

Role of Background Knowledge in Iranian EFL Learners' Reading Comprehension Test Performance

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Abstract

As far as reading comprehension is concerned, background knowledge bears significance for English as a foreign language (EFL) learners who take high-stake tests such as M.A. University Entrance Examination. The reading part of this test can pose a challenge for Iranian EFL test takers, some of whom may have enough background knowledge to enhance their performance on the reading comprehension test, which may question the validity of the test. To fill the gap in the related literature, this study examined the effect of EFL test takers' background knowledge on their performance on the reading part of English M.A. University Entrance Examination. To this end, 58 undergraduate students of English, aged 20-25, at Shahrekord University participated in the study. First, Topic Familiarity Ranking Measure and Topic Familiarity Rating Measure were employed to measure the participants' background knowledge. Then, the participants were asked to answer the reading comprehension items of 4 English M.A. University Entrance Examinations. The results of correlational procedures indicated that background knowledge had a positive correlation with reading comprehension performance for two passages, indicating that some test items were a little biased in favor of some test takers with relevant background knowledge. However, the results from multiple regression analysis revealed no statistically significant contribution of the test takers' background knowledge to their reading comprehension performance. The findings imply no serious threat to validity of the test from the construct-irrelevant variance due to the test takers' background knowledge, and offer implications for high-stake test developers in Iran.

Keywords: *Background knowledge, English M.A. university entrance examination, Reading comprehension, EFL learners, Tests*

1. Introduction

Reading, a complex process involving the activation of relevant knowledge and related language skills to recreate the writers intended meaning, can play a complementary role in the process of English as a foreign/second language (EFL/ESL) learning; reading comprehension skill becomes

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more important for EFL/ESL learners in higher education because it is crucial for academic success (Aysegül, 2012).

When considering reading comprehension performance on high-stake standardized tests, the development of fluent reading skills by EFL/ESL test takers is a challenging endeavor and reading comprehension tasks impose certain constraints on many EFL/ESL students. According to Chen (2008), a considerable percentage of EFL/ESL learners receive low ratings and mark below their native-speaking counterparts on standardized reading comprehension tests. Thus, it is important to find out the factors which affect EFL/ESL learners' performance in the reading comprehension process.

Furthermore, the reading comprehension process can involve interaction between the text and the EFL/ESL reader's prior knowledge (Meneghetti, Carretti, & De Beni, 2006). The theoretical support for this view comes from schema theory in which the role of background knowledge has been emphasized (Bartlett, 1932). According to this theory, meaning does not reside in the written material, instead the reader recreates the author's intended message based on the interaction that takes place in his head between the text and his background knowledge (Bernhardt, 1984). In line with this theoretical view, research indicates background knowledge can be involved in reading comprehension (Awabdy, 2012). However, the problem that may arise is when EFL test takers' content knowledge greatly affects their performance on reading tests.

In high-stake language testing, it is crucial to provide all test takers with equal opportunities to demonstrate their knowledge on the test. For test developers, understanding the behavior of individual items is very important for identifying potential item bias and reducing or eliminating biased items. According to Haladyna and Downing (2004), multiple factors can affect test validity and the researchers need to build a more robust understanding of these factors. When it comes to reading comprehension, understanding the effects of background knowledge in standardized reading tests becomes vital because test developers should provide unbiased passages that do not give advantages to test takers with the relevant schemata.

English MA University Entrance Examination is one of the most important high-stake tests in Iran because the results of the test takers' performance would have a great impact on EFL students' academic future. This exam has always been criticized as being invalid and nonstandardized (Razmjoo & Heydari Tabrizi, 2010). Because many criticisms have raised for validation and standardization of this test, the focus of the current study was to provide support to the (in)validity of the reading section of the test by identifying the predictability of the test takers' background knowledge on their test performance.

2. Literature Review

Background knowledge has long been assumed to have a role in one's reading comprehension (Rumelhart & Ortony, 1977). Several studies have demonstrated that background knowledge is a prerequisite for the text to be comprehended (Anderson, Reynolds, Schallert, & Goetz, 1977;

Schweller; Bransford, Nitsch, & Franks, 1977). Moreover, the contribution of background knowledge to the reading comprehension test has been the subject of investigation in EFL/ESL realm. Results of several studies (e.g., Alderson & Urquhart, 1984; Brown, 1982; Hale, 1988) have provided evidence that EFL/ESL learners performed better on the topic familiar text than the topic unfamiliar text. Despite the preponderance of studies that reported the advantage of topic familiar text over topic unfamiliar text, several recent studies (Awabdy, 2012; Liu, Schedl, Malloy, & Kong, 2009) indicated that there was no significant relationship between background knowledge and the reading comprehension test performance.

