Deeper Processing For Better EFL Comprehension——A Duplicated Experiment Report

Yujing Zheng

School of Foreign Languages, Chongqing Jiaotong University, China
Corresponding Author: Yujing Zheng

Abstract: *Since the depth of processing notion in reading comprehension was introduced by Craik and Lockhart[i] in 1972, the question whether deeper processing will result in better EFL reading comprehension has been discussed recently. The present study duplicated an experiment based on the experiment done by Oded and Walters (2001)[2], with the same aim to investigate the extent to which tasks involving processing differences in English as a Foreign Language (EFL) reading result in differences in performance on comprehension. The processing differences were created by the assignment of two different tasks—writing a summary of a text and listing the examples in a text. Text comprehension was measured by performance on a set of comprehension questions. This study was expected to offer further evidence for its model experiment. The participants of the experiment were 40 sophomores of two different levels of English proficiency who performed the tasks on two different texts.*

Keywords: *Depth processing; Summarizing; Reading Comprehension; EFL*

I. Introduction

Many studies have discussed reading comprehension, especially EFL reading comprehension both theoretically and experimentally. Oded and Walters (2001) carried out an experiment to investigate the extent to which tasks involving processing differences in English as a Foreign Language (EFL) reading result in differences in performance on comprehension. Their study focused on differences in processing when reading to summarize and when reading to provide a list of examples. As expected, the result turned out to be that the qualitative processing required in selecting the main ideas and organizing them in a summary led to greater comprehension whereas the task of listing details, being irrelevant or distracting task for overall comprehension, led to poorer comprehension.

The present experiment is duplication of Oded and Walters (2001)'s study but with different subjects and materials. It is aimed to find out whether there are any differences in reading comprehension between writing a summary of a text and listing examples used by the readers of the text when the subjects are Chinese university students.

II. Method

2.1 Participants

The participants of the experiment were 40 sophomores at Chongqing University enrolled in an EFL extensive reading course. The students were majors in social science and humanities. They were drawn from four classes, and according to their scores in the final English examination of last term, 20 students whose scores were above 80 were selected to be the high-advanced group, and another 20 students whose scores were below 65 were selected to be the low-advanced group. They were all be given the same final examination at the end of the course. At the time of this study, the students had not taken the College English Test-Band 4 (CET-4), but had learned reading skills and had practiced answering comprehension questions on a variety of texts.

2.2 Materials

Both of the two texts used for the study were selected from the test papers of CET-4 with some modification by the writer to ensure their consistency in level. Text A is a 276-word article entitled "Airline Safety Threat ", and text B is a 255-word passage entitled "Babies' Language Learning". Both texts are of explanatory type, organized as an explanation of a process or a phenomenon. The "*Airline*" text introduces the biggest safety threat facing airline---electromagnetic interference. The "*Language*" text talks about how babies learn to speak. Both texts are general enough to be understood by students of all disciplines.

A set of six multiple-choice comprehension questions is prepared for each text. All the questions were conceptual, including global questions which focus on main ideas, purpose of the writer, organization of the

text, and detailed questions about the key supporting evidence. (The questions are presented in the Appendix).

2.3 Procedure

The experiment was conducted in the EFL classroom. Every participant read the two texts on two separated days. On the first day, the text *Airline* was used and on the second day the *Language* text was used. On the first day half of the participants received the example condition and half the summary condition. Thus, every participant was exposed to the two contents (Airline and Language), each content was in one of the two processing conditions (examples and summary). Participants from each proficiency group were counterbalanced across the condition. On the first day, half of the participants from each proficiency group received the example condition for the text *Airline*; the other half received the summary condition for the text *Airline*. On the second day, those students who had received the example on the first day received the summary condition for the *Language* text, and those who had received the summary condition on the first day received the example condition for the text *Language*.

The example condition involved the following instructions: *Read the following text. Then make a **LIST OF THE EXAMPLES** used by the writer to make his point. You have thirty minutes for this task.* The summary condition involved the following instructions: *Read the following text. Then write a **SUMMARY OF THE MAIN POINTS** of the writer. You have thirty minutes for this task.* The conditions were emphasized in capital letters and explained to the participants who asked for clarification.

After thirty minutes the set of six multiple-choice questions was distributed to the students with both the text and their completed first tasks (examples or summary) still at their hand. After twenty minutes, all the materials were collected.

