**TURKISH PSYCHOLOGICAL COUNSELING AND GUIDANCE JOURNAL**
2025, VOL. 15, NO. 77, 268-282

Official Journal of
Turkish Psychological Counseling
and Guidance Association

ISSN: 1302 – 1370, E-ISSN: 2822 – 6569 https://doi.org/10.17066/tpdrd.1473786

RESEARCH ARTICLE

# Investigation of the Effect of the Cognitive-Behavioral Approach Based Self Help Platform on Test, State, and Trait Anxiety of High School Students

Zeynep KARATAŞ[a]

[a]Burdur Mehmet Akif Ersoy University, Burdur, Türkiye.

**ARTICLE HISTORY**

**Received**: 25/04/2024
**Accepted**: 16/06/2025

**KEYWORDS**

Web-Based Self-Help Intervention, Cognitive Behavioral Therapy, Anxiety, Adolescent.

**ABSTRACT**

The aim of this study was to investigate the efficacy of a self-help platform based on cognitive behavioral therapy in mitigating test anxiety, state anxiety, and trait anxiety among high school students. The research employed a quasi-experimental design, incorporating pre-test and post-test measures, as well as experimental and control groups. The study sample consisted of 222 high school students from Türkiye, with 111 participants assigned to the experimental group and the remaining 111 to the control group. In the experimental group, the gender distribution was 28 male students and 83 female students. Similarly, in the control group, there were 31 male students and 80 female students. Data were collected using the Westside Test Anxiety Scale and the State-Trait Anxiety Inventory. Dependent samples t-tests were employed to examine the differences between the pre-test and post-test scores within the experimental and control groups. Independent samples t-tests were utilized to compare the post-test scores between the experimental and control groups. To assess the effects of the intervention after one month, dependent samples t-tests were conducted. The results indicated that the CBT-based self-help platform was significantly effective in reducing test anxiety, state anxiety, and trait anxiety among the students in the experimental group. Furthermore, this beneficial effect persisted during the follow-up assessment conducted one month after the intervention. There was no decrease in the test anxiety, state anxiety and trait anxiety scores of the students in the control group.

Anxiety has been one of the most researched concepts in relation to the personality traits of individuals in recent years. Anxiety has been the subject of many studies due to its complex nature and abundance of factors that may cause it. As there are many factors affecting it, some studies have focused on psychological factors, some on environmental factors, some on personal factors, and some on neurological factors. No matter which of these factors are, anxiety is a universal condition, and it creates positive effects from time to time but also brings about several negative problems when experienced intensely. Anxiety problems are common issues faced by adolescents, but they are often under-recognized and under-treated. The prevalence

**CORRESPONDING AUTHOR** Zeynep KARATAŞ, zeynepkaratas@mehmetakif.edu.tr, ORCID: 0000-0002-4532-6827, Burdur Mehmet Akif Ersoy University, Burdur, Türkiye.

of anxiety has increased dramatically over the past decade, with the prevalence of anxiety among high school students at approximately 30% (AAP, 2025; Chang, 2021).

Spielberger (1972), who made the first notable studies on anxiety and then intensified these studies, categorized anxiety into two as state anxiety which is expressed as the perception of a situation or event as an unpleasant emotion accompanied by a physiological reaction in connection with the autonomic nervous system, and trait anxiety which is experienced in the form of individual tendency to perceive threat and danger in various situations.

Test refers to a situation involving the measurement or evaluation of knowledge and skills. Test anxiety is also considered as a form of state anxiety because it can occur as a result of exposure or possibility of exposure to any test. It is stated in various studies that test anxiety is a common situation among students and that approximately 35% of students experience test anxiety (Kaçan-Softa et al., 2015; Lufi et al., 2004; Şahin et al., 2006). This rate, which seems to be high, also causes students to experience various problems and difficulties at school. Examining the relevant literature reveals that people with test anxiety tend to have negative self-perceptions and expectations. They develop habits and attitudes of self-dislike in line with these negative self-perceptions and expectations, they have fears of anxiety-inducing situations, and they have excessive physiological activities and this excessive arousal before or during the test affect the person's assessment of the situation (Spielberger, 1972).

While it is seen in the literature that test anxiety has a cognitive, affective, and physiologically complex multidimensional structure and is defined as behavioral reactions in cases of assessment (Hancock, 2001; Hong, 1998), in another study, test anxiety is examined under four structures named as worry, tension, somatic symptoms, and thoughts unrelated to the test (Sarason, 1984). In addition, test anxiety is also considered as a negative emotional and cognitive response in situations where performance is measured and evaluated (Vogelaar et al., 2017). In a different study, test anxiety is handled as worry and emotionality (Sparfeldt et al., 2014; Liebert & Morris, 1967), and while worry is defined as cognitive distress related to the test, emotionality is expressed as physical symptoms (irritability, fear, physical discomfort, etc.) experienced during the test.

School counselors working in line with a plan and program at school determine a general goal, local goal, and some specific goals while preparing these plans. Some of these determined goals are related to student achievement. Tests are the most common way to measure student performance and achievement. Although testing is an inevitable part of education, this assessment method can sometimes cause a series of problems for students. Given that tests are important assessment tools in the Turkish education system, it is inevitable for many students to have problems with them (Kaçan-Softa et al., 2015).

One of these problems is the anxiety experienced by students during the process of preparation for a test or tests. Test anxiety is one of the important variables affecting student achievement. While students with a normal level of anxiety consider test situations as an opportunity to test their success, students with higher levels of anxiety perceive these situations as a threat and engage in a negative self-dialogue in test-related situations (Genç, 2013). Although anxiety is generally considered a negative situation, it is extremely necessary for our survival. A small amount of anxiety is of vital importance, otherwise we may not feel motivated enough to engage in our most basic duties (Kaçan-Softa et al., 2015). In this respect, school counselors are expected to carry out preventive or intervening studies on issues such as preparing for tests with individual and group work, effective and efficient study methods, and test anxiety. In order to be able to carry out these expected studies, the number of students the school counselor is responsible for is very important.

