

Predicting English Test Anxiety: How Memorization and Critical Thinking Function?

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Abstract—Understanding how foreign language anxiety develops has become very important because of its influences on language learning and performance. The current study examines the levels of Omani students' English language test anxiety and how these levels are influenced by the use of two learning strategies, memorization and critical thinking. The sample consisted of (250) students from different Omani school grades. The participants responded to three questionnaires relating to test anxiety, memorization, and critical thinking. The findings showed that these Omani school students use both learning strategies and experience slightly low levels of test anxiety. The regression model consisting of the two learning strategies explains 20% of variance in students' test anxiety. As the students increased their use of these two learning strategies, their test anxiety decreased, and critical thinking was found more influential in decreasing students' feeling of test anxiety. Implications of the findings to language teaching and learning are discussed.

Index Terms—English test anxiety, memorization, critical thinking, Oman

I. INTRODUCTION

In response to the rapid trend of English becoming the global lingua franca, English teaching and learning have become consequential. English instruction, however, is not the same as that of other subjects. As Cohen and Norst (1989) contended, something distinct exists about “the performance aspect of language learning, and the fear it engenders, compared to other knowledge + skill-based subjects.... Language and self/ identity are so closely bound ... that a perceived attack on one is an attack on the other” (p. 76). Thus, there are certain challenges encountered by the learners of English as a foreign or second language (EFL/ ESL), and that may develop stress and anxiety which can influence language learning unless students are equipped with effective learning strategies.

Foreign Language Anxiety and its Influences

EFL learners, Consequently, are prone to experience some sort of inhibitions and cognitive, psychological and emotional dysfunctions. Amongst such problems, foreign language anxiety (FLA) has been viewed as a major factor influencing language learning and performance (Al-Shboul, Ahmed, Nordin, & Abdul Rahman, 2013), and Krashen (1982) considered it, beside motivation and self-confidence, as the key affective variables influencing language acquisition (Lui, 2013). FLA is classified as a situation- specific anxiety since it manifests in evaluative type situations (Horwitz, 2010; Salehi & Marefat, 2014). Horwitz, Horwitz, and Copy defined FLA as "a distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process" (cited by Al-Shboul et al., 2013, p.33; Mohammadi, Biria, Koosha, & Shahsavari, 2013, p.638).

The causes of FLA have been investigated by many researchers, and the evaluative element has been found as the chief trigger of FLA (Mohammadi et al, 2013; Salehi & Marefat, 2014; Young, 1991). In his review of the literature on language learning anxiety, Young (1991) identified six sources of language anxiety: personal and interpersonal anxieties, learner and instructor beliefs about language learning, instructor-learner interactions, classroom procedures, and language testing (p. 427). Similarly, Jen (2003) classified other common factors including personality factors, fear of negative evaluation, low English proficiency, lack of preparation, pressure from the language instructor and tests, and parental pressure (cited by Mohammadi et al, 2013).

Experiencing FLA is likely to influence students' English learning and test performance. Indeed, it has been found pervasively in different contexts and with different languages that FLA anxiety impedes language achievement, and so these two correlate negatively (Al-Shboul et al., 2013; Horwitz, 2001; MacIntyre & Gardner, 1994; Mohammadi et al., 2013; Salehi & Marefat, 2014; Young, 1991).

English Test Anxiety and Language Learning Strategies

Test anxiety (TA) is yet another relevant facet, and studying it in relation to language learning anxiety is significant, for both types of anxiety may correlate reciprocally and affect language performance. However, Salehi and Marefat (2014) state that the research on the relationship between FLA and TA is lacking (p. 932). The only study they cite is by MacIntyre and Gardner (1989), which was appended by their recommendation: "a closer examination of the role of test anxiety in the foreign language classroom seems warranted" (cited by Salehi and Marefat, 2014, p. 932). Subsequently, the recent study of Salehi and Marefat (2014) found a strong positive relationship between FLA and TA, and that they both hinder language learning as they correlated negatively with foreign language test performance (pp. 936-937).

