The Impact of Test Anxiety on Test Performance among Iranian EFL Learners

Parviz Birjandi
English Language and Literature Department, Allameh Tabataba'i University,
Head of English Language room, South Allameh Street, Tehran, Iran
pbirjandi@yahoo.com

Minoo Alemi
Languages and Linguistics Department, Sharif University of Technology,
Room 5, first floor, Ibn sina Building, Azadi Avenue,Tehran, Islamic Republic of Iran
alemi@sharif.ir

Abstract

As an affective factor, test-taking anxiety has been investigated in different contexts in the past two decades. However, the mixed results of the relationship between test-taking anxiety and L2 learners' test performance show that the instrumentation for the assessment of test-taking anxiety and the factors comprising the construct of test-taking anxiety trait requires more investigation in order to shed more light on the issue. To this end, a test-taking anxiety questionnaire (Sarason, 1975) [27] and a general English test were administered to 164 ESP students of Engineering enrolled in a B.A. program to document (a) the degree of their test taking anxiety, (b) the relationship between test-taking anxiety and test performance, and (c) the factor loadings of anxiety based on exploratory factor analysis. The results show that L2 learners' test anxiety is rather low, with most of its components having no significant negative correlation with test performance. The results of exploratory factor analysis reveal the loading of test anxiety trait on the rather overlapping three factors of specific test anxiety, general test anxiety, and test preparation anxiety. However, out of these factors, general test anxiety, due to its functioning at the higher-order affective level, has a significant negative correlation with test performance. By contrast, test preparation anxiety, in view of facilitating test performance, manifests a positive, albeit non-significant, correlation with test performance. The results have two implications: (a) as the correlations and loadings on test anxiety factors proved to be of both negative and positive types, the anxiety questionnaire is not monolithic and hence it is not a proper measure in case the linear relationship between test anxiety and test performance is the focus of the study; and (b) test anxiety does not seem to much influence on test performance at the micro- test-specific level.

Keywords: test taking anxiety, test performance, general anxiety

1. Introduction
1.1. Definition of the Anxiety Trait and Its Classifications

As Brown (1994) [3] expressed it, the acquisition of a new language is a fascinating, though colossal, enterprise, encompassing a wide range of variables that may stem from neurological to psychological, cognitive, and affective domains. Bloom (1956, cited in Krathwohl, Bloom, and Masia, 1964) [16] offered a comprehensive definition of two domains of learning: the cognitive and the affective. Brown (1994: 135) [3] defined the affective domain as "the emotional side of human behavior." By analogy, the cognitive domain could be defined as the mental side of human behavior. These seemingly clear-cut definitions for the two most important domains of learning might suggest a division between cognition and affection, when indeed they are two sides of the same coin. Belonging to the affective domain of language learning, anxiety has been attracting more and more attention in recent years, and attempts have been made to define and classify into different categories.

Lewis defines anxiety as "an unpleasant emotion experienced as dread, scare, alarm, fright, trepidation, horror or panic" (1970: 63) [17]. Horwitz, Horwitz, and Cope have offered a precise

definition of FL anxiety: "A distinct complex of self- perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process" (1986: 128) [12].

There are two main classifications of anxiety. The first one encompasses three anxiety types: trait, state, and situation-specific anxiety (Ellis, 1994) [6]. The other classification divides anxiety into two types: facilitative and debilitative.   What follows is the description of these two classifications.

Trait, State, and Situation-Specific Anxiety: In the trichotomy, trait anxiety is defined as an aspect of personality, a more permanent predisposition to be anxious. Trait anxiety is generally associated with people who have an anxiety disorder, and it is regarded as a fixed stage of anxiety, which is undergone by a person who has the propensity to become extra anxious and persistently displays unhealthy responses when he encounters stimuli that provokes him. A person who suffers from trait anxiety can become anxious from a number of things that another person wouldn't even pick up on; for example, their anxiety may be triggered by a leaf blowing in the wind, or a specific color (things that people without the condition would not even begin to perceive as a threat). Situation-specific anxiety is aroused by a specific type of situation events such as public speaking, examinations, or class participation. Language anxiety is a type of situation-specific anxiety associated with attempts to learn an L2 and communicate in it. State anxiety is defined as an apprehension experienced at a particular moment in time as a response to a definite situation. It is a combination of trait and situation-specific anxiety. State anxiety is identified as an unpleasant emotional stimulation that occurs when a person is comes into contact with frightening stressors or dangers while trait anxiety signifies a person's continual tendency to react with state anxiety, because they're persistently expecting bad circumstances to transpire.

