

Correlation Between English Major Sophomores' Critical Thinking Disposition and Their Listening Comprehension Performance*

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Abstract—Critical thinking has drawn the attention of western researchers and domestic researchers as well. The study aims to explore whether there exists correlation between sophomore English majors' critical thinking disposition and their listening comprehension performance, and any significant difference between critical thinking disposition and listening comprehension performance in different proficiency levels. Based on the analysis of the data collected from listening comprehension tests and critical thinking disposition questionnaire, the following findings are obtained: 1) there exists significant correlation between participants' critical thinking disposition and their listening comprehension performance in general, with truth-seeking, analyticity and systematicity at the significant level of 0.01 and inquisitiveness, maturity, self-confidence and open-mindedness at the level of 0.05 in particular; 2) critical thinking disposition is significantly correlated with conversations and news broadcasts at the level of 0.01, and with passages at the level of 0.05.; 3) there also exist differences between critical thinking disposition and listening comprehension performance at different proficiency levels, with the correlations stronger in higher groups than those of lower groups. This study indicates that English major sophomores' critical thinking needs fostering, and there is a necessity to utilize different types of listening materials to cultivate their critical thinking dispositions.

Index Terms—critical thinking disposition, English listening comprehension performance, correlation

I. INTRODUCTION

With the explosion of information nowadays, how to judge the information authenticity, analyze the information effectiveness, evaluate the information, and finally to adopt and discard the information, has been the main problem facing human beings. Critical Thinking ability is an answer to the problem.

Given this status quo, the cultivation of critical thinking has become a main purpose and feature of higher education in the field of talents cultivation at home and abroad. In fact, for the past three decades or more, the Critical Thinking movement has become an upsurge in the higher education in the United States, Britain, Canada and other countries. The interrelationship between Critical Thinking and logic, education, medical care, foreign language teaching and psychology as well as the influencing factors of Critical Thinking and its cultivation approaches have appealed to the domestic scholars.

Specifically, in the 1990s, scholars have paid close attention to the development of foreign language students' critical thinking ability. Huang Yuanshen (1998) first applied the term "dialectic absence" to describe English majors, such as lack of analysis, synthesis, judgment, reasoning, thinking and analysis abilities. He et al. (1999) also clearly pointed out that the ability to analyze the problems and provide independent advices is a long-term problem for English majors. Hence, according to Teaching Syllabus for English Majors, universities will no longer teach students what to think but to teach students how to think. However, a large number of studies (He et al., 1999; Li, 2010; Ma, 2011; Luo, 2000; Huang, 2010, etc.) have shown that, English majors' Critical Thinking ability is relatively inadequate. Some scholars condemn the restrictions of English professional skill training courses on the cultivation of critical thinking, while some others attempted different approaches to solve the problem, like applying different teaching methods in the instruction of English reading, English writing, English speaking, English debate and translation. However, researchers rarely involved English listening teaching and its relationship with critical thinking.

Following the critical thinking affective dispositions of Delphi Report (1990), the present study endeavors to find the correlation between critical thinking disposition and listening comprehension performance in general, critical thinking disposition subscales and different listening comprehension item types, and critical thinking disposition and students with different listening comprehension proficiency levels in particular.

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II. LITERATURE REVIEW

A. Critical Thinking Definitions

John Dewey defined critical thinking in 1933, but critical thinking did not draw scholars' attention until the 1980s, because of hot debates about the future direction of education (Facione, 1992). Although more and more researches have been carried out in this field, consensus on the definition of critical thinking remains elusive.

Ennis (1987) viewed critical thinking as a reasonable thinking and reflection process which mainly concentrate on the decision and behavior with underlying belief. McPeck (1981) contended that the essence of critical thinking is "an aptness and skill involved in an activity with reflective skepticism". Paul et al (2005) viewed it as a reflection upon your own thinking process because you're thinking how to make your thinking better which allows a thinker to move beyond the separate analysis to comprehend the issue from the different perspectives and handle the problem on the whole. Paul and Elder (2005) holds the belief that critical thinking is self-disciplined, self-guided thinking which attempts to judge and reason at the highest level of thinking in a fair-minded way. Halpern (1997, p.4) defined critical thinking as "the formation of logical inferences and a mental activity useful for a particular cognitive task".

