The Reading Matrix © **2014**
Volume 14, Number 2, September 2014

EFL Reading Comprehension, Individual Differences and Text Difficulty

Neslihan Bilikozen
American University of Sharjah

Ayse Akyel
Yeditepe University

ABSTRACT

This study explores the relative contribution to EFL reading comprehension of the following individual-difference variables: prior knowledge, topic interest, linguistic proficiency, gender, reading motivation, and metacognitive awareness. It also investigates the relationship between the aforementioned individual differences and the role of text difficulty in EFL reading comprehension. The participants of the study are 66 Turkish students studying English for academic purposes at a state university in Turkey. The participants' level of reading comprehension was assessed through reading recall protocols. The data, which have been collected through several tests and questionnaires, are analyzed using hierarchical multiple regression procedures. Results indicate that linguistic proficiency, reading motivation and prior knowledge, in order of significance, account for 54% of the variability in the reading comprehension of the participants. Furthermore, text difficulty is found to have an influence on the contribution to L2 reading comprehension of the selected individual-difference variables.

INTRODUCTION

Second language (L2) reading is a multifaceted, complex process in that it involves the interplay of a wide range of components. As a result, although most of the reviews on L2 reading research start with an attempt to answer the question 'What is reading?', nearly all of them go on to state that it is such a complex concept that no definition of reading, which is clearly stated, empirically supported, and theoretically unassailable, has been offered to date (e.g., Aebersold, & Field, 1997; Alderson, 2000; Bernhardt, 1991; Grabe & Stoller, 2002; Urquhart&Weir, 1998).

Grabe (2009) notes that a proper definition of reading will need to account for what fluent readers do when they read, what processes are used by them, and how these processes work together to build a general notion of reading. Granting that no single statement can capture the complexity of reading, Grabe (2009) states that reading can be

conjured as a complex combination of processes – processes that are rapid, efficient, interactive, strategic, flexible, evaluative, purposeful, comprehending, learning, and linguistic (p. 14). In the most general terms, it can be stated that reading is a process that involves the reader, the text, and the interaction between the reader and the text (Eskey, 1988; Grabe, 2009; Grabe & Stoller, 2002; Koda 2005; Rumelhart, 1977; Weir & Yan, 2000). Reading researchers' continuous attempts to explain how the reader and the text components interact, and how this interaction results in reading comprehension have paved the way to the conceptualization of a number of reading models, each focusing on different aspects of reading.

The present study focuses on readers as individuals, and attempts to better understand the way individual differences contribute to foreign language reading comprehension. Accordingly, the theoretical background of the study originates from the following fields: L2 reading theory and L2 reading research on individual differences.

BACKGROUND

L2 Reading Theory

Reading models are broadly classified into two categories: 1) Process models, and 2) Componential models. While the process models attempt to describe the actual process of reading as a cognitive activity operating in real time according to temporal sequence (Weir & Yan, 2000), the componential models focus on what components are thought to be involved in the reading process (Urquhart & Weir, 1998). Process models, also known as "metaphorical models" (Grabe, 2009, p. 88), are usually listed as bottom-up, top-down, and interactive models. As the name suggests, metaphorical models represent generalizations about the comprehension process. "As introductions to reading comprehension processing, they are useful because they make fundamental processing ideas accessible to interested individuals. However, they obscure important details, ignore critical distinctions, and typically do not accurately reflect more current views of reading" (Grabe, 2009, p. 89).

As opposed to process models, componential models attempt to model the reading ability rather than the reading process, and to understand reading as a set of theoretically distinct and empirically separable constituents (Berhnardt, 1991; Coady, 1979; Hoover & Tunmer, 1993). In other words, while process models seek to describe how the factor operates, componential models limit themselves to arguing that such and such a factor is actually present in the reading process (Urquhart & Weir, 1998). The objective of a componential approach, as stated by Carr and Levy (1990), is to identify specific individual differences influencing reading, investigate their functional interdependence, and in so doing, determine their relative contributions to the general reading ability.

Similarly, Grabe and Stoller (2002) maintain that fluent reading can be better understood if analyzed into a set of component skills. According to their taxonomic view of reading comprehension, the components involved in reading are divided into two main categories: lower level and higher level processes. While lower level processes represent the more automatic linguistic processes, the higher level processes include comprehension processes that make much more use of the reader's background knowledge and inferencing skills.

Componential models of reading have gained considerable attention from EFL researchers. Koda (2005), for instance, notes that the componential approach can help dissect closely interwoven competency elements inherent in reading ability; shed light on the place of L2 knowledge in L2 reading comprehension by determining the multifaceted connection patterns between the two multidimensional constructs, that is, linguistic knowledge and reading ability; and explicate the impact of "restricted L2 sophistication" (p. 195), which is another competence dimension associated with L2 reading ability. In Koda's words:

> By comparing and contrasting ways in which component skills contribute to reading performance in L1 and L2 within individual readers, we should be able to pinpoint specific deficiencies attributable to limited L2 linguistic sophistication. Furthermore, similar comparisons of individuals across proficiency levels could also allow us to determine, with increased proficiency, which deficiencies are most easily overcome. (p. 195)

Individual Difference Research on L2 Reading

Ellis (1994) states that there is still no comprehensive theory of individual differences in second language acquisition (SLA) research. According to him, a comprehensive theory will need to do the following: 1) to identify those individual differences that are important for successful learning, 2) to specify how they interrelate, and 3) to indicate the relative contribution of particular individual differences to learning. However, research on individual differences has revealed little about the relative influence of different learner factors or how they interrelate (Ellis, 1994).

Although there are several SLA studies that include discussions of individual differences, these studies do not specifically examine the individual differences thought to contribute to variations in L2 reading comprehension. Moreover, the research on individual differences has not been consistent in its attempt to identify which variables to examine. These inconsistencies in classifications raise difficulties in synthesizing the results of different studies (Ellis, 1994).

Koda (2005) reports two traditions of individual difference research in reading: 1) Single-focus studies, and 2) Component-skills studies. In single-focus studies only one or two individual differences are investigated. Although single-focus studies identify many factors directly associated with successful reading comprehension, most are primarily correlates of reading ability. Thus, they offer little direct explanation of reported performance variations. Therefore, Koda suggests that individual difference research should go beyond examinations of single skills separately. The alternative for single-focus studies is component skills approach, which seeks to separate the interwoven components, explore their functional interdependence, and in turn, to determine their relative contributions to overall reading ability (p. 190).

A considerable number of single-focus studies have revealed the importance of various individual-difference variables in L2 reading; to name a few, prior knowledge (Adams, 1982; Alderson & Urquhart, 1988; Barry & Lazarte, 1995; Brantmeier, 2005; Carell, 1983; Chen & Donin, 1997; Johnson, 1982; Hammadou, 1991; Hudson, 1982; Leeser, 2007; Mohammad & Swales 1984; Nunan 1985; Olah, 1984; Omaggio, 1979), topic interest (Carrell & Wise, 1998; Lee, 2009), gender (Brantmeier, 2003; Bügel &

Buunk, 1996; Pae, 2004; Schueller, 2004), motivation to read (Bamford, 1998; Gardner, 1985; Mori, 2002; Takase, 2003), metacognitive awareness (Baker & Brown, 1984; Carrell 1989; Garner, 1987; Phakiti, 2003, 2008; Pressley & Afflerbach, 1995).