Facilitating and Debilitating Anxiety: Anxiety, e.g. the negative experience of anxiety during preparation for a test or during the test itself, is often detrimental, but it may be beneficial if it is not extreme. Simpson, Parker, and Harrison (1995) [29] convey this with two well known principles of anxiety. The first one is facilitating anxiety or a minimal amount of anxiety (an optimal amount is more accurate) which "can mobilize human beings to respond rapidly and efficiently." Facilitating anxiety motivates learners to fight the new learning tasks and prompts them to make extra efforts to overcome their feelings of anxiety, although Horwitz (1986) [10] suggests that this may only occur in fairly simple learning tasks. The second one is referred to as debilitating anxiety: "excessive amounts of anxiety" which "may foster poor response and sometimes inhibit response" (Simpson, Parker, and Harrison, 1995: 700) [29]. Debilitating anxiety causes learners to flee the learning task in order to avoid the source of anxiety.

1.2. Foreign Language Anxiety

According to Guiora (1980, cited in Ehrman, 1999: 78) [4] "the task of learning a new language is a profoundly unsettling psychological proposition." Anxiety "ranks high among factors influencing language learning, regardless of whether the setting is informal or formal' (Oxford, 1999: 59) [24].

Studies into anxiety in language learning have focused on language anxiety, which is a type of anxiety related specifically to language situations (Gardner and MacIntyre, 1993) [8]. This is seen as "a distinct complex of self-perceptions, beliefs, feelings, and behaviors ... arising from the uniqueness of the language learning process" (Horwitz, Horwitz, and Cope, 1986, p.128) [12] which 'does not appear to bear a strong relation to other forms of anxiety' (MacIntyre, 1999: 30) [18]. Findings from studies indicate that language anxiety is negatively related to achievement in the L2 and is associated with "deficits in listening comprehension, impaired vocabulary learning, reduced word production, low scores on standardized tests, low grades in language courses or a combination of these factors" (Gardner, Tremblay, and Masgoret, 1997: 345) [9]. The effects of

anxiety are described as "pervasive and subtle" (MacIntyre and Gardner, 1994: 283) [21] and can "influence both language learning and communication processes" (MacIntyre, 1999: 24) [18]. Like motivation, there is a link between anxiety and proficiency levels, with anxiety levels often at their highest early on in language learning, and then declining as proficiency increases (Gardner and MacIntyre, 1993) [21]. This is true of distance language learners too, who, according to White (1995: 208) [33], report "initial feelings of lack of preparedness and lack of confidence and a sense of inadequacy."

Language anxiety is a type of situation-specific anxiety associated with attempts to learn an L2 and communicate in it. In the context of second language studies, anxiety in a general sense is considered in attitudes and motivation studies (Gardner, 1985 [7]; MacIntyre and Gardner, 1991 [20]), and especially language anxiety (e.g., Bailey et al., 1999 [2]; Elkhafaifi, 2005 [5]; Horwitz, 2001 [11]; Philips, 1992 [26]) has often examined. Past studies show a negative and overall moderate relationship between foreign language anxiety overall and language achievement (Horwitz, 2001 [11]; MacIntyre, 1999 [18]).

Scovel (1978) [28] states that foreign language anxiety research suffers from several ambiguities. He discusses a few studies, each of which had somewhat inconsistent results. He points out, for example, that Swain and Burnaby (1976) [30] found a negative correlation between language-class anxiety and one measure of children's ability to speak French but no significant correlation with other measures of proficiency. Similarly, Tucker, Hamayan, and Genesee (1976) [32] found one index of performance to be significantly negatively related to French-class anxiety, but reported three other indices that were not correlated significantly with this type of anxiety.

Components of Foreign Language Anxiety: Horwitz, Horwitz, and Cope (1986) [12] make a similar statement almost a decade after Scovel's review. As a remedy, they outline a theoretical framework from which to begin. Horwitz et al. describe three components of foreign-language anxiety. The first is communication apprehension. They propose that the language student has mature thoughts and ideas but an immature second-language vocabulary with which to express them. The inability either to express oneself or to comprehend another person leads to frustration and apprehension. The second component, closely related to the first, is fear of negative social evaluation. Because students are unsure of themselves and what they are saying, they may feel that they are not able to make the proper social impression. The third component is test anxiety, namely, apprehension over academic evaluation. These three components are viewed by Horwitz et al. to have a deleterious effect on second language acquisition.

