

## Test Anxiety and Foreign Language Reading Anxiety in a Reading-Proficiency Test

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**Abstract: Problem statement:** The impact of foreign-language anxiety has been researched with respect to the reading domain; however, how it affects reading proficiency in relation to test anxiety in a test situation is yet to be explored. **Approach:** This study investigated possible relationships between test anxiety, foreign language reading anxiety and English reading proficiency by using scales published in previous studies. A total of 302 EFL college freshmen enrolled in Freshman English were assessed with the Test Anxiety Scale, the Foreign Language Reading Anxiety Scale and a reading-proficiency test. Data were analyzed by means of Pearson's product-moment correlations and independent-samples t-tests. **Results:** Several findings were reported. First, English reading proficiency was found negatively related to test anxiety and foreign language reading anxiety. Second, test anxiety was found correlated positively with foreign language reading anxiety. Third, the reading-proficiency difference between Low Anxiety Testees and High Anxiety Testees did not reach a significance level. Fourth, the reading-proficiency difference between Low Anxiety Readers and High Anxiety Readers did not reach a significance level, either. **Conclusion/Recommendations:** It was possible that the sample sizes may not be enough to make the reading-proficiency difference between LAT and HAT or between LAR and HAR reach a significance level. In addition, the reading-proficiency test in the form of multiple-choice questions could not have differentiated low anxiety participants from high anxiety ones. In the future, the number of participants should be increased to increase the power of the statistical procedure. In addition, various reading-proficiency assessments should be considered.

**Key words:** Anxiety, L2 acquisition, reading-proficiency test, EFL learners

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### INTRODUCTION

In the past decades, affective factors were reported to impact language-learning processes and achievement (Larsen-Freeman and Long, 1999). In particular, anxiety is described to be consciously perceived disorder, i.e., tension, apprehension, inadequacy, nervousness, insecurity and self-doubt (Spielberger and Gorsuch, 1983). It is considered a factor influencing second language (L2) learning (Steffensen *et al.*, 1999; Pawanchik *et al.*, 2010) and predictor of L2 performance (MacIntyre and Gardner, 1991; Saito and Samimy, 1996). Moreover, performance impairment is perceived to have something to do with the degree of anxiety (Calvo and Alamo, 1987). In the past decades, a body of L2 research have been conducted, focusing on Foreign Language Reading Anxiety (FLRA) concerned with any of the four language skills (Young, 1998). Given that anxiety takes place in a context-dependent

manner, L2 research has yet to take into account test anxiety-anxiety with respect to a test (Cassady and Johnson, 2002; Zeidner, 1998)-along with FLRA altogether. To compensate for the gap in the literature, this study investigated the relationship between test anxiety, FLRA and reading proficiency in a test situation.

**Test anxiety and reading performance:** Research on the issue of anxiety has been central to L2 research since the 1960s (Cassady and Gridley, 2005; Cassady and Johnson, 2002; Hsu, 2004; Saito *et al.*, 1999; Sellars, 1998, 2000; Leow and Sanz, 2000). Test anxiety is labeled from a cognitive perspective-a negative psychological emotion that students experience during formal testing or an evaluation (Cassady, 2004). The term includes disturbing thoughts, distracting emotions, preoccupied feelings, or the fear of evaluation that one perceives while engaged in a test

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situation. Previous literature has documented that test anxiety impacts learners' proficiency profoundly (Naveh-Benjamin *et al.*, 1987). Though the majority of the previous studies revealed that test anxiety at a higher level is associated with proficiency impairment in a test situation, the cause-and-effect relationship between the two has to be understood in more depth (Benjamin *et al.*, 1981; Saito and Samimy, 1996; Scovel, 1978). Students with high levels of test anxiety tend to show symptoms or manifest certain behaviors to cope with the situation (Musch and Broeder, 1999; Zeidner, 1998). They may encounter problems with encoding and storage processes, which results in inadequate conceptual representations of the content (Benjamin *et al.*, 1981; Naveh-Benjamin, 1991). They are more susceptible to procrastination (Cassady and Johnson, 2002), the selection of surface-level processing strategies (Sarason, 1980) and engagement in repetitive memorization strategies (Benjamin *et al.*, 1981). Students with higher test anxiety spend more time preparing for tests than those with low levels of test anxiety (Culler and Hollohan, 1980). Test anxiety is reported to be correlated with a significant performance decrement in students' grade point averages (Carrier and Jewell, 1966). In comparison to their peers with lower test anxiety, students with higher test anxiety did much poorly (Cassady and Johnson, 2002). Children with higher test anxiety are easily distracted than those who with lower test anxiety (Nottelmann and Hill, 1977). Simply put, when anxiety reaches a certain level, it becomes disorder and disturbs the ability to concentrate. For example, he who is prone to anxiety may know the answer but "freeze up" biologically on a test, failing to demonstrate the information that he has learned.

