study suffered.

It is the observation of the thesis advisor that difficulties in recruiting research participants and obtaining support from school administration for research seem to be much less than in the past when the first adaption study on test anxiety was conducted. Therefore, briefer and more practical data collection means gain importance. Future studies may focus on developing a short-form and an online version of the Turkish adaptation of the TAI. Considering that the original TAI has both a shortened and an online format, similar adaptations in Turkish could enhance its usability in different research and practical contexts. A short-form version would be particularly beneficial for large-scale studies or settings where time efficiency is crucial, while an online version could facilitate remote data collection and broader accessibility. To ensure the validity and reliability of these adaptations, future research should conduct comprehensive psychometric evaluations, including factorial structure, internal consistency, and measurement invariance analyses. Such efforts would contribute to the broader applicability of the Turkish TAI in educational and psychological assessments.

Another line of future research could be increasing the relevance of instruments for participants. As part of the reliability analysis, this study examined the TAI-T items in detail and Item 19 stood out as outcast compared to the rest of the items. In light of its consistently low item-total correlation and minimal contribution to internal consistency, future studies might consider removing, revising or replacing Item 19 with a more relevant content. Its limited alignment with the Emotionality

subscale suggests it may not adequately capture culturally relevant expressions of somatic test anxiety. Its revision could enhance the scale's construct validity and overall reliability in Turkish contexts.

Addressing test anxiety as a preventive measure is essential in Türkiye. Psychoeducational interventions and group activities should be conducted in schools to help students manage test anxiety. While implementing these measures, it would be more effective to assess the level of test anxiety students experience and design interventions accordingly. The Turkish version of the Test Anxiety Inventory, examined in this study, emerges as a reliable and valid instrument for measuring test anxiety. Administering this scale to students and organizing interventions based on their test anxiety levels can contribute to reducing test anxiety, enhancing students' well-being, and improving their overall performance in tests.

Students' academic achievement means like grade point averages (GPA) was not included in this study, even though many studies in the literature have examined its relationship with test anxiety. Exclusion of key indicators of academic performance limits the ability to explore how test anxiety might affect students' overall achievement. Future research could consider incorporating academic performance measures to provide a clearer picture of how if at all, test anxiety relates to long-term academic success, rather than just a performance on individual exams.

APPENDIX A

DEMOGRAPHIC INFORMATION FORM

(TURKISH)

KATILIMCI BİLGİ FORMU
Sayın Katılımcı, Bu çalışma Boğaziçi Üniversitesi Rehberlik ve Psikolojik Danışma Programı'nda uzmanlık öğrencisi olan psikolojik danışman Binnur Yeter'in tez araştırmasıdır. Araştırmanın amacı Sınav Kaygı Envanterinin psikometrik özelliklerini incelemektir. Bunun için araştırma paketinde öğrencilerin sınav tutumlarına dair bazı sorular bulunmaktadır. Tüm soruları yanıtlamak yaklaşık 15 dakika sürmektedir. Katılımınız bütünüyle gönüllülük temellidir. Formda kimliğinizi sorgulayan bir soru bulunmamaktadır. Tüm yanıtlar toplu halde ele alınacak ve araştırmacılar dışında kimseyle ilgili hiçbir paylaşılmayacaktır. Katıldığınız takdirde, çalışmanın herhangi bir aşamasında herhangi bir gerekçe göstermeksizin ve herhangi bir olumsuz sonuçla karşılaşmaksızın onayınızı geri çekme hakkına sahipsiniz. Araştırmamızın size herhangi bir risk getirmesi beklenmemektedir. Ancak soruları yanıtlarken psikolojik destek almaya gereksiniminiz olduğunu düşünürseniz okulunuzdaki rehberlik servisine başvurabilirsiniz. Ayrıca aşağıda size destek sunabilecek farklı kaynaklar sıralanmıştır. Katkılarınız için şimdiden teşekkür ederiz.
Cinsiyetiniz: ☐ Kadın ☐ Erkek
Yaşınız:
Dönem not ortalamanız:
Kaçınıcı sınıfta öğrencisiniz?
Anne-babanız: ☐ Birlikte yaşıyorlar ☐ Ayrı yaşıyorlar
Anne-babanız: ☐ Her ikisi de hayatta ☐ Annem vefat etti ☐ Babam vefat etti
Destek almak üzere okulunuzun rehberlik servisine düzenli olarak gider misiniz? (Tek kerelik uğrama değil, haftada ya da Ayda bir şeklinde bir düzeniniz varsa evet kutucuğunu işaretleyiniz.) ☐ Evet ☐ Hayır

APPENDIX B

DEMOGRAPHIC INFORMATION FORM

(ENGLISH)

DEMOGRAPHIC INFORMATION FORM
Dear Participant, This study is part of the thesis research of Binnur Yeter, a specialization student in the Boğaziçi University Guidance and Psychological Counseling Program. The aim of the research is to examine the psychometric properties of the Test Anxiety Inventory. To achieve this, the research package includes questions about students' exam attitudes. It should take approximately 15 minutes to answer all the questions. Your participation is entirely voluntary. The form does not inquire about your identity. All responses will be treated as a whole and will not be disclosed to anyone other than the researchers. If you choose to participate, you have the right to withdraw your consent at any point in the study without providing a reason and without any negative consequences. Our research is not anticipated to pose any risk to you. If you feel that you require psychological support while answering the questions, please contact the guidance service at your school. Additionally, there are various resources listed below that can provide you with support. Thank you for your contribution.
Gender: ☐ Female ☐ Male
Age:
GPA:
What grade are you in?:
Your Parents: ☐ Live Together ☐ Live Separately
Your Parents: ☐ Both are alive ☐ My mother passed away ☐ My father passed away
Do you regularly visit your school's guidance counseling service to get support? (Please check yes if you do not visit once a week, but once a week or once a month). ☐ Evet ☐ Hayır

APPENDIX C

TEST ANXIETY INVENTORY

(TURKISH)

Yönerge: Aşağıda bireylerin kendilerini tanımlamak için kullandıkları bir dizi ifade sıralanmıştır. Bunların her birini okuyun ve genel olarak nasıl hissettiğinizi anlatan ifadenin sağındaki boşluklardan uygun olanı işaretleyin. Burada doğru ya da yanlış ifade yoktur. İfadelerin hiçbirisi üzerinde fazla zaman harcamadan yazılı ve sözlü sınavlarda genel olarak nasıl hissettiğinizi gösteren yanıtı işaretleyin. Lütfen hiçbir soruyu atlamayın.	Hiçbir zaman	Bazen	Sık Sık	Her zaman
1. Sınav sırasında kendimi güvenli ve rahat hissedirim.				
2. O dersten alacağım notu düşünmek sınav sırasındaki başarıyı olumsuz yönde etkiler.				
3. Önemli sınavlarda donup kalırım.				
4. Sınavlar sırasında bir gün okulu bitirip bitiremeyeceğimi düşünmekten kendimi alamam.				
5. Bir sınav sırasında ne kadar çok uğraşırsam kafam o kadar çok karışır.				
6. Sınavlarda kendimi huzursuz ve rahatsız hissedirim.				
7. Önemli bir sınav sırasında kendimi sinirli hissedirim.				
8. Başarısız olma düşünceleri dikkatimi sınav üzerinde toplamama engel olur.				
9. Bir sınava çok iyi hazırlandığım zamanlar bile kendimi oldukça sinirli hissedirim.				
10. Önemli sınavlarda sinirlerim öylesine gerilir ki midem bulanır.				