In many definitions, critical thinking is characterized by various skills such as interpretation, analysis and ability to integrate. Critical thinking is not just about having the right skills, there is also a need to recognize the attitudes or dispositions involved when using critical thinking skills. Disposition is about recognizing that a particular skill is needed and a willingness to exert the mental effort needed to apply it (Halpern, 1997).

In order to explore critical thinking thoroughly, Facione (1990) employed a powerful qualitative research methodology known as Delphi Report to develop the theoretical framework which is used in this study. In his report, they elaborate a good thinker as "habitually inquisitive, well-formed, trustful of reason, open-minded, flexible, fair-minded in evaluation, willing to consider, diligent in seeking relevant information, reasonable in the selection of criteria, focused on inquiry" (Facione, 1990, p.3). His report firstly added the affective dispositions into critical thinking to perfect it and considered that a good thinker should possess these affective dispositions.

So after reviewing the definitions mentioned above, one of the most widely accepted definitions has been adopted by the researcher for further study, which is provided by Facione (1990) as the working definition of this study.

B. Structural Models and Contents of Critical Thinking

Definitions of critical thinking don't only refer to what it is, but its contents and subscales. In order to define its subscales, Ennis, Delphi team, Paul and Elder proposed three structural models to interpret the subscales of critical thinking.

Ennis (1987) previously considered that critical thinking ability only refers to a series of skills which are logical induction oriented. Since this opinion is questioned by other researchers, in 1990, Ennis also took critical thinking Dispositions into the content of critical thinking. But FRISCO Model still mainly focused on the critical thinking skills, including six subscales: focus, reasons, inference, situation, clarity and overview.

According to Delphi Report (1990) critical thinking should consist of two scales: affective dispositions and cognitive skills. For the cognitive skills, it can be divided into six subscales: interpretation, analysis, evaluation, inference, explanation, and self-regulation, with analysis, evaluation and inference as the key three skills. As for the affective dispositions, it can be divided into seven subscales, truth-seeking, open-mindedness, analyticity, systematicity, self-confidence, inquisitiveness and maturity.

Following Delphi Report components of critical thinking skills include:

1) Interpretation refers to the ability to comprehend and express the meaning or significance of a large number of data, events, experiences, situations, conventions, beliefs, principles, procedures and judgments. It can be divided into three categories: classification, comprehension of the significance and accurate meaning clarification.

2) Analysis is defined to identify the intended and actual inferential relationships among descriptions, concepts, questions, and other representations that intend to express beliefs, judgments, experience, reasons, opinions or information. Its subcategories consist of censoring ideas or opinions, detecting arguments and analyzing arguments.

3) Evaluation means evaluating the creditability of the statements or other descriptions concerned about personal perceptions, experience, circumstances, judgments, beliefs or opinions; and assessing the logical strength of the actual or intended inferential relationships among the statements, descriptions, questions or other representations. This scale includes two subcategories: evaluating opinions and evaluating arguments.

4) Inference indicates the ability to identify and preserve the elements needed for drawing logical conclusions; to form reasonable conjectures and hypothesis; to ponder some relevant information and generalize logical consequences on the basis of data, statements, principles, beliefs, conceptions, judgments, evidence, descriptions, perspectives and other representations. Its three subcategories are the ability to query evidence, propose alternative hypothesis and draw logical conclusions.

5) Explanation refers to the ability to state or present the results of conjectures; to justify that inference with the application of evidential, conceptual, methodological, criteriological and contextual forms; and to state the demonstration with potent and convincing arguments. Three subcategories include stating results, justifying the legitimacy of the inference and presenting the arguments.

6) Self-regulation refers to the ability of self-consciously monitoring one's own cognitive activities, the elements applied in these activities, and the results deduced, particularly by the application of skills in the analysis and assessment to one's own inferential judgments. It includes two subcategories: self-evaluation and self-correction.

And the components of critical thinking affective dispositions are defined as follows:

1) Truth-seeking scale: representing those who tend to seek the truth rather than win the argument, even if the findings or results do not support one's presupposed opinions. People, who are truth-seekers, are courageous about asking questions and objective about pursuing inquiry.

2) Open-mindedness scale: representing those who are open-minded and tolerant of divergent opinions. The open-minded persons are sensitive to the possibility of one's own bias.

3) Analyticity scale: referring to the disposition of being alert to the need of intervene, comprehending the potentially problematic situations, predicting possible consequences, and applying reasoning and evidence to resolve problems.