Stages of Foreign Language Anxiety: Applying Tobias' (1986) [31] model of the effects of anxiety on learning, MacIntyre and Gardner (1994) [21] theorized that foreign language anxiety occurs at each of the following three stages of the second language acquisition process: input, processing, and output. At input, anxiety may cause attention deficits and poor initial processing of information. For example, people with higher anxiety seem easily distracted from the task because time is divided between the processing of emotion-related and task- related cognition. If the task is relatively simple, anxiety may have little effect on processing. The more difficult the task becomes, relative to ability, the greater the effect of anxiety on processing. Interference with the rehearsal of new information would be an example of this type of effect. At output, anxiety may interfere with the retrieval of previously learned information. The experience of getting blank on a test can be attributed to the influence of anxiety at the time of retrieval.

1.3. Test Anxiety

With respect to test anxiety, Daly (1991; cited in Onwuegbuzie et al., 2000) [23] found that learners experience more language anxiety in highly evaluative situations. Indeed, the more unfamiliar and ambiguous the test tasks and formats, the higher the prevailing level of language anxiety (Young, 1991) [34].

Components of Test Anxiety: Since test anxiety is multicomponential (Zeidner, 1998) [35], investigating how each component is related to performance measures may be more important than investigating how test anxiety overall is related to performance measures.

Knox, Schacht and Turner (1993) [15] state that test anxiety can include performance anxiety and content (e.g. math) anxiety. Both of these make it hard for students to concentrate on tests and perform adequately. Knox et al. also recognize the consequences of poorly-managed test anxiety: "Failure to manage test anxiety can result in failing courses, dropping out of school, a negative self-concept and a low earning potential" (1993: 295) [15].

Causes of Test Anxiety: There are many reasons for test anxiety. The first one is lack of preparation as indicated by (a) cramming the night before the exam, (b) poor time management, (c) failure to organize text information, and (d) poor study habits. The second one is worrying about (a) past performance on exams, (b) how friends and other students are doing, and (c) the negative consequences of failure. In addition, a student may experience physical signs of test anxiety during an exam like perspiration, sweaty palms, headache, upset stomach, rapid heart beat, and tense muscles.

Research on test anxiety has identified three models that explain the causes of test anxiety. According to the first model, identified as the learning-deficit model (Kleijn et al., 1994) [14], the problem lies not in taking the test, but in preparing for the test. According to this model, the student with high test anxiety tends to have or use inadequate learning or study skills while in the preparation stage of exam taking (Mealey and Host, 1992) [22]. The second model is termed as the interference model (Kleijn, et al., 1994) [14]. The problem for people in this model is that, during tests, individuals with test anxiety focus on task-irrelevant stimuli which negatively affect their performance (Sarason, 1975) [27]. The attention diverted from the task at hand can be categorized into two areas, according to Sarason. The first type of distraction can be classified as physical distraction and includes an increase in awareness of heightened autonomic activity (e.g. sweaty palms and muscle tension). The second type of distraction includes inappropriate cognitions, such as saying to one, "others are finishing before me, I must not know the material," or "I'm stupid, I won't pass." The presence of either of these two task-irrelevant cognitions will affect the quality of a student's performance. The third model of test anxiety includes people who think they have prepared adequately for a test, but in reality, did not. These people question their abilities after the test, which creates anxiousness during the next test.

Effects of Test anxiety on Test performance: There are many types of test anxiety effects. The first one is nervousness including having difficulty reading and understanding the questions on the exam paper, having difficulty organizing one's thoughts, having difficulty retrieving key words and concepts when answering essay questions, and doing poorly on an exam even though one knows the material. The second effect is related to mental blocking. It includes going blank on questions, and remembering the correct answers as soon as the exam is over. Finally, common worries that increase test anxiety are worry about performance, worry about bodily reactions, worry about how others are doing, and worry about possible negative consequences.

In'nami (2006) [13] investigated the effects of test anxiety on listening test performance and found out that test anxiety did not affect listening test performance. He concluded that among the three components of test anxiety (i.e. general test worry, test-irrelevant thinking, and emotion), none affects listening test performance. The result supported Aida's (1994) [1] and MacIntyre and Gardner's (1989) [19] findings and suggested that, in foreign language anxiety (Horwitz et al., 1986) [12], test anxiety seemed to work differently compared with communication apprehension and fear of negative evaluation. The non-relationship between test anxiety and listening test performance was because of test takers' English proficiency levels, strategic competence, and low-stakes nature of test results.