As the above review suggests, the results of previous studies investigating the effect of background knowledge on reading comprehension test performance are not consistent. To draw more valid and convincing conclusions about the effect of background knowledge on reading comprehension, more research should be carried out in different contexts. Furthermore, if tests are to provide an accurate measure of learners' language abilities, language testers should take into account the influence of intervening factors such as background knowledge. Thus, in the light of above issues, this study aimed at investigating the effects of background knowledge on the reading comprehension performance of EFL learners in the M.A. University Entrance Examination which has been administered as a high-stake test in Iran since 1990. To this end, the following research questions were addressed in this study:

Q1: How familiar are Iranian EFL students with the topics covered in reading passages found in English M.A. University Entrance Examination?

Q2: Do the ratings and/or rankings of background knowledge that Iranian EFL students assign to passage topics predict performance on reading section of English M.A. University Entrance Examination?

3. Method

3.1. Participants

Fifty-eight (10 male and 48 female) undergraduate English Translation students, aged 20-25, participated in this study. All of the participants belonged to the same racial group (i.e., Persian).

3.2. Instruments

The Topic Familiarity Ranking Measure and the Topic Familiarity Rating Scale were utilized to assess background knowledge of the EFL participants. Topic Familiarity Ranking Measure, comprising six topic descriptions, including a short summary of what each passage was about, was used to determine the relative level of background knowledge for specific topics that appeared in reading passages in the M.A. University Entrance Examination which has been administered to the participants.

Topic Familiarity Rating Scale was also used to measure background knowledge. It included a four-point Likert-type scale with 4 values (1 = *Not familiar at all*, 2 = *A little familiar*, 3 = *Somewhat familiar*, and 4 = *Very familiar*).

Lastly, reading comprehension was assessed using six reading comprehension passages, namely Neanderthal, Jazz Music, Global Warming, Waste Material, Chemistry, and Modern Family. Six reading passages following multiple-choice reading comprehension items were selected from the M.A. University Entrance Examination. The tests were administered in 1391, 1392, 1993, and 1994. Using Cronbach's Alpha coefficient, the reliability computed for reading test in this study was .76 which was quite satisfactory.

3.3. Procedure

During the first visit, the Topic Familiarity Ranking Measure was administered to the participants. After distributing the topic descriptions and written instructions, EFL participants were asked to rank passages labelled as A through Passage F by writing a unique rank number on each description strip. They were supposed to rank the least familiar topic descriptions from 1 to 3 according to familiarity (with rank 1 being the least familiar). Then, they were asked to rank the most familiar topic descriptions from 4 to 6 (with 6 being the most familiar).

One week later, the reading passages, released from M.A. University Entrance Examination, were administered to 58 EFL participants. During this visit, the EFL participants were asked to read the passages, rate them using the Topic Familiarity Rating Scale, and then, answer the related test items following each passage.

In the next step, researchers reviewed the reading passages that had been given to the EFL participants. The values for Familiarity Rating for each passage were totalled for each participant that represented the perceived overall background knowledge regarding all topics used in the M.A. University Entrance Examination.

3.4. Analysis

To assess topic familiarity levels for the reading passages, several variables including Familiarity Ranking, Individual Familiarity Rating, and Total Familiarity Rating scores were utilized. Descriptive statistics (i.e., frequencies, median ranks, and mode ranks) were estimated for Familiarity Ranking scores for each of the six passages. Furthermore, descriptive statistics (i.e., rating scores, frequencies, means, and standard deviations) were calculated for Individual Familiarity Rating for each passage. For Total Familiarity Rating scores, descriptive statistics (i.e., means and standard deviations) were estimated for each passage. Regression analysis was also performed to know whether there is any relationship between background knowledge and reading comprehension performance.