Test anxiety and performance generally keep a negative relationship. With 168 sophomore and junior education-major undergraduates as participants, Cassady and Johnson (2002) assessed the impact of test anxiety on three course exams and students' self-reported performance on the Scholastic Aptitude Test. The results revealed that higher levels of test anxiety were associated with lower test scores on each of the three course exams and lower Scholastic Aptitude Test scores. Despite the confirmative findings regarding the context-dependent feature of anxiety, some methodological flaws were found in Cassady and Johnson (2002). Just to name a few here. The insufficient number of the participants and the homogeneous background of students in majors constrain the generalization of the results. In addition, it may run short of validity to use students' scores from three course exams and self-report SAT scores, since

the instruments may not be as reliable or valid as standardized tests.

Despite the negative correlation between test anxiety and proficiency, it does not hold true across the board. Take Ruebush (1960) for example. The participants consisted of 280 elementary school students, who were asked to complete the Yale Test Anxiety and Yale General Anxiety Scales designed by Ruebush (1960). On the basis of their survey performance, the participants were further divided into groups of high and low anxiety levels for data analysis. Surprisingly, students with higher levels of test anxiety outperformed those with lower anxiety levels on criterion-based tasks. Thus, Ruebush concluded that anxiety may not impede learning all the time (p. 210).

Test anxiety-a possible impediment to performance in an evaluation-may turn to facilitate students carrying out difficult tasks effectively when it is neither too much nor too little (Scovel, 1978). McDonald (2001) contended that an optimal level of anxiety is when the correlation between test anxiety and performance reaches the highest point of the inverted "U" shape curve on the grounds that certain degree of test anxiety helps students stay focused on the task and keeps them feel challenged. However, too much or too little test anxiety may either create stress/pressure or have no inspiring effect, consequently resulting in performance detriment.

In brief, research on test anxiety has generated conflict findings. Test anxiety, depending on its levels, is found to have something to do with performance. Generally speaking, anxious students usually fail to perform well. Only when test anxiety reaches an optimal level can students carry out tasks successfully. However, it is difficult to measure the quantity of test anxiety in an objective manner.

**Reading anxiety and reading performance:** One of the lines of L2 research is concerned with reading anxiety. Affective factors are deemed influential to L2 reading and mediate reading purposes (Fryer, 1988). According to Horwitz *et al.* (1986), Foreign Language Reading Anxiety (FLRA) "... is a distinct complex of self-perceptions, beliefs, feelings and behaviors related to classroom language learning arising from the uniqueness of the language learning process" (p. 31). This definition involving "self-perceptions, beliefs, feelings and behaviors" has been conceptualized in the literature (Young, 1998; Jalongo and Hirsh, 2010; Young, 1998).

Because speaking has been considered the most threat-provoking to L2 learners among the four language skills, previous studies on anxiety in a

language learning situation were inclined to concentrate on the oral or aural aspect (Horwitz and Young, 1991; Gregersen and Horwitz, 2002; Horwitz *et al.*, 1986; Philipps, 1992; Woodrow, 2006). Comparatively, FLRA has not drawn much attention until recent decades. Found that speaking English to teachers leads to the most anxiety of EFL Chinese students and that proficient students are less anxious. Similarly, Matsuda and Gobel (2004) made a case that reading anxiety is positively related to proficiency. Despite the situation-specific feature of foreign-language anxiety (Arnold, 2007), Brantmeier (2005) warned that level of reading anxiety is also affected by immediate- or post-reading activities. Generally speaking, the impact of foreign-language anxiety has been researched with respect to the reading domain; however, how it affects reading proficiency in relation to test anxiety in a test situation is yet to be explored (Hou, 2009; Hsu, 2004; Sellers, 2000; Leow and Sanz, 2000).