1.4. Purpose of the Study

Most past studies calculate correlation coefficients between foreign language anxiety as a whole and performance measures, but they do not examine the relationship between each constituent of test anxiety and performance measures. Since test anxiety is multi- faceted (Zeidner, 1998) [35], investigating how each constituent is related to performance measures may be more important than investigating how test anxiety overall is related to performance measures. Against this backdrop, the present study focused on anxiety as an affective trait of L2 learners and investigated the relationship between test anxiety and test performance and how each constituent of test anxiety was related to test performance. To this end, the following research questions were addressed:

1. What is the degree of the test-taking anxiety of engineering students learning General English?
2. Is there any significant relation between test-taking anxiety and test performance of engineering students learning General English?
3. What are the factorial components of test-taking anxiety of engineering students learning General English?

2. Method

This study adopted both correlational analysis and factor analysis to investigate the research questions. What follows are the features of participants, instruments, data collection, and data analysis.

2.1. Participants

The participants in this study consisted of 164 Iranian first-year university students (mainly males) enrolled in a general English course with its focus on all components of English language. As many as 164 students made up the final pool for the anxiety research. As the data related to general English test performance were missing for 19 students, the final pool taken into account for the investigation of the relationship between test-taking anxiety and test performance amounted to 145 participants. All students were majoring in Engineering. Their classes were held twice a week for 75 minutes which were compulsory for all the first-year students. The students' ages ranged from 18 to 20 years.

2.2. Instruments

The instruments used to gather descriptive data consisted of two parts: a test-taking anxiety questionnaire and a general English achievement test.

Test anxiety questionnaire: The Test Anxiety Scale (TAS) (Sarason, 1975) [27] was used to measure participants' degree of test-taking anxiety. It contains 37 items, reflecting the multi-componential aspects of test anxiety (Zeidner, 1998) [35]. The items are based on evidence that test anxiety is composed of test-relevant and test-irrelevant thinking.

The TAS was translated into Persian by the researcher and double-checked by another professional ELT researcher. The TAS originally included a 2-point scale, but was changed to a 4-point Likert scale (1=completely disagree, 2=disagree, 3=agree, 4=completely agree) for two reasons. First, 4-point scales are interval scales and are more likely to provide normally distributed data. Second, 4-point scales increase the accuracy of responses compared to 2-point scales. The TAS, which was multi-componential, investigated how each component was related to performance measures which is more important than investigating how test anxiety overall is related to performance measures. A sample item was "I dread courses where the instructor has the habit of giving 'pop' quizzes."

General English Test: Right after administering the TAS, a general English achievement test containing 55 multiple-choice items of vocabulary, reading comprehension, and grammar was administered. The test items were based on the contents of the textbook the participants had studied during their general English program.

2.3. Data Collection Procedure
This study involved two phases. In the first phase, the anxiety questionnaire was administered as soon as the participants entered the exam hall. It took the participants a maximum of 30 minutes to answer the test-taking anxiety questionnaire. Then the achievement test was administered. The participants were given ample time, 60 minutes, to answer the general English test.

2.4. Data Analysis
To investigate the reliability of the questionnaire and the test, the responses to the TAS and the test were analyzed by Cronbach's alpha and KR21, respectively. Then the responses to the TAS were analyzed through explanatory factor analysis to investigate the factors underlying the anxiety questionnaire. Finally the researcher examined the relationship between factors in the TAS and participants' performance on the general English test.

3. Results and Discussion
The purpose of the study was twin: to investigate the test-taking anxiety of ESP students of Engineering taking a course in general English and to shed light on the relationship between the students' test-taking anxiety and their performance on a general English test. To this end, the first phase of the study was devoted to the reliability of the two instruments employed to address the research question: (a) the anxiety questionnaire (TAS), and (b) the general English test. The second or main phase of the study was concerned with the four research question. In this section, the results of analyses related to the two phases are presented.

3.1. Reliability of the TAS and General English Test
The TAS: The present study used the TAS (Sarason, 1975) [27] to determine the students' test-taking anxiety. The use of Cronbach's alpha showed the internal consistency of .876 (Table 1).

Table 1: Reliability of the test anxiety questionnaire

Cronbach's Alpha	No. of Items
0.876	37

The General English Test: The formula KR21 was used to determine the reliability of the general English test. As shown in Table 2, the reliability of the test was .82 (Table 2).

Table 2: Reliability of the general English test

	N	Minimum	Maximum	Mean	Variance	KR21
Achievement Test	145	26.12	55.00	46.3897	36.684	.82

3.2. Test-Taking Anxiety

The first research question was concerned with the degree of the general test-taking anxiety of ESP students learning general English. Table 3 presents the students' mean anxiety (x=2.16, sd. = .34).

Table 3: Descriptive statistics for the test anxiety questionnaire

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ANXIETY	164	1.46	3.27	2.1645	0.34173	0.389	0.207	0.379	0.411
Valid N (listwise)	164								

Table 4 also shows the mean of each of 37 items comprising the TAS.