4. Results

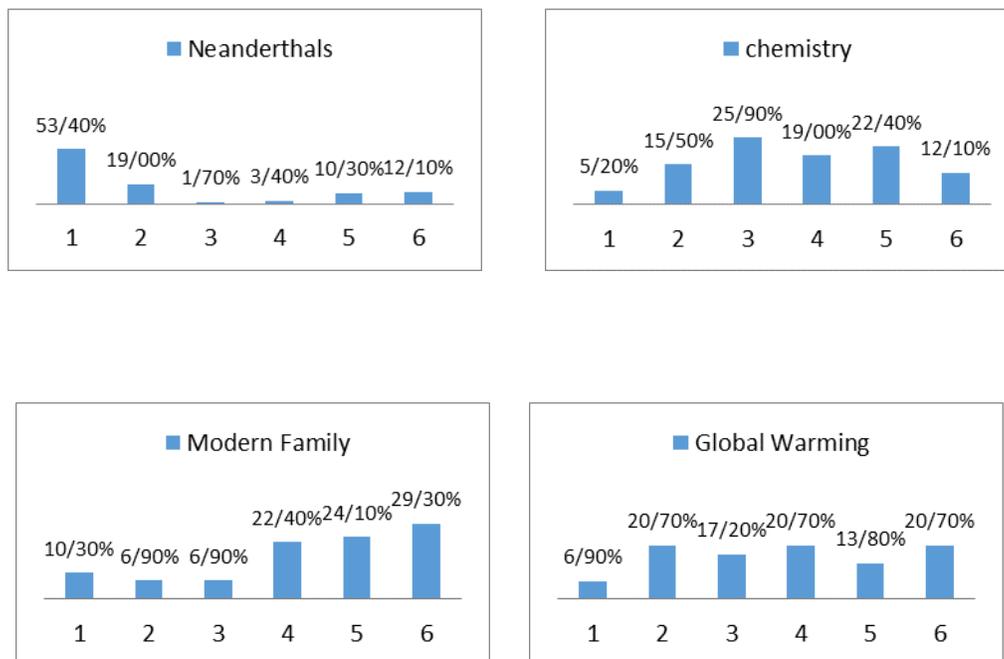
4.1. Results for topic familiarity measures

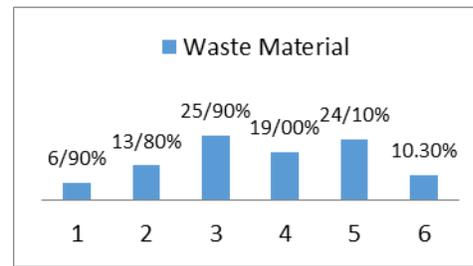
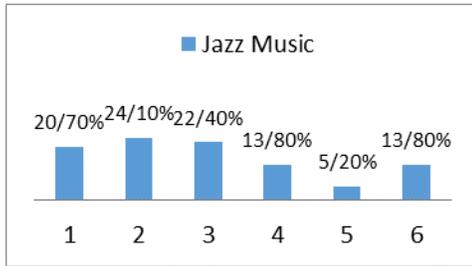
Figure 1 provides a visual representation of the Topic Familiarity Ranking Measure Results for each passage. For the ‘Neanderthals’, 53.4% of the participants gave a familiarity ranking of 1. Median of 6.5 suggests that this passage is among the least familiar passages. As can be seen in Figure 1, 25.9% of the participants gave a familiarity ranking of 3 to ‘Chemistry’. The chemistry topic with a mode of 3 and a median of 10 is among the least familiar passages.

For ‘Modern Family’, 24% of the participants gave familiarity ranking 5. This passage with mode of 5 and median of 9.5 is among the most familiar passages. For ‘Global Warming’, 42.4% of the participants gave familiarity ranking 4 or 6. This passage is among the most familiar passages with multiple modes of 2, 4, 6, and median of 11.

According to Figure 1, for ‘Jazz Music’, 67.5% of the participants gave familiarity ranking of 1, 2, and 3. This passage with mode of 2 and median of 10 is among the least familiar passages. Finally, 43 % of the participants gave a familiarity ranking of 4 or 5 to ‘Waste Material’. The waste material topic with a mode of 3 and a median of 9.5 is among the least familiar passages.

Figure 1. Frequency distributions of topic familiarity ranking for all passages





Findings of the Topic Familiarity Rating Measure indicated that participants rated the topics of Neanderthal, Jazz Music, Global Warming, Waste Material, Chemistry, and Modern Family, from least to most familiar, respectively. The mean rating for each passage can be found in Table 1.

Table 1. Descriptive statistics for reading comprehension performance and background knowledge rankings and ratings for each passage

	Item	SD	Rating	M	r for	r for	r for	M (SD) for	Items
	Rank			Rating	Rank/	Rank/	Rating/	RC Items	in
	(1-6)			(1-4)	Rating	RC	RC		Passage
Neanderthal	1	.753	1.45	.86**	111	-.030	4.47 (1.39)	7	
Chemistry	3	0.821	2.47	.61**	108	.250	2.6 (.917)	6	
Modern Family	6	.777	2.47	.287*	106	.273*	3.67 (1.39)	7	
Global Warming	2	.672	2.07	.41**	181	.144	3.03 (1.24)	7	
Jazz Music	2	.767	1.79	.45**	107	.058	1.24 (1.23)	3	
Waste Material	3	.782	2.14	.456	133	.390**	2.76 (1.49)	6	
Overall RC	N/A	N/A	N/A	N/A	N/A	N/A	12.26 (2.35)	36	

Note: RC = Reading Comprehension.