More recently, some researchers have also drawn attention to the role played by linguistic proficiency in the interactions between individual-difference variables and L2 reading comprehension. For instance, Brantmeier conducted a series of studies on the role of readers' gender and passage content on L2 reading comprehension. In one study, Brantmeier (2003) reported significant interactions between readers' gender and gender-oriented passage content with comprehension among intermediate second language learners of Spanish at the university level. Findings revealed that there were significant interactions between readers' gender, topic familiarity, and L2 reading comprehension measured by both written recall and multiple-choice questions. The results of the study provided evidence that topic familiarity had a facilitating effect on L2 reading comprehension by gender at the intermediate level of Spanish language instruction. However, Brantmeier (2002) found no significant interaction between these variables with advanced Spanish learners. She found that significant differences in topic familiarity were maintained across instruction levels whereas the effects of passage content on L2 reading comprehension by gender were not maintained when the intermediate text was read by more advanced learners. While at intermediate level male and female readers got better reading scores on familiar topics, at more advanced levels male and female performance on L2 reading comprehension tasks was no longer affected by gender-oriented passage content.

Purpose of the Study

This study has two main goals: to examine the relative contributions to foreign language reading comprehension of a number of important individual-difference variables and to investigate the relationship between the contribution to foreign language reading comprehension of these individual-difference variables and text difficulty. The selected individual-difference variables are prior knowledge, topic interest, linguistic proficiency, gender, motivation to read, and metacognitive awareness. It has been difficult to decide which individual-difference variables to focus on since there is still no comprehensive theory of individual differences in SLA research (Ellis, 1994). The same is true for L1 and L2 reading research. While inconsistencies in classifications has raised difficulties, the final decision has been based on the common individual differences listed in most of the existing theories (e.g., Altman, 1980; Ellis 1994; Larson-Freeman & Long, 1991; Lightbown & Spada 1999; Skehan, 1989), guided by the researchers' interests and perspectives, and had to be restricted with the number of research participants.[1]

Hence, the following research questions have been asked:

1. What are the relative contributions to foreign language reading comprehension of individual-difference variables such as prior knowledge, topic interest, linguistic proficiency, gender, motivation to read, and metacognitive awareness when intermediate and advanced EFL learners read an intermediate text for general comprehension?

2. How does the contribution of these individual-difference variables relate to text difficulty?

Significance of the Study

As it was noted previously, although individual variations in SLA have been examined to some extent (e.g., Altman, 1980; Ellis 1994; Larson-Freeman & Long, 1991; Lightbown & Spada 1999; Skehan, 1989), there is still a need for research explaining the role of individual differences in accounting for the variability in foreign language reading comprehension (Brantmeier, 2003; Koda, 2005).

Koda (2005) indicates that studying individual differences in L2 reading can provide useful information for both reading theory and practice. On theoretical grounds, such research can shed light on to what she calls "two fundamental puzzles" (p. 181) in reading research: 1) What constitutes successful reading, 2) What precisely distinguishes strong from weak readers. On pedagogical grounds, individual difference studies can increase instructional quality by providing L2 teachers with a clearer understanding of individual variations, and thereby encouraging them to adapt their instruction to the diverse needs of individual learners. He goes on to explain that for instruction to be efficient, intervention must target skills that are causally related to reading performance. Practitioners can identify which skills to emphasize with greater accuracy once they have a clearer understanding of variations in competencies and their direct effect on reading performance.

The present study holds a component-skills approach to examining individual differences influencing L2 reading since the objective of the study is to explore the relative contributions to foreign language reading comprehension of several individual differences. As noted earlier, a component-skills perspective is argued to be more suitable for examining individual differences in L2 reading rather than single-focus studies. Thereupon, this study can be considered as an attempt to provide some insights into this research area, which, according to Koda (2005) "has not been fully explored yet, despite its potential utility" (p. 195).

METHOD

Participants

The research was conducted at an English-medium state university in Istanbul, Turkey. A total of 66 students studying English for academic purposes took part in the study. The students had different majors; however, in order to matriculate into their respective disciplines, they were required to demonstrate a specific level of English language proficiency. Half of the participants were advanced students; the other half was made up of intermediate students. The students had been placed into English classes according to their linguistic proficiency levels determined by the university's English proficiency test, whose minimum passing score is accepted as the equivalent of 550 on the paper-based version of the TOEFL. They had also received high scores on the verbal sections of the national university entrance examination (ÖSS) administered in Turkish. The participants, therefore, were homogeneous with regards to their reading ability in L1 and L2. Of the 66 students who participated, 31 were female and 35 male. The average age was 19, ranging from 17 to 24. The following table shows the distribution of students in the two classes by gender.

Table 1. The Distribution of the Female and Male Students at Two Linguistic Proficiency Levels

	Female	**Male**
Intermediate students	13	20
Advanced students	18	15
Total	31	35

Data Collection

Topic Interest Test

The topic interest questionnaire (Appendix C and D) was adapted from Schiefele, 1996. The test comprised two parts. In the first part, the participants were asked to estimate the value of the text's topic to them personally by using the terms: "meaningful", "unimportant", "useful", or "worthless". In the second part, the participants were asked to estimate how they expected to feel while reading the text in question by using the following adjectives: "bored", "stimulated", "interested", "indifferent", "involved", or "engaged". All of the items in the questionnaire were rated on four-point rating scales, "4 - completely true" implying complete agreement with a specific feeling, and "1 - not at all true" implying complete disagreement with that feeling. The internal reliability of the topic interest test was calculated to be .874 (Cronbach's alpha: .874).

Prior Knowledge Test

Before reading each selected text, the participants were asked to take a prior knowledge test developed by the researcher (Appendix A and B). Two experts examined and provided feedback regarding the content of the tests.

The prior knowledge test on the intermediate text included 5 multiple choice and 7 true/false questions. The prior knowledge test on the advanced text, on the other hand, was composed of 7 multiple choice and 12 true/false questions. While some of the questions in both tests were related to information contained in the text, some questions were asked for domain knowledge which was not directly addressed in the text.

Both of the tests met the requirements for internal reliability. The mean inter-item correlation for the prior knowledge test on the intermediate text was calculated to be .481. The split half reliability of the prior knowledge test on the advanced text was found to be .801 (Spearman-Brown coefficient: .801).

Reading Passages

An intermediate and an advanced text developed by the curriculum committee constituted the reading materials used in this study. Both of the texts were four pages long. One was related to the nature of stress and its influences on people's lives, and the other one was a text on the structure of human brain and split brain studies. They were modified authentic texts and part of the regular curriculum followed by the instructors of both the intermediate and the advanced classes. These texts were chosen to ensure the testing

situation was similar to the typical class as much as possible. The data were collected towards the middle of the semester so the students were familiar with the type and format of the reading materials.

While the intermediate text was read by both the intermediate and advanced students, the advanced text was only read by the advanced students.

Recall Protocol

The participants were asked to write down the text content as completely as possible in their native language, Turkish, immediately after they read the given texts. They were, however, allowed to switch to English if they felt more comfortable to do so. All of the students preferred to write in Turkish, but occasionally used English, especially when referring to the specific scientific terms used in the texts.