11. Bir sınav kağıdını geri almadan hemen önce çok huzursuz olurum.				
12. Önemli sınavlarda kendimi adeta yenilgiye iterim.				
13. Sınavlar sırasında kendimi çok gergin hissederim.				
14. Önemli bir sınav sırasında paniğe kapılırım.				
15. Sınavların beni bu kadar rahatsız etmemesini isterdim.				
16. Önemli bir sınava girmeden önce çok endişelenirim (kurarım).				
17. Sınavlar sırasında başarısız olmanın sonuçlarını düşünmekten kendimi alamam.				
18. Önemli sınavlarda kalbimin çok hızlı attığını hissederim.				
19. Sınav sona erdikten sonra endişelenmemeye (kurmamaya) çalışırım.				
20. Sınavlar sırasında öylesine sinirli olurum ki aslında bildiğim şeyleri bile unuturum.				

APPENDIX D

TEST ANXIETY INVENTORY

(ENGLISH)

Instruction: Listed below are a series of statements that individuals use to describe themselves. Read each of these and mark the appropriate blank to the right of the statement that describes how you feel in general. There are no right or wrong statements. Without spending too much time on any of the statements, mark the answer that describes how you generally feel in written and oral tests.	Hiçbir zaman	Bazen	Sık Sık	Her zaman
1. I feel safe and comfortable during the test.				
2. Thinking about the grade I will get in that course negatively affects my success during the tests.				
3. I freeze up during important tests.				
4. During tests, I can't help but wonder if one day I will finish school.				
5. The more I struggle during a test, the more confused I get.				
6. I feel restless and uncomfortable during tests.				
7. I feel nervous during an important test.				
8. Thoughts of failure prevent me from focusing my attention on the test.				
9. Even when I am very well prepared for an exam, I feel very nervous.				
10. During important tests, my nerves get so tense that I get nauseous.				
11. I get very anxious just before I get a test paper back.				
12. I almost defeat myself in important tests.				
13. I feel very nervous during exams.				
14. I panic during an important test.				

15. I wish tests didn't bother me so much.				
16. I worry a lot before taking an important test.				
17. During tests I can't stop thinking about the consequences of failing.				
18. I feel my heart beating very fast during important tests.				
19. After the exam is over, I try not to worry.				
20. During tests, I get so nervous that I forget even things I know.				



APPENDIX E

BECK ANXIETY INVENTORY

(TURKISH)

Aşağıda insanların kaygılı ya da endişeli oldukları zamanlarda yaşadıkları bazı belirtiler verilmiştir. Lütfen her maddeyi dikkatle okuyunuz. Daha sonra, her maddedeki belirtinin BUGÜN DAHİL SON BİR HAFTADIR sizi ne kadar rahatsız ettiğini yandaki uygun yere (x) işareti koyarak belirleyiniz.	Hiç	Hafif Düzeyde (Beni pek Etkilemedi)	Orta Düzeyde (Hoş değildi ama Katlanabildim)	Ciddi Düzeyde (Dayanmakta çok zorlandım)
Bedeninizin herhangi bir yerinde uyuşma veya karıncalanma				
Sıcak/ateşbasmaları				
Bacaklarda halsizlik, titreme				
Gevşeyememe				
Çok kötü şeyler olacak korkusu				
Baş dönmesi veya sersemlik				
Kalp çarpıntısı				
Dengeyi kaybetme duygusu				
Dehşete kapılma				
Sinirlilik				

Boğuluyormuş gibi olma duygusu				
Ellerde titreme				
Titreklik				
Kontrolü kaybetme korkusu				
Nefes almada güçlük				
Ölüm korkusu				
Korkuya kapılma				
Midede hazımsızlık ya da rahatsızlık hissi				
Baygınlık				
Yüzün kızarması				
Terleme (sıcaklığa bağlı olmayan)				

APPENDIX F

BECK ANXIETY INVENTORY

(ENGLISH)

Below are some symptoms that people experience when they are anxious or worried, please read each item carefully. Then, indicate how much the symptom in each item has bothered you IN THE LAST WEEK INCLUDING TODAY by placing an (x) in the appropriate place next to it.	Not at All	Midly but it didn't bother me much	Moderately	Severely
Numbness or tingling				
Feeling Hot				
Wobbliness in legs				
Unable to relax				
Fear of worst happening				
Dizzy or lightheaded				
Heart pounding/racing				
Unsteady				
Terrified or afraid				
Nervous				
Feeling of choking				
Hands Trembling				

Shaky / unsteady				
Fear of losing control				
Difficulty in breathing				
Fear of Dying				
Scared				
Indigestion				
Faded/Lightheaded				
Face Flushed				
Hot/Cold sweats				

APPENDIX G

STATE-TRAIT ANXIETY INVENTORY

(TURKISH)

Aşağıda kişilerin kendilerine ait duygularını anlatmada kullandıkları birtakım ifadeler verilmiştir. Her ifadeyi okuyun, sonra da o anda nasıl hissettiğinizi ifadelerin sağ tarafındaki boşluklardan uygun olanını işaretleyerek (x) belirtin. Doğru ya da yanlış cevap yoktur. Herhangi bir ifadenin üzerinde fazla zaman sarf etmeksizin anında nasıl hissettiğinizi gösteren cevabı işaretleyin.

	Hiç	Biraz	Çok	Tamamiyle
1. Şu anda sakinim.				
2. Kendimi emniyette hissediyorum.				
3. Şu anda sinirlerim gergin.				
4. Pişmanlık duygusu içindeyim.				
5. Şu anda huzur içindeyim.				
6. Şu anda hiç keyfim yok.				
7. Başıma geleceklerden endişe ediyorum.				
8. Kendimi dinlenmiş hissediyorum.				
9. Şu anda kaygılıyım.				
10. Kendimi rahat hissediyorum.				
11. Kendime güvenim var.				
12. Şu anda asabım bozuk.				
13. Çok sinirliyim.				
14. Sinirlerimin çok gergin olduğunu hissediyorum.				
15. Kendimi rahatlamış hissediyorum.				
16. Şu anda halimden memnunum.				
17. Şu anda endişeliyim.				
18. Heyecandan kendimi şaşkına dönmüş hissediyorum.				

