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The Effect of Anxiety on University-Level L2 Learner Ability to Recall Items in the Lexicon

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Abstract

This study examines the effect of anxiety-producing situations on the vocabulary output performance of second language (L2) learners. Two levels of learner anxiety, high anxiety and low anxiety, were identified using the Foreign Language Classroom Anxiety Scale (FLCAS). High-anxiety L2 students and low-anxiety L2 students, as measured by the FLCAS, were each asked to write down as many English vocabulary words beginning with 'b' as they could think of in two minutes in two anxiety-producing situations. Before they started, half of the high-anxiety students and half of the low-anxiety students were told that an average score on this English vocabulary recall test was ten words. The other half was told that it was forty words, aiming to increase their tension level. The findings show that foreign language anxiety generally led to deficits in output performance; however, the effect of high anxiety-producing situation on language learners could be viewed as facilitative.

Key words: Anxiety-producing situation, Learner anxiety, Vocabulary recall, Foreign language anxiety

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1. Introduction

One of the critical issues in the field of second language acquisition (SLA) is the question of differential success. For a number of years, foreign language teachers and educators have been puzzled by findings that some L2 learners acquire an L2 with relative ease while others have repeated failures or meet with limited success. A number of factors, including age, language aptitude, social-psychological factors, personality, cognitive styles and the like, have been proved to contribute to individual differences. The factor of our main concern in the study is language anxiety. The arousal of anxiety has

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posed several potential problems for students learning a foreign language because it can interfere with the language acquisition process and with ongoing cognitive activity (Tobias, 1986). This interference reduces learner ability to take in information and to learn new material. Research has shown that students who experience high levels of anxiety may have difficulty acquiring an L2 (Awan, Azher, Anwar, & Naz, 2010; Batumlu & Erden, 2007; Gregersen, 2003; Horwitz, 1991, 2001; Kleinmann, 1977; MacIntyre & Gardner, 1989, 1991a, 1991b; Marcos-Llinás & Garau, 2009; Young 1986). Some problems commonly associated with high levels of language anxiety toward the L2 learning process include listening comprehension failure, reduced word production, lower course grades in language learning, poor performance in language testing, and impaired vocabulary learning. Language anxiety in other studies (Ehrman & Oxford, 1995; Horwitz, 1990; Young, 1992) could be viewed as facilitative anxiety, as called by Alpert and Haber (1960), and this anxiety seems to enhance language achievement, that is, it is positively related to language performance. Although the direction of correlation is not always consistent, it is generally believed that some learners might be anxious more often than others or have a more severe reaction to anxiety-producing situations. As a result, the study aims to explore the influence of anxiety-producing situations in an English vocabulary recall task on learners who perceive themselves as being high/low in language anxiety, hoping to gain meaningful insights into the relationship between language anxiety and output performance measured by an English vocabulary recall test.

2. Literature Review

Language anxiety is the feeling of tension, nervousness and apprehension that is experienced as a response to L2 context. The study of language anxiety has received considerable attention in SLA research (Abu-Rabia, 2004; Campbell & Ortiz, 1991; Horwitz, Horwitz, & Cope, 1986; MacIntyre & Gardner, 1989, 1991a; Torres & Turner, 2014). L2 researchers have long been aware that language anxiety is the specific type of anxiety associated with language performance, and it is distinct from other forms of anxiety. In reviewing the research into the effects of anxiety on L2 learning, MacIntyre and Gardner (1991a) found a large body of evidence indicating that such anxiety negatively influences the language-learning process. Horwitz et al. (1986) acknowledged the significant negative effects of language anxiety on language achievement, such as course grades; however, they suggested that research should look at the more subtle effects by which anxiety may impair performance in foreign-language contexts. In one such study, Steinberg and Horwitz (1986) studied the effect of environmentally induced anxiety on oral communication in the L2 and found that students experiencing an anxiety-producing situation attempted less interpretive (or more concrete) messages than those in a non-anxiety-producing setting. Krashen (1982) hypothesized that anxiety contributes to an affective filter, which makes individuals less receptive to language input and less expressive of output. Consequently, they fail to absorb the target language message, and language acquisition process is impeded. They are also inhibited with trying to use any L2 they have managed to acquire. Lim (2009) found that learners experiencing negative high levels of language anxiety are more likely to drop out of their L2 class and quit their L2 studies.

