

Development of short test anxiety scale



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Anxiety is defined as “ an uneasy feeling of discomfort or dread accompanied by an

autonomic response; a feeling of apprehension caused by anticipation of danger (Taber’s

Cyclopedic Medical Dictionary, 2013, p. 155). As long as educators have been testing students,

some students have experienced test anxiety (Zeidner, 1988). Severe test anxiety is thought to

afflict approximately 20 percent of American students and an additional 18 percent have test

anxiety of a moderate level, according to the American Test Anxiety Association (Strauss, 2013).

Test anxiety can be described as “ worry of suffering a reduction in one’s self-image and self-

efficacy, particularly its reflection in the eyes of significant others, concurrently with obstruction

of cognitive processes and outstanding physical and mental discomfort” (Friedman & Bendas-

Jacob, 1997, p. 1045).

The current study proposes a new scale to measure test anxiety. This proposed scale

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consists of only ten statements in order to accurately screen individuals experiencing test anxiety.

By developing a scale that is short in length and can be administered in a few minutes, students

can be routinely screened for test anxiety. Thus, using this tool, individuals whose academic

performance is negatively affected by test anxiety will be quickly identified.

Following that,

interventions can be offered and initiated, if desired. Because of this, students will be able to

perform at their best academically in the testing environment, thus allowing students to

maximize their potential.

Literature Review

Researchers have been studying test anxiety for about seventy years (Sarason & Mandler,

1952). Zeidner (1998) noted an increased interest in the subject and noted a sizable number of

studies being conducted. In considering the construct of test anxiety, Numan and Hasan (2017)

utilized an exploratory research design and asked participants to write as many situations that

make them anxious during the entire testing process. They were also asked to rank those

experiences in a hierarchical order from least anxiety producing to most anxiety producing

situations (Numan & Hasan, 2017). While they found students experience test anxiety before,

during, and after the actual test, the most frequently reported test anxiety situations that provoke

test anxiety were “ waiting for the question paper,” followed by “ lengthy exam paper” and “ night

before exam” (Numan & Hasan, 2017, p. 10).

The components of test anxiety have been investigated repeatedly over the years with

varying outcomes. Some researchers believe that test anxiety has four components while others

view test anxiety as having only two main components (??????). Sarason (1984) developed the

Reactions to Tests which included the four factors of tension, worry, test-irrelevant thinking, and

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factors dealing with bodily symptoms. This four factor view developed into the Revised Test

Anxiety(RTA) scale that continues to be utilized today. The purpose of a study by Benson and

El-Zahhar (1994) was to validate the four dimensions further and improve on the Revised Test

Anxiety Scale (RTA) using a sample of both American and Egyptian students. They used

three different cross-validation approaches and ultimately concluded that the 18-item RTA

should have 20 items because it added additional precision for the individual dimensions. This

20 item scale continues to be utilized in later research (Hagtvet & Benson, 1997, Putwain &

Symes, 2018).

Liebert and Morris (1956) developed the two concept approach of W (worry) and E

(emotionality). Worry includes issues about fear of failure while emotionality is related to

physiological responses. The purpose of their study was to show that there is an inverse

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correlation between worry and performance expectancy and that this is different than the

relationship between expectancy and emotionality. As hypothesized, they found that worry and

expectancy were negatively related but no similar relationship was found between emotionality

and expectancy. The questionnaire used in the Liebert and Morris study consisted of 10 items

which were modified from the Test Anxiety Questionnaire (TAQ) by Sarason and Mandler

(1952).

The Test Anxiety Inventory (TAI) was developed by Charles Spielberger (1980). This tool

built on the above mentioned work and uses the two subscales of worry and emotionality. The

worry subscale has eight items, the emotionality subscale has eight items and there are four

additional general test anxiety items for a total of 20 items. This questionnaire was utilized in a

study of test anxiety and academic achievement by Dawood, Ghadeer, Mitsu, Almutary and

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Alenezi (2016). The purpose of this study involving student nurses was to determine the

relationship between test anxiety and academic success. The study found that most students had

either a mild or moderate level of anxiety and that there was no significant relationship between

test anxiety and grade point average (GPA) (Dawood et al., 2016).

Even with its considerable popularity, there has been an attempt to shorten the Test Anxiety

Inventory (TAI) to five questions. Taylor and Deane (2002) created a tool which they call the

TAI-5 after conducting a study of psychology students over a three-year period. The purpose of

their study was to create a short form of the Test Anxiety Inventory (TAI) for times when using

the entire scale might be difficult due to either time or other constraints.