19. Şu anda sevinçliyim.				
20. Şu anda keyfim yerinde.				
	Hiç	Biraz	Çok	Tamamiyle
1. Genellikle keyfim yerindedir.				
2. Genellikle çabuk yorulurum.				
3. Genellikle kolay ağlarım.				
4. Başkaları kadar mutlu olmak isterim.				
5. Çabuk karar veremediğim için fırsatları kaçıırım.				
6. Kendimi dinlenmiş hissedirim.				
7. Genellikle sakın, kendime hakim ve soğukkanlıyım.				
8. Güçlüklerin yenemeyeceğim kadar biriktiğini hissedirim.				
9. Önemsiz şeyler hakkında endişelenirim.				
10. Genellikle mutluyum.				
11. Her şeyi ciddiye alır ve etkilenirim.				
12. Genellikle kendime güvenim yoktur.				
13. Genellikle kendimi emniyette hissedirim.				
14. Sıkıntılı ve güç durumlarla karşılaşmaktan kaçınırım.				
15. Genellikle kendimi hüzünlü hissedirim.				
16. Genellikle hayatımdan memnunum.				
17. Olur olmaz düşünceler beni rahatsız eder.				
18. Hayal kırıklıklarını öylesine ciddiye alırım ki hiç unutmam.				
19. Akli başında ve kararlı bir insanım.				
20. Son zamanlarda kafama takılan konular beni rahatsız eder.				

APPENDIX H

STATE-TRAIT ANXIETY INVENTORY

(ENGLISH)

Below are some expressions that people use to describe their feelings. Read each statement, then indicate how you feel at that moment by crossing out the appropriate brackets on the right side of the statement. There are no right or wrong answers. Mark the answer that shows how you feel in the moment without spending too much time on any of the statements.

	Not at All	A little	Somewhat	Very Much So
I feel calm				
I feel secure				
I feel tense				
I feel strained				
I feel at ease				
I feel upset				
I am presently worrying over possible misfortunes				
I feel satisfied				
I feel frightened				
I feel uncomfortable				
I feel self-confident				
I feel nervous				
I feel jittery				
I feel indecisive				
I am relaxed				
I feel content				
I am worried				

I feel confused				
I feel steady				
I feel pleasant				

	Not at All	A Little	Somewhat	Very Much So
I feel pleasant.				
I feel nervous and restless.				
I feel satisfied with myself.				
I wish I could be as happy as others seem to be.				
I feel like a failure.				
I feel rested.				
I am "calm, cool, and collected".				
I feel that difficulties are piling up so that I cannot overcome them.				
I worry too much over something that really doesn't matter.				
I am happy.				
I have disturbing thoughts.				
I lack self-confidence.				
I feel secure.				
I make decisions easily.				
I feel inadequate.				
I am content.				
Some unimportant thought runs through my mind and bothers me.				
I take disappointments so keenly that I can't put them out of my mind.				
I am a steady person.				
I get in a state of tension or turmoil as I think about my recent concerns and interests.				

APPENDIX I

ACADEMIC MOTIVATION SCALE

(TURKISH)

Aşağıdaki dereceleri kullanarak, okula neden gittiğinizi ifadeleri uygun şekilde işaretleyerek cevaplandırınız.

Hiç uyuşmuyor	Biraz uyuşuyor		Orta derecede uyuşuyor	Oldukça uyuşuyor	Tam olarak uyuşuyor	
1	2	3	4	5	6	7

Neden Okula Gidiyorsunuz? Çünkü							
...sadece lise diploması ile ileride iyi bir iş bulamayabilirim.	1	2	3	4	5	6	7
... yeni bir şeyler öğrenirken zevk alıyorum ve tatmin oluyorum.	1	2	3	4	5	6	7
... üniversite eğitiminin, seçtiğim alana daha iyi hazırlanmamda yardımcı olacağını düşünüyorum.	1	2	3	4	5	6	7
... bana ait düşünceleri başkalarıyla paylaşırken çok yoğun duygular yaşıyorum.	1	2	3	4	5	6	7
... dürüst olmak gerekirse, bilmiyorum, aslında okulda boşa zaman harcıyormuşum gibi geliyor.	1	2	3	4	5	6	7
...derslerde kendimi aşarken zevk aldığım için	1	2	3	4	5	6	7
...üniversiteyi bitirebileceğimi kendime kanıtlamak için	1	2	3	4	5	6	7

...ileride daha itibarlı bir iş sahibi olabilmek için	1	2	3	4	5	6	7
...daha önce hiç görmediğim şeyleri keşfederken zevk aldığım için	1	2	3	4	5	6	7
...aslında, istediğim iyi bir iş alanına girmemi sağlayacak.	1	2	3	4	5	6	7
...ilginç yazılar okumaktan zevk aldığım için	1	2	3	4	5	6	7
...önceden okula gitmek için iyi nedenlerim vardı ama şimdi devam edip etmeme konusunda kararsızım.	1	2	3	4	5	6	7
... kişisel hedeflerimden birine ulaşmak için kendimi aşarken yaşadığım mutluluktan dolayı.	1	2	3	4	5	6	7
... şu da bir gerçek ki, okulda başarılı olduğum zaman kendimi önemli hissediyorum.	1	2	3	4	5	6	7
...ileride “iyi bir hayat” yaşamak istiyorum.	1	2	3	4	5	6	7
... ilgimi çeken konular hakkında bilgilerimi artırırken duyduğum mutluluktan dolayı.	1	2	3	4	5	6	7
... meslek edinme açısından daha iyi seçim yapmamı sağlayacak.	1	2	3	4	5	6	7
... önemli yazarların yazdıklarına tamamen kendimi kaptırdığımda hissettiğim mutluluktan dolayı.	1	2	3	4	5	6	7

... neden okula gittiğimi bilemiyorum, açıkçası pek de umurumda değil.	1	2	3	4	5	6	7
... zor olan akademik çalışmalarda zorlandığımı hissetmekten zevk aldığım için.	1	2	3	4	5	6	7
... kendi kendime zeki olduğumu göstermek için.	1	2	3	4	5	6	7
... ileride daha iyi ücret alabilmek için.	1	2	3	4	5	6	7
... ilgimi çeken birçok konu hakkında daha fazla şey öğrenmeye devam etmemi sağlıyor.	1	2	3	4	5	6	7
... inanıyorum ki, birkaç yıl daha aldığım bu eğitim çalışma hayatı için gereken yeteneklerimi geliştirecek.	1	2	3	4	5	6	7
... birbirinden farklı ve ilginç konuları okurken hissettiğim büyük hazdan dolayı.	1	2	3	4	5	6	7
... bilmiyorum, zaten okulda ne yaptığımı bir türlü anlayamadım.	1	2	3	4	5	6	7
... üniversitedeki çalışmalarımda mükemmel olmaya çalışmak, bireysel tatmin yaşamamı sağlıyor.	1	2	3	4	5	6	7
... kendi kendime, derslerde başarılı olabileceğimi göstermek istiyorum.	1	2	3	4	5	6	7

APPENDIX J

ACADEMIC MOTIVATION SCALE

(ENGLISH)

Using the scale below, indicate to what extent each of the following items presently corresponds to one of the reasons why you go to college.

