On Anxiety, Ambiguity Tolerance and Reading Comprehension in EL*

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This investigation employed three scales to collect information on the 109 students' degrees of English test anxiety, of ambiguity tolerance and their performance in reading tasks. Based on the statistical analyses, the paper mainly obtained the following conclusion: English test anxiety, ambiguity tolerance, and overall reading comprehension are significantly correlated to one another. Anxiety has a negative effect on students' performance in reading while ambiguity tolerance is positively related to their performance. Also, anxiety and ambiguity tolerance are negatively correlated at a high significance level.

Keywords: anxiety, ambiguity tolerance, reading comprehension

Introduction

With the increasing popularity of multimedia network technology, the teaching mode of English reading has greatly changed. With the help of network, English reading becomes much more efficient, capacious, multi-dimensioned, and ubiquitous, which enables university students to study more effectively and autonomously. In the network test, the students' performance in reading comprehension depends not only on their vocabulary, cultural knowledge, and cognitive level, but also on their emotional factors. Students usually exhibit a higher level of anxiety while reading in the reading English test. The aim of this study is to investigate the relationship of English test anxiety, ambiguity tolerance, and overall reading comprehension.

Research Issues

Our general interest is to examine whether there are some significant correlations among a Chinese college student's English test anxiety, his ambiguity tolerance, and his overall reading comprehension; and if there are, what is the direction like? i.e., are they positively or negatively related to one another? More specifically, our research questions are:

(1) To what degree do Chinese college students feel anxious when attending formal English test? And to what degree are they tolerant or intolerant towards the ambiguities entailed in language learning? In the reading comprehension test, do they do better in specific detail questions than in implied idea questions?

(2) Is a Chinese college student's anxiety in attending English test related to his total score of reading comprehension? Are they positively or negatively related? What is the correlation like between a student's

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ambiguity tolerance and his overall reading comprehension? Is there any relationship between a student's English test anxiety and his ambiguity tolerance?

Subjects

Our subjects consist of 115 freshmen in Linyi University who were just finishing their first year in college. The subjects come from six different departments, majoring in engineering or technology.

The subjects are from 16 provinces, municipalities, or autonomous regions in China. All of them are native speakers of Chinese and none of them has English-speaking parent or has lived in the L2 environment. In age, they range from 18 to 20. Before passing the National Matriculation Examination and being enrolled in the university, all the subjects had learned English for at least six years in the middle and high schools.

Research Instruments

In the current investigation, three variables need to be represented with something concrete and comparable: the subjects' English test anxiety level, their degree of ambiguity tolerance, and their competence in some specific reading skills as well as in the overall reading skill.

Measurement of Anxiety

The current project adopts a five-point Likert-type questionnaire. This is because it has three obvious advantages. First, the self-report means serves this study quite satisfactorily. Although some concern exists over the reliability of the answers to self-report measures and over the subjects' tendency to offer socially acceptable responses, Levitt (1980) believes that the influence of social desirability is minimal in the measurement of anxiety because anxiety is an affect rather than a belief or opinion held by the subject. Second, anxiety scales have been employed abundantly in other language learning studies and have proved to be quite reliable. The third reason is out of practical considerations. Clearly, self-reports are far easier to administer and hence make the research more feasible.

When constructing the questionnaire, we first had an interview with some students to gather first-hand information on the anxiety they felt in English test, then we referred to several anxiety scales available, mainly the Foreign Language Classroom Anxiety Scale (FLCAS) by Horwitz (1986) and the French Class Anxiety Scale (FCAS). The FCAS, taking shape in 1975, is perhaps the first measure of the anxiety particular to F/SL learning. Though merely five items are included in it, the seven-point Likert-type scale has been proved to have a rather strong reliability.

After the English Test Anxiety Scale (ETAS) was constructed, a pilot study was administered to make it more suitable for the research. In the pilot study, a modified version of the FCAS was also included. The inclusion of this scale is not simply to assess the degree to which the subjects feel anxious in English classes but more importantly, to compare and contrast the newly developed ETAS with it. In this way, the validity and reliability of the new scale can be estimated. In modifying the FCAS, we consistently replaced the terms "French" in the original version with "English". Besides, it was changed from a seven-point scale to a five-point one.