In the appointment of the permanent school counselors in Türkiye, the provisions of Article 21 titled "Permanent Recruitment of Counselors" of the Regulation on the Permanent Recruitment of Administrators

and Teachers in Educational Institutions Affiliated to the Ministry of National Education, published in the Official Gazette dated 18.06.2014 and numbered 29034, are taken into account. These provisions stipulate that a) For each level and type of private education institutions (to be given to those who have more students from private education institutions that provide education at different levels in the same building or garden), 1 permanent counselor post is given for a total number of 25 or more students, b) For each primary school with a total number of 300 or more students and for each secondary school and Imam Hatip secondary school with a total number of 150 or more students, 1 permanent counselor post is given, c) For each of secondary schools having a total number of 150 or more students, 1 permanent counselor post is given, ç) Regardless of the number of students, for each of boarding schools, 1 permanent counselor post is given, d) When a permanent counselor post cannot be given as the number of students is not enough in primary and secondary education institutions in central districts, 1 permanent counseling teacher post is given to the school with the highest number of students, e) For each of the vocational training centers with 200 or more apprentices and trainees, 1 permanent counselor post is given. Although these numbers of permanent posts seem optimistic, there are schools that do not have a school counselor and there are schools where the number of students is too high but there is just one school counselor. Considering the high number of students that school counselors have to deal with in each school in Türkiye, it seems very difficult for school counselors to deal with each student individually and for a long time, especially with students having high-test anxiety.

The school counselor-student ratio recommended by the American School Counselor Association (ASCA) is one school counselor per 250 students (ASCA, 2023). Although there are no statistics on this issue in Türkiye, it is thought that the number of students per school counselor is much higher. Therefore, it seems extremely functional and practical in terms of time to apply self-help practices, which form the basis of this research, to students experiencing test anxiety problems by school counselors.

Self-help is the general name of scientifically based practices that help people individually apply scientifically proven methods through various tools and thus help them cope with psychological problems. Self-help should not be perceived as the individual conducting self-help therapy with their own means. What is important is to enable the individual to do something by themselves through some guidance (Williams & Chellingsworth, 2010). Here, guidance can be provided with a book, a sound recording, or it can be done through software offered online over the internet or applications used via smart phones as a result of developing technologies. Online interventions generally consist of staged activities. The individual works on the content presented to them by creating an account on the software. This content can be in the form of text, animation, video, or it can include forms and measurement tools that the individual will fill out. Web-based interventions can include expert guidance or can be designed to be completely autonomous. In times of increasing psychological symptoms and problems, web-based interventions are increasingly used because the number of available specialists may be insufficient to meet the applications, and preventive intervention programs can prevent problems before they reach the clinical level. Barak et al. (2009) define internet-based support interventions as a user-directed, structured intervention program run through an online program operated over a website and used by individuals seeking assistance for their health and mental health. In this context, three different types of web-based interventions can be mentioned. The first of these is educational content that only provides information. Another is the presentation of therapeutic interventions that individuals can use in the self-help process. The last category includes expert-assisted interventions. In these programs, the expert regularly informs the user. It is possible to add a fourth type, which includes artificial intelligence supported software, to these three types of intervention. These software programs include more advanced technology and autonomous interventions that can make decisions according to the needs of the user (Barak et al., 2009).

Web-based interventions are generally designed as structures made up of successive modules. In these interventions, individuals are registered in the system, or they register themselves. They then use the applications determined by the person who developed the intervention. These applications can also be designed to be interactive with the user from time to time. Interventions generally begin with an assessment

module. Then, it continues with the content that offers psycho-education about the problem area to the user. In the following modules, interventions specific to the theoretical approach on which the program is based are presented online (Doğan, 2021).

In the international literature, there are studies conducted with the participation of children, adolescents, and university students on the use of networked, web-based, and self-help applications to address mental health (Levin, Hayes, Pistorello, & Seeley, 2016; Viskovich, 2019), resilience (Herrero et al., 2019; Levin et al., 2016), self-care (Viskovich, 2019), depression (Abeles et al., 2009; Deady et al., 2014; Hoek et al., 2012; O'Kearney et al., 2006; Sethi et al., 2010; Makarushka, 2011; Stallard et al., 2011), anxiety disorder (Vigerland et al., 2016), social anxiety (Furmark et al., 2009), anxiety disorders and phobias (Botella et al., 2010; Hoek et al., 2012; Khanna & Kendall, 2010; Sethi et al., 2010; Spence et al., 2006; Spence et al., 2011; Stallard et al., 2011; Vigerland et al., 2013), chronic fatigue syndrome (Nijhof et al., 2012), alcohol abuse (Deady et al., 2014), sleep disorders (Cliffe et al., 2018), headache (Trautmann & Kröner-Herwig, 2010), and career planning (Gati & Asulin-Peretz, 2011). When these applications are examined, it is seen that there are a few studies that include a web-based self-help application on university students' test, state, and trait anxiety, and that the studies include cognitive behavioral-based interventions (Alibak, & Alibak, 2021; Chancey et al., 2023; McEwan et al., 2018; Orbach et al., 2007; Tzvi, 2018). It is seen that there are a few studies include cognitive behavioral-web based interventions on high school students' anxiety and anxiety disorders (Bevan-Jones et al., 2023; Nordh et al., 2017; Radomski et al., 2019; Stjerneklar et al., 2018; Stjerneklar et al., 2019). It is not seen that there is any research that includes a web-based self-help application with cognitive behavioral techniques on high school students' test, state, and trait anxiety.

When the studies conducted in the field of counseling and guidance in Türkiye are examined, it is seen that the use of networked, web-based, and self-help programs is limited (Buğa & Hamamcı, 2016; Çetintulum-Huyut, 2019; Doğan, 2011; Özer & Ceyhan, 2021; Özer et al., 2023; Psybot, t.y.). Buğa and Hamamcı (2016) investigated the effects of web-based interactive and traditional psycho-educational programs based on cognitive-behavioral approach on children's cognitive errors and psychological symptoms, and as a result of the analyses, the cognitive errors of students involved in both web-based interactive and traditional psycho-education programs were found to have decreased after the application, and this decrease continued in the follow-up periods. Doğan (2011) investigated the effect of networked counseling application on the career development levels of 8th grade students and reached significant results. Moreover, as a result of the literature review, an application called Psybot (http://www.psybotapp.com/) was also encountered. The Psybot application was prepared as a mobile application developed for mental self-help, and the techniques in it were prepared according to the principles of cognitive therapy and schema therapy. An internet-based self-help application based on the cognitive behavioral therapy (CBT) approach was developed by Özer and Ceyhan (2021) during the pandemic period. The platform includes three modules on depressive mood, anxiety, and stress, and one relaxation exercise module. Each of the modules consists of five sessions created in stages. The platform, which functions as a self-help intervention without expert support, aims to help users manage their psychological symptoms. In addition to these studies, Çetintulum-Huyut (2019) showed that the use of internet-based CBT applications in the treatment of social anxiety disorder, panic disorder (with or without agoraphobia), generalized anxiety disorder, and specific phobia is increasing. In the treatment of anxiety disorders, internet-based, therapist-supported CBT applications and therapist-assisted group applications have been evaluated as the last period alternatives to traditional face-to-face therapies. As can be understood from the limited studies in Türkiye, there are few studies that include internet and web-based applications, and only two of them are web-based self-help applications. When these studies are examined, it is seen that they are not related to high school students' test, state, and trait anxiety.

