Journal of Comparative Literature and Culture (JCLC)
Vol. 1, No. 2, 2012

www.worldsciencepublisher.org

Critical Thinking, Content Schemata and EFL Readers' Comprehension and Recall

[1]Mansoor Fahim, [2]Hossein Ahmadi (Corresponding author)

[1]Islamic Azad University— Science and Research Branch, Tehran, Iran
[2]Islamic Azad University— Malayer Branch, Malayer, Iran

Email: dr.manfahim@yahoo.com, ahmadikhm@gmail.com

Abstract - The present study examined the effect of critical thinking ability on Foreign language learners' reading comprehension and recall of content-familiar and content-unfamiliar texts. The study involved 63 female intermediate learners of English as a foreign language in a private language institute in Iran. The subjects were devided into two groups (i.e., high critical thinkers and low critical thinkers) based on their responses to the the items in the Persian version of Watson-Glaser Critical Thinking Appraisal (WGCTA) test. Results of Analysis of Varience applied to a multiple-choice reading comprehension task and a recall task revealed significantly higher scores for all of the participants in the content-familiar text. However, The high critical thinkers outperformed the low critical thinkers in both content-familiar and content-unfamiliar texts. No significant interaction was found between the effects of content and critical thinking ability on the participants' performace. This may imply that critical thinking is a general ability rather than a subject-specific one.

Keywords - Critical thinking, content schemata, EFL Reading Comprehension, Recall.

1. Introduction

Critical thinking was traditionally considered and practiced by philosophers, psychologists and educators. Critical thinking and Socratic questioning are considered to be related and share a common goal [8]. Critical thinking approach to learning was applied 2000 years ago for the first time by Socrates who carefully questioned peoples' claims, saught evidence and reasons, and analyzed concepte as a basis for his beliefs [16]. Popper(1966) presented critical rationalism,which included fallibilism ('I may be wrong'), criticism (the required 'effort'), and verisimilitude ('we may get nearer to the truth')(cited in [5], p. 93).

Critical thinking has been dealt with in the fields of philosophy, psychology and education(for a review see [10]). As [3] maintain the importance of teaching critical thinking is nowadays obvious to all educators. Critical thinking is claimed to be teachable through lecture, homework, term papers and exams [32] as well as short stories [24]. Moreover, the contribution of critical thinking to academic achievement and TESL/TEFL has been investigated by numerous researchers (e.g., [2], [1], [26], [27], [20], [7], [19] and [33]). [29] highlight the significance of critical thinking in reading instruction.

2. Literature Review

2.1. Critical Thinking

There seems to be little agreement on exactly what critical thinking is [15]. Arguing that critical thinking is a social practice, [6] considers it as cultural thinking (p.89). Critical thinking has been defined as a number of skills such as, the ability to focus the problem, uncover assumptions underlying a problem, inference, reason inductively and deductively, and judge the validity and reliability of assumptions and sources of information [30]. [17] defines critical thinking as "our active, purposeful, and organized efforts to make sense of our world by carefully examining our thinking, and the thinking of others, in order to clarify and improve our understanding (p. 29)". Critical thinking is also said to involve such factors as interpretation, analysis, evaluation, inference, explanation, and self-regulation [28]. [4], a developmental psychologist, begins by equating critical thinking with *separate knowing*, which she defines as:

detachment. The separate knower holds herself aloof from the object she is trying to analyze. She takes an impersonal stance. She follows certain rules or procedures to ensure that her judgments are unbiased. All disciplines and vocations have these impersonal procedures for analyzing things. (p. 36)

[9] states that "critical thinking is one of the cognitive abilities that "increase[s] the probability of a desirable outcome, … the kind of thinking involved in solving

problems, formulating inferences, calculating likelihoods, and making decisions" (p.6). Furthermore, [22] look critical thinking from a personality trait perspective.

2.2. Critical Thinking and Second Language Reading

Among the four languae skills, reading probably plays the most important role in foreign and second language learners' academic achievement. As a result , this skill is worth in-depth investigation from both teoretical and practical perspectives. Researchers have investigated numerous text-related and reader-related factors determining EFL/ESL readers' comprehension. Accordingly, the cognitive dimension of EFL/ESL reading has been the target of a considerable number of studies.