Measurement of Ambiguity Tolerance

Ely's Second Language Tolerance of Ambiguity Scale (1995) is the only one specially designed for language learning. It has 12 items and the responses are in Likert-scale format with a set of four responses. The

total score indicates the general tolerance/intolerance that learners show and it may range from 12 to 48. The higher the score, the more intolerant learners are of foreign language ambiguities. The questionnaire is originally written in English. The Second Language Tolerance of Ambiguity Scale (SLTAS) was selected in this research because it was specially designed for language learning. It was also modified to suit for the current specific research situation. The Chinese translations were provided together with the original English statements. The responses were changed into a set of five choices with a total score ranging from 12 to 60. The higher the score is, the more tolerant the learner is in foreign language learning.

Testing of Reading Comprehension

We adopted the part of reading comprehension in the College English Test for Grade 2002 as a variable in our research. These students were finishing their 2nd semester in the college and were required to take the college English examination (usually known as College English Test-Band 2) at the end of the term in June 2003. In the original test paper, the part of reading comprehension contains two sections, with three passages in Section One and one in Section Two. The first section belongs to multiple-choice questions and the second section short-answer questions. For the purpose of convenience and consistency, we only make use of the first section. Therefore, there are altogether 15 questions (each passage contains five questions) with a total score of 30 points in this reading comprehension test.

The advantage of adopting a test in the teaching process is self-evident. Our subjects will face real pressure and anxiety in the test so they will have to be as serious as they can. In other words, the students will be under down-to-earth testing circumstances. This would help to discover the nature among the three variables, especially that of English test anxiety and reading comprehension. This adoption, however, also bears its disadvantage: i.e., we cannot design the reading comprehension test in accordance with the whole necessity of the research. The research is restrained by the test itself. For example, in the research we can only compare the effect of anxiety on the subjects' skill of reading for specific detail with that of anxiety on their skill of reading for inference because of the absence of other types of questions. The structure of the reading comprehension test is illustrated in the following Table 1.

Table 1

Structure of the Reading Comprehension Test

Question type	Ability tested	Passage No.	Question No.	Points	Total points
Specific detail questions	Skill of reading for detail	1	1	2	14
		2	7, 8, 9, 10	8	
		3	11, 14	4	
Implied idea questions	Skill of reading for inference	1	2, 3, 4, 5	8	16
		2	6	2	
		3	12, 13, 15	6	

Procedures and Test Scoring

The ETAS and the SLTAS were administered during the class sessions a week before the final examination of the term. We presented the scales to the participants as part of their class work, and the students were given 20 minutes to finish them. The subjects were also told that the questionnaire was part of an empirical investigation, and they did not need to worry about the correctness of their answers. What was required of them was simply to fill the questionnaire in accordance with their real experiences. Moreover, the

method to do the questionnaire was explained in great detail to prevent any possible misunderstanding of the instructions placed at the opening part. As for the test of reading comprehension, the subjects' answer sheets were sorted out and scored by the researcher after the final examination. Therefore, three scores for each subject were calculated: the score of the ETAS, of the SLTAS, and of the reading comprehension test.

The anxiety questionnaire was scored in the following way. For a positively-worded statement, such as, "I am usually at ease during formal English test", the subjects who responded with "strongly agree" were awarded one point, "agree" two points, "neither agree nor disagree" three points, "disagree" four points, and "strongly disagree" five points. For a negative-worded item, such as "I never feel quite sure of myself when I am attending a formal English test", scoring was reversed. It follows naturally that a high point indicates a high level of anxiety. The total number of items in the scale is 14, so the maximum score is 70 points.

All the items in the SLTAS are stated in a negative way, such as, "When I'm reading something in English, I feel impatient when I don't totally understand the meaning", and the subjects who chose "strongly agree" were marked with one point, and "strongly disagree" with five points. Therefore, the higher the score is, the more tolerant the subject is.

In the reading comprehension test, we gave two points to each correct answer. With 15 questions altogether, the maximum score was 30 points. Besides, each subject's scores in specific detail questions and in implied idea questions were also calculated (the former with a maximum score of 14 points, the latter 16 points). So each subject has three scores concerning reading comprehension: the total score, the score of specific detail questions, and the score of implied idea questions.