Due to the above-mentioned reasons, it is clear that the field of counseling and guidance cannot be left out of these developing technologies. The use of web-based self-help applications will not only ensure that counseling services are supported by technology, but might eliminate the limitation of counseling services to working hours during the day. As a result of the integration of counseling and guidance services with

technology, students who could not otherwise benefit from these services for various reasons will have the opportunity to reach them. In addition, it will provide individuals the opportunity to benefit from counseling and guidance services from their home or any place where there is an internet connection.

The current study, encompassing the development of a web-based self-help application, is considered important in terms of demonstrating and supporting the functionality of technology use in counseling services, supporting existing limited studies, and pioneering new studies. It is anticipated that this research will contribute substantially to the knowledge base regarding test anxiety, state anxiety, and trait anxiety. Additionally, the findings are expected to aid school counselors in their efforts to mitigate these forms of anxiety among high school students. By leveraging this self-help platform, school counselors can allocate their time more effectively, given their demanding workloads, while simultaneously providing counseling and guidance services beyond the confines of the school setting.

The overall aim of this study is to examine the effectiveness of a CBT-based self-help platform in reducing test, state, and trait anxiety in high school students. To this end, the following hypotheses have been formulated:

H1: When comparing the test, state, and trait anxiety pre-test and post-test scores of the experimental and control groups, the post-test scores of the experimental group will show a significant decrease.

H2: When comparing the test, state, and trait anxiety post-test scores of the experimental and control groups, the post-test scores of the experimental group will be significantly lower.

H3: When comparing the test, state, and trait anxiety post-test and follow-up scores of the experimental group, there will be no significant differences between them.

## Methodology

### Model

A quasi-experimental design with pre-test, post-test, and follow-up measurements and experimental and control groups was used in the study. Quasi-experimental designs are those in which random assignment is not made but a matching is involved. In the paired quasi-experimental design, two of the ready-made groups are tried to be matched on certain variables (Büyüköztürk et al., 2024; Tabachnick & Fidell, 2007). In this study, participants were not randomly selected from a large population. Since sampling could not be done randomly from the universe, a complete experimental design could not be reached. All participants were evaluated. The participants were divided into two groups and the groups were assigned as experimental and control on a voluntary basis. In addition, pairings were made according to gender and pre-test scores.

### Study Group

The research was conducted with a study group of 222 high school students from Burdur, Türkiye. Participants were assigned to either the experimental group (n = 111) or the control group (n = 111) on a voluntary basis. In the experimental group, the gender distribution was 28 (25.2%) male students and 83 (74.8%) female students, with a mean age of 16.65 years. Similarly, in the control group, there were 31 (27.9%) male students and 80 (72.1%) female students, with a mean age of 16.72 years. The demographic composition of the study group suggests a balanced representation of gender and age across both the experimental and control groups, facilitating a rigorous evaluation of the intervention's effectiveness. Statistical analyses were performed to determine whether the test, state, and trait anxiety pre-test scores of the two groups were similar; and it was found that they were similar (Test anxiety, $t(220)=-1.291$, $p>.05$; State anxiety, $t(220)=1.082$, $p>.05$; Trait anxiety, $t(220)=.253$, $p>.05$).

### Tools and Data Collection

***Westside Test Anxiety Scale:*** Developed by Driscoll (2007), this scale was adapted into Turkish by Totan

and Yavuz (2009), who conducted validity and reliability studies. Totan and Yavuz (2009) determined that the explained variance of the scale was 46.05% in the descriptive factor analysis, and that there was a one-dimensional structure with factor loadings between .32 and .78. They found that the one-factor structure of the scale was confirmed in the confirmatory factor analysis ($\chi2$= 155.02, df= 42, $\chi2$ /df= 3.69, CFI= .97, RMSEA= .05). They reported that the test-retest validity of the scale, whose item total correlations were between .47-.71, was .57 and the Cronbach alpha coefficient was. 89. Totan (2018) examined the one-dimensional structure of the scale in middle and high school students with confirmatory factor analysis. Confirmatory factor analysis using maximum likelihood estimation was modeled at the first level. According to the results obtained, the goodness of fit indices of the models at the middle school ($\chi2$= 137.96, df= 44, $\chi2$/df= 3.14, CFI= 0.97, SRMR= 0.003) and high school ($\chi2$= 128.33, df= 44, $\chi2$/df= 2.92, CFI= 0.96, SRMR= 0.003) levels were at a sufficient level. While the standardized parameter estimates of the scale at the middle school level were between 0.57 and 0.79, they were positively loaded between 0.49 and 0.80 and were statistically significantly ($p\leq 0.05$) in the high school. The reliability analyses of the Westside Test Anxiety Scale were conducted using internal consistency and test-repeat methods. In the analyses conducted for reliability examination, it was found that the Cronbach alpha value of the scale was 0.92 in middle school students and 0.91 in high school students. In the test-repeat reliability analyses where measurements were repeated at two-week intervals, a significant relationship ($p\leq .001$) was determined between the two applications at the level of .72 in middle school and .74 in high school. In the reliability analysis conducted on the data of this study, Cronbach Alpha coefficient was found to be .92.

***State-Trait Anxiety Inventory (STAI):*** Originally developed by Spielberger et al. (1970), the STAI was adapted into Turkish by Öner and LeCompte (1983). The scale consists of 40 items in total, 20 of which evaluate state anxiety and 20 evaluate trait anxiety. For the trait anxiety subscale, test-retest reliability coefficients ranged from .71 to .86, while for the state anxiety subscale, they ranged from .26 to .68. Internal consistency and test homogeneity calculated using the Kuder Richardson 20 formula, yielded values between .83 and .87 for the state anxiety subscale, and between .94 and .96 for the trait anxiety subscale. Construct validity analysis revealed correlation coefficients between .52 and .80 for female students, and between .58 and .79 for male students, when compared to other anxiety scales. Moreover, the construct validity of both scales was tested experimentally on healthy and patient groups 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, the fact that such a change in trait anxiety was not significant, supported the hypotheses derived from the theory, and was evaluated as an indicator of the construct validity of the inventories. The results of the applications made by Oner and Le Compte (1985) for periods ranging from 10 days to 1 year revealed that although there were increases and decreases in state anxiety scores under changing conditions, there were no significant changes in the trait anxiety scores of the same individuals. In the reliability analysis conducted on the data of this study, the Cronbach Alpha coefficient was found to be .61 for state anxiety and .62 for trait anxiety.