Hence, various factors have been investigated closely so that the undesired effects of TA can be reduced, and language learning strategies (LLS) are one of these main variables. Lucas et al., (2011) demonstrate that "foreign language learners ... equip themselves with learning strategies that would help them not only to learn the target language but also to cope with their language learning anxieties" (cited by Mohammadi et al., 2013, p. 637). Several studies have found a negative relationship between learning strategy use and FLA and TA generally, and so learners who use effective learning strategies show lower levels of anxiety and perform more efficiently (Ergene, 2011; Huang, 2001; Kesici, Baloğlu, & Deniz, 2011; Lui, 2013; Mohammadi et al., 2013; Noormohamadi, 2009).

LLS have been defined by many researchers (see Hajhashemi, Shakarami, Anderson, Amirkhiz, & Zou, 2013 for a reference of definitions), and they basically refer to study skills, habits, techniques or behaviors that learners use to enhance their language learning and information processing. These strategies have also been classified into different categories, and the prominent cited classification is Oxford's (1990) Strategy Inventory for Language Learning (SILL) which includes two categories. The first one is the direct strategies group, which comprises memory strategies (e.g., creating mental associations and retrieving information), cognitive strategies (e.g., analyzing and reasoning) and compensation strategies (e.g., guessing), while the indirect strategies include metacognitive strategies (e.g., planning and evaluating one's own learning), affective strategies (e.g., managing one's own feelings) and social strategies (e.g., asking for clarification) (Oxford, 1990, p. 71).

There have been some differences exhibited by learners in their use of strategies. Many studies investigated the frequency of strategy use (Aljuaid, 2010; Ghafournia, 2014; Liu & Chen, 2014; Mohammadi et al., 2013; Phillips, 1990, Salehi, 2002 and Tajjeddin, 2001 cited in Mohammadi et al., 2013). In general, metacognitive skills were found to be more commonly used, whereas affective and memory strategies were the least. In contrast, Lan and Oxford (2003) found that young learners were more prone to use affective and compensation strategies (cited by Liu, 2013, p. 78). Besides, a significant correlation between LLS use and gender has been indicated. Some studies reported that female students have a higher use of LLS than their male counterparts (Sheu, 2009 cited by Liu, 2013; Yu, 2013), where others found that males show a greater tendency to the use of study skills than females (Agarwal, 1983 cited by Ngwoke, Ossai & Obikwelu, 2013).

The current study focuses on two main learning strategies: memorization and critical thinking. The effects of both strategies on learning and on TA are studied, with special attention to gender differences among EFL learners.

Memorization in Relation to Test Anxiety

Memorization as a learning strategy can be viewed as a double-edged sword because of the dispute over its favorable and unfavorable consequences (Oanh & Hien, 2006; Özkan & Kesen, 2008). Memorization constitutes a direct involvement in language learning, and it belongs to memory strategies according to Oxford's (1990) LLS taxonomy, while it is found under cognitive learning strategies according to Types of Learning Strategies by Chamot and O'Malley (1990) (cited in Oanh & Hien, 2006 and Özkan & Kesen, 2008). Use of this strategy is represented in conscious internalizing, recalling and retrieving of information. When learning an FL, memorization is commonly used to learn and remember vocabulary and phrasal structures to aid in communication (Oxford, 2003; Özkan & Kesen, 2008). Positive learning results were found by Kovecses and Szabo (1995) for students memorizing phrasal verbs (cited by Oanh & Hien, 2006). As cited in Özkan and Kesen (2008), Cook (1994) asserts that "repetition and learning by heart are valuable, pleasurable and efficient uses of language learning activities and can help language learners set valuable goals as they will be involved in the authentic and communicative use of language" (p. 60). On the other hand, many scholars and teachers, mainly native English speakers, were not in favor of memorizing chunks since although this may help the learner accelerate initial learning and sound more fluent and native-like, it can consequently impede spontaneous and appropriate speaking performance (Oanh & Hien, 2006). Therefore, because memorization is inevitable and cannot be eliminated in foreign language learning, making students and teachers aware of good and bad memorization can certainly help make good use of this strategy.

