Examining the Correlates and Components of English Test Anxiety in EFL Students: A Quantitative Study[1]

Budi Waluyo[2], Walailak University[3], Nakhon Si Thammarat, Thailand

Ali Zahabi[4], King Mongkut's University of Technology Thonburi[5], Bangkok, Thailand

Benjamin Panmei[6], Bangkok University[7], Bangkok, Thailand

Abstract

Despite the vast research on test anxiety and test performance since the 1950s, studies on how students' English test anxiety affects their English proficiency test performance in the context of second- and foreign language learning remain few. Therefore, using a quantitative research design, this study explored students' English test anxiety and proficiency test results of students at an autonomous university in Thailand. The study was focused on examining the distinctive constructs and levels of English test anxiety, along with the variations by gender and proficiency level. It also examined the correlation and predictive power of EFL students' English test anxiety towards their English proficiency test performance both in general and specific skills. The results showed that university students in Thailand had a high level of English test anxiety, which had a detrimental impact on their English proficiency test results. *Worry, tension, emotionality*, and *bodily/physical symptoms* were four distinct constructs that characterized their anxiety over the English exam. *Worry* was the strongest construct in lowering students' overall and individual English test performance. Female and low-proficiency students, in particular, had to deal with high levels of test anxiety, and they were especially apprehensive before English tests. These findings should encourage English educators and policymakers to develop strategies for generating welcoming situations and environments for students prior to their English tests, as well as to implement an appropriate treatment plan incorporating cognitive and behavioral therapies. It is advised that teaching and testing materials not only concentrate on conveying cognitive knowledge and strategies for answering test questions, but also include tools that may be used to manage real-world exam anxiety.

Resumen

A pesar de la vasta investigación sobre la ansiedad y el desempeño en los exámenes desde la década de 1950, los estudios sobre cómo la ansiedad de los estudiantes ante los exámenes de inglés afecta su desempeño en los exámenes de competencia en inglés en el contexto del aprendizaje de una segunda lengua y de una lengua extranjera siguen siendo escasos. Por lo tanto, utilizando un diseño de investigación cuantitativa, este estudio exploró la ansiedad de los estudiantes ante los exámenes de inglés y los resultados de los exámenes de competencia de los estudiantes en una universidad autónoma de Tailandia. El estudio se centró en examinar los constructos y niveles distintivos de ansiedad ante los exámenes de inglés, junto con las variaciones por género y nivel de competencia. También examinó la correlación y el poder predictivo de la ansiedad ante los exámenes de inglés de los estudiantes de EFL con respecto a su desempeño en los exámenes de competencia en inglés, tanto en habilidades generales como específicas. Los resultados mostraron que los estudiantes universitarios en Tailandia tenían un alto nivel de ansiedad ante los exámenes de inglés, lo que tuvo un impacto perjudicial en sus resultados en los exámenes de competencia en inglés. La preocupación, la tensión, la emocionalidad y los síntomas corporales/físicos fueron cuatro constructos distintos que caracterizaron su ansiedad ante el examen de inglés. La preocupación fue el constructo más fuerte en la reducción del desempeño general e individual de los estudiantes en los exámenes de inglés. En particular, las alumnas y los estudiantes con bajo nivel de competencia lingüística tuvieron que lidiar con altos niveles de ansiedad ante los exámenes y se mostraron especialmente aprensivos antes de los exámenes de inglés. Estos hallazgos deberían alentar a los educadores y a los responsables de las políticas de inglés a desarrollar estrategias para generar situaciones y entornos acogedores para los estudiantes antes de sus exámenes de inglés, así como a implementar un plan de tratamiento adecuado que incorpore terapias cognitivas y conductuales. Se recomienda que los materiales de enseñanza y evaluación no solo se concentren en transmitir conocimientos cognitivos y estrategias para responder a las preguntas de los exámenes, sino que también incluyan herramientas que puedan usarse para manejar la ansiedad ante los exámenes en el mundo real.

Introduction

Theory and research on test anxiety began to emerge in the 1950s as a response to the normally established test-conscious, test-giving culture in education, which had put the lives of students partly, but significantly, at the mercy of their test performance (Sarason, 1959; Szafranski et al., 2012). In the early years, test scores were extensively applied to evaluate educational attainment and programs, starting from determining whether a student should be moved to the next grade in school to determining whether a student would be admitted to a top university. Consequently, it created a more pressure-laden atmosphere in the school and university system, leading to experiences of greater concern and anxiety (Hill & Wigfield, 1984). The use of

[1] This is a refereed article. Received: 15 June, 2022. Accepted: 28 April, 2023. Published: 31 January, 2025.
[2] budi.business.waluyo@gmail.com, 0000-0003-1919-2068
[3] Research Center for Language Teaching and Learning, School of Languages and General Education
4 ali.zaha@kmutt.ac.th, 0000-0002-8632-4553
[5] School of Liberal Arts
[6] benjamin.p@bu.ac.th, 0000-0002-2788-5385, Correspondent
[7] Bangkok University International-Language and Culture for Business Department

tests and exams in education has not declined in the present day; in fact, it has become more prevalent, incorporated formally into educational policies both in the Global North and South (Soares & Woods, 2020), signifying the relevance of further explorations into the role of test anxiety in test performance.

Test anxiety has become a pervasive problem among students as a result of the stress associated with taking tests, such as regularly experiencing severe apprehensive sensations and being preoccupied with task-irrelevant thoughts, which may interfere with focus and cause significant decrements in test performance (Spielberger, 2010). The findings of early studies on test anxiety have indicated that test anxiety has a negative effect on test performance (Ackerman & Heggestad, 1997; Hembree, 1988), has multidimensional constructs among students in different countries (Putwain, 2008), and can be resolved by applying an appropriate remedy containing cognitive and behavioral treatments (Hembree, 1988; Tryon, 1980). In the last decade, empirical studies have been carried out to further identify levels of test anxiety among students in different countries (Yanxia, 2017), assess the appropriate treatment to reduce test anxiety (von der Embse et al., 2015), and examine the impact of high-stakes standardized tests on students' test anxiety (Wood et al., 2016). The concern over the impact of test anxiety lies in the thought that, due to having a high level of test anxiety, some students may not be able to perform well on a cognitive test and fail to manifest the knowledge and skills they have acquired before; this, then, leads to the inference that the cognitive test results would not reflect students' individual cognitive knowledge, resulting in measurement bias (Reeve & Bonaccio, 2008).

Weighing upon the constant use of tests in education and the findings of empirical studies on test anxiety, the present study aims to further explore test anxiety and test performance in the context of EFL learning at a university level. Standardized English proficiency tests have been predominantly used to assess EFL students' proficiency levels. Several empirical studies have been conducted to examine the relationship between test anxiety and EFL students' performance on English proficiency tests, such as the International English Language Testing System (IELTS), the Canadian Academic English Language (CAEL) assessment in Canada, the College English Test (CET) in China, and the General English Proficiency Test (GEPT) in Taiwan, in which the results varied across contexts and types of tests (Cheng et al., 2014; In'nami, 2006). These varied results may indicate that students in different countries have different characteristics, thereby revealing distinctive traits of test anxiety (Lowe & Ang, 2012). Therefore, a specific investigation is required to better describe the impact of test anxiety on EFL students' proficiency test performance at a university level in Thailand. Thus far, studies have confirmed three types of variables affecting the relationship between test anxiety and test performance: 1) personal variables, including gender and age (Cheng, 2014), 2) educational levels, including school and university (von der Embse & Hasson, 2012), and 3) test types, e.g., speaking, reading, listening, and reading tests (Huang & Hung, 2013; In'nami, 2006). All these variables were considered in the design of the present study.

Specifically, this study examines the English test anxiety and English proficiency test performance of university students in Thailand. Reports from international educational institutions administering English proficiency tests, i.e., Educational Testing Service (ETS) and Education First (EF), have consistently ranked Thailand among poor-performing countries since 2011 (Education First, 2020). In 2014, the Thai Ministry of Education officially adopted the Common European Framework of Reference (CEFR) for languages, requiring all aspects of English teaching and learning, including assessment, to be benchmarked with the CEFR levels from A1 to C2 (Anantapol et al., 2018). The latest study from Waluyo (2019), assessing Thai first-year university students' English proficiency on CEFR Levels, disclosed that most of the university students were at the levels of basic users of English (A1 and A2), while they were supposed to be at the levels of independent users of English (B1 and B2). Given these low-performance results on the English proficiency test, the present study contemplates the idea that explorations into English test anxiety and English proficiency tests among Thai EFL students may offer some insights, not to mention that this area of research is still insufficiently researched in Thailand.