In the data collection process of the study, ethics committee permissions were obtained, and necessary institutional permissions were obtained. High schools volunteering to participate in the study were visited and the study was continued with students who volunteered to participate in the study. Each student was invited to the guidance service, a consent form was signed, and permission was obtained from their family. The experimental study and data collection were carried out by going to the school where the student was studying, during counseling hours or after class.

## Experimental Procedure

The initial phase of the study involved an extensive literature review to inform the development of a web-based self-help platform targeting high school students' test anxiety, state anxiety, and trait anxiety. The literature search revealed that the cognitive-behavioral approach is the most effective intervention strategy for anxiety and test anxiety. Consequently, the decision was made to employ this approach in designing the self-help platform. The platform was developed by incorporating various components, including videos, audio recordings, and informational texts grounded in cognitive-behavioral principles. Additionally,

relaxation activities and relevant links were integrated to provide comprehensive support for mitigating test anxiety, state anxiety, and trait anxiety among high school students.

The experimental process commenced with obtaining ethical clearance from the relevant committee (B…M…A…E…University, G.O:2022/805). Subsequently, collaboration was established with the principal and counselor of the participating school. The students were then informed about the study, and those who provided informed consent were pre-tested. Based on their pre-test scores, participants were assigned to either the experimental or control group. In the next stage, students in the experimental group were granted access to the web-based self-help platform through a personalized link. No intervention was conducted for the control group. Following the intervention, post-test measures were administered to both the experimental and control groups. Additionally, a follow-up assessment was conducted one month after the post-test to evaluate the sustained effects of the intervention. After the experimental study was completed and follow-up measurements were taken, the control group received the interventions applied to the experimental group.

### Development of the web-based self-help platform on test, state, and trait anxiety

The self-help platform was developed by the researcher using the principles of the cognitive-behavioral approach. The content, including videos and audio recordings, was carefully curated and produced using CBT techniques. The platform comprised five distinct rooms, each serving a specific purpose within the intervention. During and after the development of the platform, opinions were obtained from three field experts who are authorities in the field of CBT. The platform consisted of a total of five modules and each module contained interconnected content. Depending on the participants' speed and module content, each module lasted approximately 40 minutes. Before the experimental applications, a pilot study was conducted with 10 high school students and their opinions about the platform were obtained. After interacting with the platform, students' opinions were positive and there were significant decreases in their post-tests.

**Room 1:** In this initial room, participants were required to complete the pre-test measures and familiarize themselves with brief introductory information.

**Room 2:** This room presented a comprehensive “Anxiety and Test Anxiety Information” bulletin, which participants were expected to read thoroughly.

**Room 3:** Participants were instructed to watch a series of videos in this room, including the Crocodile Metaphor, Theater Metaphor, Exam Soon, Profit and Cost Analysis, and Evidence Review. Additionally, they were provided with a text on opposing automatic thinking and fostering realistic thinking patterns.

**Room 4:** In this room, participants were first required to listen to audio recordings on Relaxation Exercise, Imagination Relaxation, and Safe Place. Subsequently, they engaged in coloring activities, explored an interactive aquarium, and participated in relaxation exercises accompanied by soothing music. Motivational quotes were also incorporated to provide additional support.

**Room 5:** Upon completing the activities in the previous rooms, participants were instructed to fill out the post-test measures by clicking on the “Post-tests” button. Finally, after reading an acknowledgment note, they were able to conclude their journey through the self-help platform.

This structured and comprehensive approach ensured that participants received a well-rounded intervention grounded in cognitive-behavioral principles, encompassing informational resources, experiential activities, and relaxation techniques.

### Data Analysis

Prior to conducting the statistical analyses, the normality of the data distribution was assessed using the Shapiro-Wilk test. The results ($df = 111$, SW: .978-.989, $p > .05$) indicated that the pre-test, post-test, and follow-up data were normally distributed. Furthermore, an examination of the skewness and kurtosis values

revealed that they fell within the range of -1 to +1, further confirming the normal distribution of the data. Consequently, parametric analyses were deemed appropriate for analyzing the pre-test, post-test, and follow-up data (Büyüköztürk, 2024). First of all, an independent samples t-test was conducted to examine whether there was a difference between the pre-test scores of the test, state, and trait anxiety of the experimental and control groups, and it was seen that there were no significant differences between the scores of the two groups (Test anxiety, t(220)=-1.291, p>.05; State anxiety, t(220)=1.082, p>.05; Trait anxiety, t(220)=.253, p>.05).

After it was seen that the pre-test scores of the two groups were similar, a series of analyses were conducted to evaluate the effectiveness of the self-help platform:

1. Dependent samples t-tests were employed to examine the differences between the pre-test and post-test scores within the experimental and control groups.

2. Independent samples t-tests were utilized to compare the post-test scores between the experimental and control groups.

3. To assess the effects of the intervention after one month, dependent samples t-tests were conducted to compare the post-test and follow-up test scores within the experimental group.

This comprehensive analytical approach, involving both within-group and between-group comparisons, allowed for a rigorous evaluation of the self-help platform's efficacy in reducing test anxiety, state anxiety, and trait anxiety among high school students. The use of appropriate parametric tests, following the confirmation of normality assumptions, ensured the validity and reliability of the statistical inferences drawn from the study.

## Results

### 1- Results related to the hypothesis that when comparing the test, state, and trait anxiety pre-test and post-test scores of the experimental and control groups, the post-test scores of the experimental group will show a significant decrease.

To investigate the effectiveness of the cognitive-behavioral approach-based self-help platform, a dependent samples t-test was conducted to compare the participants' pretest and posttest scores. The results are presented in Table 1.