The first step in analysing the recall protocols was dividing the original texts into idea units. As stated by Alderson (2000, p. 230), "an idea unit is somewhat difficult to define, and rarely addressed in the literature". Schiefele (1996) defines it as a meaningful information complex that corresponds to a proposition. The identification of idea units in this study does not include the structural or meaning relationships between text units, in contrast to a complete propositional analysis which includes the hierarchical nature of relationships between the idea units (Meyer, 1975). To be more specific, in this study, an idea unit corresponds to a simple sentence, a sentence including an adverbial clause, adjective clause, noun clause, or a verb phrase.

The parsing of the original texts into idea units was done by two independent raters, and then checked by two other experts. Disagreements were resolved through discussion. To further clarify how idea units were identified in the reading passages, the parsing of one paragraph into idea units is given as an example (see Appendix H).

Each idea unit in the texts recalled by the students was given '2' points when the idea was the complete copy or paraphrase of the original unit. '1' point was given if the idea unit in question was incomplete, and '0' point was given when the idea was wrong, new, or repetition of a previously stated idea. The comprehension scores were calculated by adding the points given to each idea unit. Two independent raters scored the texts recalled and written by the participants, and an inter-rater reliability of .986 was found.

Reading Motivation Questionnaire

The instrument used to assess reading motivation in this study was adapted from the Motivation for Reading Questionnaire (Wigfield & Guthrie, 1995). Since Wigfield and Guthrie's motivational scales were specifically developed for primary school students learning to read their L1, some items appearing in the Motivation for Reading Questionnaire (MRQ) were not considered directly applicable to university students learning English as a foreign language. Thus, some items in the original questionnaire were eliminated and some were slightly changed so that the questionnaire would be more relevant to the participants and the context in which this study was carried out. Two experts -a specialist in foreign language testing and a specialist in foreign language reading- contributed to the adaptation of the questionnaire. The items that were eliminated and changed are shown in Appendix G.

The MRQ assesses 11 possible dimensions of reading motivation which are categorized under three major learner factors that affect reading comprehension: 1) Competence and Efficacy, 2) Achievement Values and Goals, 3) Social Reasons for Reading.

The adapted version of the MRQ used in the present study (Appendix E) comprises 54 items in total: four items in the "reading efficacy" part, six items in the "challenge" part, seven items in the "curiosity" part, six items in the "reading involvement" part, two items in the "importance" part, two items in the "recognition" part, six items in the "grades" part, two items in the "social" part, four items in the "competition" part, seven items in the "compliance" part, and finally eight items in the "reading avoidance" part. The items are scored on a 1 to 5 likert scale (1 = strongly disagree, 5 = strongly agree). The internal reliability of the questionnaire is .791 (Cronbach's alpha: .791).

Metacognitive Knowledge Questionnaire

The metacognitive questionnaire, developed by Carrell (1989), included 36 items eliciting information from the participants as to their metacognitive conceptualizations or awareness judgments about their silent reading strategies in English as a foreign language. Six of the items were about the participants' abilities in reading in English and provided a measure of students' confidence in English. Five of the statements were pertaining to what the students do when they do not understand something in the text. The following seventeen statements were about the participants' perception of effective reading strategies, and the last eight items were asked to learn about the participants' perception of things that may cause difficulty in reading in English. All of the items are rated on a 1 to 5 Likert Scale (1 = strongly disagree, 5 = strongly agree). The internal reliability of the questionnaire was found to be .819 (Cronbach's alpha: .819).

Procedures

In the advanced class, the data collection was completed in four sessions, all of which took place in concurrent weeks. In the first session, following the implementation of the topic interest questionnaire, the prior knowledge test was administered. Next, the students were asked to read the intermediate text and write down the text content as completely as possible in their native language, Turkish. The total amount of time the first session took was two hours. The intermediate students went through the very same procedure as the advanced class in the same week. The following week, the same session was repeated in the advanced class with the advanced text this time. Both the advanced and intermediate students were given two hours to read the text and complete the recall protocol. In the third week of the data collection procedure, the reading motivation questionnaire was implemented in both of the classes. In the fourth week, the students at both levels took the metacognitive awareness questionnaire.

The language of the prior knowledge and topic interest tests as well as the motivation to read and metacognitive awareness questionnaires was English. However, the researchers were ready to respond to any questions that came to mind as the students worked through the tests and questionnaires and decided on their answers. Moreover, the

participants in both classes were given ample time to complete the tasks. The sessions ended when all of the participants had finished.

Prior to all data collection, the participants were assured of total anonymity and confidentiality and the right to withdraw from the study at any time. After the aims of the research were clarified, the participants' consent was sought. All of the sessions took place in the normal class hours with the permission and the co-operation of the classroom teachers.

RESULTS AND DISCUSSION

Research Question 1

Hierarchical multiple regression analysis was used to answer the first research question: What are the relative contributions to foreign language reading comprehension of individual-difference variables such as prior knowledge, topic interest, linguistic proficiency, gender, motivation to read, and metacognitive awareness when intermediate and advanced EFL learners read an intermediate text for general comprehension?

The decision regarding which variables would enter the equation was made after examining the relationships among the independent variables (i.e., prior knowledge, topic interest, linguistic proficiency, gender, motivation to read, and metacognitive awareness) and the dependent variable (i.e., reading comprehension).

Table 2. Intercorrelations among Variables for the Advanced and Intermediate Groups Reading the Intermediate Text

	2	**3**	**4**	**5**	**6**	**7**
1.Reading comprehension	.37*	.596**	.385**	.084	.05	.375**
2.Gender	--	-.129	-.205	.013	.39**	-.163
3.Linguistic proficiency		--	.230*	-.145	.125	.168
4.Prior knowledge			--	.015	-.096	.016
5.Topic interest				--	-.078	.213
6.Metacognitive awareness					--	.123
7.Motivation to read						--

*p<.05. **p<.01

The independent variables with insignificant relationships with the dependent variable (i.e., reading comprehension) did not enter the multiple regression analysis. Thus, the independent variables that entered the equation were linguistic proficiency, prior knowledge, motivation to read, and gender. The assumptions of multicollinearity for the predictor variables, normality, linearity, and uncorrelated residual terms were checked, and it was found that none of these assumptions constituted a problem for this analysis. Table 3 shows the results of the regression analysis.

Table 3. Beta Weights Obtained in Multiple Regression Analysis Explaining the Variability in Reading Comprehension of both the Intermediate and Advanced Students on the Intermediate Text 'Stress'

Independent Variable	Step 1		Step 2		Step 3		Step 4	
	Beta	T	Beta	T	Beta	T	Beta	T
Linguistic proficiency	.622	5.61***	.551	5.05***	.481	4.61***	.475	4.63***
Prior knowledge	--	--	.274	2.52*	.283	2.8*	.249	2.42*
Motivation to read	--	--	--	--	.303	3.03*	.292	2.94*
Gender	--	--	--	--	--	--	.144	1.43

p<.05. **p<.01, ***p<.0001
Note. N=52
Note. Beta weights are standardized multiple regression coefficients.

At the first step of the analysis, linguistic proficiency entered the equation and accounted for 39 % of the variability ($R^2 = 0.39$, Adj. $R^2 = 0.38$) in reading comprehension, F (1, 51) = 31.51, p< .001. At the second step in the regression analysis, prior knowledge entered the model, adding an incremental R^2 change of 7 % to the model, F (2, 51) = 20.6, p< .001. At the third step, motivation to read entered the model and added another 9 % to the R^2, F (3, 51) = 19.06, p< .001. Then, gender entered the equation, and added an R^2 change of 2 % to the model. However, the unique contribution of this variable to the model was not significant. Therefore, this variable was taken out of the model.