Does not correspond at all		Corresponds a little		Corresponds moderately		Corresponds a lot	Corresponds exactly
1	2	3	4	5	6	7	

Why do you go to college?							
Because with only a high-school degree I would not find a high-paying job later on.	1	2	3	4	5	6	7
Because I experience pleasure and satisfaction while learning new things.	1	2	3	4	5	6	7
Because I think that a college education will help me better prepare for the career I have chosen.	1	2	3	4	5	6	7
For the intense feelings I experience when I am communicating my own ideas to others.	1	2	3	4	5	6	7
Honestly, I don't know; I really feel that I am wasting my time in school.	1	2	3	4	5	6	7
For the pleasure I experience while surpassing myself in my studies.	1	2	3	4	5	6	7

To prove to myself that I am capable of completing my college degree.	1	2	3	4	5	6	7
In order to obtain a more prestigious job later on.	1	2	3	4	5	6	7
For the pleasure I experience when I discover new things never seen before.	1	2	3	4	5	6	7
Because eventually it will enable me to enter the job market in a field that I like.	1	2	3	4	5	6	7
For the pleasure that I experience when I read interesting authors.	1	2	3	4	5	6	7
I once had good reasons for going to college; however, now I wonder whether I should continue.	1	2	3	4	5	6	7
For the pleasure that I experience while I am surpassing myself in one of my personal accomplishments.	1	2	3	4	5	6	7
Because of the fact that when I succeed in college I feel important.	1	2	3	4	5	6	7
Because I want to have "the good life" later on.	1	2	3	4	5	6	7
For the pleasure that I experience in broadening my knowledge about subjects which appeal to me.	1	2	3	4	5	6	7

Because this will help me make a better choice regarding my career orientation.	1	2	3	4	5	6	7
For the pleasure that I experience when I feel completely absorbed by what certain authors have written.	1	2	3	4	5	6	7
For the pleasure I experience when I discover new things never seen before.	1	2	3	4	5	6	7
Because eventually it will enable me to enter the job market in a field that I like.	1	2	3	4	5	6	7
For the pleasure that I experience when I read interesting authors.	1	2	3	4	5	6	7
I once had good reasons for going to college; however, now I wonder whether I should continue.	1	2	3	4	5	6	7
For the pleasure that I experience while I am surpassing myself in one of my personal accomplishments.	1	2	3	4	5	6	7
Because of the fact that when I succeed in college, I feel important.	1	2	3	4	5	6	7
Because I want to have "the good life" later on.	1	2	3	4	5	6	7
For the pleasure that I experience in broadening my knowledge about subjects which appeal to me.	1	2	3	4	5	6	7

Because this will help me make a better choice regarding my career orientation.	1	2	3	4	5	6	7
For the pleasure that I experience when I feel completely absorbed by what certain authors have written.	1	2	3	4	5	6	7



APPENDIX K

AYDA TEST ANXIETY SCALE

(TURKISH)

Yönerge: Aşağıda verilen ifadeleri okuyunuz. Maddelere konu olan sınav KPSS, LYS, YKS gibi ÖSYM'nin yaptığı geniş ölçekli sınavlardır. Her ifadeyi okuduktan sonra görüşünüzü Asla doğru değil (1), Doğru değil (2), Ara sıra doğru (3), Doğru (4), ve Her zaman doğru (5) seçeneklerinden birini işaretleyerek belirtiniz. Eğer bir ifade sizin için bazen doğru bazen doğru değilse 3'ü işaretleyiniz.	Asla Doğru Değil	Doğru Değil	Ara Sıra Doğru	Doğru	Her Zaman Doğru
Sınav yaklaştıkça heyecandan ya bildiklerimi karıştırırsam endişesi yaşarım.	1	2	3	4	5
Sınav günü yaklaştıkça kaydırma yaparsam, gerginlikten bildiklerimi karıştırırsam gibi düşünceler zihnimi kurcalar.	1	2	3	4	5
Sınavda kötü sonuç alırsam çevremdekilerin tepkisi ne olur vb. Tarzı endişeler zihnimi yorar.	1	2	3	4	5
Sınav yaklaştıkça daha çok çalışsaydım, daha farklı hazırlansaydım, ya başaramazsam tarzı kuruntularım artar.	1	2	3	4	5
Sınavım kötü geçerse ailem ne der (sitem etme, kızma, kıyaslama, suçlama, ayıplama) tarzı endişeler taşımam.	1	2	3	4	5
Sınav günü yaklaştıkça çözemediğim konu/soruların artmasıyla sınava ilişkin endişelerim artar.	1	2	3	4	5

Sınavda kötü sonuç alırsam sevdiğim insanların gözünde değersizleşeceğim düşüncesi beni yorar.	1	2	3	4	5
Sınav esnasında fizyolojik sorunlar (kalp atışlarının hızlanması, baş ağrısı, ellerin buz kesmesi, terleme vb. gibi) yaşıyorum.	1	2	3	4	5
Öncesinde çok çalışmama rağmen sınav günü hazır olduğuma kendimi ikna edemem.	1	2	3	4	5
Başarısız olursam olacakları (ailenin üzülmesi, başkaları hayatına yön verirken yerinde saymak, geride kalmak) düşünmek zihnimi yorar.	1	2	3	4	5
Sınava fiziken bitkin girmek (stresten uyuyamamak, yorgun, bitkin, gergin olmak) sınav günü moralimi alt üst eder.	1	2	3	4	5
Başarısız olacağım endişesi sınav günü üzerimde büyük bir baskı oluşturur.	1	2	3	4	5
Sınavda başarılı olamazsam çevreden alacağım tepkileri düşünmek bile istemiyorum.	1	2	3	4	5
Sınav yaklaştıkça, başka bir şey düşünemediğim için kaygılarım gittikçe artar.	1	2	3	4	5
Ailem ve arkadaşlarım için sınavdaki başarı veya başarısızlığım çok anlam ifade etmez.	1	2	3	4	5

APPENDIX L

AYDA TEST ANXIETY SCALE

(ENGLISH)