4) Systematicity scale: representing the disposition of being organized, orderly, focused and diligent in inquiry.

5) Self-confidence scale: referring to the level of trust that one places in one's own reasoning process. Persons who are self-confident trust themselves to make good judgments, resolve problems and bring reasonable closure to inquiry.

6) Inquisitiveness scale, representing the disposition of being curious about how things work and desiring to be well informed even if the immediate payoff is not directly evident.

7) Maturity scale: targeting the disposition of being judicious of one's cognitive maturity when making decisions.

Paul and Elder (2005) proposed the three-core structural model of critical thinking. They consider that the thinking process should consist of eight elements: purpose, points of view, information, basic concepts, questions, assumptions, inferences and implications. For the eight elements, each should be measured and checked with ten standards, namely those of explicitness, veracity, relativeness, logicality, breadth, accuracy, importance, completeness, motivation and profundity. As for the intellectual traits, it can be divided into eight subscales: modesty, independence, integrity, bravery, persistence, confidence, sympathy and fairness.

C. Instruments Measuring Critical Thinking

The research and development on measurements of critical thinking can be traced back to 1980s in the western countries. And the western scholars have accumulated abundant experience in this field. Actually there are about thirty kinds of measurements in the literatures abroad. For example: California Critical Thinking Disposition Inventory (CCTDI) and California Critical Thinking Skills (CCTST), the two insight assessment developed by the Delphi Report in America. These two tests are verified with high validity and reliability after a four years' examination. Another alternative assessment, Cambridge Thinking Skills Assessment (CTSA) was developed by the Cambridge Assessment group and has been applied in Cambridge University since 2001, and the number of its application has increased year by year. Table 1 is a brief introduction of some main measurements of critical thinking which is summarized by the researcher in this study.

TABLE 1
INSTRUMENTS MEASURING CRITICAL THINKING

Instrument	Developer	Year	Target populations	Test contents	Question types
California Critical Thinking Disposition Inventory (CCTDI)	P. Facione, N.C. Facione	1992	Advanced high school students, University and college students	To measure the scales of truth-seeking, open-mindedness, analyticity, systematicity, confidence, cognitive maturity and inquisitiveness	Likert rating scales (objective items)
California Critical Thinking Skills Test (CCTST)	Peter Facione	1990 1992 2000	Advanced high school students, University and college students	To measure students skills of analysis, evaluation, inference, explanation, and deduction	Multiple choice (objective items)
Cambridge Thinking Skills Assessment (CTSA)	University of Cambridge	2003	University and college students	To measure the problem solving and thinking ability: summarizing conclusions, identifying assumptions, evaluating the influence of related information on the arguments, identifying inferential errors, matching similar reasoning, and utilizing potential rules	Multiple choice (objective items)
Ennis-Weir Critical Thinking Essay Test (EWCTET)	R. H. Ennis, Eric Weir	1985	University and college students, secondary school students	To measure the ability of extracting key points of the passage, comprehending the reasons and assumptions, stating the key points, making reasonable inferences, and the comprehension of other possibilities	Reading comprehension and writing (subjective items)
Watson-Glaser Critical Thinking Appraisal (WGCTA)	G. Watson, E.M. Glaser	1980 1994	Students in 9th grade and above, adults	To measure the ability of making inferences, identifying assumptions, deducting, judging the reliability of the inferences and evaluating the arguments	Reading comprehension and multiple choice (objective items)
Cornell Critical Thinking Test, Level Z(CCTT-Z)	R. H. Ennis, J. Millman	1985	Advanced high school students, University and college students, adults	To measure the ability of inducting, deducting, observation, judging the reliability of other people's reports	Multiple choice (objective items)

From the table above, one can observe that, different measurement tools have different focuses when they are applied to estimate people's critical thinking. Some focuses on the disposition or tendency of one's critical thinking (CCTDI), some on the reasoning skills (CCTST, CRA), and others concentrate on the evaluative aspects of critical thinking (CCTT-Z), etc. However, since the thinking activity is a dynamic, continuous, complicated psychological phenomenon, there is a certain correlation among thinking skills, such as analysis, reasoning, evaluation, etc. They are mutually dependent on each other in the thinking process, so thinking activity is not a simple linear process, and without one of these skills, the other skills are not effective.