2.4 Data analysis

Scores for the comprehension questions were computed as a percentage of correct answers. Summaries were read to see if participants captured the correct gist of the texts or misread them, as a wrong summary might lead to wrong answers on the comprehension questions. The task of listing examples was also evaluated to see whether the participants did indeed give examples. All the 40 participants completed the tasks properly. Based on the above criteria, all the data are valid.

III. Result and discussion

The original study done by Oded and Walters (2001) aimed to investigate to what extent tasks involving processing differences result in differences in performance on comprehension. Similarly, this duplicated experiment was also to check whether it could get the same result while the similar experiment was carried out with different materials and subjects. The underlying assumption was that depth of processing required in the task of summarizing the main ideas of a text would ensure quality encoding of the content and hence better retrieval. This would facilitate comprehension on the subsequent task. Conversely, the low-level processing required in listing examples in a text was expected to result in more superficial encoding, and in turn, poorer comprehension of the content as a whole and poorer performance on the subsequent task.

A series of one-way ANOVAS for group differences, broken down for condition and text content showed main effects for group differences in every case except for the *Airline* text in the summary condition. Table 1 summarizes the findings.

For the summary condition, the mean score for the text *Airline* was 68.345 for the high-advanced group, and61.586 for the low-advanced group. Table 2 presents the mean comprehension scores for all four groups.

Table 1: ANOVA summary statistics

	d.f.	SS	MSE	F	P
Summary					
Airline	1, 18	228.420	228.420	1.122	0.304
Language	1, 18	1681.044	1681.044	12.237	0.003
Examples					
Airline	1, 18	1429.740	1429.740	5.117	0.036
Language	1, 18	1697.956	1697.956	10.303	0.005

Table 2: Mean comprehension scores for group, processing condition, and text content

Groups	Summary		Examples	
	Airline	*Language*	*Airline*	*Language*
Low-advanced	61.586	65.010	48.070	59.919
High-advanced	68.345	83.346	64.980	78.347

The main finding regarding processing differences is portrayed in Fig.1, where the overall mean comprehension scores are presented for the two processing conditions (example/summary). A t-test performed

on these scores revealed a significant difference between the two conditions: t (1, 39) =2.297, p=0.027. The mean score in the example and summary condition was 62.829 and 69.572 respectively. On the whole, students who did the summary task outperformed students who did the example task. Moreover, this performance was regardless of the order in which they did the summary or example tasks.
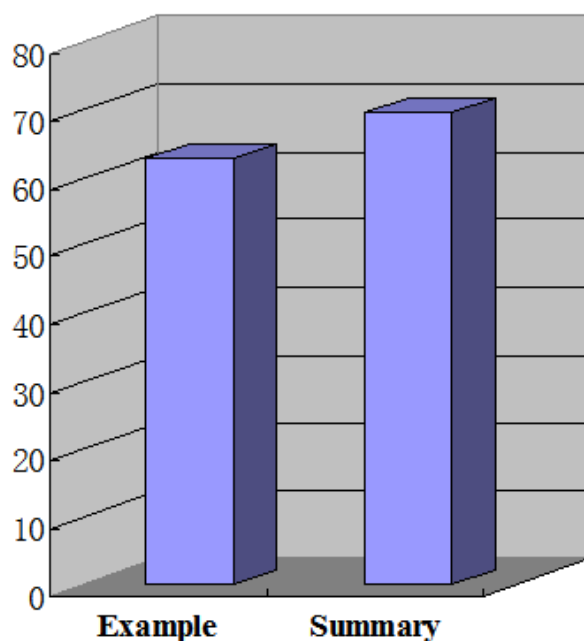