Instruction: Read the statements given below. The exams subject to the statements are large-scale exams conducted by ÖSYM such as KPSS, LYS, YKS. After reading each statement, indicate your opinion by marking one of the options: Never true (1), Not true (2), Sometimes true (3), True (4), and Always true (5). If a statement is sometimes true and sometimes not true for you, mark 3.	Never True	Not True	Sometimes True	True	Always True
As the exam gets closer, I get excited and worry what if I confuse what I know.	1	2	3	4	5
As the day of the exam approaches, thoughts such as if I will make a slip, if I will mix up what I know out of nervousness haunt my mind.	1	2	3	4	5
If I do badly in the exam, what will be the reaction of the people around	1	2	3	4	5

me, etc. worries like that tire my mind.					
The closer the exam gets, the more I wish I had studied harder, prepared differently, or what if I fail.	1	2	3	4	5
I don't worry about what my family will say (reproach, anger, comparison, blame, shame) if I do badly in my exam.	1	2	3	4	5
As the exam day approaches, my anxiety about the exam increases with the increase in the subjects/questions I cannot solve.	1	2	3	4	5
The thought that if I do badly in the exam, I will be worthless in the eyes of the people I love makes me tired.	1	2	3	4	5
I experience physiological problems (such as rapid heartbeat, headache, cold hands, sweating, etc.) during the exam.	1	2	3	4	5
I can't convince myself that I'm ready on the day of the exam, even though I've studied a lot beforehand.	1	2	3	4	5
Thinking about what will happen if I fail (upset family, standing still	1	2	3	4	5

while others lead their lives, falling behind) tires my mind.					
Entering the exam physically exhausted (not being able to sleep due to stress, being tired, exhausted, tense) will ruin my morale on the day of the exam.	1	2	3	4	5
Worrying that I will fail puts a lot of pressure on me on test day.	1	2	3	4	5
I don't even want to think about the reactions I will get from the environment if I fail the exam.	1	2	3	4	5
The closer the exam gets, the more anxious I get because I can't think of anything else.	1	2	3	4	5
For my family and friends, my success or failure in the exam does not mean much.	1	2	3	4	5

APPENDIX M
CONSENT FORM FOR MINORS
(TURKISH)

Arařtırmayı destekleyen kurum: Boğaziçi Üniversitesi

Arařtırmanın adı: Spielberger Sınav Kaygısı Envanterinin Türkçe Formunun
Psikometrik Özelliklerinin Yeniden İncelenmesi

Yürütücüsü:

E-mail adresi:

Telefonu:

Arařtırmacının adı:

E-mail adresi:

Telefonu:

Sayın Veli,

Boğaziçi Üniversitesi Psikolojik Danışmanlık ve Rehberlik Bölümü Yüksek Lisans öğrencisi Binnur Yeter Dr. Deniz Albayrak Kaymak danışmanlığında “Spielberger Sınav Kaygısı Envanterinin Türkçe Formunun Psikometrik Özelliklerinin Yeniden İncelenmesi” adında bir tez çalışması yürütmektedir. Çalışmanın amacı Sınav Kaygı Ölçeğinin psikometrik özelliklerini yeniden gözden geçirmektir. Sizleri çocuğunuzun bu çalışmada bulunmasında bize yardımcı olmaya davet ediyoruz. Kararınızı vermeden önce sizi arařtırmamız hakkında bilgilendirmek istiyoruz. Bu bilgileri okuduktan sonra arařtırmaya katılmak isterseniz, lütfen bu formu imzalayınız.

Araştırma T.C. Milli Eğitim Bakanlığı'nın ve okul yönetiminin de izni ile gerçekleştirilmektedir. Araştırma uygulamasına katılım tamamıyla gönüllülük esasına dayalı olmaktadır. Çocuğunuz çalışmaya katılıp katılmamakta özgürdür. Araştırma çocuğunuz için herhangi bir istenmeyen etki ya da risk taşımamaktadır. Çocuğunuzun katılımı tamamen sizin isteğimize bağlıdır, reddedebilir ya da herhangi bir aşamasında ayrılabilirsiniz. Araştırmaya katılmamama veya araştırmadan ayrılma durumunda öğrencilerin akademik başarıları, okul ve öğretmenleriyle olan ilişkileri etkilemeyecektir.

Çalışmada öğrencilerden kimlik belirleyici hiçbir bilgi istenmemektedir. Cevaplar tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir.

Uygulamalar, genel olarak kişisel rahatsızlık verecek sorular ve durumlar içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden çocuğunuz kendisini rahatsız hissederse cevaplama işini yarıda bırakıp çıkmakta özgürdür. Bu durumda rahatsızlığın giderilmesi için gereken yardım sağlanacaktır. Çocuğunuz çalışmaya katıldıktan sonra istediği an vazgeçebilir. Böyle bir durumda veri toplama aracını uygulayan kişiye, çalışmayı tamamlamayacağını söylemesi yeterli olacaktır. Anket çalışmasına katılmamak ya da katıldıktan sonra vazgeçmek çocuğunuza hiçbir sorumluluk getirmeyecektir.

Onay vermeden önce sormak istediğiniz herhangi bir konu varsa sormaktan çekinmeyiniz. Bu araştırmaya katılım tamamen gönüllülük esasına dayanmaktadır.

Katıldığınız takdirde, çalışmanın herhangi bir aşamasında herhangi bir gerekçe göstermeksizin onayınızı geri çekme hakkına da sahipsiniz. Araştırma projesi hakkında ek bilgi almak isterseniz lütfen Boğaziçi Üniversitesi Öğretim Üyesi Doç. Dr. Deniz Albayrak Kaymak Adres: Boğaziçi Üniversitesi, Eğitim Fakültesi ya da araştırma öğrencisi Binnur Yeter ile iletişime geçiniz. Bu çalışmadaki haklarınızla ilgili olarak Boğaziçi Üniversitesi Sosyal ve Beşeri Bilimler İnsan Araştırmaları Etik Kurulu'na da danışabilirsiniz.

Bu çalışmaya katılmayı kabul ediyorsanız, lütfen bu formu imzalayın ve bize geri gönderiniz.

Ben, (katılımcının adı) yukarıdaki metni okudum ve katılmam istenen çalışmanın kapsamını, amacını ve bir gönüllü olarak sorumluluklarımı tam olarak anladım. Çalışma hakkında soru sorma fırsatım oldu. Çalışmadan istediğim zaman ve herhangi bir sebep göstermek zorunda kalmadan ayrılabileceğimi ve ayrıldığım takdirde herhangi bir olumsuz sonuçla karşılaşmayacağımı anladım. Bu koşullar altında, söz konusu araştırmaya herhangi bir baskı veya zorlama olmaksızın gönüllü olarak katılmayı kabul ediyorum.

Formun bir örneğine sahibim / sahip olmak istemiyorum (bu durumda araştırmacı bu kopyayı saklar).

Katılımcının Velisi:.....

İmza*:.....

Tarih (Gün/Ay/Yıl):...../...../.....

Arařtırmacının Adı-Soyadı:.....

İmza*:.....

Tarih (Gün/Ay/Yıl):...../...../.....

*Eğer bu formu dijital bir şekilde imzalama imkânınız yoksa, bu formun size gönderildiğı e-mail adresine cevap olarak “Bana anlatılanları ve yukarıda yazılanları anladım. Bu formun bir örneğini aldım / almak istemiyorum (bu durumda arařtırmaçı bu kopyayı saklar). Çalışmaya katılmayı kabul ediyorum.” şeklinde yazınız.