In this paper, the test to measure students' critical thinking dispositions is the Chinese version of CCTDI, namely the CTDI-CV edited by Peng Meici et al. (2004), because it has three modifications. First, the item wordings were selected from the focus interview verbatim transcriptions. This was to ensure that the language used was comprehensible for students at high school level. Second, 16 items were contextualized by adding a hypothetical situation or by accommodating the Chinese cultural norms that took modesty as a virtue in the item descriptions. Third, CTDI-CV simplified the scoring formula of CCTDI, but retained the same subscale and total scoring points.

D. Studies on Critical Thinking

In the last 30 years, studies on critical thinking have received more and more attention at home and abroad.

Many researchers have proposed some basic definitions of critical thinking (Ennis, 1987; Facione 1990; Halpern, 1997); structural models to interpret the subscales of critical thinking (Ennis1987; Delphi team, 1990). Researches have been on whether critical thinking abilities can be taught and how critical thinking abilities are embodied in all subjects, such as medicine, biological science, accountancy and nursing. Pithers and Soden (2000) summarized the research circumstances of this area in British higher educational field, and pointed out several problems of this area in higher education.

Critical thinking appealed to Chinese researchers as well. Most scholars agree that critical thinking includes both cognitive and affective dimensions. Analysis, evaluation and reasoning constitute the core skills in cognitive dimension, while curiosity, self-confidence, openness, flexibility, honesty, and tolerance the affective dimension (Liu, 2000; Luo, 2000). Some scholars concerned the lack of critical thinking abilities. For example, Huang Yuanshen (2010) dealt with the absence of critical thinking and pointed out that the situation did not changed much after about a decade and teachers and students of foreign language department were still confused by it.

At the same time, scholars in the area of TEFL have already noted the importance of fostering critical thinking in teaching and have been conducting research in critical thinking techniques in an EFL context. For example, He (1999) pointed out the importance of training English majors to think critically and to develop their creative abilities. Many Chinese scholars analyzed critical thinking in the context of speech, reading, spoken English and writing. Gao Yihong (1999) attended to critical thinking in the context of speech. Wen Qiufang et al (2006) introduced the correlation of critical thinking and English writing.

Empirical researches on critical thinking disposition at home just made its appearance in recent years and took on an increasing tendency. Based on the retrieval of relevant papers in China's Wanfang Thesis Database from 1994 to 2009, there are no empirical studies on critical thinking from 1994 to 2001, with only 55 available from 2003 to 2009. Among them, four theses relate critical thinking with second language acquisition, with only one concerning critical thinking disposition and second language acquisition (Zhang, 2018). More researches have been done on the cultivation of critical thinking ability (Han et al, 2009; Li, 2010; Yan, 2012; Wang, 2013; Sun, 2015; Zhang, 2018; Li et al, 2018; Liu et al, 2019; Lin, 2020)

As mentioned above scholars made attempts to research on the relationship between language teaching and critical thinking as well as how to foster critical thinking by language teaching, but few of them dealt with listening and critical thinking, thus this study endeavors to find the correlation between critical thinking and listening comprehension in order to enhance the integration of critical thinking in the process of listening and finally to strengthen the comprehensive developments of English majors.

III. RESEARCH DESIGN

A. Research Questions

To investigate the correlation between critical thinking and listening comprehension among English-major sophomore, the study mainly addressed the following research questions:

1. Is there any correlation between English majors' critical thinking disposition and listening comprehension performance?
2. Is there any correlation between the subscales of English majors' critical thinking disposition and their performance in each listening comprehension item types? And to what extent do they correlate with each other?
3. Is there any difference in the correlations between English majors' critical thinking disposition and their listening comprehension performance for different listening proficiency groups?

B. Participants

78 sophomores, including 69 girl students and 9 boy students majoring in English in the school of English in Hunan University are recruited as the subjects of this study. The participants are selected according to their student ID, from NO.1 to NO.78. Their average age is about 20 and they have already received about 1.5 years' English professional education and will participate in TEM-4 2015. Based on the performance in part two of the listening comprehension test of TEM-4 tests in 2013 and 2014, which requires students to analyze the intention, purpose as well as the attitude and mood of the speakers and thus better represent students' listening comprehension proficiency, the participants are divided into 2 groups. Those who scored 24 or above are considered as the higher listening proficiency group, and those 21 and lower than 21 as lower proficiency group, with those who scored between 20 and 23 excluded from the research to show the differentiation of higher and lower proficiency groups.