MacIntyre and Gardner (1989) examined the learning and production of vocabulary items and found that subjects high in Communicative Anxiety learned and recalled fewer vocabulary items than did those low in Communicative Anxiety. From a cognitive psychological perspective, anxiety has shown to impair cognitive functioning, to disrupt memory, to lead to avoidance behaviors, and to have several other effects (Eysenck, 1979). Anxiety-arousal is closely associated with distracting, self-related cognition such as excessive self-evaluation, worry over potential failure and concern over the opinions of others; therefore, anxious learners have their attention divided between task-related cognition and self-related cognition, making cognitive performance less efficient. A more complete analysis of the subtle effects of language anxiety includes specific task performance and the cognitive process preceding that performance. Tobias (1986) pointed out that anxiety can be hypothesized to affect three stages of the learning process: input, processing and output. The intrusive thoughts associated with anxiety can impair an individual's cognitive ability to process information at each of the stages because anxiety-prone people engage in self-related cognition about their reaction to a task rather than concentrating on the task at hand.

Research into the effects of anxiety on language learning has mostly been directed at the output stage in terms of standardized test scores (Gardner, Lalonde, Moorcroft & Evers, 1987), verbal production (Gardner, Moorcroft, & MacIntyre, 1987), and the quality of free speech (MacIntyre & Gardner, 1994). MacIntyre and Gardner (1991a) used Tobias' (1986) model to investigate the effect of anxiety on Input and Output stages in learners' first language (English) and second language (French). Performance at the Output stage was measured by scores on a vocabulary production test. A significant correlation between language anxiety and L2 performance was found at the Input and Output stages, whereas no such correlation was found between anxiety and the test performance in the learners' first language (L1). They, in a later experimental study, found that anxiety aroused by a video camera during a vocabulary learning task, particularly at the Processing and Output stages, did have a debilitating effect on learner language performance. A study by Moldawsky and Moldawsky (1982) also yielded a similar finding. Two groups of subjects were exposed to different degrees of anxiety-provoking instructions when they were tested in a vocabulary subtest in their L1 on an intelligence test. They found that the anxiety-provoking instructions did not differentially affect vocabulary scores of the two groups. They concluded that vocabulary measures in learners' L1 might be less sensitive to anxiety-producing situations than other subtests.

In light of current theory and research in SLA, the problem of anxiety can have profound effects on many aspects of language learning. In terms of geographical distribution of languages, the Chinese language is not designated to be a language of the Indo-European language family, suggesting that Chinese and English do not show any degrees of similarity to each other. Since there is not direct relationship between the two languages, the effect of English language anxiety on Chinese students' cognitive ability to recall English vocabulary words may be more salient than those whose L1 and L2 are from a parent speech. Thus, the purpose of the present study is to examine the influence of anxiety-producing situations on learners' ability to recall vocabulary items in their L2 (English). The research questions to be addressed are:

- (1) Do learners with different degrees of language anxiety perform differently in recalling L2 items in the lexicon?
- (2) How well do learners in a low anxiety-producing situation perform in a vocabulary recall task, compared with learners in a high anxiety-producing situation?
- (3) Does the effect of learner anxiety on L2 vocabulary recall vary depending on the level of the anxiety-producing situations?

3. Method

3.1 Participants

A convenience sample of 92 university-level L2 learners was used. After the Foreign Language Classroom Anxiety Scale (see below) questionnaire was administered to them, those who scored 0.5 or more standard deviations above the overall sample mean were classified as high-anxiety students (HAS), and those who scored 0.5 or more standard deviations below the sample mean were identified as low-anxiety students (LAS). The former included 45 students while the latter 32. Then 30 HAS and 30 LAS were randomly chosen from each of these two groups, and data collected from the 60 students (42 males, 18 females) were used for analysis in the study.