Hence, to guide the study, the following research questions were considered:

1. *What are the distinctive constructs of English test anxiety of EFL students in Thailand?*
2. *What are EFL students' test anxiety levels on English exams in Thailand?*
3. *How do gender and English proficiency affect the levels of English test anxiety?*
4. *What are the relationships between EFL students' English test anxiety and proficiency test performance both in general and specific skills?*
5. *How much unique variance do test anxiety and its constructs explain in overall English proficiency test performance and in specific skills?*

Literature Review

Test anxiety

Conceptions of test anxiety

Test anxiety has been defined as the phenomenological, physiological, and behavioral responses associated with apprehension about negative consequences or failure on a test or other evaluative event (Sieber et al., 1977). Students with high test anxiety levels will perceive evaluative or testing events as personally threatening (Zeidner, 1998). Their reactions during the test would, hence, consist of extensive worry, intrusive thoughts, mental disorganization, and tension (Spielberger et al., 1978). They would experience reduced feelings of self-efficacy, self-derogatory cognition, and unstable emotional reactions that would impede their best cognitive performance (Sarason et al., 1986). Their test anxiety would only decrease if they believe that their intellectual, motivational, and social capabilities and capacities exceed the demands of the test situation (Sarason & Sarason, 1990). However, Zeidner (1998) emphasized, "…it is still unclear why the imminence of evaluation is so much more stressful and anxiety-arousing for some people than for others" (p. 18). Because there are so many ways for people to react to tests, it is essential to look at how anxiety manifests itself in students in specific settings.

The body of the literature provides three conceptions of test anxiety, including trait, state, and clinical anxiety. Test anxiety is perceived as a personality trait when the focus is on the scales of differences among students prone to experiencing anxiety in various situations (Spielberger, 1980). With this concept, some students may experience test anxiety more or less than others (Reeve & Bonaccio, 2008). Zeidner (1998) elaborates,

> *Trait test anxiety, as a latent construct, is not directly manifested in behavior but is inferred from the frequency and intensity of an individuals' elevations in state anxiety in evaluative situations over time. Persons who are high in evaluative trait anxiety are disposed to see the test or evaluative situations as more dangerous or threatening than low-trait-anxious individuals. Consequently, they are more vulnerable to stress in test situations and tend to experience anxiety state reactions of greater intensity and with greater frequency over time than persons who are low in trait anxiety.* (p. 22)

However, it is important to note that, although trait test anxiety seems to perfectly portray individual differences in test anxiety levels across situations, it is merely descriptive and difficult to measure and interpret in the context of a specific assessment (Hong, 1999). Thus, another type of test anxiety is state anxiety, which refers to an immediate degree of anxiety experienced by a student before a particular test or exam (Zeidner, 1998). This state anxiety concept is commonly used to frame research examining the manifestation of anxiety felt by students at the time of testing (Reeve & Bonaccio, 2008). Furthermore, test anxiety can be classified as a clinical or educational phenomenon (Zuriff, 1997); however, this conception is flawed because it is frequently used to frame the levels of test anxiety experienced by students as a result of national educational policy (Putwain, 2008). On the other hand, students may take tests individually for other educational purposes without the intervention of the national educational policy, where test anxiety potentially emerges. Given the limitations of the other conceptualizations of test anxiety, the present study considers EFL students' English test anxiety on an English proficiency test within the conception of state test anxiety.

Measures of test anxiety

From the conceptions of test anxiety, early researchers developed an instrument named Text Anxiety Inventory (TAI) to measure test anxiety. TAI was first created by Spielberger et al. (1978) and is considered the most widely used by researchers; it has been translated and adapted into different languages, e.g., Dutch, Egyptian, German, Hungarian, and others (Ware et al., 1990). The inventory consists of 20 items on a 4-point frequency self-report rating scale, specifically designed to explore test anxiety among college students (Spielberger, 1980). In earlier years, there was a measure of test anxiety for behavior therapy created by Suinn (1969) that contained 50 self-reported Likert-scale items. Suinn's inventory was, however, intended to measure students' experiences that might cause fear or apprehension related to tests in general; therefore, it has been used in a larger context, for instance, measuring students' anxiety in mathematics, rather than examining students' anxiety towards an upcoming test (Suinn et al., 1988). There were also the Reactions to Tests (RTT) scale established by Sarason (1984) and the Children's Test Anxiety Scale (CTAS) created by Wren and Benson (2004). These prominent anxiety inventories indicate that test anxiety can be measured by using a self-reported scale. Zeidner (2010) argued that self-report inventories were preferred,"largely because they are considered to provide the most direct access to a person's subjective

experiential states in evaluative situations, possess good psychometric properties, are relatively inexpensive to produce, and are simple to administer, score, and interpret" (p. 2).

The present study uses the Test Anxiety Inventory (TAI) by Spielberger et al. (1978) since it is relevant to the objectives of the study. This inventory was specifically generated to assess students' perceptions of anxiety on timed-tests such as high-stakes exams (Lewandowski et al., 2015). The English proficiency test used in the present study is a type of high-stakes exam. The inventory has also been used by recent studies in different countries, which validates its application to the present day (Mowbray et al., 2015). For instance, Fulton (2016) utilized the inventory to examine the relationship between students' test anxiety and their test performance on the New York State Standardized Science Test, although the results showed a non-significant relationship. In another study, Fernández-Castillo and Caurcel (2015) employed the inventory to investigate students' state test anxiety and their selective attention and concentration on university exams in Spain, discovering,"when anxiety levels are very high, this could overactivate the orientating and alerting functions and reduce the capacity of attentional control. These processes could have a negative impact on specific attentional processes and become a negative influence on performance in exams" (p. 265). Nonetheless, there is little research examining the inventory in the context of EFL students and English proficiency tests, which this study attempts to address.

Constructs of test anxiety

Pioneers in test anxiety research have produced various constructs of test anxiety. In 1967, Liebert and Morris (1967) examined the cognitive and emotional components of test anxiety in 54 students in an undergraduate psychology class at Vanderbilt University in the U.S. Their study identified two constructs: *worry* and *emotionality*, which further predicted that students' worries about exams would significantly affect their performance, while their emotionality had no relationship with the expected exam performance. These findings were, then, reconfirmed by the following studies (e.g., Spielberger et al., 1978; Taylor & Deane, 2002). In 2012, Szafranski et al. (2012) reassessed the internal consistency and factor structure of the Test Anxiety Inventory by Spielberger et al. (1978) 30 years after the inventory was produced; their research still confirmed the identification of *worry* and *emotionality* within the test anxiety structure of students at a university in Texas, U.S.A.

Meanwhile, Sarason's (1984) study identified four constructs of test anxiety, including *worry, tension, test irrelevant thinking*, and *bodily symptoms*. *Worry* and *test-irrelevant thinking* were considered as cognitive components, while *tension* and *bodily symptoms* were part of physiological affective components. It was argued that these components could interfere with students' cognitive knowledge, ultimately affecting test performance (Putwain et al., 2010). However, other test anxiety-related studies involving university students have reported different constructs of test anxiety. For example, using a survey questionnaire adapted from Sarason (1984), Pekrun et al. (2011) identified eight factors constructing test anxiety, encompassing *enjoyment, hope, pride, relief, anger, anxiety, shame*, and *hopelessness*. In more contextual components, Bonaccio and Reeve (2010) pointed out three sources of scaffolding test anxiety, including *perceptions of the test, perceptions of the self*, and *perceptions of the test-taking situation*, which can be used in the effort to manage students' test anxiety. A study by Bedewy and Gabriel (2013) disclosed three constructs consisting of *excessive-performance anxiety, negative academic self-concept* and *excessive autonomic response*, and *familiar test anxiety*.

The mixed results on the constructs of test anxiety indicate the need to conduct a specific investigation. Most of the research exploring test anxiety was conducted in global northern countries, e.g., the U.S.A., Canada, and England. The present study attempts to contribute to the understanding of test anxiety among Southeast Asian university students. Figure 1 below illustrates how this study assembles the preceding research on test anxiety.