C. Instruments

The instruments employed in this study include the Chinese version of Critical Thinking Disposition Inventory (CTDI-CV), two pieces of English Listening Proficiency Test selected from TEM-4 tests in 2013 and 2014 as well as SPSS 18.0.

CTDI-CV is applied to investigate English majors' critical thinking disposition. Two pieces of listening proficiency test is used to get the average score of each participant's listening comprehension proficiency to assure that the division of groups is objective.

SPSS 18.0 is employed to analyze the data collected from the CTDI-CV, and the two listening proficiency tests.

D. Materials

CTDI-CV is adopted as the instrument to measure participants' Critical Thinking Disposition. CTDI-CV is a Chinese version modified from the CCTDI by Peng Meici (2004), which includes seven dimensions: truth-seeking, open-mindedness, analyticity, systematicity, self-confidence, inquisitiveness and maturity.

The questionnaire is composed of the demographic information and CTDI-CV survey. CTDI-CV consists of 70 Likert-type questions that represent seven critical thinking disposition subscales with 10 items in each subscale, and the total 70 questions are spread randomly as in the table below. Participants tick their choices according to a six-point Likert scale ranging from "strongly disagree" to "strongly agree" (strongly agree=1, pretty agree=2, agree=3, undecided=4, pretty disagree=5, strongly disagree=6). Total scores range from 70 to 420, with each subscales' score

from 10~60. The overall Cronbach Alpha reliability was 0.90. Subscale alphas ranged between 0.54 and 0.77. These readings show satisfactory content validity and internal consistency (Peng, 2004).

TABLE 2
ITEMS DISTRIBUTION OF CRITICAL THINKING DISPOSITION

Subscales	Items	Total
Truth-seeking	2, 5, 10, 14, 33, 35, 43, 48, 53, 56	10
Open-mindedness	1, 8, 15, 21, 22, 34, 40, 44, 61, 67	10
Analyticity	4, 6, 27, 28, 30, 38, 41, 50, 58, 69	10
Systematicity	3, 9, 11, 16, 37, 45, 49, 62, 65, 66	10
CT confidence	7, 12, 17, 24, 31, 36, 47, 51, 64, 68	10
Inquisitiveness	13, 18, 20, 39, 42, 46, 52, 54, 55, 60	10
Maturity	19, 23, 25, 26, 29, 32, 57, 59, 63, 70	10

Part two of listening comprehension test in 2013 and 2014 is used to examine students listening proficiency. Part two consists of 30 objective items. Each item has only one proper answer. In this part, item 1-10 are based on some short dialogues, item 11-20 on short passages, and the rest on some pieces of news. The listening materials of these two tests are selected from the authentic TEM-4 test in 2013 and 2014. Passages and conversations are closely connected with students' daily life, and news items include news, lectures and comments broadcasted by VOA and BBC.

Rating sticks to the requirements of TEM-4 syllabus and the official answer of TEM-4 in 2013 and 2014. Each item is 1 mark and there are 30 items in total, so the total score of each test is 30. The testing materials can be shown in the following table.

TABLE 3
ITEMS DISTRIBUTION OF LISTENING COMPREHENSION TEST

Categories	Items	Total
Conversations	1~3, 4~7, 8~10	10
Passages	11~13, 14~17, 18~20	10
News broadcasts	21~22, 23~24, 25~26, 27~28, 29, 30	10

E. Procedures

Procedures in this study mainly consist of three parts. Part one is the pilot test in order to identify the understanding of expressions of test and to confirm testing time. 10 sophomores majoring in English participate in the pilot test of the survey. After the pilot test, test takers can understand most of the questionnaire items, only very slight revisions need to be made. And the results of pilot study show that the CCTDI-CV survey will need 20-25 minutes.

The second part is the data-collection part, including the listening comprehension proficiency tests and CTDI-CV. The relevant teachers are contacted in advance. Participants are kept blind to the purpose of critical thinking survey. The data collection is completed in two weeks.

After data collection, SPSS was employed to analyze the data to explore the correlation between CTD and LCP.