APPENDIX N
CONSENT FORM FOR MINORS
(ENGLISH)

Supporting Institution: Boğaziçi University

Project Title: Revisiting the Psychometric Characteristics of the Turkish Form of the
Spielberger Test Anxiety Inventory

Project Coordinator:

E-mail:

Office Phone:

Researchers Name:

E-mail:

Phone:

Dear Participants,

Binnur Yeter, a graduate student at Boğaziçi University, Department of Psychological Counseling and Guidance, is conducting a thesis entitled "Re-examination of the Psychometric Properties of the Turkish Form of the Spielberger Test Anxiety Inventory" under the supervision of Dr. Deniz Albayrak Kaymak. The aim of the study is to review the psychometric properties of the Test Anxiety Inventory. We invite you to help us to enroll your child in this study. Before you make your decision, we would like to inform you about our research. After reading this information, please sign this form if you would like to participate in the study.

The research is conducted with the permission of the Republic of Türkiye Ministry of National Education (MEB) and the school administration. Participation in the research is entirely voluntary. Your child is free to participate in the study or not. The research does not carry any undesirable effects or risks for your child. Your child's participation is entirely voluntary; you can refuse or leave at any stage. Non-participation or withdrawal from the study will not affect the academic achievement of the students and their relationships with their school and teachers.

No identifying information is requested from the students in the study. Answers will be kept completely confidential and will be evaluated only by the researchers.

In general, the applications do not include questions or situations that may cause personal discomfort. However, if your child feels uncomfortable with the questions or for any other reason during participation, he/she is free to stop answering and leave. In this case, the necessary assistance will be provided to alleviate the discomfort. Your child may withdraw at any time after participating in the study. In such a case, it will be sufficient for him/her to tell the person administering the data collection tool that he/she will not complete the study. Not participating in the survey or withdrawing after participating will not bring any responsibility to your child.

I, (name of participant) have read the text above and fully understand the scope and purpose of the study I am asked to participate in, and my responsibilities as a volunteer. I had the opportunity to ask questions about the study. I understood that I could leave the study whenever I wanted and without having to give any reason, and that I would not face any negative consequences if I quit. In

these circumstances, I agree to participate in the research in question voluntarily, without any pressure or coercion.

I have / do not want to have a sample of the form (in which case the researcher keeps this copy)

Participant Guardian's Name-Last Name:.....

Signature*:.....

Date (day/month/year):...../...../.....

Name-Last Name of the Researcher:

Signature*:

.....

Date (day/month/year):...../...../.....

*If you do not have the opportunity to sign this form digitally, please write "I have understood what has been explained to me and what is written above. I have received a copy of this form / I do not want to receive a copy (in this case the researcher will keep this copy). I agree to participate in the study."

APPENDIX O
CONSENT FORM FOR INDIVIDUALS ABOVE 18
(TURKISH)

Araştırmayı destekleyen kurum: Boğaziçi Üniversitesi

Araştırmanın adı: Spielberger Sınav Kaygısı Envanterinin Türkçe Formunun
Psikometrik Özelliklerinin Yeniden İncelenmesi

Yürütücüsü:

E-mail adresi:

Telefonu:

Araştırmacının adı:

E-mail adresi:

Telefonu:

Sayın Katılımcı,

Boğaziçi Üniversitesi Psikolojik Danışmanlık ve Rehberlik Bölümü Yüksek Lisans öğrencisi Binnur Yeter, Dr. Deniz Albayrak Kaymak danışmanlığında “Spielberger Sınav Kaygısı Envanterinin Türkçe Formunun Psikometrik Özelliklerinin Yeniden İncelenmesi” adında bir tez çalışması yürütmektedir. Çalışmanın amacı Sınav Kaygı Ölçeğinin psikometrik özelliklerini yeniden gözden geçirmektir. Sizleri bu çalışmada bize yardımcı olmaya davet ediyoruz. Kararınızı vermeden önce sizi araştırmamız

hakkında bilgilendirmek istiyoruz. Bu bilgileri okuduktan sonra araştırmaya katılmak isterseniz, lütfen bu formu imzalayınız.

Eğer bu çalışmaya katılmaya karar verirsiniz, sizden sırasıyla 20,21 ve 28 maddelik anketleri cevaplandırmanızı rica edeceğiz. Özetle çalışmamıza katılmayı kabul etmeniz durumunda sizlerden 69 soruya cevap vermesini isteyeceğiz.

Bu araştırma bilimsel bir amaçla yürütülmekte ve katılımcı bilgilerinin gizliliği esas tutulmaktadır.

Bu araştırmaya katılım tamamen gönüllülük esasına dayanmaktadır. Katıldığınız takdirde, çalışmanın herhangi bir aşamasında herhangi bir gerekçe göstermeksizin onayınızı geri çekme hakkına da sahipsiniz. Araştırma projesi hakkında ek bilgi almak isterseniz lütfen Boğaziçi Üniversitesi Öğretim Üyesi Doç. Dr. Deniz Albayrak Kaymak Adres: Boğaziçi Üniversitesi ya da araştırma öğrencisi Binnur Yeter ile iletişime geçiniz. Bu çalışmadaki haklarınızla ilgili olarak Boğaziçi Üniversitesi Sosyal ve Beşeri Bilimler İnsan Araştırmaları Etik Kurulu'na da danışabilirsiniz.

Bu çalışmaya katılmayı kabul ediyorsanız, lütfen bu formu imzalayın ve bize geri gönderiniz.

Ben, (katılımcının adı) yukarıdaki metni okudum ve katılmam istenen çalışmanın kapsamını, amacını ve bir gönüllü olarak sorumluluklarımı tam olarak anladım. Çalışma hakkında soru sorma fırsatım oldu. Çalışmadan istediğim zaman ve herhangi bir sebep göstermek zorunda kalmadan

ayrılabilirceğimi ve ayrıldığım takdirde herhangi bir olumsuz sonuçla karşılaşmayacağımı anladım. Bu koşullar altında, söz konusu araştırmaya herhangi bir baskı veya zorlama olmaksızın gönüllü olarak katılmayı kabul ediyorum.

Formun bir örneğine sahibim / sahip olmak istemiyorum (bu durumda araştırmacı bu kopyayı saklar).

Katılımcının Adı-Soyadı:.....

İmzası*:.....

Tarih (Gün/Ay/Yıl):...../...../.....

*Eğer bu formu dijital bir şekilde imzalama imkânınız yoksa, bu formun size gönderildiği e-mail adresine cevap olarak “Bana anlatılanları ve yukarıda yazılanları anladım. Bu formun bir örneğini aldım / almak istemiyorum (bu durumda araştırmacı bu kopyayı saklar). Çalışmaya katılmayı kabul ediyorum.” şeklinde yazınız.