**Table 1.** Dependent Samples T-Test Results Comparing Pretest and Posttest Scores of the Experimental and Control Groups

| | | | n | x̄ | S | df | t | p | Cohen d |
|---|---|---|---|---|---|---|---|---|---|
| Experimental | Test | Pretest | 111 | 35.44 | 8.66 | 110 | 8.969*** | .000 | 0.85 |
| | | Posttest | 111 | 28.95 | 8.97 | | | | |
| | State | Pretest | 111 | 56.72 | 5.68 | 110 | 3.491** | .001 | 0.33 |
| | | Posttest | 111 | 54.81 | 5.48 | | | | |
| | Trait | Pretest | 111 | 51.56 | 5.46 | 110 | 2.155* | .033 | 0.20 |
| | | Posttest | 111 | 50.45 | 5.42 | | | | |
| Control | Test | Pretest | 111 | 36.94 | 8.59 | 110 | -.708 | .481 | 0.07 |
| | | Posttest | 111 | 37.07 | 8.16 | | | | |
| | State | Pretest | 111 | 55.70 | 8.12 | 110 | -4.344*** | .000 | 0.41 |
| | | Posttest | 111 | 57.23 | 8.07 | | | | |
| | Trait | Pretest | 111 | 51.31 | 8.98 | 110 | -2.143* | .034 | 0.20 |
| | | Posttest | 111 | 53.26 | 5.86 | | | | |

***p<.001, **p<.01, *p<.05

As seen in Table 1, when the pre-test and post-test scores of the experimental group students were compared, it was determined that there was a significant decrease in the post-test scores (Test anxiety: $t(110) = 8.969$, $p < .001$, Cohen d=0.85; State anxiety: $t(110) = 3.491$, $p < .01$, Cohen d=0.33; Trait anxiety: $t(110) = 2.155$, $p < .05$, Cohen d=0.20). These findings suggest that the post-test scores of the experimental group students were significantly lower than their pre-test scores, demonstrating the effectiveness of the cognitive-behavioral approach-based self-help platform in reducing test anxiety, state anxiety, and trait anxiety. When the effect sizes are analyzed, it can be said that there is a large effect in test anxiety and a small effect in state and trait anxiety (Cohen, 1988).

In contrast, the significant difference observed in state and trait anxiety scores in the control group (Table 1) indicates an increase rather than a decrease in the post-test scores. This suggests that the control group students experienced an increase in state and trait anxiety when no intervention was implemented. This further emphasizes the positive effect of the self-help platform on the experimental group.

These results provide strong evidence that the developed self-help platform, grounded in cognitive-behavioral principles, was successful in mitigating test anxiety, state anxiety, and trait anxiety among high school students in the experimental group.

### 2- Results related to the hypothesis that when comparing the test, state, and trait anxiety post-test scores of the experimental and control groups, the post-test scores of the experimental group will be significantly lower.

To further evaluate the effectiveness of the cognitive-behavioral approach-based self-help platform, an independent samples t-test was conducted to compare the post-test scores of the experimental and control groups. The results are presented in Table 2.

**Table 2.** Independent Samples T-Test Results Comparing Posttest Scores of the Experimental and Control Groups

| Posttest | | n | x̄ | S | df | t | p | Cohen d |
|---|---|---|---|---|---|---|---|---|
| Test | Experimental | 111 | 28.95 | 8.97 | 220 | -7.062*** | .000 | 0.95 |
| | Control | 111 | 37.07 | 8.16 | | | | |
| State | Experimental | 111 | 54.81 | 5.48 | 220 | -2.618** | .009 | 0.35 |
| | Control | 111 | 57.23 | 8.07 | | | | |
| Trait | Experimental | 111 | 50.45 | 5.42 | 220 | -3.708*** | .000 | 0.50 |
| | Control | 111 | 53.26 | 5.86 | | | | |

***p<.001, **p<.01

As seen in Table 2, there were significant differences between the experimental and control groups in test anxiety, state anxiety, and trait anxiety posttest scores (Test anxiety: $t(220) = -7{,}062$, $p < .001$, Cohen d=0.95; State anxiety: $t(220) = -2{,}618$, $p < .01$, Cohen d=0.35; Trait anxiety: $t(220) = -3{,}708$, $p < .001$, Cohen d=0.50). Specifically, the post-test scores of the experimental group were significantly lower than those of the control group, indicating that the self-help platform developed using CBT techniques was effective in reducing test anxiety, state anxiety, and trait anxiety. When the effect sizes are analyzed, it can be said that there is a large effect in test anxiety, a small effect in state anxiety, and a moderate effect in trait anxiety (Cohen, 1988).

These findings, in conjunction with the results from the dependent samples t-test (Table 1), provide compelling evidence for the efficacy of the cognitive-behavioral approach-based self-help platform. The significant differences observed between the experimental and control groups, with the experimental group exhibiting lower levels of test anxiety, state anxiety, and trait anxiety, further substantiate the positive impact of the intervention.

### 3- Results related to the hypothesis that when comparing the test, state, and trait anxiety post-test and follow-up scores of the experimental group, there will be no significant differences between them.

To assess the sustained effects of the self-help platform based on the cognitive-behavioral approach, a dependent samples t-test was conducted to compare the experimental group's post-test and follow-up scores. The results are presented in Table 3.

Table 3. Dependent Samples T-Test Results Comparing Posttest and Follow-up Scores of the Experimental Group

| | | | n | $\bar{x}$ | S | df | t | p |
|---|---|---|---|---|---|---|---|---|
| Experimental | Test | Posttest | 111 | 28.95 | 8.97 | 110 | -1.944 | .054 |
| | | Follow up | 111 | 29.08 | 8.89 | | | |
| | State | Posttest | 111 | 54.81 | 5.48 | 110 | 1.701 | .092 |
| | | Follow up | 111 | 54.62 | 5.66 | | | |
| | Trait | Posttest | 111 | 50.45 | 5.42 | 110 | 2.239* | .027 |
| | | Follow up | 111 | 50.12 | 5.26 | | | |

*p<.05

When Table 3 is examined, when the post-test and follow-up tests of the experimental group were analyzed, it was seen that there was no significant difference between the post-test and follow-up test scores of Test anxiety ($t(110) = -1.944$, $p > .05$) and State anxiety ($t(110) = 1.701$, $p > .05$). However, a significant difference was observed between Trait anxiety post-test and follow-up test ($t(110) = 2.239$, $p < .05$).

These findings demonstrate that the positive effects of the self-help platform, developed using cognitive-behavioral techniques, were sustained over time for test anxiety and state anxiety.

These results provide evidence that the effect of the self-help platform based on the cognitive-behavioral approach on reducing test anxiety and state anxiety in high school students lasted for one month. The sustained benefits observed at the follow-up assessment highlight the enduring efficacy of this intervention.

## Discussion

The present study aimed to develop a self-help platform using cognitive-behavioral techniques to address test, state, and trait anxiety in high school students. The results showed that the developed self-help platform was significantly effective in reducing test anxiety, state anxiety, and trait anxiety scores and that these positive effects were sustained over time.

The literature review revealed a paucity of research examining the development and evaluation of self-help platforms based on cognitive-behavioral techniques for test, situation, and trait anxiety. However, few studies have examined internet-based interventions using cognitive-behavioral techniques for anxiety and anxiety disorders in adolescents (Bevan-Jones et al., 20-23; Nordh et al., 2017; Radomski et al., 2019; Stjerneklar et al., 2018; Stjerneklar et al., 2019).