3.2 Materials

A Foreign Language Classroom Anxiety Scale (FLCAS) taken from Horwitz et al. (1986) study and then translated into Chinese was administered to the participants. The FLCAS contains 33 statements. Negatively-worded statements on the FLCAS were changed into positive statements in the present study before they were translated into the participant native language. For example, "I don't worry about making mistakes in language class" was changed into "I worry about making mistakes in language class." Each of the statements is answered on a 5-point Likert scale ranging from strongly agree (5) to strongly disagree (1), based on to what extent each participant agrees with the statement. An anxiety score was obtained by summing up the ratings. The FLCAS ranges from 33 to 165. Its authors have conducted several validity and reliability studies on the FLCAS, showing satisfactory reliability, internal consistency, construct validity and test-rest reliability (Horwitz, 1991). Failure to control for the level of initial language proficiency in research studies investigating L2 learning, as suggested by Au (1988), is a serious methodological weakness. Therefore, participant performance on a standardized English proficiency test, the GEPT (General English Proficiency Test--Intermediate), and the participant first-semester English scores on the mid-term exam and final exam provided by their instructors were used to minimize the threat to internal validity.

3.3 Procedures

The 30 HAS were randomly assigned into two subgroups (HAS-A & HAS-B) and so were the 30 LAS (LAS-A & LAS-B), each containing 15 students. Then all of the four subgroups were asked to write down as many English words beginning with 'b' as they could think of in two minutes. Before the participants in subgroups A started, they were told that an average score on the English vocabulary recall test was 10 words. The participants in subgroups B, on the other hand, were told that it was 40 words, aiming to increase their tension level.

3.4 Data Analysis

The researcher was responsible for scoring the English vocabulary recall test. Each correctly-spelled English word was granted one point. In the study, there were two independent variables, Group and Anxiety, each with two levels, 10-word group vs. 40-word group, high learner anxiety vs. low learner anxiety. There was only one dependent variable in the study, i.e. the number of English words that each participant could recall in two minutes. A 2 × 2 between-subjects Analysis of Covariance (ANCOVA) was calculated to examine the effects of learner anxiety (high / low anxiety) and anxiety-producing situations (10-word / 40-word) on the ability to access items in the lexicon, covarying out the effect of learner language proficiency. As mentioned earlier in the Materials Section, participant English proficiency level could be expected to correlate with the dependable variable. Thus, it was essential to remove the effect of the covariate from the data set and to perform Analysis of Variance (ANOVA) on the 'purified' set so as to result in an increase in the power of the ANOVA test. Each participant's English proficiency level was calculated by summing up their scores on the GEPT, mid-term exam and final exam and dividing the total by 3.

4. Results

Table 1 and Table 2 summarize the results. A significant main effect for learner anxiety was found ($F(1, 55) = 11.95, p < .01$). Participants with low learner anxiety had higher scores on the vocabulary recall test ($M = 12.63, SD = 3.67$) than those with high anxiety ($M = 9.67, SD = 3.20$). A significant main effect was also found for anxiety-producing situations ($F(1, 55) = 9.72, p < .01$). Participants who were in the 40-word group did better ($M = 12.53, SD = 3.86$) than those who were in the 10-word group ($M = 9.77, SD = 3.07$). The interaction was not significant ($F(1, 55) = 0.08, p > .05$). That is, learners who were high in anxiety and those who were low in anxiety both recalled more vocabulary items in the 40-word situation than in the 10-word situation.

Table 1. Means, Standard Deviation, and Number of Participants for Vocabulary Recall Test as a Function of Learner Anxiety and Anxiety-Producing Situations

Group	High-Anxiety Learner			Low-Anxiety Learner			Total		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
10-word	15	8.40	2.99	15	11.13	2.56	30	9.77	3.07
40-word	15	10.93	2.96	15	14.13	4.07	30	12.53	3.86
Total	30	9.67	3.19	30	12.63	3.67	60	11.15	3.72

Table 2. Two-Way Analysis of Covariance for Vocabulary Recall Test as a Function of Learner Anxiety (Anxiety) and Anxiety-Producing Situations (Group)

Source of Variation	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Language Proficiency	0.06	1	0.06	0.01	.939
Anxiety	124.25	1	124.25	11.95	.001
Group	101.11	1	101.11	9.72	.003
Anxiety * Group	0.79	1	0.79	0.08	.784
Error	571.94	55	10.40		

5. Discussion

In this study, university-level L2 learners who perceived themselves as being high in language anxiety tended to have lower scores on the vocabulary recall test than those with low language anxiety. This outcome is consistent with that of previous research (MacIntyre & Gardner, 1989; Tobias, 1986) that language anxiety can intrude on learner ability to retrieve appropriate L2 items from long-term memory, and the division of cognitive resources for those high in anxiety results in lower vocabulary production scores, compared with less anxious students. The negative correlation between language anxiety and output performance echoes Na's (2007) finding that "high anxiety can make learners get discouraged, lose faith in their abilities, escape from participating in classroom activities, and even give up the effort to learn a language well. Therefore, the learners with high anxiety often get low achievement" (p. 30).