Araştırmacının Adı-Soyadı:

İmza:

APPENDIX P

CONSENT FORM FOR INDIVIDUALS ABOVE 18

(ENGLISH)

Supporting Institution: Boğaziçi University

Project Title: Revisiting the Psychometric Characteristics of the Turkish Form of the
Spielberger Test Anxiety Inventory

Project Coordinator:

E-mail:

Office Phone:

Researchers Name:

E-mail:

Phone:

Dear Participant,

Binnur Yeter, a graduate student at Boğaziçi University, Department of Psychological Counseling and Guidance, is conducting a thesis entitled "Re-examination of the Psychometric Properties of the Turkish Form of the Spielberger Test Anxiety Inventory" under the supervision of Dr. Deniz Albayrak Kaymak. The aim of the study is to review the psychometric properties of the Test Anxiety Inventory. We invite you to help us in this study. Before you make your decision, we would like to inform you about our research. After reading this information, please sign this form if you would like to participate in the study.

If you decide to participate in this study, we will ask you to answer the questionnaires 20, 21 and 28 items respectively. In summary, if you agree to participate in our study, we will ask you to answer 69 questions.

This research is conducted for scientific purposes and confidentiality of participant information is essential.

Participation in this research is entirely voluntary. If you participate, you also have the right to withdraw your consent at any stage of the study without giving any reason. We would like to emphasize that we did not compare different slots or different classes in this research. If you would like to receive additional information about the research project, please contact Boğaziçi University Faculty Member Doç. Dr. Deniz Albayrak Kaymak- Adres: Boğaziçi Üniversitesi, Eğitim Fakültesi or researcher Binnur Yeter. You can also consult Boğaziçi University Social and Human Sciences Human Research Ethics Committee regarding your rights in this study.

If you agree to participate in this study, please sign this form.

I, (name of participant) have read the text above and fully understand the scope and purpose of the study I am asked to participate in, and my responsibilities as a volunteer. I had the opportunity to ask questions about the study. I understood that I could leave the study whenever I wanted and without having to give any reason, and that I would not face any negative consequences if I quit. In these circumstances, I agree to participate in the research in question voluntarily, without any pressure or coercion.

I have / do not want to have a sample of the form (in which case the researcher keeps this copy)

Participant Name-Last Name:.....

Signature:

Date (day/month/year):...../...../.....

Name-Last Name of the Researcher:

Signature*:

.....

Date (day/month/year):...../...../.....

*If you do not have the opportunity to sign this form digitally, please write "I have understood what has been explained to me and what is written above. I have received a copy of this form / I do not want to receive a copy (in this case the researcher will keep this copy). I agree to participate in the study."

APPENDIX R

PERMISSION TO USE TAI-T AND STATE-TRAIT ANXIETY INVENTORY

15.01.2024

İlgili Kuruma,

“Sınav Kaygısı Envanteri” ile ilgili tüm haklarını Vakfına
devretmiştir. Ölçek kullanımı için izin yazıları adına Vakfı Başkanı
imzası ile vakıf tarafından göndermektedir.

Boğaziçi Üniversitesinde tez çalışması yapan Binnur Yeter’in, "Revisiting the Psychometric Characteristics of the Turkish Form of the Spielberger Test Anxiety Inventory" konulu yüksek lisans tezinde “Sınav Kaygısı Envanteri El Kitabı, Süreksiz Durumluk/Sürekli Kaygı Envanteri Testleri” ni kullanmasına izin veriyorum.

APPENDIX S

PERMISSION TO USE ACADEMIC MOTIVATION SCALE

Sayın Hocam merhaba,

Ben Boğaziçi Üniversitesinde yüksek lisans öğrencisiyim. Tezim kapsamında "Spielberger Sınav Kaygısı Envanterinin Türkçe Formunun Psikometrik Özelliklerinin Yeniden İncelenmesi" adlı konuyu çalışıyorum. Sizin çalıştığınız Akademik Motivasyon Ölçeğini de çalışmam da kullanma isteğindeyim. Bu nedenle size bu maili yazıyorum. Çalışmam da Akademik Motivasyon Ölçeğini kullanabilir miyim?

Kolaylıklar dilerim.

Alici: ben

17 Oca 2024 Çar 00:32 ☆ 😊 ↩ ⋮

Merhaba Binnur Yeter,

Akademik Motivasyon Ölçeğini tezinde kullanabilirsin. Ölçek ile ilgili belgeler ekte yer alıyor. Başarılar dilerim.

APPENDIX T

PERMISSION TO USE BECK ANXIETY SCALE

Beck Anksiyete Ölçeği için İzin

3 ileti

Binnur Yeter

4 Mart 2024 15:12

Alıcı:

Sayın Hocam merhaba,

Ben Boğaziçi Üniversitesinde yüksek lisans öğrencisiyim. Tezim kapsamında "Spielberger Sınav Kaygısı Envanterinin Türkçe Formunun Psikometrik Özelliklerinin Yeniden İncelenmesi" adlı konuyu çalışıyorum. Sizin çalıştığınız Beck Anksiyete Ölçeğini de çalışmam da kullanma isteğindeyim. Bu nedenle size bu maili yazıyorum. Çalışmam da Beck Anksiyete Ölçeğini kullanabilir miyim?

Kolaylıklar dilerim.

Alıcı: Binnur Yeter

13 Mart 2024 10:16

Binnur Hanım merhaba

İlgili çalışmanızda BAÖ ni kullanabilirsiniz.

Selamlar

APPENDIX U

PERMISSION TO USE AYDA TEST ANXIETY SCALE

AYDA Sınav Kaygı Ölçeği Kullanım İzni



Binnur Yeter

Alıcı:

17 Nis Çar 01:10



Sayın Hocam merhaba,

Ben Boğaziçi Üniversitesinde yüksek lisans öğrencisiyim. Tezim kapsamında "Spielberger Sınav Kaygısı Envanterinin Türkçe Formunun Psikometrik Özelliklerinin Yeniden İncelenmesi" adlı konuyu çalışıyorum. Sizin çalıştığınız AYDA Sınav Kaygı ölçeğini de çalışmam da kullanma isteğindeyim. Bu nedenle size bu maili yazıyorum. Çalışmam da AYDA Sınav Kaygı Ölçeğini kullanabilir miyim?

Kolaylıklar dilerim.

Merhaba Sevgili Binnur,
Mutlu olurum. Kolaylıklar dilerim. Yardım gerekirse bir tık uzatırızdayım.

Sevgiler,

APPENDIX V

APPROVAL OF SBİNAREK



T.C.
BOĞAZİÇİ ÜNİVERSİTESİ REKTÖRLÜĞÜ
Sosyal ve Beşeri Bilimler İnsan Araştırmaları Etik Kurulu (Sbinarek)



Sayı : E-84391427-050.01.04-168502
Konu : 2024-05T Kayıt Numaralı Başvurunuz
Hakkında

20.02.2024

Sayın Doç. Dr. Deniz KAYMAK

Tez danışmanlığını yürüttüğünüz öğrenciniz Binnur Yeter'in "Revisiting the Psychometric Characteristics of the Turkish Form of the Spielberger Test Anxiety Inventory" başlıklı projesi ile Boğaziçi Üniversitesi Sosyal ve Beşeri Bilimler İnsan Araştırmaları Etik Kurulu (SBİNAREK)'e yaptığınız 2024-05T kayıt numaralı başvuru 08.02.2024 tarih ve 2024/01 sayılı kurul toplantısında incelenmiş ve projeye etik onay verilmesi uygun bulunmuştur.