Relating memorization to test anxiety, Oxford (2003) maintains that "the use of memory strategies in a test-taking situation had a significant negative relationship to learners' test performance in grammar and vocabulary" (p. 13). A study by Schmeck (1988) indicated that the use of rehearsal and rote memorization is related to high levels of TA (cited by Mohammadi et al., 2013, p. 639). The use of memorization, however, may not always result in negative performance and high TA. As indicated early, good memorization practices may increase performance and decrease TA.

Critical Thinking in Relation to Test Anxiety

On the other hand, the ability to think critically has been considered as a valid indicator of academic success and an essential construct in language acquisition, mainly in reading and writing (Fahim, Barjesteh, & Vaseghi, 2012; Nikoopour, Farsani, & Nasiri, 2011; Rashid & Hashim, 2008). Thadphoothon (2005) reports that conveying thoughts in

a foreign language is more challenging than in L1 considering the use of different linguistic conventions and competences; hence, teaching of critical thinking is crucial as it helps learners to communicate form and meaning together (pp. 23-24). The body of literature on the relationship between critical thinking and foreign language learning is however insufficient, and on the whole, it has been led by western researchers (Rashid & Hashim, 2008). A number of these scholars drew some disputable conclusions maintaining that critical thinking is unique to the western culture, as Stapleton (2001) claimed that Asian learners "are deficient in critical thinking abilities" (cited by Rashid & Hashim, 2008, p. 374). However, several studies have been conducted to refute such claims among which are Japanese and Malaysian studies which found that their students did display some critical thoughts to certain levels (Rashid & Hashim, 2008).

When examining critical thinking in relation to FLA, there is much limited research that has been conducted. The studies which have investigated the relationship found a significant negative correlation between critical thinking and FLA (Fahim & Nilforooshan, 2014; Haseli & Rezaii, 2013), and in contrast, critical thinking was found to correlate positively with achievement (Fahim, Barjesteh, & Vaseghi, 2012; Haseli & Rezaii, 2013).

Gender Differences Across the Study Variables

When it comes to the influence of gender pertaining to the levels of test anxiety, memorization and critical thinking, some statistical differences have been found to exist. As regards test anxiety, many studies have shown that female students are more anxious than male students (Ergene, 2011; Mousavi, Haghshenas & Alishahi, 2008; Ngwoke, Ossai & Obikwelu, 2013; Park & French, 2013; Rodarte-Luna & Sherry, 2008); in opposition, in their study of Spanish as a foreign language, Marcos-Llinás and Garau (2009) found that females showed lower levels of anxiety than their male counterparts (cited by Salehi & Marefat, 2014). Mousavi et al. (2008) suggest that the reason behind the results displaying females as more anxious can be explained by the masculine nature of males as they tend to deny experiencing anxiety, or they can find ways to diminish it, whereas females can confess it (p. 6).

Concerning strategy use, gender differences are more disputable and inconclusive. Rodarte-Luna and Sherry (2008) cite one study which indicated that males show a greater disposition to use "superficial learning strategies, such as memorization or rote-learning," while other studies proposed that "men more often show a deep level approach to learning where women display more surface level processing" (p.330). They also found that men did better than women on critical thinking, whereas females, to a small extent, outperformed males on rehearsal (p.335). Based on the California Critical Thinking Disposition Inventory (CCTDI) which consists of seven subscales, Pacione, Sánchez, Pacione, and Gainen (1995) recorded that females scored higher in "Open-Mindedness (tolerance of differences) and Maturity (the awareness that some types of problems can be ill-structured and do not necessarily have only one solution)," whereas males reported higher scores in "Analyticity," and no significant gender differences in the strength of critical thinking disposition across-the-board were reported (cited by Walsh & Hardy, 1999). However, it has been observed that women appear to be better able at utilizing a wide range of learning strategies (Lee & Oxford, 2008; Rodarte-Luna & Sherry, 2008), and this utilization impacts their anxiety significantly (Rodarte-Luna & Sherry, p. 338). In a study based on Oxford's (1990) SILL, Sheu (2009) showed that women had a higher use of all learning strategies except compensation strategies (cited by Liu, 2013, p. 78).