N/A = Correlation

* $p < .05$, ** $p < .01$

Moreover, to determine the consistency between the measures of background knowledge (i.e., rating and ranking), the results from the two background knowledge measures were compared through the correlational statistics. The results revealed significant positive

correlations for Neanderthal, Jazz Music, Global Warming, Chemistry, and Modern family. As can be seen in Table 2, a positive correlation was found for the waste material topic. Thus, the overall correlation for the two measures was strong and positive.

4.2. Comparing background knowledge findings to reading comprehension findings

The Pearson correlation coefficient was performed to know if there is any significant relationship between the two background knowledge measures and reading comprehension performance. Negative correlations were found between background knowledge rankings and reading comprehension for all passages, except for Chemistry which had a positive nonsignificant correlation with the rankings (Table 1).

Whereas the correlation analysis revealed negative correlations between the ratings and the reading comprehension performance for Neanderthals and Jazz Music, positive nonsignificant correlations were found for Chemistry and Global Warming. Furthermore, statistically significant positive correlations were found between the ratings and reading comprehension test performance for Modern Family and Waste Material at both .05 and .01 levels. Overall, the positive correlation coefficients between Topic Familiarity Rating Measure and the reading comprehension performance provided support for the strength of the relationship.

4.3. Influences on reading comprehension performance for each passage

To know if there was a relationship between predictor variables and dependant variable (i.e., reading comprehension performance) for each passage, all relevant variables were clustered into two blocks: Block 1 included overall reading comprehension test performance and block 2 included the predictor variables (i.e., Total Topic Familiarity, Rating Topic Familiarity, and Ranking Topic Familiarity). To determine the impact of knowledge of a specific topic versus general knowledge of all topics discussed on the reading comprehension test performance, the individual knowledge variables were included. Results are displayed in Table 2.

Table 2. Variance in reading comprehension performance per passage accounted for by background knowledge variables

	Neanderthal	Chemistry	Modern family	Global Warming	Jazz Music	Waste Material
Block1 RC						
<i>t</i>	4.457	3.959	4.766	5.322	4.722	4.628
Block2 BK						
TF Beta	.216	.045	.065	.40	.404	.005

<i>t</i>	1.620	.301	.389	.250	2.963	.31
<i>R</i> ²	.253	.253	.253	.253	.0253	.0253
Ranking Beta	.401	.118	-.166	-.303	.121	-.025
<i>t</i>	2.523	.842	-1.160	-2.079	.880	-.189
<i>R</i> ²	.068	.041	.152	.062	.020	.0001
Rating Beta	-.248	.228	.157	.176	-.564	.318
<i>t</i>	-1.507	1.425	.908	1.035	-3.703	2.136
<i>R</i> ²	.002	.086	.244	.009	.114	.101

For Neanderthal, Global warming, and Modern Family, the largest Beta value belonged to ranking measure. For Chemistry, Waste Material, and Jazz Music, the largest Beta value belonged to rating measure.

The Beta value more than 0.5 for Jazz Music showed that Topic Familiarity Rating measure significantly contributed to reading comprehension.

For the Neanderthal, Chemistry, Modern Family, Waste Material, and Global Warming, the Beta values were less than 0.5. Thus, background knowledge variables did not make a significant contribution to the prediction. Moreover, the multiple analysis for each passage showed the variances (Neanderthal = 8%, Chemistry = 4.8%, Modern Family = 1%, Global Warming = 4.8%, Jazz Music = 19.5%, and Waste Material = 5.1%) of predictor variables (Total Topic Familiarity, Topic Familiarity Rating, and Topic Familiarity Ranking) in predicting reading comprehension performance did not make a unique contribution.

In a nutshell, the results shed light on the fact that Total Topic Familiarity, Topic Familiarity Ranking measure, and Topic Familiarity Rating measure did not contribute significantly to M.A. University Entrance Examination reading comprehension performance.

5. Discussion

The present research examined whether items on the reading items of English M.A. University Entrance Examination favored test takers with certain content background knowledge. Although background knowledge was significantly contributed to the reading comprehension performance on two reading passages of the test, the findings supported no significant association between the test takers' background knowledge and their reading performance, in general. Despite criticism (e.g., Razmjoo & Heydari Tabrizi, 2010) regarding construct validity of English M.A. University

Entrance Examination, no major threat was found to construct-irrelevant validity of its reading section due to background knowledge.