As a result, it was found that the variables that significantly explained the variability in the reading comprehension of both the intermediate and advanced students on the intermediate text were linguistic proficiency, motivation to read, and prior knowledge. While linguistic proficiency alone explained 39 % of the variability, motivation to read explained 9 %, and prior knowledge accounted for 7 % of the variability. Thus, it was revealed that these three variables, together, explained 54 % of the variability ($R^2 = 0.54$, Adj. $R^2 = 0.52$) in reading comprehension, F (3, 48) = 19.06, p< .001.

However, metacognitive awareness, topic interest, and gender were not found to have any significant contributions to the foreign language reading comprehension of the participants. This might be related to the number of participants involved in the study. Had there been a larger group of participants, the unique contributions of these variables might have yielded significant results.

Research Question 2

The next research question was whether the relative contribution to foreign language reading comprehension of the selected individual-difference variables (i.e., prior knowledge, topic interest, gender, motivation to read, and metacognitive awareness) was liable to change according to the difficulty level of the text.

To answer this question, first the intermediate and advanced learners' reading comprehension of an intermediate text was assessed. Then advanced learners' reading comprehension of an advanced text was assessed. Next, three separate multiple regression analyses were run: one for the intermediate students reading the intermediate text, one for the advanced students reading the advanced text, one for the advanced students reading the intermediate text.

The analyses revealed that when both the intermediate and advanced participants read a text at their own level of linguistic proficiency, none of the above noted individual-difference variables made a significant contribution to their foreign language reading comprehension. However, the situation was different for the advanced EFL learners reading the intermediate text. The analyses indicated that motivation to read and prior knowledge became significant predictors of the variability when the advanced EFL learners read the intermediate text.

The dependent variable for this analysis was the reading comprehension of the advanced students on the intermediate text. The independent variables were prior knowledge, topic interest, gender, motivation to read, and metacognitive awareness. First, the correlation coefficients between the dependent variable and independent variables were checked. Table 4 shows the intercorrelations among the variables.

Table 4. Intercorrelations among the Variables for the Advanced Group Reading the Intermediate Text

	2	**3**	**4**	**5**	**6**
1.Reading comprehension	-.461*	.393*	.345	-.002	.434*
2.Gender	--	.111	-.129	-.399*	-.17
3.Prior knowledge		--	.158	-.147	.039
4.Topic interest			--	-.183	.26
5.Metacognitive awareness				--	-.077
6.Motivation to read					--

*p<.05

In light of the correlations between the independent variables and reading comprehension, a hierarchical multiple regression analysis was conducted. After examining the relationships among the independent variables and reading comprehension results, which variables would enter the equation was determined. The independent variables with low and negligible relationships with the dependent variable (i.e., reading comprehension) did not enter the multiple regression analysis. As a result, the independent variables that entered the equation were prior knowledge, motivation to read, and gender. The assumptions of multicollinearity for the predictor variables, normality, linearity, and uncorrelated residual terms were checked, and it was found that none of these assumptions constituted a problem for this analysis. However, the results of this analysis should be taken with caution due to small sample size, N=27, relative to the number of independent variables, 3. Table 5 shows the results of the multiple regression analysis.

Table 5. Beta Weights Obtained in Multiple Regression Analysis Explaining the Variability in Reading Comprehension of the Advanced Students on the Intermediate Text 'Stress'

Independent Variable	**Step 1**		**Step 2**		**Step 3**	
	Beta	**T**	**Beta**	**T**	**Beta**	**T**

Prior knowledge	.41	2.25*	.40	2.46*	.39	2.49*
Motivation to read	--	--	.42	2.54*	.40	2.58*
Gender	--	--	--	--	-.29	-1.89

*p<.05
Note. N=27
Note. Beta weights are standardized multiple regression coefficients.

At the first step of the analysis, prior knowledge entered the equation and accounted for 17 % of the variability ($R^2 = 0.17$, Adj. $R^2 = 0.14$) in reading comprehension, F (1, 25) = 5.08, p< .05. At the second step in the regression analysis, motivation to read entered the model, adding an incremental R^2 change of 18 % to the model, F (2, 24) = 6.34, p< .05. At the third step, gender entered the model and added another 8 % to the R^2. However, the unique contribution of this variable to the model was not significant. Therefore, this variable was taken out of the model.

Hence, it was concluded that the variables that significantly explained the variability in the reading comprehension of the advanced students on the intermediate text were motivation to read and prior knowledge. While motivation to read alone explained 18% of the variability, the unique contribution of prior knowledge to the variability in reading comprehension was 17%. As a result, 35% of the variability ($R^2 = 0.35$, Adj. $R^2 = 0.30$) in the reading comprehension of the advanced students on the intermediate text was found to be explained by the conjoint contributions of motivation to read and prior knowledge, F (2, 24) = 6.34, p< .05. However, as in the findings of the first research question, metacognitive awareness, topic interest, and gender were not found to have any significant contributions to the foreign language reading comprehension of the advanced group. As indicated earlier, this finding might be attributed to the limited number of participants involved in the study.

As a consequence, the three analyses conducted to answer the second research question revealed that the relative contribution to foreign language reading comprehension of the selected individual-difference variables (i.e., prior knowledge, topic interest, gender, motivation to read, and metacognitive awareness) was liable to change according to text difficulty. The following table shows the results of all three analyses.

Table 6. Independent Variables Found Significant in All Three of the Multiple Regression Analyses

Analyses	**Significant Independent Variables**
Analysis #1: the intermediate students reading the intermediate text	None
Analysis #2: advanced students reading the advanced text	None

Analysis #3: advanced students reading the intermediate text	Prior knowledge ($R^2 = 0.17$) Motivation to read ($R^2 = 0.18$)

The results gained from these analyses can be better interpreted in light of the Threshold Hypothesis (Cummins, 1981). According to the Threshold Hypothesis, students must have reached a minimal threshold level of linguistic proficiency in the target language to make effective use of skills and strategies that are part of their reading comprehension abilities. However, linguistic threshold is not absolute; it varies by the demands of the task (Alderson, 2000). Grabe and Stoller (2002, p. 51) state that readers generally cross the threshold whenever they encounter L2 texts in which they know almost all of the words and can process the text fluently. Grabe and Stoller (2002) further state that because L2 readers are all different in their L2 knowledge, prior knowledge about the text content, and other reading experiences, there is no level of linguistic proficiency that counts as the threshold for all readers or for all texts. The threshold varies depending on the reader, the text and the topic. Thus, it can be argued that, the intermediate and advanced participants in the present study did not cross the threshold when they were reading the texts at their own level of linguistic proficiency. They were, possibly, so busy with figuring out the language of the L2 text they were trying to read that they were left with few cognitive resources needed for fluent reading comprehension. For Grabe and Stoller (2002), once students have passed through the linguistic threshold, they free up cognitive resources, which were previously used to figure out language structures and vocabulary, to read more strategically. This suggestion supports the findings for the advanced students reading the intermediate text in the present study. As indicated earlier, while none of the individual-difference variables selected to be investigated in the present study was found to make a significant contribution to the reading comprehension of advanced students when they were reading the advanced text, motivation to read and prior knowledge became significant predictors of the variability in the reading comprehension of the advanced students reading the intermediate text.

DISCUSSION AND CONCLUSION

This study has shown that linguistic proficiency, motivation to read, and prior knowledge, in order of significance, account for 54% of the variability in the English reading comprehension of the participants.