IV. RESULTS

Among the 78 participants involved in the tests and survey, 7 questionnaire responses are deemed invalid and outliers because of the missing values. Thus, the study results will be obtained and analyzed from the abovementioned 71 sophomores (64 girls and 7 boys).

A. Correlation between Critical Thinking Disposition and Listening Comprehension

This section mainly explores the correlation between overall critical thinking disposition and listening comprehension and critical thinking disposition subscales and listening comprehension, as shown in the table below.

TABLE 4
CORRELATION BETWEEN CTD AND LC

		LC total score
Truth-seeking	Pearson Correlation	.512**
	Sig. (2-tailed)	.001
	N	71
Open-mindedness	Pearson Correlation	.270*
	Sig. (2-tailed)	.048
	N	71
Analyticity	Pearson Correlation	.368**
	Sig. (2-tailed)	.002
	N	71
Systematicity	Pearson Correlation	.476**
	Sig. (2-tailed)	.002
	N	71
Self-confidence	Pearson Correlation	.273*
	Sig. (2-tailed)	.046
	N	71
Inquisitiveness	Pearson Correlation	.415*
	Sig. (2-tailed)	.019
	N	71
Maturity	Pearson Correlation	.292*
	Sig. (2-tailed)	.039
	N	71
Total score	Pearson Correlation	.505**
	Sig. (2-tailed)	.007
	N	71

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

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

It can be found that there is a significant correlation between participants' critical thinking disposition and their listening comprehension performance ($r=0.505$, $\text{sig.}=0.007$). The overall correlation is strong because they are significantly correlated at the 0.01 level.

As for the correlation between critical thinking disposition subscales and listening comprehension performance, there exist significant correlations between listening comprehension performance and subscales like truth-seeking ($r=0.512$; $\text{sig.}<0.01$), analyticity ($r=0.368$; $\text{sig.}<0.01$), and systematicity ($r=0.476$; $\text{sig.}<0.01$). Besides, the correlations are also positive between listening comprehension performance and subscales such as inquisitiveness ($r=0.415$; $\text{sig.}<0.05$), maturity ($r=0.292$, $\text{sig.}<0.05$), self-confidence ($r=0.273$, $\text{sig.}<0.05$) and open-mindedness ($r=0.270$, $\text{sig.}<0.05$). This indicates that English listening comprehension has a 99% possibility to be correlated with truth-seeking, analyticity and systematicity while it has a 95% chance to be correlated with inquisitiveness, maturity, self-confidence and open-mindedness.

B. Correlation between Critical thinking Disposition Subscales and Listening Comprehension Item Types

The correlation between critical thinking disposition and subscales and the listening comprehension item types are shown in the following table.

TABLE 5
CORRELATION BETWEEN CTD AND LC ITEM TYPES

		Conversations	Passages	News broadcasts
Truth-seeking	Pearson Correlation	.303*	.523**	.506**
	Sig. (2-tailed)	.011	.009	.006
	N	71	71	71
Open-mindedness	Pearson Correlation	-.072	.213	.245*
	Sig. (2-tailed)	.988	.075	.039
	N	71	71	71
Analyticity	Pearson Correlation	.358**	.273*	.201
	Sig. (2-tailed)	.002	.041	.092
	N	71	71	71
Systematicity	Pearson Correlation	.444**	.351**	.237*
	Sig. (2-tailed)	.002	.003	.047
	N	71	71	71
Self-confidence	Pearson Correlation	.245*	-.012	.140
	Sig. (2-tailed)	.049	.921	.244
	N	71	71	71
Inquisitiveness	Pearson Correlation	.406**	.236	.247*
	Sig. (2-tailed)	.013	.058	.038
	N	71	71	71
Maturity	Pearson Correlation	.271*	.111	-.091
	Sig. (2-tailed)	.048	.357	.873
	N	71	71	71
Total score	Pearson Correlation	.408**	.247*	.340**
	Sig. (2-tailed)	.003	.024	.009
	N	71	71	71

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

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

Generally the table shows significant correlations between critical thinking disposition and Conversations ($r=0.408$, $\text{sig}.<0.01$), followed by critical thinking disposition and News Broadcasts ($r=0.340$; $\text{sig}.<0.01$), and critical thinking disposition and Passages ($r=0.247$; $\text{sig}.<0.05$).

