

## Research Article

### Research on Oil Agriculture and Food Processing Engineer Students' English Test Anxiety

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**Abstract:** By conducting a principal component analysis on 254 Chinese oil agriculture and food processing engineer students' answer to English Test Anxiety Scale (Dong, 2010), the current study examined the internal structure of their English Test Anxiety (ETA). Six dimensions were found, which were the ETA-Speaking, ETA-Reading and ETA-Writing, as well as the Interpersonal skill and Lack of practice. Cumulatively, the six components accounted for 55.6% of the total variance of the ETA. The component of ETA-Listening alone contributed to 21.79% of the total variance, which implied that ETA-Listening was an important part of the ETA. Besides, the identification of language skill-specific anxieties within ETA indicated that there possibly exists individual difference with regards to language skill-specific anxieties among test-takers. Series of paired t-tests on ETA-Listening, ETA-Speaking, ETA-Reading and ETA-Writing indicated that the sample test-takers experienced different levels of ETA-Listening and ETA-Speaking, but the same level of ETA-Reading and ETA-Writing.

**Keywords:** English test anxiety, food processing engineer, oil agriculture, principal component analysis

## INTRODUCTION

ETA represents the kind of anxiety that is particularly associated with English tests. Previously, instead of being treated as an independent and distinguishable concept of its own, ETA had always been studied as test anxiety. This researcher separates it from test anxiety based on the assumption that ETA may have its own unique characteristics since it occurs only in the special context of English tests. Hopefully, such an approach may possibly bring new light to the understanding of this phenomenon. By conducting a principal component analysis on 243 Chinese oil agriculture engineer students' answer to English Test Anxiety Scale (Dong, 2010), the current study would like to examine the internal structure of the ETA. It is expected that through the study, oil agriculture engineering students may better understand their anxious situation before, during and after large-scale English proficiency tests.

Dong (2010) has conducted some correlation studies, which showed that ETA had a significant and moderate correlation with test anxiety ( $r = 0.53$ ,  $p < 0.01$ ,  $n = 243$ ), indicating that it was a kind of anxiety that is correlated, but distinct from test anxiety.

According to Dong's study, the correlation coefficient between ETA and State Anxiety was 0.50 ( $p < 0.01$ ,  $n = 243$ ), while its correlation coefficient with Trait Anxiety was 0.47 ( $p < 0.01$ ,  $n = 243$ ), meaning that ETA is more a kind of existing and immediate emotional state than a predisposition to perceive the situation of English tests as something threatening and depressing. This is a bit different from the previous

studies (Brooks, 1986) about test anxiety. According to Brooks (1986), the correlation coefficients between test anxiety with state and trait anxieties were 0.45 and 0.53 ( $p < 0.01$ ,  $n = 790$ ;  $n = 961$ ).

Since situations that are associated with English tests are an indispensable part of ETA, ETA is inevitably fallen into the category of situation-specific anxiety. Actually, MacIntyre and Gardner (1991) recommended that situation-specific approach was a reasonable way as it was more closely related to the anxiety arousal situation, therefore, could offer more to the understanding of a particular type of anxiety.

Thus, up to now, it can be summed up that ETA is a special case of test anxiety. It is a situation-specific state anxiety, which is reflected by those phenomenological, physiological and behavioral responses that accompany concern about high-stake English proficiency tests.

However, up to now, nothing has been conducted in terms of the penetration of the internal structure of ETA. This has seriously hindered the development of ETA study as well as other associated researches. Therefore, it is worthy to spend time and energy in doing something in this respect.

## RESEARCH DESIGN

**Participants:** This study involved 254 Chinese oil agriculture engineering students from Xi'an Petroleum University. Their ages ranged from 20 to 24. Among them 69 were female and 185 were male. All of them had experiences in College English Test Band IV or Band VI and had reported symptoms of ETA.

**Instrument:** The ETAS (Dong, 2010) was adopted in this study. It was designed by the researcher and its psychometric properties had been strictly calculated and tested. Results indicated that it was of 0.75 in Cronbach's Alpha and 0.56 in Guttman Split-Half Coefficient. The scale was correlated with the Westside Test Anxiety Scale at 0.57.

**Data analysis method:** Dimensional analysis affords a convenient means of obtaining information about something that is too complicated for a full solution to be feasible, from a study of small-scale models. Principal Component Analysis (PCA) is often used for conducting dimensional analysis. There are two main purposes for doing PCA. One is of data reduction. That is to say to reduce data to a smaller set of summary variables. The other is to explore the theoretical structure of a construct. This exactly serves the purpose of the current study.

**Procedures:** The 254 sample students were arranged in two classrooms. They were administered the Chinese version of the English Test Anxiety Scale (hereafter abbreviated as ETAS). Prior to the administration, a tape about how to fill in all of these scales was broadcasted simultaneously in the two classrooms to avoid any misunderstanding of the study. The process lasted between 45 and 60 minutes. After the administration, 254 pieces of answer sheets were collected, among which 243 were valid.

## RESULTS

**KMO and Bartlett's test:** The KMO and Bartlett's test was conducted. The results are shown in Table 1.

Kaiser-meyer-olkin measure of sampling adequacy		0.77900
Bartlett's test of sphericity	Approx. Chi-square	975.842
	df	190.000
	Sig.	0.00000

Table 2: Items and factor loadings

Item		Factor loading
Factor I: ETA-Listening		
Q13	I feel anxious about the listening part of the test since listening is a "one shot deal".	0.773
Q14	During the listening part of the test, I fear that I may miss the key words.	0.775
Q15	I fear I would misunderstand the topic I am listening during the test.	0.577
Factor II: ETA-writing		
Q10	Whenever I have to write a composition during an English proficiency test, I am worried if the sub-ideas written down by me can possibly support the main idea logically.	0.726
Q6	Whenever thinking about the incoming English proficiency test, I cannot help anticipating failure.	0.612
Q18	During the writing part of the test, I always think that I do not have enough to say about the topic.	0.579
Q1	When preparing for large-scale English proficiency test, I am always worried about forgetting the vocabulary and grammatical knowledge that I have reviewed during the test.	0.505
Q2	During the English proficiency test, things such as synthesizing, summarizing and guessing are quite confusing to me.	0.560
Factor III: ETA-speaking		
Q7	I freeze up during the oral part of the test as I cannot recall the word that I want to say.	0.712
Q9	During the oral test, I shiver a little before the examiner.	0.642
Factor IV: ETA-reading		
Q12	During the test, sometimes, my mind just wanders to somewhere else.	0.702
Q19	I always produce overt articulation during the reading part of the test.	0.642
Factor V: Interpersonal skill		
Q3	During the English proficiency test, I always think that the person next to me is doing better than I am.	0.687
Q4	I do not know how to discuss with my teachers about my worry over the incoming English proficiency test.	0.727
Factor VI: Lack of practice		
Q5	I always think that it is my fault if I fail the test.	-0.607
Q17	During the listing part of the test, I cannot remember what I have heard and understood.	0.810

The above table indicates that the correlation matrix is significantly different from an identity matrix. Thus, factor-analyzing of the data set will be sure to bear certain results.

**PCA results:** Results of the PCA are presented in Table 2.

The above table reveals six dimensionality of the ETA, which are ETA-Listening, ETA-Writing, ETA-speaking, ETA-reading, Interpersonal skill and Lack of practice.

### CONCLUSION

The current research has examined the internal structure of ETA. After subjecting the ETAS to an exploratory principal component analysis with varimax rotation, six components that most adequately represented the construct of ETA were extracted. Therefore, it was concluded that ETA of oil agriculture engineering students were a construct with six components.

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