They compared the

item-remainder correlations and the correlations between the possible short forms and the

remaining items of the TAI. Taylor and Deane (2002) ultimately decided on two items

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from the worry subscale, two items from the emotionality subscale and one item from the general

category. The five items selected were the top five item-remainder correlations and all had r

values $> .70$ in this study. Despite this, Taylor and Deane (2002) viewed this with limited

success. They concluded that:

we advocate the use of the full-form TAI when an understanding of the separate

components of worry and emotionality is needed. In situations in which a brief measure of

test anxiety is needed and the full 20-item version may be too cumbersome, the TAI-5

provides a promising alternative, particularly in research contexts. (p. 135)

Despite a variety of tools that have been developed, there continues to be a need for a shorter

item tests for the measurement of anxiety (Marteau & Bekker; Taylor & Deane). If shorter

versions that accurately measure test anxiety can be constructed, massive groups of students

could be screened and those individuals suffering from significant test anxiety can be identified

and offered one of several methods to minimize test anxiety suggested by current research. A

cursory review of the literature from 2015 to the present time found a variety of interventions

investigated as solutions to the problem of test anxiety. For example, Altundağ (2019) identified

solution-focused brief counseling; Cho (2016) studied daily mindful breathing; Reiss (2016)

considered cognitive behavioral therapy; Clinton (2019) compared two in-class anxiety reduction

exercises before an exam; Ne'Eman-Haviv and Bonny-Noach (2019) evaluated substances as

self-treatment for test anxiety; and Hoferichter, Ruafelder, Ringeisen, Rohrmann and Bukowski

(2015) suggested biofeedback and relaxation techniques, as answers to test anxiety.

The proposed Short Test Anxiety Scale was developed so that educators could quickly

identify students in their courses who suffer from test anxiety and might profit from intervention.

The Test Anxiety Inventory (TAI) (Spielberger, 1980) is one of the tools most frequently utilized

to measure test anxiety. It consists of 20 statements while the Short Test Anxiety Scale has only

10 statements. The current study compared the scores of this new scale with the scores on the

TAI as it is a reliable and validated scale though twice as long as the new tool. Since both are

measures of test anxiety, analysis was done to measure convergent validity using the TAI.

Scores on the Short Test Anxiety Scale were also compared to scores on the Job Satisfaction

Scale(JSS), developed by Spector (1985). This survey is a 36 item scale with nine facets, all

related to aspects of the work environment. Facets include topics such as pay, fringe benefits,

promotion, and coworkers. Responses are computed using a Likert scale from strongly disagree

to strongly agree. Approximately half of the items are negatively worded and must be reverse

scored. One would not expect there to be a strong relationship between test anxiety and job

satisfaction since the school environment is separate from the work environment and job

satisfaction is unrelated to test anxiety. Therefore, job satisfaction was used to test for

discriminant validity.

Based on this literature review and the need seen in classrooms as students continue to suffer

from test anxiety, the Short Test Anxiety Scale was developed and tested for both reliability and

validity. The hypotheses for this study were:

Hypothesis 1: The Short Test Anxiety Scale will demonstrate high reliability.

Hypothesis 2: There will be a significant positive correlation between the Short Test

Anxiety Scale and the Test Anxiety Inventory, thereby offering evidence of convergent validity.

Hypothesis 3: There will not be a significant correlation between the Short Test

Anxiety Scale and the Job Satisfaction Scale, thereby offering evidence of discriminant validity.

Method

Participants

This study had a total of 97 participants. This did not include three individuals who quit

after giving only their age. Another five participants were deleted because they completed less

than half of the survey. Participants were recruited by posting on the author's Facebook page.

The posting said " Hello friends, I need your help! I am taking a summer class and doing some

research. This is now the way to collect data, so please, please, please...click on this link and fill

out the questionnaire. I promise to update you on things when the class is over in August.

Thanks! You just need to click the attachment below." Because a minimum of 90 completed

surveys were required, additional friends were added after sending an email to the author's

upcoming two classes (see Appendix A). These students were offered one extra credit point.

Participants aged in range from _____.

The average age was 41.63 years with a standard deviation of 15.56 years.