Like test anxiety, FLRA is reported to differ from general foreign language anxiety and influence reading comprehension as well as processes (Sellers, 2000; Saito *et al.*, 1999). When readers perceive a rise in the difficulty level of foreign-language reading materials, their FLRA increases (Saito *et al.*, 1999). Sellers (2000) explored the effect of FLRA on reading comprehension and processes by investigating how university students recalled reading texts at different levels and lengths. Students with high FLRA tended to verbalize more task-irrelevant cognitive interference than those with lower FLRA. Thus, FLRA was concluded to affect reading comprehension.

However, FLRA does not always affect advanced L2 readers or exert a formative influence on beginning or intermediate L2 readers (Brantmeier, 2005; Frantzen and Magnan, 2005; Sellers, 2000). It was possible that advanced L2 readers were strategic at reading by nature while beginning or intermediate L2 readers invested more effort and time to compensate for their ineffective processing capacity. When students are inclined to spend more time handling foreign-language material to make up their lack of study skills, FLRA does less harm to reading performance (Culler and Holahan, 1980).

**Research on FLRA in Taiwan:** FLRA-related research in Taiwan was not initiated until the last decade (Chen, 2007a; Hou, 2009). Huang (2001) surveyed 236 undergraduates in Taiwan, reporting that a variety of factors-- personal reading purposes, length of time studying English and life plans-contributed to FLRA, more or less. Zhang (2003) tested the relationship between FLRA and three reading tasks--reading aloud in class, reading orally to oneself and reading silently. In

the aspect of reading comprehension, students perceiving the lowest level of reading anxiety were found to comprehend the most when reading silently. Meanwhile, those who had exhibited the highest level of reading anxiety comprehended the least when reading orally to themselves. Hsu (2004) examined the effect of FLRA on reading comprehension and the causes of FLRA of 114 first-grade cadets of a military junior college. Interestingly, FLRA did not affect students on comprehending difficult texts. When the reading material was easy to read, high-anxiety readers recalled less passage content whereas low-anxiety readers recalled minor idea units. The FLRA was found to be associated with limited English competence, not texts. Chen (2007b) explored the interplay among test anxiety, reading anxiety and reading comprehension. The correlation between test anxiety and English reading performance was low and so was it between FLRA and English reading performance. However, test anxiety and reading anxiety had a moderate correlation. In particular, low-anxiety readers did not outperform their high-anxiety peers.

The previous studies are methodologically flawed in some aspects. The participants consisted mainly of homogenous students. Chen (2007a), for instance, the participants were comprised exclusively of English-major freshmen. The homogeneity of the participants' background might have limited the generalization of the results. Mindful of this potential danger, the present study, ensured participants of different majors were involved. In addition, almost all the participants were female in Chen (2007b) while all the participants were male students in Hsu (2004). Gender imbalance could have been a potential factor in this line of research since female learners were reported to differ from male ones in learning behaviors (Klee, 1995). The other limitation is that prior studies assessed reading performance by utilizing convenient assessments, such as course grades (Chen, 2007b). Inevitably, the validity and reliability of the assessments are open to question.

**Research questions:** Three research questions were addressed:

- What was the relationship between test anxiety, FLRA and reading performance in a test situation?
- How did High Anxiety Testees (HAT) and Low Anxiety Testees (LAT) differ in a reading proficiency test?
- How did High Anxiety Readers (HAR) and Low Anxiety Readers (LAR) differ in a reading proficiency test?

## MATERIALS AND METHODS

**Participants:** A total of 302 EFL college freshmen who had enrolled in the course Freshmen English participated in this study-157 male students and 145 female ones. The participants consisted of 216 students from the College of Agriculture (69%), 42 students from the College of Education (14%) and 44 students from the College of Life Sciences (17%). The age of the participants ranged from 18-20 (M = 18.9 yrs.). Mandarin Chinese was their mother tongue. Regarding English instruction the participants had previously received, 46 students (15%) received formal English instruction for approximately 6 years, 192 students (64%) for 7-10 years and 64 students (21%) for over 10 years. As for length of residence in countries where English was an official language, 279 students (92%) had never had that kind of experience, 13 students (4%) for less than 1 month, 9 students (3%) for 2-6 months and 1 student (0.3%) for over 1 year. Based on their self-reported data, none of them rated their English reading ability excellent, 21 students (7%) rated their English reading ability good, 114 students (38%) rated their English reading ability fair, 97 students (32%) rated their English reading ability poor and 70 students (23%) rated their English reading ability quite bad.