The finding that L2 proficiency has a vital role in explaining the variability in foreign language reading comprehension (39% of the variability in the reading comprehension of the participants) is consistent with the results of the previous empirical studies (Bernhardt & Kamil, 1995; Bossers, 1991; Carrell, 1991), which demonstrate that L2 proficiency explains 30% to 40% of the variability in foreign language reading comprehension. This finding also provides further evidence to the L2 reading models which identify linguistic proficiency as a major component of reading comprehension process, such as the componential models proposed by Bernhardt (1991), Coady (1979), and Grabe and Stoller (2002).

The finding that motivation to read is a statistically significant factor explaining the variability in foreign language reading comprehension provides evidence for arguments that reader motivation is among many of the reader variables that influence L2 reading

comprehension (Alderson, 2000; Grabe & Stoller, 2002). However, contrasted with the abundance of literature on motivation to interact/communicate in L2 or motivation to read in L1, little research can be found on motivation to read in second/foreign language reading (Day & Bamford, 1998; Mori, 2002; Takase, 2003). Furthermore, to the best knowledge of the researcher, these studies do not attempt to determine the relative contribution of this particular individual-difference variable to overall L2 reading comprehension. The scarcity of research in this area indicates the need for more experimental studies to determine the contribution of L2 reading motivation to explaining variability in L2 reading comprehension.

As for the role of prior knowledge, the findings concur with the results of a number of previous studies (e.g., Brantmeier, 2005; Leeser, 2007). In addition, the results provide further support for various reading models, which include prior knowledge as a component of L2 reading comprehension process (e.g., Bernhardt, 1991; Coady, 1979; Grabe & Stoller, 2002).

It has also been revealed that the relative contribution to foreign language reading comprehension of individual-difference variables is influenced by the difficulty level of the text. This finding concurs with the findings in Taillefer's study (1996), which tested the relative importance of L1 reading ability and L2 proficiency for reading tasks of varying cognitive complexity. Taillefer's study (1996) indicates that the contribution of the individual-difference variables vary depending on the complexity of the reading task. This finding is very similar to those reported in this study since the results of the present study also made it explicit that the contribution to foreign language reading comprehension of the selected individual differences varied depending on text difficulty.

Hence, while the present study has cast light on the significance of L2 proficiency, motivation to read, and prior knowledge as powerful predictors of foreign language reading comprehension, it has also highlighted the role of text difficulty as a factor influencing the way individual differences are called into play in foreign language reading comprehension.

The results offer several pedagogical implications. The findings imply that EFL students with limited linguistic proficiency levels exhaust most of their mental resources to cope with linguistic difficulties of the text when faced with a challenging reading task; hence, they are unable to make use of their individual strengths, such as motivation to read or background knowledge, which would normally contribute to their reading comprehension. This insight into the potential challenges confronting L2 readers may contribute to the development of instructional strategies that would facilitate students' reading comprehension, helping them deal with structural difficulties of the text as well as allowing them to tap into their existing individual strengths.

Although some interesting and important findings were obtained in this study, results should be taken with caution and indicative of the need for more research due to small sample size. Another limitation stems from the use of recall protocol as the only measure of reading comprehension. Although there is a general agreement that recall protocol provides the most straightforward measure of comprehension since test questions do not intervene between the reader and the text, it is argued that, it does not inform the test giver about what is not recalled, and hence makes it difficult to determine whether the omission of certain text elements is attributable to lack of understanding, retention difficulty, or other factors (Alderson, 2000; Bernhardt, 1991; Koda, 2005). Future studies

can support the results gained from recall protocol by other techniques for measuring reading comprehension, such as multiple choice or short answer questions.

As indicated earlier, the individual differences investigated in the present study accounted for 54% of the variability in the foreign language reading comprehension of the participants, leaving 46% of the variability unexplained. This suggests that there are factors, other than the ones studied in the present study, which account for the variability in the foreign language reading comprehension of the participants. Future research can take into consideration other individual-difference variables such as reading styles, self-esteem, cognitive styles, vocabulary knowledge, text-structure knowledge, or L1 reading abilities, which were not examined in this study. However, increasing the number of individual differences to be investigated necessitates a much larger group of participants. Undoubtedly, such research would contribute to construction of a theory of individual differences in L2 reading research.

Neslihan Bilikozen *works as a full-time instructor at the Department of Writing Studies in American University of Sharjah, UAE. She is also a doctoral candidate at the University of Exeter. Her current research interests include language and identity, academic literacy development, and critical issues in second language writing.*

E-mail: nbilikozen@aus.edu

Ayse Akyel, *Ph.D., is the Dean of the School of Graduate Studies in Educational Sciences at Yeditepe University, Istanbul, Turkey. Her research interests include teacher education and professional development, teacher cognition, approaches to teaching language skills, use of literary texts for TEFL purposes, and content-based instruction.*

E-mail: aakyel@yeditepe.edu.tr

ENDNOTES

[1] A higher number of independent variables would have required a larger sample size.

ACKNOWLEDGEMENT

We would like to thank Assoc. Prof. Gulcan Ercetin, who provided invaluable guidance on the statistical analyses presented in this study.

REFERENCES

Adams, S. J. (1982). Scripts and the recognition of unfamiliar vocabulary: Enhancing second language reading skills. *Modern Language Journal*, 66, 155-159.

Aebersold, J. A. & Field, M.L. (1997). *From reader to reading teacher*. Cambridge: Cambridge University Press.

Alderson, J. C. (2000). *Assessing reading*. NY: Cambridge University Press.

Alderson, C. & A. Urquhart (1988). This test is unfair. I'm not an economist In P. L. Carrell, J. Devine, & D. E. Eskey (Eds.), *Interactive approaches to second language reading,* (pp. 168-183). Cambridge: Cambridge University Press.

Altman, H. B. (1980). Foreign language teaching: focus on the learner. In H.B. Altman & C. Vaughan James. (Eds.) *Foreign Language Teaching: Meeting Individual Needs.* Oxford: Pergamon.

Barry, S., & Lazarte, A. A. (1995). Embedded clause effects on recall: Does high prior knowledge of content domain overcome syntactic complexity in students of Spanish? *The Modern Language Journal, 79*, 491-504.

Bernhardt, E. B. (1991*). Reading Development in a Second Language: Theoretical, Empirical, and Classroom Perspectives*. Norwood, New Jersey: Ablex Publishing Corporation.

Bernhardt, E. B. & Kamil, M. L. (1995). Interpreting relationships between L1 and L2 reading: Consolidating the linguistic threshold and the linguistic interdependence hypotheses. *Applied Linguistics*, 16, 16-34.

Bossers, B. (1991). On thresholds, ceilings and short-circuits: The relation between L1 reading, L2 reading and L2 knowledge. In J. H. Hulstijn & J. F. Matter (Eds.), *Reading in two languages. AILA* Review, 8, 45-60. Amsterdam: Free University Press.

Brantmeier, C. (2003). Beyond linguistic knowledge: Individual differences in second language reading. *Foreign Language Annals,* 36/1, 33-43.

Brantmeier, C. (2005). Effects of reader's knowledge, text type, and test type on L1 and L2 reading comprehension. *The Modern Language Journal*, *89*(1), 37-53.

Briggs, S. R. and Cheek, J. M. (1986). The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality*, *54*, 106-148.