Males accounted for

12.5 percent of the participants, with females totaling 87.5 percent of the total. Eighty-nine

percent of the participants were white, four percent were black, two percent

_____. All participants completed an informed consent form prior to beginning

the survey.

Materials

The Short Test Anxiety Scale. The Short Test Anxiety Scale (Appendix B) was created

from the author's own experiences with test taking. Additionally, the author gained some ideas

after a discussion with a current graduate student. Feedback from the course instructor provided

suggestions on the wording of three of the statements. The scale consists of 10 statements in

which the individual was asked to respond using a 7-point Likert scale ranging from 1

_____ to 7. All items are scored positively, so that higher scores indicate higher

test anxiety.

Test Anxiety Inventory (TAI). The Test Anxiety Inventory (TAI) was created by Charles

Spielberger. This scale was designed to measure test anxiety and consisted of 20 statements that

were rated on a Likert scale ranging from Almost Never to Almost Always.

There are two

subscales: worry and emotionality, each with eight items. There are four additional items which

were loaded onto both subscales and included in the total score. The total scores ranged from 20

to 80, with higher test anxiety indicated by higher scores. An example item from the worry

subscale was: *During tests I find myself thinking about the consequences of failing*; and example

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item from the emotionality subscale was: *The harder I work at taking a test, the more confused I*

get. One item that is part of the total score but not part of either subscale was: *During important*

tests I am so tense that my stomach gets upset. The Test Anxiety Inventory was used to show

convergent validity.

Job Satisfaction Scale. The Job Satisfaction Scale was created by Paul Spector. It

consisted of 36 items and uses a Likert scale with six choices, ranging from strongly disagree to

strongly agree. Scores ranged from 36 to 216. Four items each are devoted to the following

categories: pay, promotion, supervision, fringe benefits, contingent rewards, operating

procedures, coworkers, nature of work and communication (Spector, 1985).

*****The

Job Satisfaction Scale was used to show discriminant validity.

Procedure

Once the Short Test Anxiety Scale was created, the information was entered into the

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Qualtrics program. The link was added to the author's Facebook page so that participants could

complete the survey on their computer or smartphone. The survey began with informed consent

statement, followed by a question regarding the age of the participant.

Following that, the Short

Test Anxiety scale was given, followed by the Test Anxiety Inventory, and the Job Satisfaction

Scale. Demographics were then solicited with age, gender, and ethnicity.

Finally, there was a

debriefing statement. The data obtained was compiled using the JMP website. An Excel

spreadsheet was developed to analyze the data obtained.

Results

The reliability was calculated for the proposed Short Test Anxiety Scale. The internal

consistency reliability was Cronbach's α

= .886. Support was found for the first hypothesis, that

the scale will demonstrate reliability. This demonstrates that the scale has adequate reliability.

The Test Anxiety Inventory (TAI) was found to be reliable with an α

= .961. The Job

Satisfaction Scale (JSS) also demonstrated reliability (α

= .938). With further analysis of the

Short Test Anxiety Scale, all 10 statements were positively correlated with the total score of the

scale (see Appendix B). Since the scale reached reliability greater than .80, none of the items

were removed. In reviewing each of the statements in this scales, the reliability of the whole

scale would not have been increased substantially with the removal of any one items.

Using a Pearson r correlation, there was a significant, strong positive correlation between the

Short Test Anxiety Scale and the Test Anxiety Inventory ($r = .886, p < .05$); subjects who had a

higher test anxiety on the Short Test Anxiety scale tended to have a in lecture tended to have a

higher score on the Test Anxiety Inventory. This provides evidence for convergent validity and

thus confirms Hypothesis 2. Individuals who scored high on the Test Anxiety Inventory, which

measures higher levels of test anxiety, also scored higher on the proposed new Short Test

Anxiety Scale. Likewise, both the new proposed Short Test Anxiety Scale and the Test Anxiety

Inventory were significantly correlated with the Job Satisfaction Scale ($r = -.27$ and $r = -.26$,

respectively). This provides evidence of lack of discriminant validity, and both are negative

correlations, implying that higher test anxiety is correlated with lower job satisfaction. Thus,

Hypothesis 3 involving discriminant validity is not supported. In conclusion, two of the three

hypotheses were supported in this study.