[31] conducted a research study exploring the relationship between autonomy, critical thinking ability, and reading comprehension of the Iranian EFL learners. The results showed that there existed a significant relationship between critical thinking ability of learners and their performance on reading comprehension; simply put, the higher the critical thinking ability, the higher the reading comprehension. The findings of the study also indicated that critical thinking and autonomy of students were highly correlated.

[34] investigated the relationship between critical thinking ability, resilience, and reading comprehension of texts containing unknown vocabulary items. The results of their study revealed that there is a significant relationship between critical thinking ability, resilience, and reading comprehension suggesting that good internal resources such as high levels of critical thinking ability and resilience can affect academic performance, i.e. competence in reading, and may be considered as protective factors among L2 readers.

Along the same line, [21] conducted a study intending to investigate the impact of teaching critical thinking skills on reading comprehension ability. In this study critical thinking was also found to have a positive effect on the participants' reading comprehension.

3. Purpose of the Study

This study aims to investigate the effects of critical thinking and content schemata on EFLreaders' comprehension and recall. In other words, the purpose of the study is to explore the relationship between critical thinking ability and EFL readers' comprehension and recall of content-familiar and content-unfamiliar texts. Therefore, the following research questions were formulated. Research questions:

1.Does critical thinking ability have any significant effects on EFL learners' reading comprehension ?

2. Is there any significant interaction between the effects of critical thinking, and content schemata on EFL learners' reading comprehension?

3. Does critical thinking ability have any significant effects on EFL learners' recall ?

4. Is there any significant interaction between the effects of critical thinking, and content schemata on EFL learners' recall?

4. Methodology

4.1. Participants

The participants were 62 female Iranian EFL learners between the ages of 20 and 35 (mean: 27.46, Standard deviation: 4.49). They were learning English at a private English language institute. They were intermediate learners with no experience of life in an English-speaking country.

4.2. Instrumentation

Two types of instruments were used in this study: a critical thinking appraisal test and two reading comprehension tests.

Firstly, The researchers used the Farsi version of Watson-Glaser Critical Thinking Appraisal, Form A (WGCTA-FA) to measure the participants' critical thinking. The test consists of five subsections, namely drawing inferences, recognizing assumptions, making deductions, interpreting evidence, and evaluating arguments, each comprising 16 items with two to five alternatives. The appraisal is not subject-specific and can be completed in 60 minutes. The test-retest reliability of the original version of this critical thinking appraisal ($r = 0.81$) has been reported by [13], and the reliability coefficient of its Farsi version has been estimated by Cronbach's Alpha ($\alpha = 0.85$) in [11]. A composite score for the five subscales of the test is obtained with values ranging from 0 to 80.

The reading comprehension tests were taken from [23]. These authors piloted the tests with a sample of learners with the same level of English language proficency in the same language instituite as the participants of the present study. The content-familiar test was an extract from the biography of the Prophet Muhammad (P.B.U.H). The content-unfamiliar test was an extract from the biography of Joseph Smith, a Christian religious figure. As [23] maintain, the two texts are similar as far as genre, length, and linguistic difficulty are concerned.

4.3. Procedure

4.3.1. Subject grouping procedure

Eighty two EFL learners were chosen as the subjects of the study through convenience sample procedure [18]. Out of the 82 learners, 63 learners participated in all the tests of the study. The subjects were from five intermediate classes. The subjects had been already assigned to these classes based on a placement test in the institute.

4.3.2. Test Administration Procedure

To avoid participants' fatigue, the critical thinking appraisal and the reading comprehension tests were administered in two separate sessions with an interval of two days. The participants were asked to read the texts and answer the MC items. Then, the participants were asked to read the texts once more and write down what they could remember on their recall answer-sheets without looking back at the text and the MC questions. Here, the purpose was to measure the participants' recall of what they read rather than their EFL writing ability. Therefore, we asked the participants to write their recalls in whatever language they preferred (i.e., Farsi, English or a mixture of both). The time allocated to each test was 45 minutes, which had been determined to be suitable in the pilot study by [23].