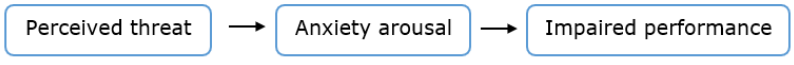

Figure 1: Conceptualization of test anxiety from preceding research

English test anxiety and English proficiency test performance

Relationships

Empirical studies evaluating the relationship between test anxiety and test performance in the context of English proficiency tests are still scarce. Within the limited numbers, the findings have been mixed. Besides, previous studies have used various English proficiency tests as the variable of test performance. Among the

studies confirming a negative correlation is Zheng and Cheng (2018), who investigated the correlation between test anxiety and the College English Test Band 4 (CET-4) performance of university students in China. Their correlational analyses depicted a negative correlation, yet the interview data did not indicate that the students felt very anxious about the test. In Taiwan, Wu and Lee (2017) also observed a negative effect of university students' test anxiety on their performance on the General English Proficiency Test (GEPT). An initial study by Covington et al. (1986) created a simple formulation of how test anxiety negatively affects test performance, as seen in the following figure.

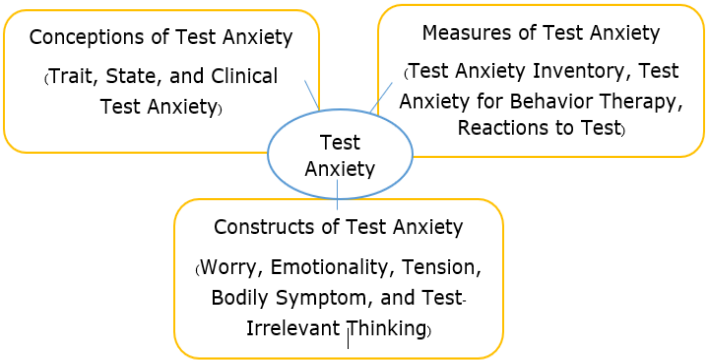

Figure 2: Illustration of the negative effect of anxiety

Moreover, Cheng et al. (2014), who compared students' motivation and test anxiety with their test performance in the Canadian Academic English Language (CAEL) Assessment in Canada, the College English Test (CET) in the People's Republic of China, and the General English Proficiency Test (GEPT) in Taiwan, revealed a close association between test anxiety and test performance. In the same year, von der Embse and Witmer (2014) published an article in which they specified, "the composite test anxiety score was negatively related to testing performance, although one test anxiety subscale demonstrated a positive relationship with test performance" (p. 132). In the following year, von der Embse et al.'s study (2015) claimed that test anxiety was not a significant predictor of test performance, challenging the perception of the negative effects of test anxiety on test performance

On a specific skill proficiency test performance, Nam (2017) assessed the relationship between test anxiety and performance on the Test of English for International Communication (TOEIC) listening and reading tests of university students in Korea. The study revealed that students' test anxiety was negatively associated with their TOEIC listening and reading scores. Hamzavi and Afshar (2014) also reported a negative relationship between test anxiety and the listening scores of Iranian students taking the Test of English as a Foreign Language (TOEFL) test. Wood et al. (2016) conducted a study on the relationship between test anxiety and reading test performance as measured by the Florida Comprehensive Achievement Test (FCAT) in the U.S. and found a negative relationship. A significant negative effect of test anxiety on speaking test performance was also noted among Taiwanese EFL learners taking the GEPT (Huang, 2018) and Spanish EFL learners taking the APTIST Test, a global English assessment tool created by the British Council (Valencia Robles, 2017). Test anxiety and writing test performance, on the other hand, had a weak negative correlation (von der Embse & Hasson, 2012).

Gender role

Gender differences have long been of interest in test anxiety and performance research in which females appear to have a higher level of anxiety, thereby significantly influencing their test scores (Everson et al., 1991; Szafranski et al., 2012). A previous study also indicated that across educational levels from high school to college, female students outscored male students in the test anxiety survey (Lowe, 2015). A recent study by Santana and Eccius-Wellmann (2018) also reinforced a similar result. They collected the test anxiety data from university students in Mexico and ran linear regression analyses. Their results displayed that women scored higher on the test anxiety survey and had lower scores on the TOEIC test than their opposite gender. In Cheng et al's (2014) study, gender could explain 11% and 26% of the test takers' total scores in the CAEL assessment in Canada and CET in China, respectively; however, no significant difference was observed with the GEPT scores in Taiwan. Concerning a specific skill test performance, several studies have noted that in a speaking test, although test anxiety negatively influenced students' performance in a speaking test, it did not vary by gender (Amengual-Pizarro, 2018; Huang, 2018; Prima, 2019). Nonetheless, empirical studies have not sufficiently explored the various effects of test anxiety on a specific skill test by

gender. The present study has considered this limitation and has included the related variables in the examination to offer some insights.

Proficiency role

As elaborated earlier, research in test anxiety and test performance argues that test takers' performance is not only influenced by the content and difficulty of the test but also by their anxiety levels. Besides, another influence may come from test takers' competencies, which can certainly determine test results. However, the present study argues that differences in test anxiety levels among test takers with different competencies may exist, and the effects on test performance may significantly vary. This argument seems to be manifested in Stenlund et al.'s (2017) study that investigated group differences in a high-stakes test situation. Involving 1129 test-takers taking the Swedish scholastic aptitude test (SweSAT), they observed the existence of group differences between high and low achievers and gender differences between males and females in their responses to a high-stakes test situation. In accordance with this, Aydin (2013) discovered that students with low achievement were likely to have more test anxiety, which adversely affected their test scores. Moreover, Liu (2006) studied the anxiety levels of Chinese undergraduate non-English majors who differed in their English proficiency levels. Using different methods of data collection, e.g., survey observation, reflective journal, and interview, it was found:

> (*1*) *a considerable number of students at each level felt anxious when speaking English in class,* (*2*) *the more proficient students tended to be less anxious,* (*3*) *the students felt the most anxious when they responded to the teacher or were singled out to speak English in class. They felt the least anxious during pair work, and* (*4*) *with increasing exposure to oral English, the students felt less and less anxious about using the target language in speech communication. (*p. 301)

In the last decade, there has been a growing interest in adopting the Common European Framework of Reference (CEFR) for Languages in English proficiency tests. Prominent proficiency tests, such as TOEFL IBT, TOEIC, TOEFL, and IELTS, have conducted studies linking the scores with the CEFR levels, which differentiate English proficiency into six levels from A1 to C2 (e.g., Hidri, 2020; Papageorgiou et al., 2015). In Thailand, one of the renowned and most widely used proficiency tests, named Chulalongkorn University Test of English Proficiency (CU-TEP) has also mapped its scores to the CEFR levels (Wudthayagorn, 2018). Following this trend, the present study intends to initiate the exploration of test anxiety by proficiency within the framework of the CEFR levels.

Methods

Research design

This study employed a quantitative research design. This type of design permits the examination of interrelationships among the variables of interest using various statistical techniques applicable to applied linguistics research (Fryer & Ginns, 2018). The variables explored in this study involved English test anxiety and English proficiency test performance framed by the CEFR levels. The detailed variables are illustrated in Figure 3 below.

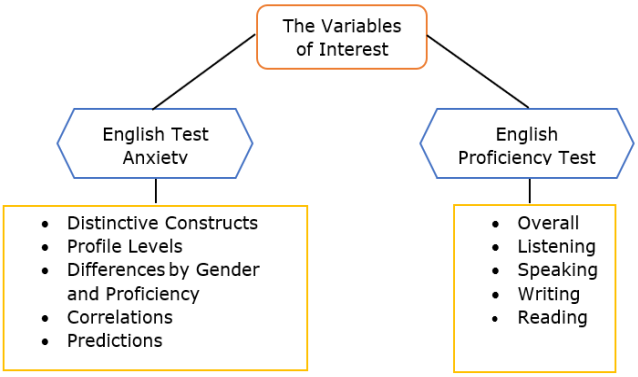

Figure 3: Illustration of the research design

Context and participants

The study was conducted at a university in the south of Thailand with a purposive sampling method. This approach establishes inclusion criteria that reflect the study's primary objective. Since the goal of this study

was to assess the English test anxiety and performance of university students on English proficiency tests. As a result, two criteria were established: 1) participants were first-year students at the time of the study, and 2) the participants had different English proficiency levels, including A1, A2, B1, and B2 in the CEFR levels, measured by the WUTEP (Walailak University Test of English Proficiency). In the subsequent phase, a random sampling technique was used. This strategy emphasized that regardless of the conditions, all students in the targeted demographic had an equal probability of being picked as participants in this study. Their involvement was entirely optional. Prior to data collection, their agreement to participate in the study was sought.