Carr, T. H. & Levy, B. A. (1990). *Reading and its development: Component skills approach.* San Diego, California: Academic Press, Inc.

Carrell, P.L. (1989). Metacognitive awareness and second language reading. *Modern Language Journal,* 73, 121-134.

Carrell, P.L. (1991). Second language reading: Reading ability or language proficiency. *Applied Linguistics*, 12, 159-179.

Coady, J. (1979). A psycholinguistic model of the ESL reader. In R. Mackay, B. Barkman, & R. Jordan (Eds.), *Reading in a second language* (pp. 5-12). Rowley, MA: Newbury House Publsihers.

Chen, Q., & Donin, J. (1997). Discourse processing of first and second language biology texts: Effects of language proficiency and domain-specific knowledge. *The Modern Language Journal*, *81*(2), 209-227.

Cummins, J. (1981). The role of primary language development in promoting educational success for language minority students. In California State Department of Education (Ed.), *Schooling and language minority students: A theoretical framework* (pp. 3-49). Los Angeles: National Dissemination and Assessment Center.

Day, R. & Bamford, J. (1998). *Extensive reading in the second language classroom.* Cambridge: Cambridge University Pres.

Ellis, R. (1994). *The Study of Second Language Acquisition*. Oxford: Oxford University Press.

Eskey, D. E. (1988). Holding in the bottom: An interactive approach to the language problems of second language readers. In P.L. Carrell, J. Devine, & D. Eskey (Eds), *Interactive Approaches to Second Language Reading* (pp. 93-100). Cambridge: Cambridge University Press.

Grabe, W. (2009). Reading in a second language: Moving from theory to practice. New York: Cambridge University Press.

Grabe, W., & Stoller, F. L. (2002). *Teaching and researching reading.* London, England: Pearson Education.

Hoover, W. A. & Tunmer W. E. (1993). The components of reading. In G. B. Thompson, W. E. Tunmer, & T. Nicholson (Eds.), *Reading acquisition process* (pp. 1-19). Clevedon: Multilingual Matters Ltd.

Hudson, T. (1982). The effects of induced schemata on the 'short circuit' in L2 reading: non-decoding factors in L2 reading performance. *Language Learning* 32, 1-31.

Johnson, P. (1982). Effects on reading comprehension of building background knowledge. *TESOL Quarterly*, 16, 503-16.

Koda, K. (2005). *Insights into Second Language Reading: A Cross Linguistic Approach*. Cambridge: Cambridge University Press.

Larsen-Freeman, D. & M. Long, (1991). *An Introduction to Second Language Acquisition Research*. Essex: Longman.

Lee, S-K. (2009) Topic congruence and topic of interest: How do they affect second language reading comprehension? *Reading in a Foreign Language* 21: 159-178.

Leeser, M. J. (2007), Learner-Based Factors in L2 Reading Comprehension and Processing Grammatical Form: Topic Familiarity and Working Memory. *Language Learning, 57*(2), pp. 229-270

Lightbown, P. & Spada, N. (1999). *How languages are learned*. Oxford: Oxford University Press.

Meyer, B. J. F. (1975). *The organization of prose and its effects on memory*. Amsterdam: North-Holland.

Mori, S. (2002). Redefining motivation to read in a foreign language. *Reading in a Foreign Language,* 14, 91-110.

Nunan, D. (1985). Content familiarity and the perception of textual relationships in second language reading. *RELC Journal*, 16, 43-51.

Olah, E. (1984). How special is special English? In A. K. Pugh & J. M. Ulijn (Eds.), *Reading for professional purposes: Studies and practices in native and foreign languages* (pp. 223-226). London: Heinemann Educational Books.

Omaggio, A. C. (1979). Pictures and second language comprehension: Do they help? *Foreign Language Annals*, 12, 107-116.

Pae, T. (2004). Gender effect on reading comprehension with Korean EFL learners. *System*, 32(3), 265-281.

Phakiti, A. (2003), A Closer Look at Gender and Strategy Use in L2 Reading. *Language Learning*, 53: 649–702. doi: 10.1046/j.1467-9922.2003.00239.x

Phakiti, A. (2008). Construct validation of Bachman and Palmer's (1996) strategic competence model over time in EFL reading tests. *Language Testing* , 25(2), 237–272.

Rumelhart, D.E. (1977). Toward an interactive model of reading. In S. Dornic (Ed.), *Attention and Performance* (pp. 573-603). Hillsdale, NJ: Erlbaum.

Lee, S.-K. (2009). Topic congruence and topic interest: How do they affect second language reading comprehension? *Reading in a Foreign Language, 21*.

Schifele, U. (1996). Topic interest, text representation and quality of experience. *Contemporary Educational Psychology*, 21, 19-42.

Schueller, J. (2004). Gender and foreign language reading comprehension: The effects of Strategy Training. In C. Brantmeier (Ed.) *Adult Foreign Language Reading: Theory, Research and Implications. The Southern Journal of Linguistics*. Charlotte, NC: The University of North Carolina at Charlotte, 17(1), 45-65.

Skehan, P. (1989). *Individual differences in second-language learning.* London: Edward Arnold.

Taillefer, G. F. (1996). L2 reading ability: Further insight into the short-circuit hypothesis. *Modern Language Journal,* 80, 461-477.

Takase, A. (2003). Motivating and demotivating factors in reading English extensively. *JALT 2003 Conference,* Presentation No. 271. Retrieved October 26, 2005, http://www.extensivereading.net/er/ERJALT2003/JALT2003-takase.doc

Urquhart, S. & Weir, C. (Eds.) (1998), *Reading in a foreign language: process, product and practice*, Harlow: Longman

Weir, C., Huizhong, Y., & Yan, J. (Eds.) (2000). *An empirical investigation of the componentiality of L2 reading in English for academic purposes.* Cambridge: Cambridge University Press.

Wigfield, A. & Guthrie, T. J. (1995). Dimensions of children's motivation for reading: An initial study. *(Research Rep. No. 34). Athens, GA. National Reading Research Center.*

Appendix A. Prior Knowledge Test on the Intermediate Text "Stress"[1]

Name: Gender:

Age: Department:

Please circle the correct answer to each of the following questions.

1. A stressor is _____.

   a. a person who gets stresses frequently
   b. <u>any event that may produce stress</u>
   c. a person who causes others to feel stressed
   d. a psychological problem that makes people stressed

2. A physical illness caused by psychological factors is an example of a _____.

   a. psychopathologic disorder
   b. psychopharmacologic disorder
   c. <u>psychosomatic disorder</u>
   d. psychopathic disorder

3. "Acute stress" is a kind of stress caused by _____ problems.
   a. <u>short-term</u>
   b. serious health
   c. emotional
   d. uncontrollable

4. _____ is an example of cognitive symptoms of stress.

   a. anxiousness
   b. nervous laughter
   c. sleep disturbances
   d. <u>reduced creativity</u>

5. The complex network of interacting cells that protects body from foreign substances is called_____.

   a. <u>immune system</u>
   b. nervous system
   c. fight or flight system
   d. general adaptation system

[1] The underlined items are the correct answers.

6. Please circle ***true*** or ***false*** for the following statements. If you circle false, correct the statement.

True	**False**	A certain amount of stress is a healthy and necessary part of one's life.
True	**False**	Men and women are equally open to stress-related illnesses.
True	**False**	Psychological stress influences the immune system.
True	**False**	Long-term relationship problems are an example of chronic stress.
True	**False**	Stress is accepted as one of the causes of cancer.
True	**False**	Learning how to manage stress can cure medical problems.
True	**False**	As people get older, it becomes more difficult for them to relax after a stressful event.