Result of the Research

Statistical analyses were conducted primarily with SPSS (Statistical Package for Social Science), Version 11.0. Out of the 115 subjects, six were excluded from analyses because of their incompleteness of all the items, leaving a total number of 109 subjects. Before any processing and analysis of the data was conducted, the reliability of the instruments was analyzed, as shown in the following:

Table 2

Reliability Analysis—Scale (Alpha)

Scale/Test	Number of cases	Number of items	Alpha
ETAS	109	14	.8154
SLTAS	109	12	.7676
Reading	109	3	.8342

.8154, .7676, and .8342 are fairly telling figures. They suggest that the scales and the test we have adopted in the study are highly reliable and that the results thereof derived can be trusted.

Comparing the subjects' scores of the reading comprehension test with those of the last-term English examination, we obtain the following results. The correlation coefficient compared on the 109 subjects is .813, and the correlation is significant at the .01 levels. The result proves that the reading comprehension test has tested the students' abilities validly.

Research Question One

To what degree do Chinese college students feel anxious when attending formal English test? And to what degree are they tolerant or intolerant towards the ambiguities entailed in language learning? In the reading

comprehension test, do they do better in specific detail questions than in implied idea questions?

To answer the first research question, means and standard deviation of the students' four kinds of scores are presented in Table 3. These four kinds of scores include the scores of the ETAS, the SLTAS, and the marks in specific detail questions and in implied idea questions.

Table 3

Means and Standard Deviation of the Students' Four Kinds of Scores

	Mean	SD	Range of score
ETAS	40.60	7.989	14–70
SLTAS	32.77	7.024	12–60
SDQ	10.38	3.115	0–14
IIQ	7.849	3.134	0–16

Notes. Number of cases: 109; SDQ: specific detail questions; IIQ: implied idea questions.

From Table 3, we can see that the mean of anxiety score is 40.60 (SD = 7.989) which is positioned a little below the mid-point of the scoring continuum of 14–70 (with 42 as the mid-point). This shows that the anxiety Chinese college students experience in English test is of a moderate degree. The results obtained in the table also indicate that the ambiguity tolerance score is 32.77 (SD = 7.024). Similarly, this score may be located a little below the mid-point (36) of the scoring continuum 12–60 and indicates that learners are not placed towards either the low end or the high end of the continuum. This signifies that Chinese college students do not exhibit high tolerance that would lead them to accepting new language elements unquestioningly and on the other hand they do not present high intolerance that would impede their language learning processes. The standard deviation in both cases is relatively high (above 7.000), which shows that individuals in the research differ a lot from one another in their degrees of anxiety and ambiguity tolerance they display.

Concerning the last part of Research Question One, we can easily conclude from the table that students do better in specific detail questions than in implied idea questions because they obtain a high mean in the former questions (cf. 10.38 vs. 7.849) even though this kind of questions has a lower total score than the latter ones (cf. 14 vs. 16). This conclusion may also be proved by the comparison of the percentage of correct answers given by the students among the total number of the two kinds of questions respectively, as it is illustrated in Table 4 (cf. 74.12% vs. 49.06). The results indicate that the type of implied idea questions is the most difficult among the three and the type of specific detail questions is the easiest one. In other words, reading for inference is a harder skill to master for the students than reading for specific detail.

Table 4

Comparison of the Percentage of Correct Answers in SDQ & IIQ

	SDQ	IIQ	All Qs
Percentage of correct answers	74.12%	49.06%	60.75%

Notes. All Qs: all the questions in the test.

Through calculating the scores of all items included in the ETAS and the SLTAS, and computing their mean respectively, we have illustrated the general anxiety/ambiguity tolerance that learners show. Now, we would like to make reference to the scores of individual items of the two scales. These scores indicate learners' anxiety/ambiguity tolerance in the specific situation described in the item. It can range from 1 to 5 and in this case too, the higher the score, the more anxious/tolerant learners are.