II. THE CURRENT STUDY CONTEXT AND RESEARCH QUESTIONS

Relating worldwide research to the context of this study, much of the research on this topic has been conducted by western and foreign studies, and very few studies come from the Arab world. Ergene (2011) claimed that "Islamic countries as a group reported the highest levels of test anxiety while Western European and Asian countries reported the lowest levels of test anxiety". Seipp and Schwarzer (1996) declared that Arab students' high scores on the test anxiety scale resulted from "the severe negative consequences related to poor examination performance in these countries" (cited by Ergene, 2011, p. 327). Furthermore, in several studies investigating gender differences among Arab, Islamic and other countries, Oman was found within the countries where anxiety existed significantly, and females were found to score higher on the anxiety scales (Abdel-Khalek & Alansari, 2004; Alansari, 2006; Alansari, 2011). Hence, such research findings are very critical that the situation should be examined locally. Only one Omani study was found to have investigated the case of EFL anxiety, and was conducted in an institution of tertiary education in Oman. The findings indicated that the differences in the levels of anxiety between Omani male and female students are insignificant, where the latter displayed a little higher level of anxiety. Females' anxiety is found to be facilitative as it has impacted positively on female students' performance (Mathew, Job, Al Damen, & Rafiqul Islam, 2013).

To this end, this study aims at investigating the levels of test anxiety experienced by Omani students in relation to the use of critical thinking and memorization strategies in learning English as a foreign language. In particular, this research intends to answer the following questions:

1. What are the levels of students' test anxiety, memorization, and critical thinking?
2. Can students' use of memorization and critical thinking strategies predict their test anxiety levels?

III. METHOD

Participants and Procedures

The sample of the current study was extracted from a larger national data collected from schools in all Omani districts. The reported sample consisted of 250 students (87 male & 163 females) who responded to the questionnaires related to learning strategies and motivational levels focusing on learning English subject. The participants came from different school grades, and their age mean was 14.30 ($SD = 1.69$). Half of the sample indicated zero day of school absence. Approximately, 80% of the sample rated their family income as average, and 88% lived with both parents.

Instrument

The participants responded to a group of measures including students' perceptions of test anxiety, the use of memorization strategy, and the use of critical thinking strategy in learning English subject. The three measures are extracted from Pintrich, Smith, Garcia, and McKeachie's (1993) Motivated Strategies for Learning Questionnaire (MSLQ). The MSLQ is validated by early research and proves to show good reliability and validity evidences in the Omani context (Author et al., 2012). All the items in the three scales were 5-point Likert type of responses. The test anxiety scale consisted of 5 items that were all negatively worded to indicate the anxiety level. Thus, high scores indicated higher levels of anxiety. The memorization scale consisted of 4 items with high scores indicating high use of this strategy in learning English. The critical thinking scale included 5 items with the same scoring procedure. All measures showed reasonably good reliability coefficients consistent with previous research findings (Author et al., 2012).

IV. DATA ANALYSIS AND RESULTS

Descriptive analyses showed that these Omani students had significantly high levels of use of memorization strategy and critical thinking strategy when learning English, as shown in the results of the One-Sample t-test (Table 1). In contrast, the t-test showed that the sample experienced slightly low levels of test anxiety. Significant negative bivariate correlations between test anxiety and both memorization ($r = 0.34, p < .001$) and critical thinking ($r = 0.41, p < .001$) strategies suggested the existence of a relationship between these two learning styles and test anxiety. The two learning strategies correlated positively with each other ($r = 0.46, p < .001$). No gender differences were found in the levels of the three variables.

TABLE 1
MEANS AND STANDARD DEVIATIONS OF THE PERCEPTIONS OF THE ASSESSMENT TASKS (N = 249)

Variable	<i>M</i>	<i>SD</i>
Test Anxiety	2.92	0.40
Memorization Strategy	3.14	0.46
Critical Thinking Strategy	3.15	0.42

To examine the predictive role of the two learning strategies (memorization and critical thinking) on predicting students' test anxiety, linear regression was applied. Prior to conducting regression model, collinearity was checked and the values reached the accepted levels. Because there was no gender difference found in any of the main study variables, gender was not entered into the regression equation. The model contained both students' memorization strategy and critical thinking strategy to predict their levels of test anxiety. Table 2 shows the outcomes of the regression model.