Table 4: The means of the items comprising the test anxiety questionnaire

Descriptive Statistics		
	N	Mean
Q1	163	2.227
Q2	163	2.012
Q3	163	2.656
Q4	163	1.571
Q5	163	2.19
Q6	163	2.472
Q7	163	1.693
Q8	163	1.282
Q9	163	1.742
Q10	163	2.012
Q11	163	1.914
Q12	163	2.724
Q13	163	1.663
Q14	163	2.068
Q15	163	2.656
Q16	163	1.841
Q17	163	1.828
Q18	163	1.675
Q19	163	1.957
Q20	163	1.577
Q21	163	2.129
Q22	163	1.982
Q23	163	2.184
Q24	163	2.141
Q25	163	2.405
Q26	163	2.663
Q27	163	2.712
Q28	163	2.227
Q29	163	2.62
Q30	163	1.791
Q31	163	1.804
Q32	163	1.564
Q33	163	2.196
Q34	163	2.883
Q35	163	2.712
Q36	163	1.883
Q37	163	2.448
ANXIETY	164	77.63
Valid N (listwise)	163	

Table 4 also shows the mean of each of 37 items comprising the TAS. The examination of the table reveals that students' degrees of anxiety vary across different items. The highest anxiety provoking item was item 34, stating that the university ought to recognize that some students are more nervous than others about tests and that this affects their performance. By contrast, it was found that Item 8, concerned with the learner's being frequently so tense that their stomach gets upset after important tests, caused the least amount of test-taking anxiety. The examination of the

means of the TAS items shows that the 2 highest anxiety-provoking items in descending order were as follows:
1.   Item 34 (x= 2.88): the university ought to recognize that some students are more nervous than others about tests and that this affects their performance
2.   Item 12 (x= 2.72): after taking a test I always feel I could have done better than I actually did

On the other hand, the 2 anxiety items provoking the least amount of test anxiety, from the lowest to the highest, were as follows:
1.   Item 8 (x= 1.28): after important tests I am frequently so tense that my stomach gets upset
2.   Item 32 (x= 1.56): before an important examination I find my hands or arms trembling

The nature of the two 2-item sets can be discussed, by and large, with reference to In'nami's (2006) [13] division of TAS items into three main factors: general test worry (Items 36, 22, 35, 30), test irrelevant thinking (Items 10, 11, 20, 14), and emotion (Items 14, 1, 4, 3, 13). Although the highest anxiety-provoking item, i.e. No. 34, does not feature in any of the three factors in In'nami's exploratory factor analysis finding, it seems that it largely falls within the domain of general test worry. The fact that the item is concerned with the students' expectation that the university ought to recognize the effect of their nervousness on their performance results from the academic setting of the research. It sounds to reason that adult university students whose major, i.e. engineering, requires analytical, logical style of thinking are more worried about the logical connection between test anxiety and test performance and want educational policy makers to consider the effect of anxiety on test performance.

The second most anxiety-provoking item in this study was Item 12, i.e. feeling one could have done better after taking the test. As with Item 34, this one reflects general test worry. However, it does not manifest any pre-test or during-test anxiety. Rather, it relates to students' post-test reflection on the test session. This worry, along with the previous one, shows that students' worries primarily arise from their metacognitive awareness of the significance of the test and the interplay of factors affecting their performance.

Lying at the other end of the continuum, Items 8 and 32 were found to cause the least amount of test-taking anxiety. Among these, Item 8 (x= 1.28) resulted in the lowest amount of anxiety. It appears to represent the emotional manifestation of test anxiety affecting the body. The very slight effect of this item is a sign of university students' control over their emotion during test periods. This emotion management feature seems to be owing to a number of reasons: (a) students' familiarity with testing condition, including time constraints and administration procedures, which is rooted in their years of exposure to examinations during pre-tertiary, i.e. elementary and secondary education; (b) the time students are allowed for test preparation; and (c) their age, predominating ranging from 18-22, which makes them less vulnerable to harsh physical effects of examination periods. The second least anxiety-provoking item was Item 2, dealing with worry before taking a test. The argument forwarded as to low mean of Item 8 applies to this item as well. Test preparation, coupled with the achievement nature of such tests – which are generally based on the content of the course – resulted in such a low index. It can be argued that the same reasons (test preparation, test wiseness, achievement nature of the test, and maturity in terms of ages) account for the very low anxiety they provoke.