As shown in Table 1, there were 345 first-year undergraduate students involved (75.1% female and 24.9% male). The participants came from 14 different Schools/Faculties, e.g., the School of Science, the School of Nursing, the School of Medicine, etc. During the study, the participants were studying General English (GE) courses, focusing on basic academic English skills: listening, reading, writing, and speaking. Their ages ranged from 18 to 21 years old. In their first academic term, the English proficiency of the participants was assessed by the university by using a standardized proficiency test framed by the CEFR levels. The results disclosed that about 44.1% of the participants in this study were basic users of English at the A1 level (44.1%), while 42% were at the A2 level (42%); another 13.3% at the B1

		Frequency	Percentage
Gender	Female	259	75.1
	Male	86	24.9
School	School of Political Science and Law	38	11.0
	School of Engineering	23	6.7
	School of Allied Health Sciences	56	16.2
	School of Medicine	51	14.8
	School of Management	50	14.5
	School of Science	5	1.4
	School of Nursing	26	7.5
	School of Pharmacy	36	10.4
	School of Informatics	24	7.0
	School of Public Health	11	3.2
	School of Liberal Arts	13	3.8
	School of Agriculture and Food Industry	5	1.4
	School of Architecture and Design	7	2.0
Language Proficiency (CEFR)	A1	152	44.1
	A2	145	42.0
	B1	46	13.3
	B2	2	0.6

Table 1: The demographic characteristics of the participants

Instrument and measures

Survey

This study utilized the TAI created by Spielberger et al. (1978) to collect the students' data concerning test anxiety. As previously explained, the inventory was created to evaluate students' anxiety levels during timed tests, such as a high-stakes exam (Lewandowski et al., 2015). Despite the fact that it was developed in the late 1970s, it is being used in many situations in current research, indicating that it is still relevant today (Fernández-Castillo & Caurcel, 2015; Fulton, 2016; Mowbray et al., 2015). It consists of 20 items ranging from Strongly Disagree (0) to Strongly Agree (4) on a 5-point Likert scale. Since this study focused on students' English test anxiety, some words in the original version were replaced with the words "English tests" to specify the context of the anxious feelings felt by the students. For example, the inventory items included statements such as, "While taking English tests, I have an uneasy, upset feeling","I often freeze up on important English exams", and "Thoughts of doing poorly interfere with my concentration on English tests."

English proficiency test

The study used the WUTEP, a university-standardized test, to measure students' English proficiency in listening, reading, speaking, and writing. The test was developed based on the CEFR and Classical Test Theory (CTT)—a psychometric theory permitting the prediction of testing outcomes, and has been used to measure the proficiency of ± 10.000 students since 2018. Other worldwide standardized examinations, such

as the TOEIC, IELTS, and TOEFL, have been linked to it, and recent published empirical studies have applied the test as a measure of English proficiency (e.g., Apridayani & Teo, 2021; Koad & Waluyo, 2021; Rofiah & Waluyo, 2020). The test

Test Format	Total Questions	Duration
1. Listening consists of four parts:	50	40 minutes
Part 1: Statements and pictures	5	
Part 2: Statements and responses	15	
Part 3: Conversations	15	
Part 4: Talks	15	
2. Reading consists of three parts:	50	60 minutes
Part 5: Sentence completion	20	
Part 6: An e-mail completion	5	
Part 7: Reading comprehension: single passage and double passages	25	
3. Writing *Topic prompt essay*	1	40 minutes
4. Speaking *A discussion with a lecturer involving self-introduction, speaking about a topic, and questions-answers.*		5 minutes

Table 2: The Test Format–WUTEP (Waluyo, 2019)

Reliability and validity

The reliability of the survey items was examined by using Cronbach's alpha. The results showed a high internal consistency among the items (α=.879) and suggested no item deletion. The construct validity was explored by using Exploratory Factor Analysis as recommended by Stapleton (1997) and the result was significant ($\chi 2$ (190)=3306.499, p<.001) emphasizing the validity of the survey constructs for measuring English test anxiety. All the data were normally distributed with no values of Skewness and Kurtosis beyond +2 and -2. All these results led to the further use of the survey data in the data analysis stage by using parametric tests. Meanwhile, the reliability and validity of the English proficiency tests were based on their utilization in the previous studies, as explained earlier.

Ethical concerns

Prior to data collection, researchers received ethical training and legal license from the CITI Program for Research, Ethics, and Compliance Training in U.S. and the Thai higher education research committee. Further, researchers ensured that participants were informed of the study's objectives and that the data collected would be kept confidential. Authorization from the Dean of the School to perform the data gathering was requested. Course coordinators and lecturers cere contacted to schedule survey distribution using *Google Forms*. The data were treated in strict confidence, and the students' names were not disclosed in the published research. On the first page of the online *Google Form*, participants indicated their agreement to engage in the research. They would not be required to complete the distributed survey if they chose not to participate. This study was also approved by the Institutional Review Board of Walailak University in Thailand (Approval Number: WUEC-22-021-01).

Results

Constructs of English test anxiety of EFL students

To expose the constructs of English test anxiety, this study performed multiple exploratory factor analyses (EFA) on the data collected from the survey instrument. The extraction method employed in the analysis was Principal Axis Factoring (PAF), which is a reliable and widely used method (Fabrigar & Wegener, 2012). The number of factors to be preserved was determined using the Kaiser criterion with an eigenvalue greater than 1. KMO and Bartlett's tests were performed to determine whether the components were extractable, with a sample adequacy criterion of .50 (Field, 2018). Because some factors were thought to be unrelated, orthogonal rotation, i.e., Varimax, was used. The approved factor loading cutoff point was established at a level of .40 (Fabrigar & Wegener, 2012). Finally, new names were assigned to the obtained factors.

The results indicated four constructs of English test anxiety that accounted for 49.97% of the overall variance and were validated using Bartlett's sphericity test: $\chi 2$ (190)=3306.499 p<.001. The sampling adequacy was .938, which was greater than the .50 cutoff. Based on the included items and findings from

previous studies which will be elaborated upon further in the discussion, each construct was named: *Worry* (*Eigenvalue*=8.164), *tension* (*Eigenvalue*=1.553), *emotionality* (*Eigenvalue*=1.267), and *bodily/physical symptoms* (*Eigenvalue*=1.170). *Worry* explained the biggest percentage in the outcome variance (38.73%), followed by *tension* (4.87%), *emotionality* (3.56%), and *bodily/physical symptoms* (2.81%). *Worry* also had the greatest number of items, i.e., 12 items, with a high internal consistency level (α=.932). For *tension*, there were initially three items included, but due to the need to obtain a higher internal consistency level, one item was deleted. As a result, there were only two items were counted (α=.646). *Emotionality* was represented by two items with a poor internal consistency level (α=.466) while *bodily/physical symptoms* only had one item. Moreover, of the 20 survey items, the EFA results excluded one item from the rotated factor matrix since the factor loading was<.40. Table 3 summarizes the constructed items and factor loadings.

Constructs	Items	Factor loadings
Worry	After an English exam is over, I try to stop worrying about it, but I can't.	.773
	I feel my heart beating very fast during important English tests.	.753
	I worry a great deal before taking an important English examination.	.753
	During English examinations, I get so nervous that I forget some materials I really know.	.745
	Even when I am well prepared for an English test, I feel very nervous about it.	.684
	During English tests, I feel very tense.	.674
	I feel very panicky when I take an important English test.	.641
	During English tests, I find myself thinking about the consequences of failing.	.639
	I feel very jittery when taking an important English test.	.608
	I start feeling very uneasy just before getting an English test result.	.559
	The harder I work at taking an English test, the more confused I get.	.532
	During English exams, I find myself thinking about whether I will ever get through the university.	.463
Tension	I feel confident and relaxed while taking English tests.	-.689
	I seem to defeat myself while working on important English tests.	-.634
Emotionality	Thoughts of doing poorly interfere with my concentration on English tests.	.581
	Thinking about my grade in an English course interferes with my work on English tests.	.513
Bodily/Physical Symptoms	I often freeze up on important English exams.	.472

Table 3: The four constructs of English test anxiety and their factor loadings.