Appendix B. Prior Knowledge Test on the Advanced Text "Split Brain"[2]

Name: Gender:

Age: Department:

Please circle the correct answer to each of the following questions.

1. Right and left brains have different functions in _____.

a. all living creatures
b. only human beings
c. human beings and birds
d. human beings and chimpanzees

2. _____ refers to either of the two halves of brain.

a. cerebrum
b. cerebral cortex
c. cerebellum
d. cerebral hemisphere

3. Which of the following statements is true for *handedness* and *specialization of certain brain parts*?

a. Right handed people use their left brain for physical work whereas most left handed people use their right brains.
b. While right handed people use their right brain for physical work, left handed people use their left brains.
c. Scientific studies show that there is no relationship between handedness and specialization of certain brain parts.
d. Scientists cannot explain the relation between handedness and specialization of certain brain parts although they don't deny it.

4. Which one of the following terms in the alternatives is defined in the following sentence?

"It connects the brain's left and right hemispheres."

a. corpus callosum
b. nervous system
c. cerebral retractor
d. nerve cell

[2] The underlined items are the correct answers.

5. When the connection between right and left brain is lost,

a. the left brain can function as it did before but the right brain loses its function.
b. <u>each brain can think, learn, and remember on its own</u>.
c. the brain loses its all functions and cannot work as before.
d. the right brain can function as it did before but the left brain loses its function.

6. A *split brain patient* is a patient whose_____.

a. cerebellum is impaired
b. <u>right and left brains are not connected</u>
c. left brain is removed
d. cerebellum is taken out by an operation

7. Until recently scientists called the left brain as the _____ brain.
a. silent
b. holistic
c. mild
d. <u>major</u>

8. Please check the correct areas in which the right or left brain hemisphere specializes in the following table.

Specialization areas	*Right hemisphere*	*Left hemisphere*
Music	X	
Analytical thinking		X
Language skills		X
Creativity	X	
Athletics	X	
Mathematics		X
Intuition	X	
Reasoning		X

9. Please circle ***true*** or ***false*** for the following statements. If you circle false, correct the statement.

<u>True</u>	**False**	The right hemisphere processes information from the left side, whereas the left hemisphere processes information from the right side.
True	**<u>False</u>**	The less wrinkled is the brain, the more efficient it is.
<u>True</u>	**False**	The brain is made of three main parts: the forebrain, midbrain, and hindbrain.
True	**<u>False</u>**	The cortex is the smallest part of the human brain.

Appendix C. Topic Interest Test on the Intermediate Text "Stress"

To me, reading a text on the ***nature of stress*** (sources of stress, kinds of stress, the way stress influences people's lives) is:

	1 (not all true)	2 (slightly true)	3 (True)	4 (completely true)
Meaningful				
Unimportant				
Useful				
Worthless				

While reading the text on the ***nature of stress*** (sources of stress, kinds of stress, the way stress influences people's lives), I expect to feel:

	1 (not all true)	2 (slightly true)	3 (True)	4 (completely true)
Bored				
Stimulated				
Interested				
Indifferent				
Involved				
Engaged				

Appendix D. Topic Interest Test on the Advanced Text "Split Brain"

To me, reading a text on ***the way human brain functions, and the different roles of the right and left brain*** is:

	1 (not all true)	2 (slightly true)	3 (True)	4 (completely true)
Meaningful				
Unimportant				
Useful				
Worthless				

While reading the text on ***the way human brain functions, and the different roles of the right and left brain***, I expect to feel:

	1 (not all true)	2 (slightly true)	3 (True)	4 (completely true)
Bored				
Stimulated				
Interested				
Indifferent				
Involved				
Engaged				

Appendix E. Reading Motivation Questionnaire

The following statements are about your reading motivation in *English*. Please indicate the level of your agreement or disagreement with each statement by circling the appropriate number: 1 indicates strong disagreement, 5 indicates strong agreement.

Part 1	STRONGLY DISAGREE 1	DISAGREE 2	NEUTRAL 3	AGREE 4	STRONGLY AGREE 5
1. I am a good reader.	1	2	3	4	5
2. I don't know why I sometimes get low grades in reading.	1	2	3	4	5
3. I know how well I am doing before I get my paper back.	1	2	3	4	5
4. I know how to get good grades in reading if I want to.	1	2	3	4	5

Part 2	STRONGLY DISAGREE 1	DISAGREE 2	NEUTRAL 3	AGREE 4	STRONGLY AGREE 5
5. I like hard, challenging books.	1	2	3	4	5
6. I like to look up words I don't know.	1	2	3	4	5
7. I like it when there are questions that make me think about what I read in the text.	1	2	3	4	5
8. I don't like reading difficult texts.	1	2	3	4	5
9. I usually learn difficult things by reading.	1	2	3	4	5
10. If a topic is interesting I don't care how hard the text is	1	2	3	4	5

Part 3	STRONGLY DISAGREE 1	DISAGREE 2	NEUTRAL 3	AGREE 4	STRONGLY AGREE 5
11. If the teacher discusses something interesting, I might read more about it.	1	2	3	4	5
12. I have favourite subjects that I like to read about.	1	2	3	4	5
13. I like to learn new information about topics that interest me.	1	2	3	4	5
14. If I am reading about an interesting topic, I sometimes lose track of time.	1	2	3	4	5
15. I read about my hobbies to learn more about them.	1	2	3	4	5
16. I like to read about new things.	1	2	3	4	5
17. I enjoy reading about people in different countries.	1	2	3	4	5

Part 4	STRONGLY DISAGREE 1	DISAGREE 2	NEUTRAL 3	AGREE 4	STRONGLY AGREE 5
18. I like to read about fantasy and imagine.	1	2	3	4	5
19. I like mysteries.	1	2	3	4	5
20. I like stories with interesting characters.	1	2	3	4	5
21. I make pictures in my mind when I read.	1	2	3	4	5
22. I read a lot of adventure stories.	1	2	3	4	5
23. I enjoy a long, involved story or fiction book.	1	2	3	4	5

Part 5	STRONGLY DISAGREE 1	DISAGREE 2	NEUTRAL 3	AGREE 4	STRONGLY AGREE 5
24. I t is very important for me to be a good reader.	1	2	3	4	5
25. I n comparison to other activities I do, it is very important to me to be a good reader.	1	2	3	4	5

Part 6	STRONGLY DISAGREE 1	DISAGREE 2	NEUTRAL 3	AGREE 4	STRONGLY AGREE 5
26. My friends sometimes tell me that I am a good reader.	1	2	3	4	5
27. I like to get compliments for my reading.	1	2	3	4	5

Part 7	STRONGLY DISAGREE 1	DISAGREE 2	NEUTRAL 3	AGREE 4	STRONGLY AGREE 5
28. Grades are a good way to see how well you are doing on reading.	1	2	3	4	5
29. Getting graded in reading makes me nervous.	1	2	3	4	5
30. I like to get good grades in reading.	1	2	3	4	5
31. Getting a high grade in reading makes me proud.	1	2	3	4	5
32. I look forward to finding out my reading grade.	1	2	3	4	5
33. I read to improve my grades.	1	2	3	4	5