Table 5 offers the scores of all items included in the scale of English test anxiety. After a simple examination, we find that the scores change from 2.19 to 3.74. Since we cannot find scores ranging between 4 and 5, and those that vary between 1 and 2, we can state that there are no English testing situations described in the items of the scale that arouse high anxiety, nor are there situations that bring about very low anxiety among the students. In other words, all the items in the scale make the subjects feel some degree of anxiety that varies between 2.19 and 3.74.

Table 5

Scores of Items of English test Anxiety

	Item of English test anxiety	Mean	SD
1	I never feel quite sure of myself when I am attending a formal English test.	3.74	1.022
2	It frightens me when I don't understand what a sentence means on the test paper.	2.49	.912
3	I am usually at ease during formal English test.	3.00	1.109
4	I feel confident when I do reading comprehension.	2.96	1.074
5	I worry about the consequence of failing my English test.	3.19	1.345
6	I start to panic when I have to attend a test which I think I haven't got ready for.	3.08	1.107
7	When I am on my way to the English test, I feel very sure and relaxed	3.36	1.040
8	In the English test, I can get so nervous that I forget things I know.	2.26	.788
9	Even if I am well prepared for the English test, I feel nervous about it.	2.42	1.117
10	I don't understand why some people get so upset over English tests.	3.28	1.406
11	I get nervous when I don't know every word in the reading comprehension.	2.53	.890
12	I feel overwhelmed by the great number of passages and questions I have to deal with in English test.	3.21	.988
13	I get nervous when I meet a passage belonging to the field I am not familiar with.	2.91	.815
14	I get nervous and confused when I am attending my English test.	2.19	.921

Table 6

Scores of Ambiguity Tolerance Items

No.	Ambiguity tolerance item	Mean	SD
1	When I'm reading something in English, I feel impatient when I don't totally understand the meaning.	2.60	1.132
2	I don't enjoy reading something in English that takes a while to figure out completely.	2.75	1.036
3	One thing I don't like about reading in English is having to guess what the meaning is.	3.04	1.143
4	It bothers me that I don't understand everything the teacher says in English.	2.96	1.208
5	When I write English compositions, I don't like it when I can't express my ideas exactly.	2.36	1.058
6	It is frustrating that sometimes I don't understand completely some English grammar.	2.77	1.120
7	I don't like the feeling that my English pronunciation is not quite correct.	2.96	1.414
8	It bothers me that even though I study English grammar some of it is hard to use in speaking and writing.	2.34	1.073
9	When I'm writing in English, I don't like the fact that I can't say exactly what I want.	2.30	.932
10	It bothers me when the teacher uses an English word I don't know.	3.06	1.027
11	When I'm speaking in English, I feel uncomfortable if I can't communicate my idea clearly.	2.45	.932
12	I don't like the fact that sometimes I can't find English words that mean the same as some words in my own language.	3.17	1.087

Notes. Number of cases: 109.

Table 6 presents the scores of all the ambiguity tolerance items included in the SLTAS. A preliminary analysis of the scores indicates that scores vary between 2.30 and 3.17. As no scores are found ranging between 4 and 5, we can state that there are no language learning situations described in the ambiguity tolerance items

that are dealt with high tolerance. In other words, all ambiguity tolerance items cause some form of response from learners that varies in tolerance/intolerance between 2.30 and 3.17.

Research Question Two

Is a Chinese college student's anxiety in attending English test related to his total score of reading comprehension? Are they positively or negatively related? What is the correlation like between a student's ambiguity tolerance and his overall reading comprehension? Is there any relationship between a student's English test anxiety and his ambiguity tolerance?

In order to give a description of the correlations among anxiety, ambiguity tolerance, and reading comprehension, we correlated the 109 subjects' three scores of the ETAS, the SLTAS, and the reading comprehension test. Table 6 is a summary of the result.