As for the correlation between listening comprehension item types and critical thinking disposition subscales, there exist correlations. Firstly conversations are significantly correlated with analyticity, systematicity and inquisitiveness ($r=0.358$, 0.444 , 0.406 ; $\text{sig}.<0.01$) at the 0.01 level, with truth-taking, self-confidence and maturity ($r=0.303$, 0.245 , 0.271 ; $\text{sig}.<0.05$) significantly correlated at the 0.05 level. Secondly, passages are also strongly correlated with truth-taking and systematicity ($r=0.523$, 0.351 ; $\text{sig}.<0.01$) at the level of 0.01 and analyticity ($r=0.273$; $\text{sig}.<0.05$) at the level of 0.05. Finally, news broadcasts are significantly correlated with truth-taking ($r=0.506$; $\text{sig}.<0.01$) at the level of 0.01, and with open-mindedness, systematicity and inquisitiveness ($r=0.245$, 0.237 , 0.247 ; $\text{sig}.<0.05$) at the level of 0.05.

C. Correlation between Critical Thinking Disposition and Listening Comprehension of Two Different Listening Proficiency Groups

In this section, the correlation between critical thinking disposition and listening comprehension proficiency at two different levels is explored. Based on the two listening comprehension tests, there are 15 students who scored 24 and more and thus constitute the higher proficiency group, and 17 students who scored 21 and less comprises the lower proficiency group. The table below presents the overall and specific correlation differences in higher and lower proficiency groups respectively.

TABLE 6
THE CORRELATION BETWEEN CTD SUBSCALES AND DIFFERENT LCP GROUPS

		Higher group			Lower group		
		conversations	passages	news broadcasts	Conversations	passages	news broadcasts
Truth-seeking	Pearson	.318*	.588**	.540**	.105	.081	.077
	Correlation						
	Sig. (2-tailed)	.024	.004	.002	.122	.879	.885
Open-mindedness	N	15	15	15	17	17	17
	Pearson	-.017	.208	.250*	.405	.329	.317*
	Correlation						
Analyticity	Sig. (2-tailed)	.900	.097	.045	.427	.524	.042
	N	15	15	15	17	17	17
	Pearson	.397**	.251*	.241	.181	.319*	.299*
Systematicity	Correlation						
	Sig. (2-tailed)	.001	.015	.054	.731	.047	.049
	N	15	15	15	17	17	17
Self-confidence	Pearson	.472**	.358**	.253*	.258	.243	.288*
	Correlation						
	Sig. (2-tailed)	.000	.003	.042	.721	.152	.048
Inquisitiveness	N	15	15	15	17	17	17
	Pearson	.278*	.322*	.278	.314*	.327*	.103
	Correlation						
Maturity	Sig. (2-tailed)	.048	.032	.017	.045	.040	.205
	N	15	15	15	17	17	17
	Pearson	.414**	.225	.272*	.184	.510	.298*
Total	Correlation						
	Sig. (2-tailed)	.001	.071	.029	.727	.301	.037
	N	15	15	15	17	17	17
	Pearson	.315*	.307*	.125	.293*	-.178	-.239
	Correlation						
	Sig. (2-tailed)	.019	.014	.321	.015	.249	.158
	N	15	15	15	17	17	17
	Pearson	.324**			.245*		
	Correlation						
	Sig. (2-tailed)	.009			.047		
	N	15			17		

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

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

It can be found from the table that although both higher and lower listening proficiency groups show positive correlation between critical thinking disposition and listening comprehension, there still exists a difference, with the correlation of higher proficiency group strongly significant at 0.01 level ($r=0.324$, $\text{sig}.<0.01$), and that of the lower proficiency group significant only at the 0.05 level ($r=0.245$, $\text{sig}.<0.05$). Thus, the correlation between critical thinking disposition and higher proficiency group is stronger than that between critical thinking disposition and lower proficiency group.

The table also shows clear difference in terms of the correlation between critical thinking subscales and three listening comprehension item types for two different proficiency groups. In terms of the higher proficiency group, some subscales tends to be strongly significantly correlated, such as truth-seeking with passages and news broadcasts ($r=0.588$, $r=0.540$, $\text{sig}.<0.01$); analyticity with conversations ($r=0.397$, $\text{sig}.<0.01$); systematicity with conversations and passages ($r=.472$, $r=.358$, $\text{sig}.<0.01$); inquisitiveness with conversations ($r=0.414$, $\text{sig}.<0.01$). There are some other subscales which are correlated at the 0.05 level, for example, truth-seeking, self-evidence and maturity with conversations ($r=0.318$, ($r=0.278$, $r=0.315$; $\text{sig}.<0.05$); analyticity, self-evidence and maturity with passages ($r=0.251$, ($r=0.322$, $r=0.307$; $\text{sig}.<0.05$); open-mindedness, systematicity and inquisitiveness with news broadcasts ($r=0.250$, $r=0.253$, $r=0.272$; $\text{sig}.<0.05$).