4.3.3. Scoring Procedure

The MC-test papers were scored based on the number of correctly-answered items. The recall protocols were scored based on the correct propositions recalled by the participants. For the sake of a consistent scoring procedure, we defined propositions as the relationships between a predicate and its arguments. As [14] maintain, this is the most frequently used definition in the text analysis literature. Then, the protocols were scored by the researchers. Each recall protocall was scored twice, once by each of the two researchers. A correlation index of .88 was found between the scores given to the recall protocols by the two raters. The average of the two scores was considered as the final score assigned to each recall protocol. The scores from the critical thinking appraisal, the multiple choice tests and the recall protocols constituted the data for statistical analysis.

4.4. Data analysis

SPSS was used for statistical analysis of the data (i.e., the Participants' critical thinking appraisal scores, their scores on the MC items and their recall scores). To examine the main effects of the two independent variables (i.e., critical thinking and content schemata) on the participants' comprehension and recall of the texts and their possible interaction effects, the researchers ran 2×2 (critical thinking × content schemata) analysis of variance (ANOVA) twice: once for the data related to the participants' reading comprehension (i.e., the participants' scores on the MC items) and once for the data related to the participants' recall of the texts.

5. Results

5.1. Reading Comprehension Task

The reading comprehension task was designed to address the first and the second research questions: Does critical thinking ability have any significant effects on EFL learners' reading comprehension ? Is there any significant interaction between the effects of critical thinking, and content schemata on EFL learners' reading comprehension?

The study included two Independent variables. 1) critical thinking, which included high critical thinkers (H) and low critical thinkers (L). 2) content schemata, which consisted of familiar content (F) and unfamiliar content (UF). The number of correct answers for the MC reading comprehension task was tabulated separately for each critical thinking level (H and L) within each content schemata condition (F and UF).

As shown in figure 4-1 and table 4-1, the mean score of the high critical thinkers was higher than that of the low critical thinkers in both content schemata conditions. Moreover, The participants performed better in the content familiar text (i.e., F condition) than in the content unfamiliar text (i.e., UF condition) regardless of critical thinking ability.

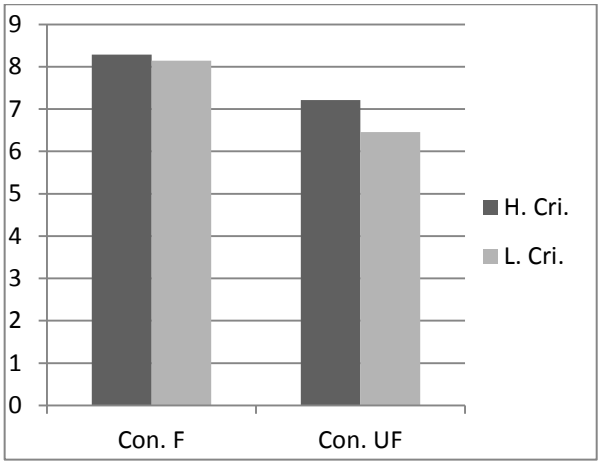

Figure 4-1. Reading Comprehension Mean Scores: Critical Thinking Level x Content Schemata

Con. F: Content-Familiar Text
Con. UF: Content-Unfamiliar Text
H. Cri.: High Critical Thinking Ability
L. Cri. : Low Critical Thinking Ability

Descriptive statistics related to the multiple-choice test scores appear in table 4-1 below.

Table 4-1
Descriptive Statistics Related to Reading Comprehension Data

Con.	Cri.	N	Mean	Std. Deviation
F	H	34	8.29	1.00
	L	28	8.14	.89
	Total	62	8.23	.95
UF	H	34	7.21	.81
	L	28	6.46	.88
	Total	62	7.42	1.21
F&UF	H	68	8.25	.91
	L	56	7.30	1.22
	Total	124	7.55	1.15

Con: Content Schemata
F: Familiar Content
UF: Unfamiliar Content
Cri.: Critical Thinking Ability
H: High
L: Low

A two-factor analysis of variance (ANOVA) [critical thinking (high, low) – content schemata condition (F, UF)] revealed a main effect for content schemata [$F = 72700$, $p < .05$]. There was also a main effect of critical thinking [$F = 7.57$, $P< .05$]. Concerning the first research question, this result demonstrated that critical thinking has a significant effect on EFL learners' reading comprehension.