The levels of English test anxiety of EFL students

The levels of English test anxiety were evaluated by looking at the descriptive statistics results, excluding two deleted items from the EFA results. For the interpretation, the means, ranging from 0 to 4, were divided into three levels: 0–1.0 (Low), 1.1–2.0 (Moderate), and ≥ 2.1 (High). Overall, Thai EFL students had a higher level of English test anxiety (*M*=2.15) and the standard deviation less than 1 suggested that there was not much difference found among the students (*SD*=.58), implying that this high level of anxiety overall might be shared equally within this group of samples. Furthermore, among the test anxiety constructs, Thai EFL students experienced a high level of *worry* (*M*=2.26, *SD*=.82) whilst *tension* (*M*=2.02, *SD*=.46) and *emotionality* (*M*=2.01, *SD*=.78) were reported to be at a moderate level. However, the students felt *bodily symptoms* at a low level (*M*=.83, *SD*=1.03). These *bodily symptoms* might not be equally shared among the students, as indicated by the high SD value.

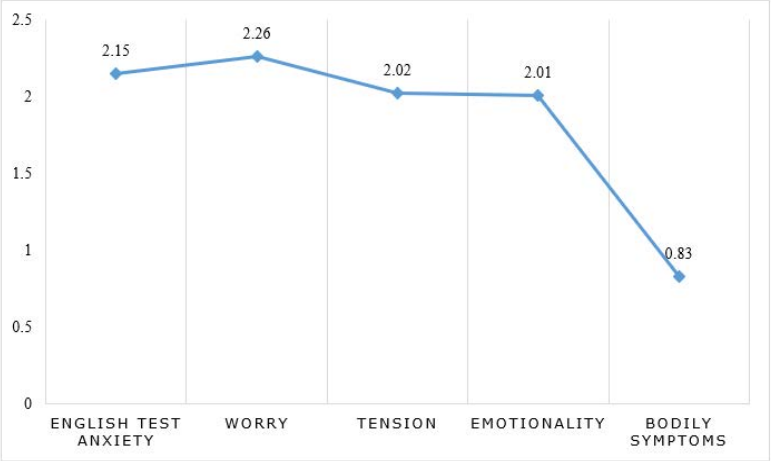

Figure 4: Levels of test anxiety

English test anxiety by gender and proficiency level

By gender, the results of the independent t-tests disclosed that female students (*M*=2.20, *SD*=.57) were significantly more anxious than male students (*M*=1.98, *SD*=.57) facing English tests: (*t* (343)=3.136, *p*=.002); the effect size was small: *Cohen's d*=0.386. Similarly, female students (*M*=2.36, *SD*=.81) were also found to possess more worries than their counterparts (*M*=1.98, *SD*=.80) towards English tests: (*t* (343)=3.78, *p*<.001) with a moderate effect size: *Cohen's d*=0.472041. Significant differences were not observed in the aspects of *tension, emotionality*, and *bodily symptoms* between female and male students, as described in Table 4 below.

	F	Sig.	t	Sig. (2-tailed)
English Test Anxiety	.416	.519	-3.136	.002
Worry	.64	.424	-3.783	0
Tension	.239	.625	1.626	.105
Emotionality	1.128	.289	-0.577	.564
Bodily Symptoms	.011	.918	1.295	.196

Table 4: Differences by gender

Then, the analyses were continued with one-way ANOVA because the proficiency levels had more than two groups. As shown in Table 5, the findings revealed that there was a significant difference in anxiety levels across students with different proficiency levels ($F(2, 341)=17.19$, $p<.001$) and the overall effect size was medium ($f=0.39$). Significant differences were also evident on the levels of *worry* ($F(2, 341)=19.67$, $p<.001$) and *emotionality* ($F(2, 341)=3.37$, $p=.019$) by English proficiency levels. However, there were no differences in the levels of English test anxiety in the aspects of *tension* and *bodily symptoms*.

Afterwards, to understand more on the differences in each level of proficiency, post hoc comparisons were conducted. The findings indicated that the lower the pupils' proficiency levels, the more nervous they were. For instance, A1 level students (*M*=2.34, *SD*=.56) had higher English exam anxiety than A2 students, (*M*=2.07, *SD*=.54), who in turn had higher anxiety than B1 (*M*=1.81, *SD*=.50) and B2 level students (*M*=.833, *SD*=.55). Significant differences were not identified among the high proficiency students in B1 and B2 levels. In the area of *worry*, similar results were obtained where lower-level students reported having more worries than higher-level students: A1-A2 mean differences of .429, A1-B1 mean differences of .802, and A1-B2 mean differences of 2.103, with *p*-values<.001. There were no significant variations in the areas of *tension, emotionality,* and *bodily symptoms*.

ANOVA		Sum of Squares	F	Sig.
English Test Anxiety	Between Groups	15.21	17.19	.000
	Within Groups	100.56		
	Total	115.77		
Worry	Between Groups	34.23	19.67	.000
	Within Groups	197.80		
	Total	232.03		
Tension	Between Groups	.573	.89	.442
	Within Groups	72.50		
	Total	73.08		
Emotionality	Between Groups	6.04	3.37	.019
	Within Groups	203.65		
	Total	209.69		
Bodily Symptoms	Between Groups	2.92	.91	.432
	Within Groups	361.98		
	Total	364.91		

Post Hoc Test (Only significant results)

Dependent Variable			Mean Difference	Std. Error	Sig.
English Test Anxiety	A1	A2	.275*	.063	.000
		B1	.525*	.091	.000
		B2	1.509*	.386	.001
	A2	A1	-.275*	.063	.000
		B1	.249*	.091	.035
		B2	1.234*	.386	.008
	B1	A1	-.525*	.091	.000
		A2	-.249*	.091	.035
		B2	.984	.392	.060
	B2	A1	-1.509*	.386	.001
		A2	-1.234*	.386	.008
		B1	-.984	.392	.060
Worry	A1	A2	.429*	.088	.000
		B1	.802*	.128	.000
		B2	2.103*	.542	.001
	A2	A1	-.429*	.088	.000
		B1	.372*	.128	.021
		B2	1.673*	.542	.012
	B1	A1	-.802*	.128	.000
		A2	-.372*	.128	.021
		B2	1.300	.550	.086
	B2	A1	-2.103*	.542	.001
		A2	-1.673*	.542	.012
		B1	-1.300	.550	.086

Table 5: One-way ANOVA results

English test anxiety and proficiency test performance

Pearson correlation analyses showed that students' English test anxiety was negatively correlated with their English proficiency test performance (r=-.389, p<.001). The effect size of this correlation was large (r^2=.15). Negative effects of anxiety were also visible in the results of listening (r=-.354, p<.001), reading (r=-.352, p<.001), writing (r=-.328, p<.001), and speaking (r=-.307, p<.001) tests of the students. As for English test anxiety constructs, *worry* (r=-.419, p<.001) and *emotionality* (r=-.133, p=.013) were negatively associated with the students' English proficiency test results. This may imply that having more worries and being more emotional towards an English test would not positively benefit the students; nevertheless, having more tension and some bodily symptoms prior to English tests would likely have no effect on the students' test results.

English test anxiety predicting proficiency test performance

Linear regression analysis demonstrated that students' test anxiety could explain 15% of the variance in their English proficiency scores (R^2=.15). When measured by standardized coefficients (β), every one unit increase in students' test anxiety would likely reduce their proficiency scores by .389. These results signified test anxiety as a significant predictor of students' proficiency test scores (F(2, 343)=61.21, p<.001) with a

medium effect size (f^2=.18). Additionally, students' anxiety could also predict the amount of variance in the scores of each skill of the proficiency test. It could predict 13% (R^2=.13) of the variance in listening, 12% (R^2=.12) in reading, 10% (R^2=.10) in writing, and 9% (R^2=.09) in speaking.