3.3. Test Anxiety and Test Performance
The second research question in this study addressed the relationship between test-taking anxiety and learners' performance on the general English test. To investigate the relationship, the Pearson product-moment correction was employed. First, the correction between total anxiety and test performance was calculated. As shown in Table 5, the index was -.011.

Table 5: Overall correlation between test anxiety and test performance

		ANXIETY
SCORE	Pearson Correlation	-0.011
	Sig. (2-tailed)	0.885
	N	164

Notwithstanding being negative, the index was too far from being significant. This signifies that test-taking anxiety has no statistically significant correlation with test performance. This finding is compatible with many similar studies examining the effects of anxiety on test performance (e.g. MacIntyre and Gardner, 1989 [19]; Aida, 1994 [1]; In'nami, 2006 [13]), all of which concluding that "test anxiety is an anxiety problem in general and … not specifically related to the foreign language learning context" (In'nami, 2006: 329-330) [13]. This study may, nevertheless, differ from some other studies because lack of significant correlation in the latter was despite relatively high anxiety means. For instance, In'nami (2006) [13] reports on relatively high general test worry without affecting listening test performance. In the current study, however, the total mean of test-taking anxiety was not high (x= 2.09), nor was a significant relationship between test-taking anxiety and test performance. In fact, the correlation index of -.01 can be interpreted as a strikingly no relationship between the two variables. Despite further substantiating non-relationship in the above studies, the present study contrasts with significantly negative correlation reported in some other studies (e.g. MacIntyre, 1999 [18]; Horwitz, 2001 [11]). However, as revealed previously in the section on the degree of students' anxiety, the degree of anxiety varies from item to item in the TAS. Accordingly, the Pearson was employed to investigate the relationship between each of the 37 components of the TAS and test performance. The dual purpose of this investigation was to place each of the components on either the negative or positive side of the continuum. As Table 6 shows, 18 components, i.e. about one half of the items in the TAS, were negatively correlated with test performance and none had a significant correlation with it.

Table 6: Correlation between the items comprising test anxiety and test performance

		SCORE			SCORE			SCORE
Q1	Pearson Correlation	-0.027	Q14	Pearson Correlation	-0.037	Q27	Pearson Correlation	-0.047
	Sig. (2-tailed)	0.732		Sig. (2-tailed)	0.637		Sig. (2-tailed)	0.554
Q2	Pearson Correlation	0.056	Q15	Pearson Correlation	-0.028	Q28	Pearson Correlation	-0.11
	Sig. (2-tailed)	0.474		Sig. (2-tailed)	0.718		Sig. (2-tailed)	0.161
Q3	Pearson	0.006	Q16	Pearson Correlation	0.102	Q29	Pearson	0.075

	Correlation						Correlation	
	Sig. (2-tailed)	0.94		Sig. (2-tailed)	0.197		Sig. (2-tailed)	0.341
Q4	Pearson Correlation	.172*	Q17	Pearson Correlation	-0.009	Q30	Pearson Correlation	0.055
	Sig. (2-tailed)	0.028		Sig. (2-tailed)	0.909		Sig. (2-tailed)	0.489
Q5	Pearson Correlation	0.083	Q18	Pearson Correlation	-0.116	Q31	Pearson Correlation	0.095
	Sig. (2-tailed)	0.289		Sig. (2-tailed)	0.139		Sig. (2-tailed)	0.229
Q6	Pearson Correlation	-0.056	Q19	Pearson Correlation	-0.041	Q32	Pearson Correlation	0.012
	Sig. (2-tailed)	0.478		Sig. (2-tailed)	0.599		Sig. (2-tailed)	0.884
Q7	Pearson Correlation	0.13	Q20	Pearson Correlation	0.001	Q33	Pearson Correlation	-0.042
	Sig. (2-tailed)	0.098		Sig. (2-tailed)	0.985		Sig. (2-tailed)	0.597
Q8	Pearson Correlation	0.074	Q21	Pearson Correlation	0.018	Q34	Pearson Correlation	-0.072
	Sig. (2-tailed)	0.35		Sig. (2-tailed)	0.815		Sig. (2-tailed)	0.361
Q9	Pearson Correlation	0.041	Q22	Pearson Correlation	-0.068	Q35	Pearson Correlation	-0.085
	Sig. (2-tailed)	0.6		Sig. (2-tailed)	0.391		Sig. (2-tailed)	0.283
Q10	Pearson Correlation	0.017	Q23	Pearson Correlation	0.064	Q36	Pearson Correlation	0.054
	Sig. (2-tailed)	0.828		Sig. (2-tailed)	0.42		Sig. (2-tailed)	0.494
Q11	Pearson Correlation	-0.046	Q24	Pearson Correlation	-0.008	Q37	Pearson Correlation	-0.076
	Sig. (2-tailed)	0.557		Sig. (2-tailed)	0.918		Sig. (2-tailed)	0.334

						tailed)	
Q12	Pearson Correlation	-0.038	Q25	Pearson Correlation	-0.138		
	Sig. (2-tailed)	0.628		Sig. (2-tailed)	0.079		
Q13	Pearson Correlation	0.078	Q26	Pearson Correlation	-0.027		
	Sig. (2-tailed)	0.321		Sig. (2-tailed)	0.728		