Bu karar tüm üyelerin toplantıya on-line olarak katılımıyla ve oybirliği ile alınmıştır. Onay mektubu tüm üyeler adına Komisyon Başkanı tarafından e-imzalanmıştır. Bilgilerinizi rica ederiz.

Saygılarımızla,

Dr. Öğr. Üyesi Işıl ERDUYAN
Kurul Başkanı

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Belge Doğrulama Kodu : 0IIU-BLAG-0PP5 Belge Doğrulama Adresi : <https://www.turkiye.gov.tr/bogazici-universitesi-ebys>

34342 Bebek-İSTANBUL
Telefon No: Fax No:
e-Posta: İnternet Adresi: www.bogazici.edu.tr
Kep Adresi: bogaziciuniversitesi@hs01.kep.tr

Bilgi İçin: Nurşen MUNAR
Mühendis

Telefon No:



APPENDIX Y

PERMISSION OF MEB



T.C.
İSTANBUL VALİLİĞİ
İl Millî Eğitim Müdürlüğü



Sayı : E-59090411-44-99786191
Konu : Anket ve Araştırma İzni (Binnur YETER)

29.03.2024

BOĞAZİÇİ ÜNİVERSİTESİ REKTÖRLÜĞÜNE
(Sosyal Bilimler Enstitüsü Müdürlüğü)

İlgi : a) Yenilik ve Eğitim Teknolojileri Genel Müdürlüğünün 21.01.2020 tarihli ve 2020/2 sayılı genelgesi.
b) Valilik Makamının 28.03.2024 tarihli ve 99750643 sayılı oluru.

Valilik Makamının Anket ve Araştırma İzni konulu ilgi (b) oluru ve kullanılması uygun görülen ölçme araçlarının Müdürlüğümüzce mühürlenmiş örnekleri ekte gönderilmiştir.

İlgi (a) genelgenin 28. maddesinde; "Araştırma uygulama izni alan kamu kurum ve kuruluşları, uluslararası kuruluşlar, üniversiteler, sivil toplum kuruluşları ve araştırmacılar tamamladıkları bilimsel araştırma ile ilgili sonuç raporlarını, izni aldıkları ilgili birime çalışma bitiminden itibaren 30 gün içerisinde göndereceklerdir." ifadesi yer almaktadır.

Olur gereğince işlem yapılması ve araştırma sonuç raporunun ekte sunulan örneğe göre Müdürlüğümüz Strateji Geliştirme Şubesine gönderilmesi hususlarında gereğini arz ederim.

Ayşe Nur ÇALIKÇI
İl Millî Eğitim Müdürü a.
Şube Müdürü

Ek:
1- Valilik Oluru (1 Sayfa)
2- Rapor Örneği
3- Ölçekler

Bu belge güvenli elektronik imza ile imzalanmıştır.

Adres : Binbirdirek Mah. İmran Öktem Cad. No: 1 Sultanahmet Fatih İstanbul Belge Doğrulama : <https://www.turkiye.gov.tr/meb-ebys>
Telefon : 0212 384 36 30 Bilgi İçin : Aydın BALTA
E-posta : stratejigelistirme34@meb.gov.tr Unvanı : Veri Hazırlama ve Kontrol İşletmeni
Kep Adresi : meb@hs01.kep.tr İnternet Adresi : <http://istanbul.meb.gov.tr/>

Bu evrak güvenli elektronik imza ile imzalanmıştır. <https://evraksorgu.meb.gov.tr> adresinden a77c-0ee1-363d-ac65-be08 kodu ile teyit edilebilir.

APPENDIX Z

SAMPLE DESCRIPTION BY INSTRUMENTS RESPONDED, GRADE LEVEL AND GENDER OF PARTICIPANTS.

Measurement Instruments Used			Grades	Gender	
				Woman	Man
TAI-T	AYDA	STAI	5	93	81
TAI-T	AYDA	STAI	6	90	16
TAI-T	AYDA	STAI	7	97	26
TAI-T	AYDA	STAI	8	100	59
TAI-T	AYDA	STAI	9	146	131
TAI-T	AYDA	STAI	10	101	106
TAI-T	AYDA	STAI	11	200	113
TAI-T	AYDA	STAI	12	131	86
TAI-T	AYDA	STAI	Graduated	50	21
TAI-T	Beck Anxiety Scale	Academic Motivation Scale	Prepatory	16	2
TAI-T	Beck Anxiety Scale	Academic Motivation Scale	Freshmen	22	16

* The data were collected from 12 public high schools, 6 public middle schools, and 1 private educational institution.

APPENDIX AA

ITEMWISE RELIABILITY ANALYSIS RESULTS FOR TAI-T, TAI- EMOTIONALITY, AND TAI-WORRY DIMENSIONS

Item	Mean	Standard Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Item-Total Correlation	Cronbach's Alpha if Item Deleted
TAI 1	20.51	10.01	40.49	1350.56	0.43	0.89
TAI 2	20.23	10.05	40.77	1320.95	0.53	0.89
TAI 3	10.91	10.00	41.09	1320.91	0.56	0.89
TAI 4	10.71	0.99	41.29	1350.67	0.44	0.89
TAI 5	20.25	10.04	40.75	1360.22	0.39	0.89
TAI 6	20.28	10.04	40.72	1310.46	0.60	0.89
TAI 7	10.88	10.03	41.12	1340.71	0.46	0.89
TAI 8	20.23	10.06	40.78	1310.28	0.59	0.89
TAI 9	10.75	10.01	41.25	1330.16	0.54	0.89
TAI 10	10.77	10.04	41.23	1330.06	0.53	0.89
TAI 11	20.19	10.08	40.81	1320.82	0.51	0.89
TAI 12	10.67	0.95	41.33	1330.22	0.58	0.89
TAI 13	20.40	10.05	40.61	1310.02	0.61	0.89
TAI 14	20.26	10.05	40.74	1300.24	0.64	0.88
TAI 15	20.66	0.95	40.35	1350.55	0.45	0.89
TAI 16	20.38	10.07	40.62	1300.69	0.61	0.89
TAI 17	20.13	10.08	40.87	1300.62	0.61	0.89
TAI 18	20.31	10.08	40.69	1320.89	0.51	0.89
TAI 19	20.56	10.11	40.45	1390.60	0.23	0.90
TAI 20	10.85	10.02	41.15	1330.70	0.54	0.89

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