Stjerneklar et al. (2019) implemented 14 weeks of therapist-guided internet-based cognitive behavioral therapy (ICBT) for high school students with anxiety and found that ICBT might be an acceptable treatment option, even for those with relatively high levels of anxiety and depressive symptoms. Bevan-Jones et al (2023) demonstrated the significant impact of digital technologies in supporting adolescents with depression and anxiety. Stjerneklar et al. (2018) reported that a 12-week internet-based CBT intervention had a significant effect on anxiety disorders in adolescents. Nordh et al. (2017) evaluated the feasibility and efficacy of internet-delivered CBT with therapist and parent guidance, supplemented by group exposure sessions, for adolescents with social anxiety disorder (SAD). Their findings indicated that this approach is a promising intervention for adolescents with SAD. Radomski et al (2019) developed and implemented an internet-based CBT programs for anxious children and adolescents, which had a significant impact on reducing anxiety.

These studies supported the findings of the current study, highlighting the importance and potential of the internet and web-based applications in addressing adolescent concerns. However, it is noteworthy that the reviewed studies focused primarily on the short-term effects of such interventions on adolescent anxiety, while the long-term effects remained unexplored. In contrast, the current study not only demonstrated the

efficacy of the self-help platform in reducing test anxiety, state anxiety, and trait anxiety but also provided evidence for the sustained effects of the intervention.

Furthermore, the existing literature has not identified any self-help applications specifically developed using cognitive-behavioral techniques to target test, trait and state anxiety in adolescents. The present study addressed this gap by introducing a self-help platform tailored to these specific concerns, thereby contributing to the knowledge base and paving the way for future research in this area.

The results of the present study showed that the self-help platform developed using cognitive-behavioral techniques had both short-term and long-term effects on adolescents' test anxiety, state anxiety, and trait anxiety. Considering these findings, it is recommended that further studies with larger sample sizes be conducted to validate and extend the efficacy of this platform. Furthermore, given the willingness of adolescents to engage with the platform during the study, it is advisable to develop similar programs targeting other key areas of concern for this age group.

It is recommended that school counselors use the self-help platform to integrate technology into counseling services, provide practicality in terms of time, and encourage the use of this platform and similar applications. Furthermore, given that students are comfortable with technology and can easily adapt to its use, school counselors can encourage students to use such applications.

As with any research endeavor, the present study is not without limitations. As the intervention was an internet-based self-help platform, occasional internet outages posed a challenge during the implementation phase. In addition, the study was conducted in two high schools in a small city, so further research is needed to assess the impact of the platform in different geographical and cultural contexts.

Despite these limitations, the current study represents a significant contribution to the existing literature by introducing and evaluating an innovative self-help platform based on cognitive-behavioral techniques for addressing test, state, and trait anxiety among high school students. The positive findings and recommendations summarized here pave the way for future research efforts to encourage, inform, and develop interventions aimed at reducing state, trait, and test anxiety in adolescents.

**Author Contributions:** This study was entirely conducted by the author.

**Funding Disclosure:** This research was funded by the Scientific and Technological Research Council of Turkey (TUBITAK) within the scope of 2219 Post-Doctoral Research Scholarship Program.

**Conflicts of Interest:** There is no conflict of interest with any person or institution in the research.

**Data Availability:** The data sets are available from the corresponding author upon reasonable request.

**Ethics Approval and Consent to Participate:** The study was conducted in accordance with the approved guidelines and regulations from the Research Ethics Committee of Burdur Mehmet Akif Ersoy University (protocol code GO 2022/805, July, 6, 2022). Informed consent was obtained from all participants involved in the study.

## References

AAP. (2025). *Anxiety and anxiety disorders in children and adolescents*. https://www.aap.org/en/patient-care/school-health/mental-health-in-schools/supporting-students-with-anxiety-in-school/

Abeles, P., Verduyn, C., Robinson, A., Smith, P., Yule, W., & Proudfoot, J. (2009). Computerized CBT for adolescent depression ("Stressbusters") and its initial evaluation through an extended case series. *Behavioural and Cognitive Psychotherapy, 37*(2), 151–165. https://doi.org/10.1017/S1352465808005067

Alibak, F., & Alibak, M. (2021). Comparing online cognitive behavioural therapy versus online positive psychotherapy, well-being theory (PERMA) on test anxiety of online learning students: A randomised control study. *Journal of the Australian and New Zealand Student Services Association, 29*(1), 6–17. https://doi.org/10.30688/janzssa.2021.1.08

ASCA. (2023). *ASCA releases updated student-to-school-counselor ratio data*. https://www.schoolcounselor.org/getmedia/a0565224-7cc7-4119-883a-2aa900e296b6/student-to-sc-ratios.pdf

Barak, A., Klein, B., & Proudfoot, J. G. (2009). Defining internet-supported therapeutic interventions. *Annals of Behavioral Medicine, 38*(1), 4–17. https://doi.org/10.1007/s12160-009-9130-7

Bevan-Jones, R., Hussain, F., Agha, S. S., Weavers, B., Lucassen, M., Merry, S., Stallard, P., Simpson, S. A., & Rice, F. (2023). Digital technologies to support adolescents with depression and anxiety. *BJPsych Advances, 29*(4), 239–253. https://doi.org/10.1192/bja.2022.3

Botella, C., Gallego, M. J., Garcia-Palacios, A., Guillen, V., Banos, R. M., Quero, S., & Alcaniz, M. (2010). An internet-based self-help treatment for fear of public speaking: A controlled trial. *Cyberpsychology, Behavior, and Social Networking, 13*(4), 407–421. https://doi.org/10.1089/cyber.2009.0224

Buğa, A., & Hamamcı, Z. (2016). The effects of a web-based interactive psychoeducational program and a traditional psychoeducational program based on cognitive-behavioral approach upon children's cognitive distortions and psychological symptoms. *Gaziantep University Journal of Social Sciences, 15*(3), 783–809. https://doi.org/10.21547/jss.256702

Büyüköztürk, Ş. (2024). *Data analysis handbook for social sciences statistics, research design SPSS applications and interpretation*. Pegem Publishing.

Büyüköztürk, Ş., Kılıç-Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2024). *Scientific research methods in education*. Pegem Publishing.

Chancey, J. B., Heddy, B. C., Lippmann, M., & Abraham, E. (2023). Using an online-based mindfulness intervention to reduce test anxiety in physics students. *Journal of Cognitive Enhancement, 7*(1–2), 128–139. https://doi.org/10.1007/s41465-023-00261-2

Chang, J. J., Ji, Y., Li, Y. H., Pan, H. F., & Su, P. Y. (2021). Prevalence of anxiety symptoms and depressive symptoms among college students during COVID-19 pandemic: A meta-analysis. *Journal of Affective Disorders, 292*, 242–254. https://doi.org/10.1016/j.jad.2021.05.109

Cliffe, B., Croker, A., Denne, M., & Stallard, P. (2018). Supported web-based guided self-help for insomnia for young people attending child and adolescent mental health services: Protocol for a feasibility assessment. *JMIR Research Protocols, 7*(12), e11324. https://doi.org/10.2196/11324

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.