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Most of the negative correlations fell within the range between 0 to -.10. Though non-significant, the highest negative correlations were between Items 25 and 18 and test performance ($r= -.138$ and $r=-.116$). Item 25 seems to b a general test anxiety item, stating that "If examinations could be done away with, I think I would actually learn more." It indicates that casting doubt on the very necessity of exams in an educational system is tied up with poor performance on the test. Looked at from the washback effect perspective, the finding suggests that the negative attitude toward exams has a negative washback on students' learning. The other item, No. 18, stated that "The harder I work at taking a test or studying for one, the more confused I get." The negative correlation between this kind of confusion and test performance reveals a desperate confusion regardless of hard work, possibly resulting from poor test preparation and test-taking strategies as well as trait anxiety about tests.

As to positive correlations, 19 constituents of the TAS were positively correlated with test performance. Out of these, only Item 4 had a significant correlation with test performance. These correlations mostly ranged from 0 to +.10. This shows that test performance can be enhanced by slight anxiety of certain types such as "not enjoying eating before an important test" (Item 31), "finding oneself thinking of the consequences of failing during the test" (Item 7), and "forgetting facts one really knows because of getting nervous during a course examination" (Item 16). Item 4 was the only item in the TAS having a significant positive correlation with test performance. The correlation ran counter to the researcher's expectation as the item concerns "perspiring a great deal while taking an important examination." Though quite unexpected, this correlation may be the result of the functioning of perspiration as a defense mechanism against anxiety and the effects it may have on bodily relaxation.

The positive correlation of a great number of TAS items with test performance can be accounted for in light of two main explanations. First, anxiety can be facilitative, as shown in this study and in view of the previous studies. These studies, drawing on Alpert and Haber's (1960, cited in Ellis, 1994) [6] distinction between facilitative and debilitative anxiety, have produced mixed, including positive/facilitative correlation, though not necessarily significant, between various forms of anxiety and test scores. The second reason is that anxiety does not have a linear relationship with test performance in that it is not a monolithic construct. It seems that positive relationships are related to those components of anxiety having a facilitating function as long as intensity remains at a low-anxiety state.

3.4. Components of Test-Taking Anxiety

The purpose of the third research question was to uncover the latent structure underlying test-taking anxiety, referred to as "components" or "factors." To do this, exploratory factor analysis was applied. To do the analysis, the 37 items making up the anxiety questionnaire were subjected to factor analysis. As shown in Table 8, 3-factor analysis and loadings above .40 were adopted.

Table 7: Exploratory factor analysis of test-taking anxiety

Rotated Factor Matrix[a]			
	Factor		
	1	2	3
Question 11	0.689		
Question 30	0.685		
Question 13	0.674		
Question 9	0.672	0.413	
Question 16	0.659		
Question 14	0.647	0.457	
Question 4	0.642		
Question 32	0.632	0.426	
Question 31	0.608		
Question 2	0.586	0.546	
Question 17	0.548	0.495	
Question 28	0.514		
Question 36	0.496	0.403	
Question 8	0.484		
Question 15	-0.48		
Question 23	0.445		
Question 27	-0.44		
Question 26	-0.41		
Question 7	0.408		

Question 20			
Question 22		0.745	
Question 37		0.681	
Question 21		0.548	
Question 1		0.536	
Question 35		0.532	
Question 6		0.499	
Question 3	-0.43	-0.49	
Question 19	0.431	0.491	
Question 18		0.48	
Question 24	0.416	0.426	
Question 25			
Question 34			
Question 12			
Question 29			0.5
Question 33			0.49
Question 10			
Question 5			
Extraction Method: Principal Axis Factoring.			
Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 6 iterations.			

A large number of items, i.e. as many as 22, loaded on Factor 1. As many as 16 items loaded on Factor 2. As with confirmatory analysis, only two items loaded on Factor 3. Before any discussion on the nature of the three factors, two features of the results need to be emphasized. First, the loading on the majority of the items on only two factors suggests that test-taking anxiety as far as reflected in Sarason's (1975) [27] TAS, is a much too monolithic construct. Second, the common loadings of 9 items on both Factor 1 and Factor 2 further confirm the hypothesis that three factors are too small in number to lead to a clear-cut factor analysis.