**Instruments:** The instruments were described in the following. They were Test Anxiety Scale (TAS), the Foreign Language Reading Anxiety Scale (FLRAS) and reading comprehension in a simulated General English Proficiency Test (GEPT), which was a locally-developed standardized test to assess a test-taker's English reading proficiency.

**Test anxiety scale.** The TAS was 27 items, originally developed by Cassady and Johnson (2002) to examine anxiety occurring in a test situation. The TAS was reported to tap anxiety taking place in the following conditions: (a) test-taker engaging in task-irrelevant thinking during testing and in the test-preparation period, (b) test-taker making comparisons to others during test taking or preparation periods, (c) test-taker either feeling panic during a test or self-study and/or (d) test-taker noticing relevant cues not captured during a test. The Chinese TAS for this study was adapted from Chen (2007a) with some modifications made by the researchers to improve the accuracy of English-to-Chinese translation. The word "English" was inserted to each item in the scale to specify English tests rather than general tests. Some items (3, 5, 8, 9, 10, 13, 17, 18 and 21) were reversed. The Chinese TAS was pilot-tested twice, with consistency coefficient reaching 0.80 and 0.89 (Li, 2011).

**The foreign language reading anxiety scale:** The Chinese FLRAS was presented to the participants with some modifications made to the version by Huang (2001), who had translated the English FLRAS to Chinese one and then back-translated to improve the accuracy of the Chinese expression for university students in Taiwan. In the present study, several items (12, 13, 14 and 18) were reversed and some Chinese wordings in Huang's were substituted to make the scale semantically clearer (Li, 2011).

**Reading Comprehension of the General English Proficiency Test (GEPT):** The General English Proficiency Test (GEPT) becomes the most widely used standardized English proficiency test in Taiwan. The GEPT, commissioned by the Minister of Education in Taiwan (Roever and Pan, 2008), was developed in 1999 to evaluate test-takers' English proficiency. It was found to be highly reliable (Shih, 2008a; 2008b), mostly in the high range ( $\alpha = 0.8$ ). The four language skills-listening, reading, writing and speaking-were assessed in the GEPT. The GEPT was at five levels: Elementary, Intermediate, High-Intermediate, Advanced and Superior. Except for the Superior level, test takers were required to pass Listening and Reading before taking the Writing and Speaking tests. Quite a few universities rely on the GEPT as one of their exit requirements or admission to higher education.

A copyright-free simulated reading comprehension of the GEPT provided by the Language Training and Testing Center was used in this study. The GEPT at the intermediate level was chosen because it met the exit requirements of the university where the participants affiliated. Presumably, the English proficiency of the participants should have reached the intermediate level. Reading comprehension of the GEPT contained 45 questions in three sections (15 questions for each): vocabulary and grammar structure, cloze and comprehension of short passages. All questions were in multiple-choice format (one correct response and three distractors).

**Procedure:** The instruments were administered to the participants in two phases. First, the participants completed the TAS and the FLRAS. Second, the participants took 45 min to complete the reading comprehension of the GEPT. In then end, they were debriefed the purpose of the present study.

**Data analysis:** The participants were categorized by the level of test anxiety and FLRA. To examine the effect of test anxiety, 100 participants in the low end of the TAS scores were Low Anxiety Testees (LAT) while

100 participants in the high end of the TAS scores were High Anxiety Testees (HAT). To examine the effect of FLRA, 100 participants in the low end of the FLRAS were Low Anxiety Readers (LAR) while 100 participants in the high end of the FLRAS were High Anxiety Readers (HAR). The classification of LAT vs. HAT or LAR Vs HAR might have been depended on statistical results; i.e., those whose scores were more than one SD above the mean to be HAT/HAR and those whose scores were more than one SD below the mean, LAT/LAR. However, the idea was given up because the number of each category was too small to be representative. The two questionnaires, the TAS and the FLRAS, adopted a 5-point Likert scale ranging from “strongly agree” to “strongly disagree.” Responses to the reversed items were reversely scored.