Among the English test anxiety constructs, *worry* could explain the highest percentage of variance in the students' test scores by 18% (R^2=.18), followed by *emotionality*, 2% (R^2=.02). The other two constructs, *tension* and *bodily symptoms*, failed to predict students' overall proficiency test scores. *Worry could also explain a significant amount of variance in listening (R^2=.14), reading (R^2=.14),* writing (R^2=.13), and speaking (R^2=.13) test scores while e*motionality* was able to describe less than 2% of the variance in the outcomes of listening (R^2=.02) and reading (R^2=.02) tests. Tension and *bodily symptoms* were not found to be predictors of students' performances in the four main English skills. These findings imply that *worry* and *emotionality* may have a greater impact on students' English examinations than *tension* and *bodily/physical symptoms*.

Discussion

Worry, *tension, emotionality*, and *bodily symptoms* were the four unique conceptions driving English exam anxiety among Thai university students, according to the first finding of this study. Some of the early studies in test anxiety identified the presence of *worry* and *emotionality* within students' test anxiety (Liebert & Morris, 1967; Spielberger et al., 1978; Szafranski et al., 2012; Taylor & Deane, 2002) while others observed the presence of more constructs involving *tension* and *bodily symptoms* (Putwain et al., 2010; Taylor & Deane, 2002). However, the majority of the previous studies were conducted in the Global North and in the setting of test anxiety in academic exams. As a result, the current study's findings have added to our understanding of test anxiety in the context of the English proficiency test, which is a common form of test for students from non-English speaking nations. The emerging distinct constructs of English test anxiety among Thai EFL students, which do not fully follow the findings of previous studies, suggest that EFL students may have different characteristics, resulting in distinct constructs in their English test anxiety, which is in line with Yanxia's recommendation (2017).

Furthermore, the current study discovered that Thai EFL students had a high level of English test anxiety, with worry about the test outcomes dominating the majority of their anxiety. They had moderate degrees of tension and emotionality but were not significantly influenced by physical symptoms. There is currently no research that looks into this specific sort of test anxiety in Thai EFL students. Given Thai students' poor performance on several English Standardized Examinations (Education First, 2020; Waluyo, 2019), the second finding of this study suggests that students' high levels of English test anxiety should be addressed before English tests take place. Treatments for test anxiety are just as important as having students prepare hard for English tests. One of the reasons is that even if students have studied hard for the tests, they may not be able to perform at their best if they are anxious during the test (Reeve & Bonaccio, 2008; von der Embse et al., 2015).

Following that, the findings of the third research question revealed that female students showed a higher level of anxiety than male students when faced with English proficiency tests; specifically, they reported having more worries than their male counterparts. Despite this, the degrees of *tension, emotionality*, and *physical symptoms* were all the same. Gender differences in test anxiety and performance study have long been studied, with females appearing to have a larger level of anxiety and hence having a greater impact on their test scores (Everson et al., 1991; Szafranski et al., 2012). Students at all stages of education, from high school to college (Lowe, 2015), university students in Mexico (Santana & Eccius-Wellmann, 2018), English proficiency examinations in Canada and China (Cheng, 2014), and the current study in Thailand have all confirmed such differences. Nonetheless, it is worth noting that there were no significant gender differences in the categories of *tension, emotionality*, and *physical symptoms*.

This study also suggested that students with varying degrees of English competence experienced varying levels of English exam anxiety. The ratings of *worry* and *emotionality* showed the most significant disparities. Lower-level students (A1 and A2) had higher levels of English test anxiety than those with better competency (B1 and B2), as one might predict. When it came to English tests, pupils with lower proficiency were more concerned than those with better proficiency. Despite the fact that A1 level students had a higher degree of test anxiety than A2 level students, there were no variations in test anxiety levels between B1 and B2 level students. These findings could indicate that English test anxiety is a widespread problem among low-proficiency students, leading to the conclusion that their poor test scores are due not just to their lack of

cognitive competence, but also to their high anxiety levels before to the exam. These findings corroborate those of prior studies. Low-achieving students tend to be more anxious about tests, which has a detrimental impact on their test results (Aydin, 2013). Liu (2006) also looked at the levels of anxiousness among Chinese undergraduate non-English majors with varied levels of English proficiency. More skilled students tended to be less anxious, according to multiple data collection methods, including survey observation, reflective journal, and interview. However, there is still a scarcity of research on English exam anxiety at the CEFR levels; so, the outcomes of this study have added to our knowledge.

The fourth and fifth research questions analyzed the correlation and predictive power of EFL students' English test anxiety towards their English proficiency test performance both in general and specific skills. This study found that English test anxiety may have a detrimental impact on students' English proficiency test outcomes, and that test anxiety could be a strong predictor of English test results. *Worry* was the most influential anxiety construct, followed by *emotionality*, with the other two constructs not appearing to be significant predictors. Students' listening, reading, writing, and speaking test results reflected these adverse associations and predictions. Previous studies' findings (Covington et al., 1986; Hamzavi & Afshar, 2014; Huang, 2018; Nam 2017: Valencia Robles, 2017; ; von der Embse & Hasson, 2012; Wood et al., 2016; Wu & Lee, 2017) were in agreement. In the context of English standardized tests, Cheng et al. (2014) found a link between test anxiety and test performance among students taking the CAEL Assessment in Canada, the College English Test (CET) in the People's Republic of China, and the General English Proficiency Test (GEPT) in Taiwan. Consequently, our data contradict von der Embse et al.'s (2015) argument that test anxiety is not a major predictor of test performance.

Implication and limitation of the study

The outcomes of this study could have three implications in the context of Thai EFL students. To begin with, English educators and policymakers involved in the development of the English curriculum at the secondary and university levels should be aware that there is a significant level of English test anxiety among students, which can negatively impact on their test outcomes. They should come up with some ideas for creating welcoming circumstances and places for students prior to their English exams, such as guiding students to their seats with smiles and using friendly voices when students do not follow certain exam instructions. The ideas should be centered on implementing a suitable treatment plan that includes cognitive and behavioral therapies or making such treatments available for students (Hembree, 1988; Tryon, 1980; Yanxia, 2017). Second, while it is predicted to some extent, it is vital to note that female students and students with weaker English competence require additional aid in coping with English test anxiety. It is advised that teaching and testing materials not only focus on imparting cognitive knowledge and strategies for answering test questions but also include tools that can be utilized to deal with exam anxiety in the real world. One of the options may be short story anecdotes about students who have overcome their test fear. Since the primary attention is on females and lower-level students, the figures in the stories can involve these types of students. Finally, test providers may want to consider providing a less stressful testing environment and hiring employees with good manners who can show positive, warm expressions, instead of the ones with stricter appearances. Although more research is needed, the current study's findings suggest that lowering the pressure in the testing environment may assist test takers to feel more at ease, reducing the impact of measurement bias caused by high levels of anxiety (Reeve & Bonaccio, 2008).

Nonetheless, this study does have certain limitations. The study was quantitative, with a heavy reliance on self-reported questionnaires from students; it should not be forgotten that students could have supplied false responses, and researchers had no means of knowing about it (Montag et al., 2021). The conclusions of this study should not be applied to other situations; nonetheless, students with similar characteristics may have similar outcomes. Future research should concentrate on examining the disparities between quantitative and qualitative data outcomes. It is believed that students will express varied outcomes during interviews, but more research is needed.

Conclusion

To sum up, university students in Thailand showed a high level of English test anxiety, which had a detrimental impact on their English proficiency test results. *Worry, tension, emotionality*, and *bodily symptoms* were four unique constructions that characterized their English exam anxiety. *Worry* was the most powerful concept in lowering students' English test performance, both overall and in individual skills. Furthermore, female and low-proficiency students had to cope with high levels of test anxiety, and they

were particularly concerned before English exams. This study has provided empirical evidence regarding English test anxiety and proficiency test performance of students in a non-English speaking country, and it is hoped it will spark more research in this area from other non-English speaking countries, as most previous research in this area has been conducted in English-speaking countries.