The table shows us that students' English test anxiety is related to their performance in reading comprehension at a highly significant level, and the correlation is negative. The result suggests that the more anxious students feel during the test, the poorer he may perform in reading comprehension, or we may say that the poorer students perform, the more anxious they become. We have to give such a dubious suggestion for the reason that the relation of anxiety to reading comprehension is not necessarily a causal one. It is generally acknowledged that apprehensive individuals tend to go through a conscious and unpleasant affect that cripples effective cognitive processing. But it is uncertain whether increases in anxiety cause or are caused by decrements in reading comprehension. Ganschow, Sparks, Anderson, Javorsky, Skiller, and Patton (1994) suggested that high anxiety might be a result of language learning problems rather than the cause (quoted in Arnold, 2000, pp. 61-65). In our view, it is most likely that the two variables in question are interrelated and interdependent, and the relationship between them is bi-directional.

Table 7

Pearson Correlations Among Individual Scores of the ETAS, the SLTAS, and the Reading Comprehension Test

		ETAS	SLTAS	Reading (total)
ETAS	Pearson correlation	1	-.505**	-.471**
	Sig. (2-tailed)	.	.000	.000
	N	109	109	109
SLTAS	Pearson correlation	-.505**	1	.337*
	Sig. (2-tailed)	.000	.	.014
	N	109	109	109
Reading (total)	Pearson correlation	-.471**	.337*	1
	Sig. (2-tailed)	.000	.014	.
	N	109	109	109

Notes. ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).

However, what we can conclude is that anxiety has a debilitating effect on students' performance in reading during the test, and it is something both students and teachers should try to find ways to diminish. Therefore, it may be safe to conclude that anxiety can affect learners' reading ability under certain circumstances, and reading in specific situations may also trigger anxiety. The latter part of the conclusion agrees with that of Horwitz and Young (1991), and Scarcella and Oxford (1992), who find that speaking tasks are not the only anxiety triggers, writing, reading, or listening can also create fear, depending on the students (ibid.).

Table 7 also illustrates that there is a significant and positive correlation between the amount of ambiguity tolerance that students bear in language learning and their proficiency in English reading. The result suggests that some degree of ambiguity tolerance is necessary for Chinese learners in English reading. This may be because the English writing system and cultural material are unfamiliar to the students and some degree of tolerance is helpful to keep the reading activity progressing and encourages them to make daring guesses.

What surprises us in Table 7 is the relatively close relationship between English test anxiety and the ambiguity tolerance in foreign language learning. The figures strongly tell us that anxiety and tolerance of ambiguity are two tightly related factors in foreign language learning. The negative correlation between them also seems to suggest that a language learner with a low degree of ambiguity tolerance tends to feel anxious in the learning process; on the other hand, a high anxious student usually bears a low degree of tolerance of ambiguities appearing in this process. Our finding proves Oxford's (1999) view, and it is also in accord with Horwitz's (1988) finding. This finding may also have direct implication for college English teaching. Through finding ways to cultivate students' proper degree of ambiguity tolerance, teachers can enable their students to deal more effectively with language anxiety.

Conclusion

This study of the relationships among Chinese college students' degree of English test anxiety, of ambiguity tolerance, and their scores in reading comprehension has yielded a series of findings.

The examination of the 109 subjects' average scores of the ETAS and the SLTAS reveals that Chinese college students suffer moderate degree of anxiety in their end-of-term English test, and the level of ambiguity tolerance they experience in English learning is also a little below the mid-point. The comparison of the subjects' scores of implied idea questions with their scores of specific detail questions demonstrates that the students' performances in these reading tasks are quite different, and the skill of reading for inference is a much-complicated ability to master than the skill of reading for specific detail. The calculation of average scores of individual items in the ETAS and the SLTAS also reveals that in no situations described in these two scales do the students show extremely high or low level of anxiety or ambiguity tolerance.

In an effort to investigate the relationships among anxiety, ambiguity tolerance, and reading comprehension, we correlate the scores of the ETAS, the SLTAS, and the reading comprehension test. The results show that the three variables are all significantly related to one another. Anxiety has a negative effect on students' performance in reading, and students with a relatively high degree of ambiguity tolerance get better marks in the reading comprehension test. The correlation coefficient of $-.505$ at 0.01 levels between the scores of the ETAS and the SLTAS firmly tells that anxiety and ambiguity tolerance are closely related factors in language learning. It may be possible for teachers to alleviate students' degree of anxiety through finding ways to cultivate and raise their tolerance for ambiguous phenomena in language learning.

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