No significant interaction was found between the effects of content and critical thinking. Therefore, regarding the second research question, it is revealed that there is no significant interaction between the effects of content schemata and critical thinking on EFL learners' reading comprehension. In other words, critical thinking has a significant effect on EFL learners' reading comprehension of both content-familiar and content-unfamiliar texts.

5.2. Recall Task

The recall task was designed to address the third and the forth research questions: Does critical thinking ability have any significant effects on EFL learners' recall ? Is there any significant interaction between the effects of critical thinking, and content schemata on EFL learners' recall? The Independent variables were critical thinking (H and L), and content schemata(F, UF).

As shown in figure 4-2 and table 4-2, the mean score of the high critical thinkers was higher than that of the low critical thinkers in both content schemata conditions. Moreover, The participants performed better in the content familiar text (i.e., F condition) than in the content unfamiliar text (i.e., UF condition) regardless of their critical thinking ability.

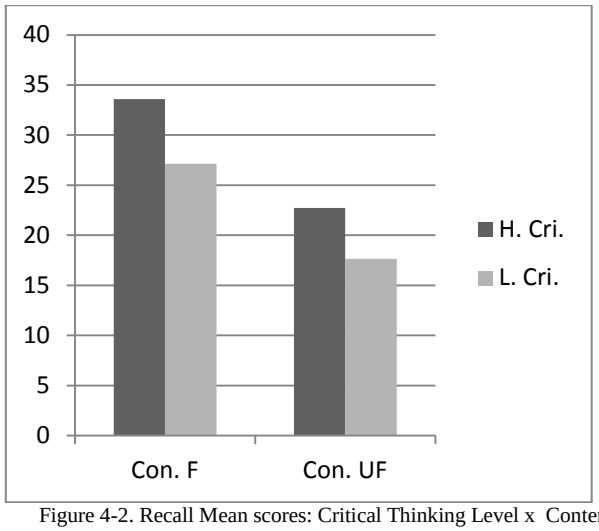

Figure 4-2. Recall Mean scores: Critical Thinking Level x Content Schemata

Con. F: Content-Familiar Text
Con. UF: Content-Unfamiliar Text
H. Cri.: High Critical Thinking Ability
L. Cri. : Low Critical Thinking Ability

Descriptive statistics pertaining to the recall scores appear in table 4-2 below.

Table 4-2
Descriptive Statistics Related to Recall Data

Con.	Cri.	N	Mean	Std. Deviation
F	H	34	33.59	9.36
	L	28	27.14	6.21
	Total	62	30.68	8.66
UF	H	34	22.74	3.72
	L	28	17.68	3.68
	Total	62	20.45	4.46
F&UF	H	68	28.16	8.94
	L	56	22.41	6.96
	Total	124	25.56	8.57

Con: Content Schemata
F: Familiar Content
UF: Unfamiliar Content
Cri.: Critical Thinking Ability
H: High
L: Low

A two-factor analysis of variance (ANOVA) [critical thinking (H, L) – content schemata condition (F, UF)] revealed a main effect of content schemata [F = 72700, p < .05]. There was also a main effect of critical thinking [F = 7.57, P< .05]. Concerning the first research question, this result demonstrated that critical thinking has a significant effect on EFL learners' reading comprehension.

No significant interaction was found between the effects of content and critical thinking. Therefore, regarding the forth research question, it is revealed that there is no significant interaction between the effects of content and critical thinking on EFL learners' recall. In other words, critical thinking has a significant effect on EFL learners' recall of both content-familiar and content-unfamiliar texts.

6. Discussion

This study investigated the effect of critical thinking on EFL learners' reading comprehension and recall of content-familiar and content-unfamiliar texts. Concerning both the reading comprehension task and the recall task, the content-familiar text resulted in a significantly higher mean than the content-unfamiliar text for both high and low critical thinkers. Moreover, the high critical thinkers outperformed the low critical thinkers in the comprehension of both content-familiar and content-unfamiliar texts. The latter is consistent with the findings of [39], [34], [21] and [26], who all found critical thinking to have a positive effect on EFL readers' comprehension. The findings of the present study are also somehow in accordance with the findings of [12], [19], and [33].