References

Ackerman, P. L., & Heggestad, E. D. (1997). Intelligence, personality, and interests: Evidence for overlapping traits. *Psychological Bulletin, 121*(2), 219–245. https://doi.org/10.1037/0033-2909.121.2.219

Amengual-Pizarro, M. (2018). Foreign language classroom anxiety among English for Specific Purposes (ESP) students. *International Journal of English Studies*, *18*(2), 145-159. https://doi.org/10.6018//ijes/2018/2/323311

Anantapol, W., Keeratikorntanayod, W., & Chobphon, P. (2018). Developing English proficiency standards for English language teachers in Thailand. *Journal of Studies in the Field of Humanities, 25*(2), 1-35. https://so04.tci-thaijo.org/index.php/abc/article/view/152853/111472

Apridayani, A., & Teo, A. (2021). The interplay among SRL strategies, English self-efficacy, and English proficiency of Thai university students. *Studies in English Language and Education*, *8*(3), 1123-1143. https://doi.org/10.24815/siele.v8i3.20213

Aydin, S. (2013). Factors affecting the level of test anxiety among EFL learners at elementary schools. *e-International Journal of Educational Research*, *4*(1), 63-81. https://doi.org/10.19160/ijer.105377

Bedewy, D., & Gabriel, A. (2013). The development and psychometric assessment of a scale to measure the severity of examination anxiety among undergraduate university students. *International Journal of Educational Psychology*, *2*(1), 81-104. https://doi.org/10.4471/ijep.2013.19

Bonaccio, S., & Reeve, C. L. (2010). The nature and relative importance of students' perceptions of the sources of test anxiety. *Learning and Individual Differences*, *20*(6), 617-625. https://doi.org/10.1016/j.lindif.2010.09.007

Cheng, L. (2014). *Effects of pragmatic task features, English proficiency, and learning setting on Chinese ESL/EFL spoken performance of requests* [Unpublished doctoral dissertation], Purdue University. https://docs.lib.purdue.edu/dissertations/AAI3668776

Cheng, L., Klinger, D., Fox, J., Doe, C., Jin, Y., & Wu, J. (2014). Motivation and test anxiety in test performance across three testing contexts: The CAEL, CET, and GEPT. *TESOL Quarterly*, *48*(2), 300-330. https://doi.org/10.1002/tesq.105

Covington, M. V, Omelich, C. L., & Schwarzer, R. (1986). Anxiety, aspirations, and self-concept in the achievement process: a longitudinal model with latent variables. *Motivation and Emotion, 10*, 71-89. https://doi.org/10.1007/BF00992151

Education First. (2020). *EF EPI 2020–EF English Proficiency Index–Thailand*. https://www.ef.co.th/epi/regions/asia/Thailand

Everson, H. T., Millsap, R. E., & Rodriguez, C. M. (1991). Isolating gender differences in test anxiety: A confirmatory factor analysis of the Test Anxiety Inventory. *Educational and Psychological Measurement*, *51*(1), 243-251. https://doi.org/10.1177%2F0013164491511024

Fabrigar, L. R., & Wegener, D. T. (2012). Structural equation modeling. In J. P. Stevens (Ed.), *Applied multivariate statistics for the social sciences* (pp. 616-664). Routledge.

Fernández-Castillo, A., & Caurcel, M. J. (2015). State test-anxiety, selective attention and concentration in university students. *International Journal of Psychology*, *50*(4), 265-271. https://doi.org/10.1002/ijop.12092

Fryer, L. K., & Ginns, P. (2018). A reciprocal test of perceptions of teaching quality and approaches to learning: A longitudinal examination of teaching-learning connections. *Educational Psychology*, *38*(8), 1032-1049. https://doi.org/10.1080/01443410.2017.1403568

Fulton, B. A. (2016). *The relationship between test anxiety and standardized test scores* [Unpublished doctoral dissertation], Walden University. https://scholarworks.waldenu.edu/dissertations/2258

Hamzavi, R., & Soodmand Afshar, H. (2014). Listening strategy use, test anxiety and test performance of intermediate and advanced Iranian EFL learners. *Applied Research on English Language*, *3*(2), 101-116. https://dx.doi.org/10.22108/are.2014.15488

Hembree, R. (1988). Correlates, causes, effects, and treatment of test anxiety. *Review of Educational Research, 58*(1), 47–77. https://doi.org/10.3102%2F00346543058001047

Hill, K. T., & Wigfield, A. (1984). Test anxiety: A major educational problem and what can be done about it. *The Elementary School Journal, 85*(1), 105–126. https://www.jstor.org/stable/1001622

Hidri, S. (2020). The IELCA and IELTS exams: A benchmark report. *Journal of Asia TEFL*, *17*(2), 742. http://dx.doi.org/10.18823/asiatefl.2020.17.2.33.742

Hong, E. (1999). Test anxiety, perceived test difficulty, and test performance: Temporal patterns of their effects. *Learning and Individual Differences, 11*(4), 431-447. https://doi.org/10.1016/S1041-6080(99)80012-0

Huang, H.-T. D. (2018). Modeling the relationships between anxieties and performance in second/foreign language speaking assessment. *Learning and Individual Differences*, *63*, 44-56. https://doi.org/10.1016/j.lindif.2018.03.002

Huang, H.-T. D., & Hung, S.-T. A. (2013). Comparing the effects of test anxiety on independent and integrated speaking test performance. *TESOL Quarterly*, *47*(2), 244-269. https://doi.org/10.1002/tesq.69

In'nami, Y. (2006). The effects of test anxiety on listening test performance. *System*, *34*(3), 317-340. https://doi.org/10.1016/j.system.2006.04.005