As for the lower proficiency group, there are no subscales which are significantly correlated with listening comprehension item types at the level of 0.01, with only several subscales correlated at the level of 0.05. For example self-evidence and maturity are correlated with conversations ($r=.314$, $r=.293$; $\text{sig}.<0.05$); analyticity and self-evidence with passages ($r=0.319$, $r=0.327$; $\text{sig}.<0.05$); open-mindedness, analyticity, systematicity and inquisitiveness with news broadcasts ($r=0.317$, $r=0.299$, $r=0.288$, $r=0.298$; $\text{sig}.<0.05$).

V. CONCLUSION

Based on the analysis of the results above, some major findings concerning the three research questions can be obtained, and some pedagogical implications can be suggested.

A. Major Findings

Firstly, there exists significant correlation between participants' critical thinking disposition and their listening comprehension performance in general, with truth-seeking, analyticity and systematicity at the significant level of 0.01 and inquisitiveness, maturity, self-confidence and open-mindedness at the level of 0.05 in particular.

Secondly, critical thinking disposition is significantly correlated with conversations and news broadcasts at the level of 0.01, and with passages at the level of 0.05. In terms of the correlation between listening comprehension item types and critical thinking disposition subscales, conversations are significantly correlated with analyticity, systematicity and inquisitiveness at the 0.01 level, with truth-taking, self-confidence and maturity significantly correlated at the 0.05 level; passages with truth-taking and systematicity at the level of 0.01 and analyticity at the level of 0.05; news broadcasts with truth-taking at the level of 0.01, and with open-mindedness, systematicity and inquisitiveness at the level of 0.05.

Thirdly, generally there exist differences in the correlation between critical thinking disposition and listening comprehension performance for both the higher and lower proficiency groups. However, the correlation for higher proficiency group tends to be significant at the level of 0.01, while that for the lower proficiency group significant at the level of 0.05. As for the correlations between critical thinking disposition subscales and three listening comprehension item performance for two different proficiency groups, clear differences can also be obtained. For the higher proficiency group, 99% possibility of Truth-seeking is correlated with passages and news broadcasts; analyticity with conversations; systematicity with conversations and passages; inquisitiveness with conversations. 95% chance of truth-seeking, self-evidence and maturity is correlated with conversations; analyticity, self-evidence and maturity with passages; open-mindedness, systematicity and inquisitiveness with news broadcasts. However, for the lower proficiency group, there are only a few subscales correlated with listening comprehension item type performance at the level of 0.05, with self-evidence and maturity with conversations; analyticity and self-evidence with passages; open-mindedness, analyticity, systematicity and inquisitiveness with news broadcasts.

B. Pedagogical Implications

Some implications for language teaching and learning in EFL context can be generalized from the findings above.

Firstly, since it is shown that critical thinking is closely correlated with students' listening comprehension performance, teachers should take critical thinking into consideration in their English listening teaching, raising students' awareness of the importance in building up their critical thinking ability and providing students more chances to become independent critical thinkers.

Secondly, teachers should be good at preparing listening teaching materials and design appropriate comprehension item types, taking critical thinking cultivation as one of the important teaching goals. For example, the selection of materials should be diverse in terms of subject areas, genres etc. Lectures, speeches, daily conversations and situational dialogues, passages, BBC, VOA and CCTV programs should all be included in listening instruction materials. In this way, it can stimulate students' learning enthusiasm, and broaden their horizon, as well as cultivate their ability to critically accept knowledge and information.

Lastly, as there exist differences in terms of the correlation between critical thinking and listening comprehension performance for students at different proficiency levels, teachers should be sensitive to these individual differences in their listening teaching. They should allow for the difference in the choice of listening materials and the speed of listening. In addition, the evaluation of students' listening comprehension performance should take various forms, with simple and mechanical testing methods least adopted.

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