The results of this study seem to go against McPeck's view of critical thinking. McPeck (1981) argues that critical thinking is desciplin-specific. For example, with little knowledge about nuclear physics it would be difficult for the person to be a critical thinker in this field (cited in [25] p.3). In the present study high critical thinkers out-performed low critical thinkers in the comprehension of both content-familiar and content-unfamiliar texts. Therefor, this finding may imply that critical thinking is a general ability rather than descipline-specific one.

7. Conclusion

Overal, it can be concluded that critical thinking plays a determining role in academic achievement because it is what students need to succeed in an academic environment. The findings of the present study is in accordance with the results of studies such as [31], [34], [21], [26], [12], [19], and [33]. In general, these studies demonstrated the positive impact of critical thinking ability on different dimensions of accademic

achievement. The present study, in particular, suggests that critical thinkers are more successful EFL readers regardless of the content schemata of the text. However, Further research utilizing texts with other genres is required for arguing that critical thinking is a general ability raher than a descipline-specific one.

References

[1] A. Malmir, S. Shoorcheh, An investigation of the impact of teaching critical thinking on the Iranian EFL learners' speaking skill. Journal of Language Teaching and Research, 3(4) (2012) 608-617.

[2] B. Gorjian, A. Pazhakh, K. Parang, An Investigation on the effect of critical thinking (CT) iInstructions on Iranian EFL learners' descriptive writing: A case of gender study. Advances in Asian Social Science,1(1), 2012, 114-118.

[3] B. Bracken, E. Brown, E. Feng, A critical thinking instruction. Journal for the Education of the Gifted, 33(1) (2009) 7–37.

[4] B. Clinchy, On Critical Thinking and Connected Knowing. In K. S. Walters (Ed.), Re-thinking Reason: New Perspectives on Critical Thinking, Albany, NY: SUNY Press, 1994, pp. 33–42.

[5] C. Lam, Is Popper's Falsificationist Heuristic a Helpful Resource for Developing Critical Thinking? In: M. *Mason (Ed.).* Critical Thinking and Learning, USA, Malden: Blackwell Publishing, 2008, pp. 93-108.

[6] D. Atkinson, A critical approach to critical thinking in TESOL. TESOL Quarterly, 31(1) (1997) 71-94.

[7] D. Atkinson, R. B. Kaplan, A critical approach to critical thinking in ESL in: the 28th Annual TESOL Convention, Baltimore, MD, 1994, March.

[8] D. Beach, The role of Socratic questioning in thinking, teaching,& learning (2004). Retrieved September 26, 2005,from http://www.criticalthinking.org?resources/articles/the-role-socraatic-questioning-ttl.shtml

[9] D. F. Halpern, Thought and Knowledge: An Introduction to Critical Thinking (4th ed.), Mahwah, NJ: Lawrence Erlbaum Associates, 2003.

[10] E. R. Lai, Critical thinking: A literature review (2011). Retrieved in 2012, March, from www.pearsons.com/hai/.../CriticalThinkingReviewFINA

[11] F. Faravani, Portfolio and critical thinking. Unpublished M.A. Thesis. Iran: Ferdowsi University of Mashhad, 2006.

[12] F. T. Villavicencio, Critical thinking, negative academic emotions, and achievement: A meditational analysis. The Asia-Pacific Education Researcher, 20 (1) (2011) 118-126.

[13] G. B. Watson, E. M. Glaser, WGCTA Watson-Glaser Critical Thinking Appraisal Manual: Forms A and B. San Antonio: The Psychological Corporation ,1980.

[14] G. Brown, G. Yule, Discourse Analysis. Cambridge: Cambridge University Press, 1983.

[15] G.D. Allen, M.G. Rubenfield, B.K Scheffer, Reliability of assessment of critical thinking. Journal of Professional Nursing, *20*(1) (2004)15-22.

[16] I. Wright, Is That right? Critical Thinking and the Social World of the Young Learner. Toronto: Pippin Publishing Corporation, 2002.