As we found in this study, a high level of learner anxiety led to deficits in output performance. However, the effect of high anxiety-producing situation on learner performance did not merge. This finding challenges the long-held belief in anxiety research that anxiety and achievement are negatively related to each other. Those learners in the 40-word condition, regardless of their language anxiety level as measured by the FLCAS, performed better on the English vocabulary recall test than did those in the 10-word condition. This suggests that anxiety does not necessarily result in poor language performance, and learners could perform better irrespective of their learner anxiety level when they feel pressured into attaining high standards.

Clearly, the effect of pressure on language performance can be facilitative, as suggested by Alpert and Haber (1960), in that facilitative anxiety motivates learners to 'fight' the new learning task, prompting them to make extra efforts to overcome their feelings of anxiety. This outcome confirms

several studies (Ehrman & Oxford, 1995; Marcos-Llinás & Garau, 2009; Young, 1992) that some level of language anxiety can be facilitative and helpful for language learning because it motivates learners to learn and do well. Bailey (1983), in her own diary study of competitiveness and anxiety while learning French as a foreign language, found that facilitative anxiety was one of the critical factors for success. She realized that sometimes her drive to compete with other members of the class hindered her SLA; other times it motivated her to try harder. Her experiences suggest that it is the strength of the anxiety one is feeling at the moment that determines whether the anxiety is debilitating or facilitating.

Learner affective states are obviously of crucial importance in accounting for individual differences in learning outcomes. The study findings indicate the negative effects of language anxiety on learner performance at the output stage and imply that some level of language anxiety may not be as negative and debilitating as expected. Pedagogically, language learners who are high in the anxiety measure can improve their language performance on a test by being given more time to compensate for their misdirected attention during the long-term memory retrieval process. In addition, to reduce learners' high levels of anxiety, teachers could assure their students that making a mistake in the foreign language classroom is not a matter of life and death, and they could also help ease students' negative language learning experiences, as suggested by Horwitz (1999), by telling them that they are not the only ones who experience anxiety about learning and using a foreign language. On the other hand, because the scores on the English vocabulary recall test were found to be substantially affected by the anxiety-producing situations, we might expect that increasing the appropriate tension level for learners prior to a language task could be viewed as creating positive energy that motivates them to achieve a higher level of language performance.

6. Limitations

The study answers certain questions regarding the effects of anxiety on L2 learner performance on a vocabulary recall test, but the study results must be interpreted with the following limitations. First, the study participants were rated as intermediate-proficiency L2 learners. The findings should not be generalized to beginner-level or advanced learners because results may vary between learners with further language experience and learners with none. Second, the generalizability of the study findings is also restricted by the nature of participant pool. In the study, males outnumbered their female counterparts. Are male students more anxious than female students in the foreign language classroom setting? Would male students have greater ability than females to recall more vocabulary words and cope with the feelings of anxiety and nervousness in an anxiety-provoking situation? Future studies could investigate the gender issue in a vocabulary recall task to determine whether gender differences play a role in L2 learner ability to recall items in the lexicon in different anxiety-producing situations. Third, the study used a single measure to assess participant anxiety level. The measurement of learner affective states is a complex process. Future research could use multiple measures, such as a combination of FLCAS and the use of personal diaries to provide a more reliable basis for evaluation of learner anxiety level.

7. Conclusion

The study results indicate that learner anxiety could result in deficits in output performance and that some level of language anxiety may not be as debilitating as traditionally believed. L2 teachers, in addition to creating a low-anxiety classroom setting to reduce learner anxiety, should be aware that language anxiety is only one of the many factors that could affect learner achievement in the foreign language classroom. Other factors, such as learner motivation, personality traits, self-confidence, and individual differences, could also have an impact on language learning and should be dealt with carefully as well.

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