Çetintulum-Huyut, B. (2019). Internet-based cognitive behavior therapy in the treatment of anxiety disorders. *Life Skills Journal of Psychology, 3*(6), 251–263. https://doi.org/10.31461/ybpd.622846

Deady, M., Kay-Lambkin, F., Teesson, M., & Mills, K. (2014). Developing an integrated, internet-based self- help programme for young people with depression and alcohol use problems. *Internet Interventions, 1*(3), 118–131. https://doi.org/10.1016/j.invent.2014.06.004

Doğan, H. (2011). The effect of network connected classroom guidance application on 8th grade primary school students' career development. *Gaziantep University Social Sciences Journal, 10*(3), 1077–1098.

Driscoll, R. (2007). *Westside test anxiety scale validation* (ERIC Digest No. ED495968). https://files.eric.ed.gov/fulltext/ED495968.pdf

Furmark, T., Carlbring, P., Hedman, E., Sonnenstein, A., Clevberger, P., Bohman, B., Eriksson, A., Hållén, A., Frykman, M., Holmström, A., Sparthan, E., Tillfors, M., Ihrfelt, E. N., Spak, M., Eriksson, A., Ekselius, L., & Andersson, G. (2009). Guided and unguided self-help for social anxiety disorder:

Randomised controlled trial. *The British Journal of Psychiatry, 195*(5), 440–447. https://doi.org/10.1192/bjp.bp.108.060996

Gati, I., & Asulin-Peretz, L. (2011). Internet-based self-help career assessments and interventions: Challenges and implications for evidence-based career counseling. *Journal of Career Assessment, 19*(3), 259–273. https://doi.org/10.1177/1069072710395533

Genç, M. (2013). Determining test anxiety of students in primary school according to class level and gender. *CBU Social Sciences Journal, 11*(1), 85–95.

Herrero, R., Mira, A., Cormo, G., Etchemendy, E., Baños, R. M., Garcia-Palacios, A., Ebert, D. D., Franke, M., Berger, T., Schaub, M. P., Görlich, D., Jacobi, C., & Botella, C. (2019). An internet-based intervention for improving resilience and coping strategies in university students: Study protocol for a randomized controlled trial. *Internet Interventions, 16*, 43–51. https://doi.org/10.1016/j.invent.2018.03.005

Hoek, W., Schuurmans, J., Koot, H. M., & Cuijpers, P. (2012). Effects of internet-based guided self-help problem-solving therapy for adolescents with depression and anxiety: A randomized controlled trial. *PLOS ONE, 7*(8), e43485. https://doi.org/10.1371/journal.pone.0043485

Hancock, D. R. (2001). Effects of test anxiety and evaluative threat on students' achievement and motivation. *The Journal of Educational Research, 94*(5), 284–290. https://doi.org/10.1080/00220670109598764

Hong, E. (1998). Differential stability of individual differences in state and trait test anxiety. *Learning and Individual Differences, 10*(1), 51–69. https://doi.org/10.1016/S1041-6080(99)80142-3

Kaçan-Softa, H., Ulaş-Karaahmetoğlu, G., & Çabuk, F. (2015). An analysis of the anxiety of exam observed in the senior high school students and the affecting factors. *K. Ü. Kastamonu Educational Journal, 23*(4), 1481–1494.

Khanna, M. S., & Kendall, P. C. (2010). Computer-assisted cognitive behavioral therapy for child anxiety: Results of a randomized clinical trial. *Journal of Consulting and Clinical Psychology, 78*(5), 737–745. https://doi.org/10.1037/a0019739

Levin, E., Hayes, S. C., Pistorello, J., & Seeley, J. R. (2016). Web-based self-help for preventing mental health problems in universities: Comparing acceptance and commitment training to mental health education. *Psychology Faculty Publications*, Article 1092. https://doi.org/10.1002/jclp.22254

Liebert, R. M., & Morris, L. W. (1967). Cognitive and emotional components of test anxiety: A distinction and some initial data. *Psychological Reports, 20*(3), 975–978. https://doi.org/10.2466/pr0.1967.20.3.975

Lufi, D., Okasha, S., & Cohen, A. (2004). Test anxiety and its effect on the personality of students with learning disabilities. *Learning Disability Quarterly, 27*, 176–184. https://doi.org/10.2307/1593667

Makarushka, M. M. (2011). *Efficacy of an internet-based intervention targeted to adolescents with subthreshold depression* [Doctoral dissertation, University of Oregon]. Oregon University Open Access System. https://scholarsbank.uoregon.edu/server/api/core/bitstreams/009d1559-52ab-4027- bd73-6a2c37823015/content

McEwan, K., Elander, J., & Gilbert, P. (2018). Evaluation of a web-based self-compassion intervention to reduce student assessment anxiety. *Interdisciplinary Education and Psychology, 2*(1), Article 6. https://doi.org/10.31532/InterdiscipEducPsychol.2.1.006

Nijhof, S. L., Bleijenberg, G., Uiterwaal, C. S., Kimpen, J. L., & van de Putte, E. M. (2012). Effectiveness of internet-based cognitive behavioural treatment for adolescents with chronic fatigue syndrome (FITNET): A randomised controlled trial. *The Lancet, 379*(9824), 1412–1418. https://doi.org/10.1016/S0140-6736(12)60025-7

Nordh, M., Vigerland, S., Öst, L. G., Ljotsson, B., Mataix-Cols, D., Serlachius, E., & Högström, J. (2017). Therapist-guided internet-delivered cognitive–behavioural therapy supplemented with group

exposure sessions for adolescents with social anxiety disorder: A feasibility trial. *BMJ Open, 7*(12), e018345. https://doi.org/10.1136/bmjopen-2017-018345

Official Gazette. (2014). *Regulation regarding the norm staff of administrators and teachers of educational institutions affiliated with the Ministry of National Education* (No. 29034).

O'Kearney, R., Gibson, M., Christensen, H., & Griffiths, K. M. (2006). Effects of a cognitive-behavioural internet program on depression, vulnerability to depression and stigma in adolescent males: A school- based controlled trial. *Cognitive Behaviour Therapy, 35*(1), 43–54. https://doi.org/10.1080/16506070500303456

Öner, N., & Le Compte, A. (1983). *State and trait anxiety inventory manual*. Boğaziçi University Publication.