### RESULTS AND DISCUSSION

**Test anxiety, FLRA and reading performance:** Descriptive information of test anxiety, FLRA and reading comprehension of the GEPT is presented in Table 1. To examine the relationship between test anxiety and reading proficiency in a test situation, Pearson’s correlation-coefficient was performed. The result displayed a moderate negative correlation ( $r = -0.405, p = 0.00$ ). Apparently, the higher test anxiety the participants experienced during the test, the lower reading scores they obtained.

Table 1: Description of test anxiety, FLRA and reading proficiency

Instrument	N	M	SD	Min.	Max
Test Anxiety	302.0	302	83.0	61	14.9
Reading Anxiety	10.3	27	27.0	123	92.0
Reading Proficiency	302.0	22	6.3	8	40.0

Table 2: Test Anxiety Levels

Group	N	M	SD	Min.	Max
LAT	100	66.7	6.2	27	78
HAT	100	98.5	10.3	94	123

Table 3: Results of independent samples t-test for reading proficiency of HAT and LAT

Group	N	M	SD	DF	t	p
HAT	100	19.3	5.6	198	7.0	0.38
LAT	100	25.2	6.2			

Table 4: FLRA Levels

Group	N	M	Min.	Max	SD
LAR	100	100	49.8	71.7	27.0
HAR	67	58	92.0	7.2	5.1

Table 5: Results of independent samples t-test for reading proficiency of HAR and LAR

Group	N	M	SD	DF	t	p
HAR	100	19.7	5.8	198	5.9	0.52
LAR	100	24.6	5.6			

To examine the relationship between FLRA and reading proficiency, Pearson’s correlation-coefficient was performed. In spite of a low correlation coefficient value ( $r = -0.325, p = 0.00$ ), a significant negative relationship was found. That is, when FLRA was not well tamed, the reading proficiency was not high.

To reveal the relationship between test anxiety and FLRA, Pearson’s correlation-coefficient was performed. The result showed a high positive correlation between test anxiety and FLRA ( $r = 0.746, p = 0.00$ ). That is, participants with higher test anxiety may also experience a higher level of FLRA and vice versa.

**HAT Vs LAT:** Test anxiety revealed by the LAT and the HAT is depicted in Table 2.

To examine whether HAT and LAT differ in reading proficiency, two t-tests were performed. An independent t-test was performed to distinguish differences in test anxiety levels between them before any further analysis. The result showed that the difference in the test anxiety between the two types of testees reached a significance level ( $t = -26.71, p = 0.00$ ). However, the results in Table 3 showed that no significant difference was found between reading proficiency for HAT or LAT ( $t = 7.0, p = 0.38$ ).

**HAR Vs LAR:** FLRA by the LAR and the HAR is shown in Table 4.

To examine whether HAR and LAR differ in reading proficiency, two t-tests were performed. An independent t-test was performed to distinguish differences in FLRA between HAR and LAR in order to proceed with further analysis. The result displayed a significant difference between the two types of readers ( $t = -24.57, p = 0.01$ ). However, as shown in Table 5, no significant difference was found between HAR and LAR in their reading proficiency ( $t = 5.9, p = 0.52$ ).

### CONCLUSION

This study aimed to explore test anxiety, FLRA and reading proficiency performance in a test situation. A moderate negative correlation between test anxiety and reading proficiency revealed that the higher level of test anxiety, the lower English reading proficiency scores the participants obtained. This finding supports Krashen (1990) affective filter hypothesis: “When the ‘affective filter’ is lifted, the acquirer may fail to understand what he hears and reads” (Krashen, 1985). Less anxious participants can concentrate on the test and tend to perform better.

The results are consistent with the findings of previous studies (Carrier and Jewell, 1966; Cassady and Johnson, 2002; Chapell *et al.*, 2005; Zeidner, 1998), demonstrating that test anxiety is associated with a significant decrement in students' academic performance. Compared to those who were not so anxious in a test situation, students with higher test anxiety performed poorly (Cassady and Johnson, 2002). One possible explanation is that anxiety results in negative self-perceptions (Horwitz *et al.*, 1986), attention drift (Cassady and Johnson, 2002) and reduction in capacity to process information (Sarason, 1984).