[17] J. Chaffee, Thinking Critically. Boston, MA: Houghton Mifflin,1988 .

[18] J. W. Best, J. V. Kahn, Research in Education. Boston: Pearson Education Inc, 2006.

[19] L. E. McCutcheon, J. M. Apperson, E. Hanson, V. Wynn, Relationships among critical thinking skills, academic achievement, and misconceptions about psychology. Psychological Reports, *71*(1992) 635-639.

[20] M. Fahim, M. Bagherkazemi, M. Alemi, The relationship between test takers' critical thinking ability and their performance on the reading section of TOEFL. Journal of Language Teaching and Research,1(6) (2010) 830-837.

[21] M. Fahim, M. Sa'eepour, The impact of teaching critical thinking skills on reading comprehension of Iranian EFL learners. Journal of Language Teaching and Research, *2*(4) (2011) 867-874.

[22] M. Fahim, M. Teimourtash, A critical look at the notion of critical thinking from a New personality trait perspective: "Midtrovert". Advances in Digital Multimedia, 1,(3)(2012), 149-152.

[23] M. H. Keshavarz, M. R. Atai, H. Ahmadi, Content schemata, linguistic simplification, and EFL readers' comprehension and recall. Reading in a Foreign Language, 19(1) (2007) 19-33.

[24] M. Khatib, K. Mehrgan, Achieving critical thinking skills through reading short stories. Advances in Digital Multimedia, 1(3) (2012) 166-172.

[25] M. Mason, Critical Thinking and Learning, in: M. Mason (Ed.) Critical Thinking and Learning USA, Malden: Blackwell Publishing, 2008, pp. 1-11.

[26] M.R. Hashemi, R. Zabihi, Does critical thinking enhance EFL learners' receptive skills? Journal of Language Teaching and Research, 3 (1) (2012) 172-179.

[27] P. Birjandi, M. Bagherkazemi, The relationship between Iranian EFL teachers' critical thinking ability and their professional success. English Language Teaching, 3 (2) (2010) 135-145.

[28] P. Facione, Critical Thinking: What it is and why it counts. California: California Academic Press, 2006.

[29] R. Vaseghi, R. Gholami, H. Barjesteh. Critical thinking: An influential factor in developing English reading comprehension performance. Advances in Asian Social Science, 2(1) (2012), 401-410 .

[30] R. T. Pithers, R. Soden, Critical thinking in education: A review. Educational Research, 42 (3) (2000) 237-249.

[31] R.. Sheikhy Behdani, The relationship between autonomy, critical thinking ability, and reading comprehension of the Iranian EFL learners. Unpublished master's thesis, Islamic Azad University, Science and Research Campus, Tehran, Iran, 2009 .

[32] S.D. Schafersman, An introduction to critical thinking,1991 . Retrieved from http://facultycenter.ischool.syr.edu/wp-content/uploads/2012/02/Critical-Thinking.pdf

[33] Y. Yeh, J. Wu, The relationship between critical thinking and academic achievement among elementary and secondary school students. Journal of Education and Psychology, 15 (1992) 79-100.

[34]Z. Kamali, M. Fahim, The relationship between critical thinking ability of Iranian EFL learners and their resilience level facing unfamiliar vocabulary items in reading. Journal of Language Teaching and Research, 2(1) (2011)104-111.

Vitae

Mansoor Fahim was born in Nahavan, Iran. He was an associate professor of TEFL at Allameh Tabataba'i University, Tehran, Iran from 1981 to 2008. At present, he runs Research Methods, Psycholinguistics, Applied Linguistics, Second Language Acquisition, and Seminar classes at M.A. level; and First Language Acquisition, Psycholinguistics, and Discourse Analysis at Ph.D. level. He has supervised many M.A. and Ph.D. theses and published several articles and books mostly in the field of TEFL and has translated some books into Persian.

Hosssein Ahmadi, is currently a Ph.D. candidate of TEFL at Islamic Azad University, Science and Research Branch, Tehran, Iran. He is also a faculty member of Islamic Azad University, Malaye Branch, Malayer,Iran. He has taught English courses for 11 years at different universities in Malayer, Iran. Furthermore, he has presented and published articles and published some books on teaching English language.