Öner, N., & Le Compte, A. (1985). *State-trait anxiety inventory manual* (2nd ed.). Boğaziçi University Publication.

Orbach, G., Lindsay, S., & Grey, S. (2007). A randomised placebo-controlled trial of a self-help Internet-based intervention for test anxiety. *Behaviour Research and Therapy, 45*(3), 483–496. https://doi.org/10.1016/j.brat.2006.04.002

Özer, Ö., & Ceyhan, A. A. (2021). Development of self-help based online psychosocial support platform. *Journal of Disaster and Risk, 4*(2), 371–386. https://doi.org/10.35341/afet.986848

Özer, Ö., Ceyhan, A. A., & Struijs, S. Y. (2023). User profile of an online cognitive behavioral therapy self-help platform in Turkey. *Current Psychology*. https://doi.org/10.1007/s12144-023-04787-8

Psybot. (n.d.). *The Psybot application*. http://www.psybotapp.com/

Radomski, A. D., Wozney, L., McGrath, P., Huguet, A., Hartling, L., Dyson, M. P., Bennett, K., & Newton, A. S. (2019). Design and delivery features that may improve the use of internet-based cognitive behavioral therapy for children and adolescents with anxiety: A realist literature synthesis with a persuasive systems design perspective. *Journal of Medical Internet Research, 21*(2), e11128. https://doi.org/10.2196/11128

Sarason, I. G. (1984). Stress, anxiety, and cognitive interference: Reactions to tests. *Journal of Personality and Social Psychology, 46*(4), 929–938. https://doi.org/10.1037/0022-3514.46.4.929

Sethi, S., Campbell, A. J., & Ellis, L. A. (2010). The use of computerized self-help packages to treat adolescent depression and anxiety. *Journal of Technology in Human Services, 28*, 144–160. https://doi.org/10.1080/15228835.2010.508317

Sparfeldt, J., Rost, D. H., Baumeister, U. M., & Christ, O. (2014). Test anxiety in written and oral examinations. *Learning and Individual Differences, 24*, 198–203. https://doi.org/10.1016/j.lindif.2012.12.010

Spence, S. H., Donovan, C. L., March, S., Gamble, A., Anderson, R. E., Prosser, S., & Kenardy, J. (2011). A randomized controlled trial of online versus clinic-based CBT for adolescent anxiety. *Journal of Consulting and Clinical Psychology, 79*(5), 629–642. https://doi.org/10.1037/a0024512

Spence, S. H., Holmes, J. M., March, S., & Lipp, O. V. (2006). The feasibility and outcome of clinic plus internet delivery of cognitive-behavior therapy for childhood anxiety. *Journal of Consulting and Clinical Psychology, 74*(3), 614–621. https://doi.org/10.1037/0022-006X.74.3.614

Spielberger, C. D., Gorsuch, R. C., & Lushene, R. E. (1970). *Manual for the State-Trait Anxiety Inventory*. Consulting Psychologists Press.

Spielberger, C. D. (1972). Current trends in theory and research on anxiety. In C. D. Spielberger (Ed.), *Anxiety: Current trends in theory and research* (Vol. 1, pp. 3–20). Academic Press.

Stallard, P., Richardson, T., Velleman, S., & Attwood, M. (2011). Computerized CBT (Think, Feel, Do) for depression and anxiety in children and adolescents: Outcomes and feedback from a pilot randomized

controlled trial. *Behavioural and Cognitive Psychotherapy, 39*(3), 273–284. https://doi.org/10.1017/S135246581000086X

Stjerneklar, S., Hougaard, E., Nielsen, A. D., Gaardsvig, M. M., & Thastum, M. (2018). Internet-based cognitive behavioral therapy for adolescents with anxiety disorders: A feasibility study. *Internet Interventions, 11*, 30–40. https://doi.org/10.1016/j.invent.2018.01.001

Stjerneklar, S., Hougaard, E., & Thastum, M. (2019). Guided internet-based cognitive behavioral therapy for adolescent anxiety: Predictors of treatment response. *Internet Interventions, 15*, 116–125. https://doi.org/10.1016/j.invent.2019.01.003

Şahin, H., Günay, T., & Batı, H. (2006). University entrance exam anxiety of senior high school students in the province of İzmir, district of Bornova. *Sted Journal, 15*(6), 107–113.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Allyn & Bacon/Pearson Education.

Totan, T., & Yavuz, Y. (2009). The validity and reliability study of the Turkish version of Westside Test Anxiety Scale. *Mehmet Akif Ersoy University Educational Faculty Journal, 17*, 95–109.

Totan, T. (2018). Investigation of test exam on middle and high school students: The Westside Test Exam Scale. *Western Anatolia Journal of Educational Sciences, 9*(2), 143–155.

Trautmann, E., & Kröner-Herwig, B. (2010). A randomized controlled trial of internet-based self-help training for recurrent headache in childhood and adolescence. *Behaviour Research and Therapy, 48*(1), 28–37. https://doi.org/10.1016/j.brat.2009.09.004

Tzvi, R. (2018). An internet based self help intervention for treating test anxiety amongst university students [Master's thesis, Bar-Ilan University]. *Bar-Ilan University Open Access System*. https://social-work.biu.ac.il/en/node/4332

Williams, C., & Chellingsworth, M. (2010). *CBT: A clinician's guide to using the five areas approach*. CRC Press.

Vigerland, S., Thulin, U., Ljótsson, B., Svirsky, L., Öst, L. G., Lindefors, N., Andersson, G., & Serlachius, E. (2013). Internet-delivered CBT for children with specific phobia: A pilot study. *Cognitive Behaviour Therapy, 42*(4), 303–314. https://doi.org/10.1080/16506073.2013.844201

Vigerland, S., Ljótsson, B., Thulin, U., Öst, L. G., Andersson, G., & Serlachius, E. (2016). Internet-delivered cognitive behavioural therapy for children with anxiety disorders: A randomised controlled trial. *Behaviour Research and Therapy, 76*, 47–56. https://doi.org/10.1016/j.brat.2015.11.006

Viskovich, S. (2019). Evaluation of a web-based Acceptance and Commitment Therapy (ACT) program to increase self-care and mental health skills in university students [Doctoral dissertation, University of Queensland]. https://espace.library.uq.edu.au/view/UQ:348d52d

Vogelaar, B., Bakker, M., Elliott, J. G., & Resing, W. C. M. (2017). Dynamic testing and test anxiety amongst gifted and average-ability children. *British Journal of Educational Psychology, 87*(1), 75–89. https://doi.org/10.1111/bjep.12136