Fig. 1. Overall mean scores according to processing condition

In order to further clarify these findings, Fig.2 summarizes the results of all the other variables. It shows the mean comprehension scores on the two contents (*Airline* and *Language*) under the two processing conditions (examples and summary) for the two proficiency groups (high-advanced and low-advanced). In every single case, the summary condition showed better results than the example condition.
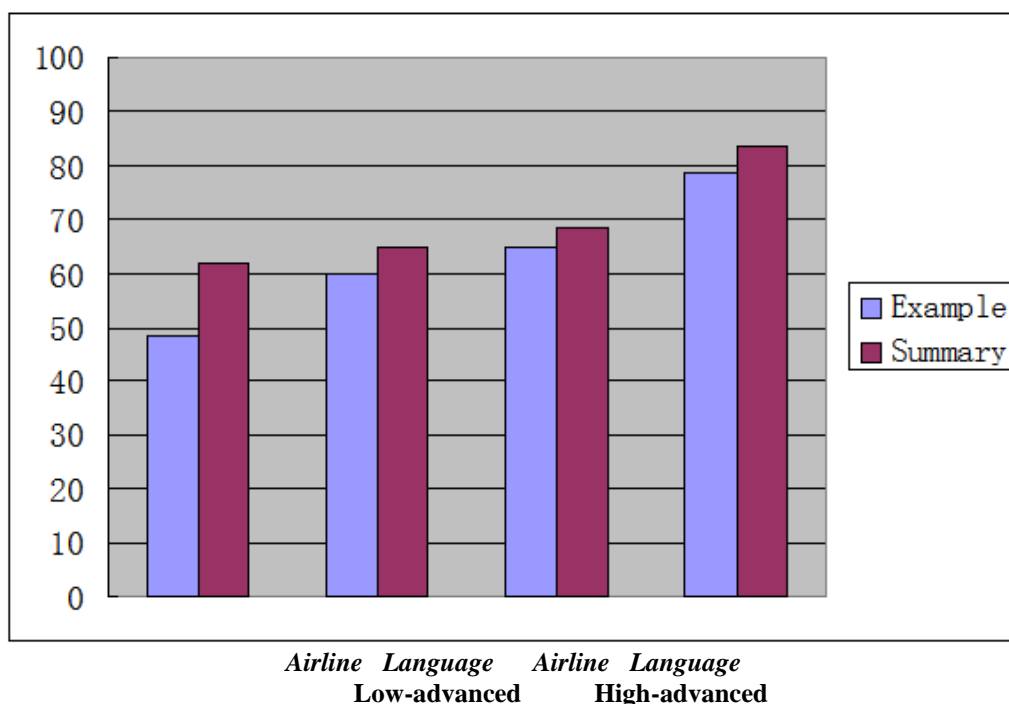

Airline   *Language*   *Airline*   *Language*
Low-advanced   **High-advanced**
Fig, 2. Mean comprehension scores for proficiency level, text content, and processing condition

For the low-advanced group, there was significant difference in comprehension performance for the two contents in the example condition, with mean scores of 48.070 and 59.919. In the summary condition, however, there was no significant difference in comprehension performance for the two contents, and mean scores are 61.586 and 65.010 respectively. And under the summary condition, the mean score for the Airline content is much close to that for the Language content(61.586 and 65.010) This result was different from that the original study yielded. The possible reason for this is that since the Airline content is a little more difficult than the Language one, difficulty in text comprehension increased the level of processing to produce a richer memory of the text. Working hard to produce a summary then increases comprehension of a difficult text. Thus summary advantage was evident here. It is also interesting to note that in the summary condition for the *Airline* passage, the mean comprehension scores for the low-advanced group are close to the scores of the high-advanced group 61.586 and 68.345). This result is quite similar to the original study, which illustrated that summaries apparently enable the lower group to close the gap in comprehension between the two groups for this more difficult passage.

For the high-advanced participants, differences between processing conditions are less evident with the *Airline* content, which is also consistent with the results of Oded and Walters' study. The reason is may be the higher proficiency students unconsciously constructing their mental models of text even when given a micro-level task like listing examples. Alternatively, the extra processing required for the *Airline* content may improved comprehension regardless of the task. However, the other content, *Language,* does show a significant difference between processing conditions for high-advanced group.

IV. Conclusion

This duplicated experiment, although has some slight differences in the results of the low-advanced group on different contents, generally speaking, it still can be considered to be consistent with the original study done by Oded and Walters (2001). As they pointed out, the reason for the advantage of summary-writing task is that when subjects wrote summaries, they paid much attention to the macro-structure and the main ideas of the text, thus to form a mental outline in their mind, which was used to guide their re-reading the text to answer comprehension questions, in this case, now information, including the detailed information could more easily be integrated. As Oded and Walters (2001) suggested in the end of their study, an educational implication of this advantage would be to train less skilled readers to write a summary of the main ideas as they read. It should be a good way to improve EFL readers' reading comprehension.

References

[1].   Craik, F. I. M. & Lockhart, R. S., Levels of processing: A frame work for memory research. *Journal of Verbal Learning and Verbal Behavior, (11),*1972, 671-684.
[2].   Oded, B., and Walters, J., Deeper processing for EFL reading comprehension, *System (29)*, 2001,357-370.