Considering the factors, Table 8 shows the loadings of 22 items on Factor 1, out of which 13 items are unique to Factor 1 and 9 items are common to Factor 1 and Factor 2. The items loading on Factor 1 may predominantly be characterized as reflection of test-takers' specific, rather than general, worries and emotions before, during and after the test. The negative values of 4 items, as described below, require close attention as to the contrasting nature of the items embedded into the TAS:

1. Item 3 (b= -.425): if I know I was going to take a test, I would feel confident and relaxed beforehand
2. Item 15 (b= -.476): when taking a test my emotional feelings do not interfere with my performance
3. Item 26 (b= -.411): on exams I take the attitude "If I do not know it now, there's no point worrying about it"
4. Item 27 (b= -.436): I really don't see why some people get so upset about tests

These items are radically different from the other items in the TAS since they manifest test-takers' control over their anxiety. Due to their positive values, their inclusion in a test-taking anxiety questionnaire of the TAS type is not reasonable at all because the other items in the TAS manifest negative, debilitative anxiety about the test. This suggests that the items in the TAS are double-valued, both negative and positive, thus the four items need to be removed from the TAS if the correlation between test-taking anxiety and test performance or the effect on the former or the latter is going to be investigated.

The second factor was formed based on the loadings on 16 items on it. Those loadings common to Factor 1 are rather test-specific worries, reflecting emotions about pre-test and during-test worries. The other loadings mainly result from general test worries and attitudes about taking test. They include such items as "I find myself thinking of how much brighter the other students are than I am" (No. 1), "I would rather write a paper than take an examination for my grade in a course" (No. 21), and "I wish examinations did not bother me so much" (No. 22).

The items loading on Factor 3 include only Items 29 and 33. They concern exam preparation habits rather than intensive test worries. They include item 29 ("I do not study any harder for final exams than for the rest of my course work") and Item 33 ("I seldom feel the need for 'cramming' before an exam"). Much like the aforementioned four items, they are positively laden, not compatible with the other TAS item. It follows that, along with the four items in Factor 1, the two items comprising Factor 3 need to be removed in order to have a more homogeneous questionnaire and to arrive at a more linear relationship between test-taking anxiety and test performance.

To sum up, the three components of the TAS derived from exploratory factor analysis in this study are general test worry, specific test worry, and test preparation worry. In addition, the results of confirmatory factor analysis, to a large extent, reject the previous findings.

4. Conclusion

This study had two purposes. The first purpose was to investigate the degree of L2 learners' test-taking anxiety and its relationship with test performance. The mean of 2.09 on a 4-point Likert scale indicates that the participant's test-taking anxiety falls with the low range of the continuum. It follows that Engineering students do not exhibit much worry about taking a test in general English

due to a number of factors, mainly their past experience in taking general English tests in secondary school days and national university entrance exams, test-wiseness as to multiple-choice tests, and the familiar test-task, i.e. the multiple-choice format, in the dominant assessment procedures in schools and universities. Although the low level of test-taking anxiety is promising, the negative correlation of more than half of the TAS items bears testimony to the need to fight the negative effects of test-taking anxiety in order to minimize the influence of proficiency-irrelevant factors, thus improving test reliability and the ability of the test to measure language proficiency.

Further, the positive correlation of nearly half of the TAS items with test performance has two significant implications. First, the constituents of the TAS as a measure of test-taking anxiety are not homogeneous. Second, and more importantly, due to the doubled feature nature of the TAS constituents, the employment of the TAS deserves two cautions: (a) the lack of significant relationship between the TAS and test performance in previous studies (e.g. In'nami, 2006) [13] does stem from the dual nature of the TAS item rather than the lack of such a relationship, and (b) the TAS needs to be modified in order to lead to be an insightful measure of text anxiety.

The second objective of the study was to investigate the components of test-taking anxiety. Not leading to clear-cut, separate components, the results of factor analysis in this study have three implications. The first implication is that there is too much overlap between the constituents of the TAS to be divided into three separate components. Hence, later studies that will use the TAS should choose a factorial design with more factors. The second implication concerns the statistically negative correlation of only one factor, i.e. Factor 2, with test performance. As this factor is a composite of predominantly general test worries, it implies that the harmful, debilitating effects of anxiety occurs more at a macro-level. As a result, trait anxiety, rather that state anxiety, shapes poor performance on tests.

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