A close examination of both Ranking and Rating measures revealed that the EFL participants were less familiar with three passages (Neanderthals, Chemistry, and Jazz Music) and more familiar with two passages (Modern Family and Global Warming). The reason may be that the content in the more familiar passages were more general than the content in the less familiar passages. The topics in Neanderthals, Chemistry, and Jazz Music required specialized knowledge of the content. In general, the results showed that a correlation existed between the background knowledge measures. Nevertheless, we should be cautious because there was a small inconsistency for one of the passages, namely Waste Material regarding the ranking and rating measures.

When examining the predictability of background knowledge variables on the reading comprehension, the results of the present study confirmed that background knowledge measures were slightly different in the degree of their predictive ability on the EFL test takers' reading performance. Low correlations were found between ranking scores and reading comprehension performance, except for Chemistry. This may show Ranking Measure could not predict the role of the test takers' schemata on their reading performance. Total Topic Familiarity Rating values revealed both negative and positive correlations with reading comprehension performance depending on the type of topics. Only two passages, Modern Family and Waste Materials, revealed positive significant correlations between background knowledge and reading comprehension. This may root in the fact that these topics were considered to be more general for the EFL test takers. Two passages of Chemistry and Global Warming also had positive and nonsignificant correlations with reading comprehension.

The above results of correlational analysis for these two passages were somehow unexpected; although the topics were specific, the test takers showed better reading comprehension scores. These findings may confirm the claim made by some researchers like Hill and Liu (2012), who argue that when the content is more general, it requires less back ground knowledge. Therefore, the effect of background knowledge would not be highly predictable when the content is specific to the EFL learners. It may also be due to the low level of complexity in the texts. The background measures for other two passages, Neanderthals and Jazz Music, were negatively associated with reading comprehension performance. A plausible explanation might be that these passages were more difficult for the EFL readers. They included abstract terms and required specialized knowledge. The above finding provides evidence to support the findings of Hill and Liu (2012) and Awabdy (2012); they have concluded that background knowledge does not always work to one's advantage and that it does not have a lasting effect on reading performance; its effect varies depending on the text type.

It seems that background knowledge can interact with the complexity of topical content. Hence, further research needs to be conducted to explore its direct and mediated effect. The future investigations should answer questions such as the factors which interact with background knowledge on the performance of reading sections in standardized test. As Awabdy (2012) states, there are many other factors that contribute to students' reading comprehension. For

instance, students' comfort level, confidence, and interest in the topics are a few among others. In summary, test takers prior knowledge about specific topics in reading comprehension cannot necessarily guarantee a better performance on reading tasks.

6. Conclusion

This study investigated the relationship between background knowledge and the reading comprehension performance on English M.A. University Entrance Examination. With respect to the first research question, findings indicated that the correlations between the test takers' background knowledge and the reading section of the English M.A. Entrance Examination varied by passage. Significant positive correlations between background knowledge and reading comprehension were found for 30% of the passages. It is likely that the difficulty of passages and reading items in the English M.A. University Entrance Examination, as well as the length of the passages affected the outcomes of reading comprehension performance. As a result, the conclusion for the presence of a positive and strong relationship between background knowledge and reading comprehension performance is tentative. In examining the predictive nature of background knowledge for reading comprehension, consistent results were not found. The correlation coefficients varied by passage. These findings, then, support the idea that the contents of reading passages in English M.A. University Entrance Examination were not strongly biased for or against specific the EFL test takers. However, because two passages were favored by the test takers with prior knowledge, further research should consider the validity of the English M.A. University Entrance Examination.

Since the participant were selected based on convenience sampling, they might have not been representative of all Iranian EFL students who take English M.A. University Entrance Examination. Furthermore, Topic Familiarity Rating Measure might not be a perfect measure to assess test takers' background knowledge. Hence, the results of this study could be enriched by future studies with a larger sample size and other measures of background knowledge. Moreover, the test takers in the present study read several lengthy passages. Future researchers can use shorter texts.

The current study advances our understanding of the effect of background knowledge in reading comprehension on English high stake tests. As Hill and Liu (2012) state, background knowledge may vary across tasks and proficiency groups; therefore, it is necessary to investigate the conditions when background knowledge can affect test performance. The results of the current study imply that test developers should aim at providing all test takers with unbiased test items benefiting certain EFL test takers; instead, increasing background knowledge should be a focal point of instructional activities that occur during the school day.

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