Appendix Ⅰ
Questions on *Airline*

1. The passage is mainly about_____.
   A) A new regulation for all airlines
   B) The defects of electronic devices
   C) A possible cause of aircraft crashes
   D) Effective safety measures for air flight
2. What is said about the over 100 aircraft incidents in the past 15 years?
   A) They may have been caused by the damage to the radio systems.
   B) They may have taken place during take-off and landing.
   C) They were proved to have been caused by the passengers' portable computers.
   D) They were suspected to have resulted from electromagnetic interference.
3. Few airlines want to impose a total ban on their passengers using electronic devices because_____.
   A) They don't believe there is such a danger as radio interference
   B) The harmful effect of electromagnetic interference is yet to be proved
   C) Most passengers refuse to take a plane which bans the use of radio and cassette players
   D) They have other effective safety measures to fall back on
4. What is true about the RTCA?
   A)   Setting rules to solve the safety problems facing airlines
   B) Calling for total ban of using portable electronic devices during all flight
   C) Prohibiting passengers from using portable electronic devices during take-off and landing
   D) Giving suggestions to the aviation industry
5 .Why is it difficult to predict the possible effects of electromagnetic fields on an airplane's computers?
   A) Because it is extremely dangerous to conduct such research on an airplane.
   B) Because it remains a mystery what wavelengths are liable to be interfered with.

C) Because research scientists have not been to produce the same effects in labs.
D) Because experts lack adequate equipment to do such research.
6. It can be inferred from the passage that the author_____.
  A) is in favor of prohibiting passengers' use of electronic devices completely
  B) has overestimated the danger of electromagnetic interference
  C) hasn't formed his own opinion on this problem
  D) regards it as unreasonable to exercise a total ban during flight

Questions on *Language*
1. By "...challenges explanation" (Line 2, Para.1) the author means that _____.
  A)no explanation is necessary for such an obvious phenomenon
  B)no explanation has been made up to now
  C)it's no easy job to provide an adequate explanation
  D)it's high time that an explanation was provided
2. The third paragraph is mainly about _____
  A)the development of babies' early forms of language
  B)the difficulties of babies in learning to speak
  C)babies' strong desire to communicate
  D)babies' intention to communicate
3. The author's purpose in writing the second paragraph is to show that children _____.
  A)usually obey without asking questions
  B)are passive the process of learning to speak
  C)are born cooperative
  D)learn to speak by listening
4.According to the passage, a_____baby begins to have the ability to imitate sounds or words deliberately.
  A)two months'
  B)three months'
  C)six months'
  D)seven months'
5. From the passage we learn that _____-
  A)early starters can learn to speak within only six months
  B)children show a strong desire to communicate by making noises
  C)imitation plays an important role in learning to speak
  D)children have various difficulties in learning to speak
6.The best title for this passage would be _____.
  A)How Babies Learn to Speak
  B)Early Forms of Language
  C)A Huge Task for Children
  D)Noise Making and Language Learning

Appendix Ⅱ

Table 1 Original data

Summary				Example			
Airline		Language		Airline		Language	
High-advanced	Low-advanced	High-advanced	Low-advanced	High-advanced	Low-advanced	High-advanced	Low-advanced
83.35	66.68	83.35	66.68	50.00	66.68	83.35	50.00
66.68	50.00	83.35	50.00	83.35	32.44	83.35	66.68
66.68	50.00	83.35	66.68	50.00	16.67	66.68	66.68
50.00	83.35	100.00	83.35	83.35	83.35	66.68	83.35
83.35	32.44	66.68	66.68	66.38	50.00	100.00	50.00
83.35	50.00	83.35	66.68	66.68	50.00	66.68	32.44
50.00	66.68	100.00	83.35	66.68	32.44	83.35	66.68
66.68	83.35	66.68	50.00	50.00	66.68	83.35	66.68
66.68	66.68	83.35	66.68	66.68	32.44	66.68	50.00
66.68	66.68	83.35	50.00	66.68	50.00	83.35	66.68

Yujing Zheng. "Deeper Processing For Better EFL Comprehension——A Duplicated Experiment Report." IOSR Journal of Research & Method in Education (IOSR-JRME) , vol. 7, no. 4, 2017, pp. 89–93.