Discussion

The goal of creating the Short Test Anxiety Scale was to provide a concise yet valid

instrument that would identify individuals who suffer from test anxiety. The results of the data

analysis showed a high Cronbach's α

, which provides evidence that the scale is reliable. This

supports the first hypothesis. The Short Test Anxiety Scale was compared to the Test Anxiety

Inventory (TAI) and the Job Satisfaction Scale (JSS) to demonstrate convergent and discriminant

validity. The data analysis revealed strong convergent validity between the Short Test Anxiety

Scale and the Test Anxiety Inventory, this supporting the second hypothesis. However, the data

showed a significant inverse relationship between the Short Test Anxiety Scale and the Job

Satisfaction Scale (JSS). Therefore, the third hypothesis was not supported.

A strength of this study was that the sample size was more than adequate to conduct this

research. Many participants were quick to participate as some were given a small incentive for

completing the questionnaire. Another strength of the study was utilizing two well-respected

questionnaires for comparison.

One of the limitations of the study was that some of the participants were not current

students and their answers to questions on test anxiety were not based on recent experiences.

Likewise, some of the participants answered the questions about job satisfaction based on their

past rather than on current employment. Finally, the participants were obtained on convenience

sampling, and thus, may not reflect an accurate representation of a student population.

The results of this study provide a shorter scale to use in research on test anxiety. Much of

the current research on the subject involves interventions, and this research could be streamlined

on the front end by using this new, reliable tool to identify students suffering with significant test

anxiety. In practice, this tool is a quick screening tool that can be used at the beginning of every

class to steer students to interventions so that the effects of test anxiety in any academic

classroom can be minimized.

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Further research might be directed at investigating the possible relationship between test

anxiety and job satisfaction. A clearer understanding of that relationship should be explored.

Another study attempting discriminant validity would be helpful in adding validity to the

proposed scale. Other studies limiting the participants to the student population would prove

especially useful.

In summary, the current study shows promise in the development of an abbreviated test

anxiety tool that could be widely used. Additional research will need to be done to show

discriminant validity but the reliability of the proposed tool is encouraging.

Students who suffer


from test anxiety will benefit from quick identification and more immediate intervention.

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Appendix A

Hello Students,

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I am your Psychiatric Mental Nursing instructor for the fall. We have a new book and the class has, historically, been a challenge for some students. I love this area of nursing and look forward to sharing my knowledge with you.

I am working on a study this summer and need some participation. I thought it would be a good way for you to earn your first point in my class. Those of you who know me realize that I do NOT give out extra credit, so this is a real luxury, and I hope you will take advantage of it.

Here's what you need to do. It involves three steps.

1) Request me as a friend on Facebook. I will check every day for two weeks and accept for request.

2) Scroll and find my posting about my research and click on the Qualtrics area, which will take you to my survey. It is on test anxiety and job satisfaction. It only takes about 10-15 minutes max to complete it but please answer honestly. I cannot see your individual responses.

The survey will only be open for approximately two weeks though so spread the word and let's get off to a good start! I'm looking forward to meeting you in August. Enjoy the rest of your summer.

Appendix B

1. I make errors on a test because I am nervous.
2. I postpone taking a test, if possible, due to worry.
3. I spend more time worrying about a test than actually studying for it.

4. I worry about tests more than my classmates.
5. I perform poorly on tests due to my anxiety.
6. I would prefer to measure my class performance in ways other than tests.
7. I feel a sense of relief when a test is over.
8. My mind “ goes blank” during part of a test.
9. I have trouble sleeping the night before a test.
10. I have thoughts of failure before a test.

Appendix C

Table 1

*Reliability Analysis for the Short Test
Anxiety Scale*

Item	Cronbach's α if Item Deleted
Item 1	. 8734
Item 2	. 8825
Item 3	. 8672
Item 4	. 8744
Item 5	. 8671

Item 6 . 8841

Item 7 . 8902

Item 8 . 8687

Item 9 . 8687

Item10 . 8682

Table 2

Means, standard deviations and intercorrelations for all scales (N = 97)

	<i>M</i>	<i>S</i> <i>D</i>	Short Test Anxiety Inventory Scale	Short Test Anxiety Inventory Scale	Job Satisfacti on Scale
Short Test Anxiety Scale	24.7	7.56	1	.8611*	-.2725*
Short Test Anxiety Inventory	47.89	18.61	.8861*	1	-.2611*

Job	16	31		
Satisfacti	5.	.	-. .-	1
on Scale	05	09	2725*	2611*

Note. * $p < .05$