This study echoes with Cassady and Johnson (2002), finding that test anxiety has something to do with reading proficiency. However, this study made use of a local-developed standardized reading-proficiency test while Cassady and Johnson (2002) collected students' course examinations, i.e., achievement scores. Taking the validity and reliability issues into account, the use of final-examination grades could have been called into question (Steinberg and Horwitz, 1986). It was suggested that researchers develop or make use of reliable and valid measures to capture the true effects of anxiety (Horwitz, 2001).

The results of this study were not in line with Chen (2007a), which demonstrated no significant correlation between test anxiety and reading proficiency. One possible explanation for the inconsistencies can be attributed to the sample sizes, the homogeneity of participants and the types of assessments. With a greater sample size and standardized assessment, the present study appears to lay claim to greater validity.

The result showed a significant negative correlation between FLRA and reading proficiency, a finding consistent with previous studies (Hou, 2009; Sellers, 2000). Though the correlation coefficient value was low, the result implied that students perceived higher degrees of FLRA might have lower GEPT reading proficiency scores. In general, learners' emotional states can impact negatively on language proficiency because negative feelings can do harm to performance. This finding corroborates with Hou (2009), but runs counter to Chen (2007b). The difference possibly results from the instruments.

Test anxiety was found somehow related to FLRA. It implies that students perceiving higher degrees of test anxiety may also experience higher FLRA and vice versa. This result could be anticipated, owing to the nature of anxiety as psychological construct.

Though HAT and LAT differed in the levels of test anxiety, no significant difference was found between their reading proficiency. The finding was in line with

previous studies (Benjamin *et al.*, 1981; Calvo and Carreiras, 1993). Two potential explanations for the result can relate to the dimension of the test (Benjamin *et al.*, 1981; Sellers, 2000) or the number of the participants. With multiple-choice questions, students can simply choose one out of four answers. Relatively less effort is required since the type of test provides more concrete information about the question. Students can obtain higher scores, as opposed to having to fill in blanks or complete open-ended questions. The other possible explanation might be that the number of HAT and LAT was not large enough to result in a significant difference.

The results also showed that reading proficiency between HAR and LAR did not reach a significance level. One possible explanation might be related to the number of the participants or the test itself (Benjamin *et al.*, 1981). The number of HAR and LAR might not have been big enough to make the difference reach a significance level. When the test took the shape of multiple-choice questions, the students were able to make a guess without having to take too much effort to answer the questions or make a guess. As a result, FLRA may have little to do with reading proficiency as represented in multiple-choice questions. This result was contrary to that of Chen (2007a), which did report that HAR and LAR differed significantly in their FLRA. When it comes to instruments, Chen (2007b) utilized the participants' course exams to measure reading performance. The testing format of the midterm examination was a reading comprehension test comprised of multiple-choice questions, fill-in-the-blank and reading comprehension, while in this study, a simulated GEPT reading comprehension with 45 questions was administered to assess students' reading proficiency. The instrument in Chen (2007a) was an achievement test, not truly representative of general English reading proficiency. Due to the flaw in the instrument, the results of Chen (2007b) are open to question. Comparatively, the simulated GEPT used in this study appears to give a better account of students' general English reading proficiency.

**Limitations and future directions:** This study investigates test anxiety, FLRA and reading proficiency in a test. Empirically, reading proficiency can be cognitively interpreted from different perspectives; i.e., test anxiety and FLRA can inhibit reading performance in a test whereas researchers used to consider limited language skills or language deficits culpable. The results highlight reading comprehension barriers from another perspective. With the findings, an understanding of how students think and feel about

reading comprehension in an English test is increased. To mitigate the negative effect of anxiety, it is necessary for students to learn to cope with anxiety in reading comprehension.

This study is limited in two aspects, at least. The primary limitation stems from the participants. Since the participants were composed of university students, the results can hardly be generalized to students in primary/secondary education. Second, this study collected quantitative data out of a local standardized test; therefore, the results shed little light on reading performance in international tests.

Several recommendations for research are suggested here. First, this study could be replicated in the future by recruiting secondary-school students to examine their FLRA in a test situation. Second, international or well-established English tests, such as TOEIC, TOEFL, or IELTS, can be employed to bridge the gap in this line of research. One shot of reading comprehension of the GEPT may simply picture a student's English reading proficiency in a partial way. Last, qualitative research involving interviews or observations should be fostered to collect additional and insightful information so that the source of anxiety can be understood in more depth.

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