Koad, P., & Waluyo, B. (2021). What makes more and less proficient EFL learners? Learner's beliefs, learning strategies and autonomy. *Asian EFL Journal, 25*(1), 48-77.
Lewandowski, L., Hendricks, K., & Gordon, M. (2015). Test-taking performance of high school students with ADHD. *Journal of Attention Disorders*, *19*(1), 27-34. https://doi.org/10.1177%2F1087054712449183
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%2Fpr0.1967.20.3.975
Liu, M. (2006). Anxiety in Chinese EFL students at different proficiency levels. *System*, *34*(3), 301-316. https://doi.org/10.1016/j.system.2006.04.004
Lowe, P. A. (2015). Should test anxiety be measured differently for males and females? Examination of measurement bias across gender on measures of test anxiety for middle and high school, and college students. *Journal of Psychoeducational Assessment*, *33*(3), 238-246. https://doi.org/10.1177%2F0734282914549428
Lowe, P. A., & Ang, R. P. (2012). Cross-cultural examination of test anxiety among US and Singapore students on the Test Anxiety Scale for elementary students (TAS-E). *Educational Psychology*, *32*(1), 107-126. https://doi.org/10.1080/01443410.2011.625625
Montag, C., Dagum, P., Hall, B. J., & Elhai, J. D. (2021). Do we still need psychological self-report questionnaires in the age of the internet of things?. *Discover Psychology*, *2*(1), 1-5. https://doi.org/10.1007/s44202-021-00012-4
Mowbray, T., Jacobs, K., & Boyle, C. (2015). Validity of the German Test Anxiety Inventory (TAI-G) in an Australian sample. *Australian Journal of Psychology*, *67*(2), 121-129. https://doi.org/10.1111/ajpy.12058
Nam, Y. (2017). *Exploring relations between Korean test takers' anxiety and performance on the test of English for international communication in listening and reading comprehension (TOEIC LR)* [Unpublished doctoral dissertation], Queen's University Kingston.
Papageorgiou, S., Tannenbaum, R. J., Bridgeman, B., & Cho, Y. (2015). *The association between TOEFL iBT® test scores and the Common European Framework of Reference (CEFR) levels* (ETS RM-15-06). Educational Testing Service. https://www.ets.org/Media/Research/pdf/RM-15-06.pdf
Pekrun, R., Goetz, T., Frenzel, A. C., Barchfeld, P., & Perry, R. P. (2011). Measuring emotions in students' learning and performance: The Achievement Emotions Questionnaire (AEQ). *Contemporary Educational Psychology*, *36*(1), 36-48. https://doi.org/10.1016/j.cedpsych.2010.10.002
Prima, S. A. B. (2019). Investigating hospitality students' level of anxiety in English class and oral exam performance. *Script Journal*, *4*(1), 62-74. http://dx.doi.org/10.24903/sj.v4i1.283
Putwain, D. W. (2008). Deconstructing test anxiety. *Emotional and Behavioral Difficulties, 13*(2), 141–155. https://doi.org/10.1080/13632750802027713
Putwain, D. W., Connors, L., & Symes, W. (2010). Do cognitive distortions mediate the test anxiety–examination performance relationship? *Educational Psychology*, *30*(1), 11-26. https://doi.org/10.1080/01443410903328866
Reeve, C. L., & Bonaccio, S. (2008). Does test anxiety induce measurement bias in cognitive ability tests? *Intelligence, 36*(6), *526–538.* https://doi.org/10.1016/j.intell.2007.11.003
Rofiah, N. L., & Waluyo, B. (2020). Using Socrative for vocabulary tests: Thai EFL learner acceptance and perceived risk of cheating. *The Journal of Asia TEFL*, *17*(2), 966-982. http://dx.doi.org/10.18823/asiatefl.2020.17.3.14.966
Santana, J. C., & Eccius-Wellmann, C. (2018). Gender differences in test anxiety in high-stakes English proficiency tests. *Electronic Journal of Foreign Language Teaching, 15*(1), 100–111. https://hdl.handle.net/20.500.12552/4687
Sarason, I. G. (1984). Stress, anxiety, and cognitive interference: Reactions to tests. *Journal of Personality and Social Psychology*, *46*(4), 929-938. https://psycnet.apa.org/doi/10.1037/0022-3514.46.4.929
Sarason, I. G., & Sarason, B. R. (1990). Test anxiety. In H. Leitenberg (Ed.), *Handbook of social and evaluation anxiety* (pp. 475-495). Springer.
Sarason, I. G., Sarason, B. R., Keefe, D. E., Hayes, B. E., & Shearin, E. N. (1986). Cognitive interference: Situational determinants and trait like characteristics. *Journal of Personality and Social Psychology*, *51*(1), 215 https://psycnet.apa.org/doi/10.1037/0022-3514.51.1.215
Sarason, S. B. (1959). What research says about test anxiety in elementary school children. *NEA Journal*, *48*, 26–27.
Sieber, J. E., O'Neil Jr., H. F., & Tobias, S. (1977). *Anxiety, learning, and instruction*. Routledge
Soares, D., & Woods, K. (2020). An international systematic literature review of test anxiety interventions 2011–2018. *Pastoral Care in Education*, *38*(4), 311-334. https://doi.org/10.1080/02643944.2020.1725909
Spielberger, C. D. (1980). *Preliminary professional manual for the Test Anxiety Inventory*. Consulting Psychologists Press.
Spielberger, C. D. (2010). Test Anxiety Inventory. In I. B. Weiner & W. E. Craighead (Eds.), *The Corsini encyclopedia of psychology* (4th ed.). Wiley.
Spielberger, C. D., Gonzalez, H. P., Taylor, D. J., Algaze, B., & Anton, W. D. (1978). Examination stress and test anxiety. In C. D. Spielberger & I. G. Sarason (Eds.), *Stress and anxiety* (Vol. 5). Hemisphere/Wiley.
Stapleton, C. D. (1997). *Basic concepts in exploratory factor analysis (EFA) as a tool to evaluate score validity: A right-brained approach* [ED407419]. Paper presented at the Annual Meeting of the Southeast Educational Research Association, Austin, TX. https://eric.ed.gov/?id=ED407419
Stenlund, T., Eklöf, H., & Lyrén, P.-E. (2017). Group differences in test-taking behaviour: An example from a high-stakes testing program. *Assessment in Education: Principles, Policy & Practice*, *24*(1), 4-20. https://doi.org/10.1080/0969594X.2016.1142935

Suinn, R. M. (1969). The STABS, a measure of test anxiety for behavior therapy: Normative data. *Behaviour Research and Therapy*, *7*(3), 335-339. https://doi.org/10.1016/0005-7967(69)90018-7

Suinn, R. M., Taylor, S., & Edwards, R. W. (1988). Suinn mathematics anxiety rating scale for elementary school students (MARS-E): Psychometric and normative data. *Educational and Psychological Measurement, 48*(4), 979–986. https://doi.org/10.1177%2F0013164488484013

Szafranski, D. D., Barrera, T. L., & Norton, P. J. (2012). Test anxiety inventory: 30 years later. *Anxiety, Stress & Coping*, *25*(6), 667-677. https://doi.org/10.1080/10615806.2012.663490

Taylor, J., & Deane, F. P. (2002). Development of a short form of the test anxiety inventory (TAI). *The Journal of General Psychology*, *129*(2), 127-136. https://doi.org/10.1080/00221300209603133

Valencia Robles, J. d. F. (2017). Anxiety in language testing: The APTIS case. *Profile: Issues in Teachers' Professional Development*, *19 (supl. 1)*, 39-50. https://doi.org/10.15446/profile.v19n_sup1.68575

Tryon, G. S. (1980). The measurement and treatment of test anxiety. *Review of Educational Research*, *50*(2), 343-372. https://doi.org/10.3102/00346543050002343

von der Embse, N., & Hasson, R. (2012). Test anxiety and high-stakes test performance between school settings: Implications for educators. *Preventing School Failure: Alternative Education for Children and Youth*, *56*(3), 180-187. https://doi.org/10.1080/1045988X.2011.633285

von der Embse, N. P., Schultz, B. K., & Draughn, J. D. (2015). Readying students to test: The influence of fear and efficacy appeals on anxiety and test performance. *School Psychology International*, *36*(6), 620-637. https://doi.org/10.1177%2F0143034315609094

von der Embse, N. P., & Witmer, S. E. (2014). High-stakes accountability: Student anxiety and large-scale testing. *Journal of Applied School Psychology*, *30*(2), 132-156. https://doi.org/10.1080/15377903.2014.888529

Ware, W. B., Galassi, J. P., & Dew, K. M. H. (1990). The test anxiety inventory: A confirmatory factor analysis. *Anxiety Research, 3*(3), 205–212. https://doi.org/10.1080/08917779008248753

Waluyo, B. (2019). Examining Thai first-year university students' English proficiency on CEFR Levels. *The New English Teacher*, *13*(2), 51-71. http://www.assumptionjournal.au.edu/index.php/newEnglishTeacher/article/view/3651/2368

Wood, S. G., Hart, S. A., Little, C. W., & Phillips, B. M. (2016). Test anxiety and a high-stakes standardized reading comprehension test: A behavioral genetics perspective. *Merrill-Palmer Quarterly, 62*(3), 233-251. https://dx.doi.org/10.13110%2Fmerrpalmquar1982.62.3.0233

Wren, D. G., & Benson, J. (2004). Measuring test anxiety in children: Scale development and internal construct validation. *Anxiety, Stress & Coping*, *17*(3), 227-240. https://doi.org/10.1080/10615800412331292606

Wu, J., & Lee, M. C.-L. (2017). The relationships between test performance and students' perceptions of learning motivation, test value, and test anxiety in the context of the English benchmark requirement for graduation in Taiwan's universities. *Language Testing in Asia*, *7*(1). https://doi.org/10.1186/s40468-017-0041-4

Wudthayagorn, J. (2018). Mapping the CU-TEP to the Common European Framework of Reference (CEFR). *LEARN Journal: Language Education and Acquisition Research Network*, *11*(2), 163-180. https://so04.tci-thaijo.org/index.php/LEARN/article/view/161641

Yanxia, Y. (2017). Test anxiety analysis of Chinese college students in computer-based spoken English test. *Journal of Educational Technology & Society*, *20*(2), 63-73. https://www.jstor.org/stable/90002164

Zeidner, M. (1998). *Test anxiety: The state of the art*. Springer.

Zeidner, M. (2010). Test anxiety. In I. B. Weiner & W. E. Craighead (Eds.), *The Corsini encyclopedia of psychology* (pp. 1766-1767). Wiley.

Zheng, Y., & Cheng, L. (2018). How does anxiety influence language performance? From the perspectives of foreign language classroom anxiety and cognitive test anxiety. *Language Testing in Asia*, *8*(1). https://doi.org/10.1186/s40468-018-0065-4

Zuriff, G. E. (1997). Accommodations for test anxiety under ADA?. *Journal of the American Academy of Psychiatry and the Law Online*, *25*(2), 197-206. https://jaapl.org/content/jaapl/25/2/197.full.pdf