TABLE 2
SUMMARY OF STANDARD REGRESSION ANALYSIS OF TEST ANXIETY ON MEMORIZATION AND CRITICAL THINKING STRATEGIES (N= 249)

Variable	<i>B</i>	<i>SE B</i>	β	<i>t</i>
Memorization Strategy	-0.17	.05	-0.19	-3.09
Critical Thinking Strategy	-0.31	.06	-0.32	-5.08
R^2	0.20			
<i>F</i>	31.737			

As can be seen from Table 2, results showed that the multiple $R^2 = 0.20$ (adjusted $R^2 = 0.198$) was statistically significant, $F(2,247) = 31.737, p < .001$, indicating that the two learning strategies explained 20% of the variance in students' test anxiety. Students' use of critical thinking strategies ($\beta = -0.32, p < .001$) and use of memorization strategies ($\beta = .19, p < .01$) were both significantly and negatively related to their levels of test anxiety.

V. DISCUSSION

The current study examined the connection between two English learning strategies (i.e., memorization and critical thinking) and students' test anxiety in the Sultanate of Oman. The findings show that students use both of these strategies to learn English. In addition, the students experience slightly low levels of test anxiety. Using regression model, the results showed that the two learning strategies were connected to test anxiety and explained 20% of variance in students' test anxiety levels.

Omani students seem to apply the two learning strategies equally when learning English as a foreign language. As the reviewed research shows, memorization helps students acquire new vocabulary that increases students' understanding and usage of the English language. It is not surprising to find EFL learners, particularly Omani students in this study, make use of memorization as it serves as a facilitator for building a new internal language system. Students just need to

get guided on how they can utilize each strategy, and studies have shown that can be done through customized instructions and training on effective use of strategies (Huang, 2001; Oxford & Crookall, 1989). Making students aware of their learning styles (i.e. auditory, visual, kinesthetic, etc.) can also help them figure out which modes of memorization work best for them.

Equally practiced is the use of critical thinking in learning English language among Omani students. Cumulative research examining students' learning strategies shows that students tend to engage in the processes related to critical thinking as a means of exploring the language and getting acquainted with its instructions and roles. This finding disaffirms the assertions mentioned early in this article which claim that Asian students, particularly Arabs, lack critical thinking abilities. The contemporary movements towards integrating language skills and encouraging the communicative approach have played a significant role in fostering students' use of higher-order thinking skills, among which is critical thinking.

An important finding of the current study is the effect of these two learning strategies on decreasing the levels of students' test anxiety. The results show that as the students increase their use of these two learning strategies, their test anxiety decreases. The regression model suggests that critical thinking is more important than memorization in decreasing students' feeling of test anxiety. This is in line with the findings of previous studies (Fahim & Nilforooshan, 2014; Haseli & Rezaii, 2013) which indicated a significant negative correlation between critical thinking and FLA. Being critical thinkers, students can become aware of their irrational fears and can identify what provokes anxiety for them. Thus, they gradually adapt themselves to cope with that rather than avoiding it.

VI. CONCLUSION

The findings of this study show that Omani students experienced slightly low levels of test anxiety, and they significantly had high levels of use of memorization and critical thinking strategies when learning English. Both learning strategies were found to correlate positively with each other and negatively with test anxiety. In addition, no gender differences were found in the levels of the three variables. The findings suggest that memorization and critical thinking can be equally considered part and parcel of students' EFL learning.

Even though we have proposed one direction for the relation between learning strategies and test anxiety, our correlational research design limits any casual assumption and allows for possible reciprocal relationship between these variables. In addition, the use of self-report may result in social desirability; therefore, it is suggested that future research uses more ability-related tests to examine students' ability to use memorization and critical thinking and how this use can predict their test anxiety.

The findings of the study, however, are consistent with early research from different cultural contexts and provide evidence for the relationship between learning strategies and test anxiety. The negative prediction of memorization on test anxiety may correct a common belief in the Arabic teaching context that memorization is a weak learning strategy, acknowledging the importance of differentiating between good and bad practices of memorization. In addition, the greater effects of critical thinking on test anxiety should enhance the ongoing calls for its use in our school and teaching practices.

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