Part 8	STRONGLY DISAGREE 1	DISAGREE 2	NEUTRAL 3	AGREE 4	STRONGLY AGREE 5
34. My friends and I like to trade things to read.	1	2	3	4	5
35. I talk to my friends about what I am reading.	1	2	3	4	5

Part 9	STRONGLY DISAGREE 1	DISAGREE 2	NEUTRAL 3	AGREE 4	STRONGLY AGREE 5
36. I like being the best at reading.	1	2	3	4	5
37. I like to finish my reading before other students.	1	2	3	4	5
38. I like being the only one who knows an answer in something we read.	1	2	3	4	5
39. I am willing to work hard to read better.	1	2	3	4	5

Part 10	STRONGLY DISAGREE 1	DISAGREE 2	NEUTRAL 3	AGREE 4	STRONGLY AGREE 5
40. I read as little as possible for my schoolwork.	1	2	3	4	5
41. I read because I have to.	1	2	3	4	5
42. I t is important for me to do my reading work carefully.	1	2	3	4	5
43. I read things that are not assigned.	1	2	3	4	5
44. I always do my reading work as the teacher wants it.	1	2	3	4	5
45. Finishing every reading assignment is very important to me.	1	2	3	4	5
46. I always try to finish my reading on time.	1	2	3	4	5

Part 11	STRONGLY DISAGREE 1	DISAGREE 2	NEUTRAL 3	AGREE 4	STRONGLY AGREE 5
47. I don't like to read loud out in class.	1	2	3	4	5
48. I think worksheets are boring.	1	2	3	4	5
49. I don't like vocabulary questions.	1	2	3	4	5
50. Complicated stories are no fun to read.	1	2	3	4	5
51. I don't like having to write about what I read.	1	2	3	4	5
52. I don't like reading stories that are too short.	1	2	3	4	5
53. I don't like reading something when the words are too difficult.	1	2	3	4	5

Appendix F. Metacognitive Knowledge Questionnaire

The following statements are about your silent reading in *English*. Please indicate the level of your agreement or disagreement with each statement by circling the appropriate number: 1 indicates strong disagreement, 5 indicates strong agreement.

When reading silently in English,	**STRONGLY DISAGREE 1**	**DISAGREE 2**	**NEUTRAL 3**	**AGREE 4**	**STRONGLY AGREE 5**
1. I am able to anticipate what will come next in the text.	1	2	3	4	5
2. I am able to recognize the differences between main points and supporting details.	1	2	3	4	5
3. I am able to relate information which comes next in the text to previous information in the text.	1	2	3	4	5
4. I am able to question the significance or truthfulness of what the author says.	1	2	3	4	5
5. I am able to use my prior knowledge and experience to understand the content of the text I am reading.	1	2	3	4	5

When reading silently in English, if I don't understand something,	**STRONGLY DISAGREE 1**	**DISAGREE 2**	**NEUTRAL 3**	**AGREE 4**	**STRONGLY AGREE 5**
7. I keep on reading and hope for clarification further on.	1	2	3	4	5
8. I reread the problematic part.	1	2	3	4	5
9. I go back to a point before the problematic part and reread from there	1	2	3	4	5
10. I look up unknown words in a dictionary	1	2	3	4	5
11. I give up and stop reading	1	2	3	4	5

When reading silently in English, the things I do to read effectively are to focus on	**STRONGLY DISAGREE 1**	**DISAGREE 2**	**NEUTRAL 3**	**AGREE 4**	**STRONGLY AGREE 5**
12. mentally sounding out parts of the words	1	2	3	4	5
13. understanding the meaning of each word	1	2	3	4	5
14. getting the overall meaning of the text	1	2	3	4	5
15. being able to pronounce each whole word	1	2	3	4	5
16. the grammatical structures	1	2	3	4	5
17. relating the text to what i already know about the topic	1	2	3	4	5
18. looking up words in the dictionary	1	2	3	4	5

19. the details of the content	1	2	3	4	5

When reading silently in English, things that make the reading difficult are	**STRONGLY DISAGREE 1**	**DISAGREE 2**	**NEUTRAL 3**	**AGREE 4**	**STRONGLY AGREE 5**
21. the sounds of the individual words	1	2	3	4	5
22. pronunciation of the words	1	2	3	4	5
23. recognizing the words	1	2	3	4	5
24. the grammatical structures	1	2	3	4	5
25. the alphabet	1	2	3	4	5
26. relating the text to what I already know about the topic	1	2	3	4	5
27. getting the overall meaning of the text	1	2	3	4	5
28. the organization of the text	1	2	3	4	5

The best reader I know in English is a good reader because of his/her ability to	**STRONGLY DISAGREE 1**	**DISAGREE 2**	**NEUTRAL 3**	**AGREE 4**	**STRONGLY AGREE 5**
29. recognize words	1	2	3	4	5
30. sound out words	1	2	3	4	5
31. understand the overall meaning of a text	1	2	3	4	5
32. use a dictionary	1	2	3	4	5
33. guess at word meanings	1	2	3	4	5
34. integrate the information in the text to what s/he already knows	1	2	3	4	5
35. focus on the details of the content	1	2	3	4	5
36. grasp the organization of the text	1	2	3	4	5

Appendix G. The Items That are Eliminated and Changed in the Original Version of MRQ

Eliminated Items
Reading efficacy 1. I know that I will do well in reading next year. 2. Sometimes I don't feel as smart as others in reading. 3. To do well in reading I have to get the teacher to like me. 4. I learn more from reading than most students in the class.
Challenge 1. I need my parents to help me with my reading homework. 2. If the project is interesting, I can read difficult material.
Curiosity 1. I don't like to read books about living things.
Reading involvement 1. I feel like I make friends with people in good books.
Importance -----
Recognition 1. I like having the teacher say I read well. 2. It is important fro me to get good comments on my reading papers. 3. My parents give me gifts when I do well in reading. 4. I am happy when someone recognizes my reading. 5. My parents often tell me what a good job I am doing in reading. 6. I don't care about getting rewards for being a good reader.
Grades 1. My parents ask me about my reading grade.
Social 1. I visit the library often with my family. 2. I often read to my brother or sister. 3. I sometimes read to my parents. 4. I like to help my friends about their schoolwork in reading. 5. I don't like reading with other students. 6. I like to tell my family about what I am reading.
Competition 1. I try to get more answers right than my friends. 2. I hate it when others read better than me. 3. My friends and I like to see who gets better comments on our papers. 4. It is important for me to see my name on a list of good readers.
Compliance 1. I do schoolwork so that the teacher can make sure that I am paying attention.
Reading work avoidance -----

Changed Items	
The Original MRQ	**The Adapted Version of MRQ**
Challenge 1. I like it when the questions in the book make me think. 2. If a book is interesting I don't care how hard it is to read.	Challenge 1. I like it when there are questions that make me think about what I read in the text. 2. If a topic is interesting I don't care how hard the text is.

Appendix H. The Idea Units Identified in the First Paragraph of the Intermediate Text

Everyone has two minds. Most people feel that way occasionally, but only recently have scientists learned how accurately this subjective impression mirrors physical reality. There are two brains. Perched on top of the brain stem inside the human skull are two large bulges - the left and right cerebral hemispheres. Normally the two are interconnected so that they work together, sharing the work of the brain, and each can, if necessary, take over many of the functions of the brain as a whole. Yet the two brains are not alike, and a number of crucial responsibilities are divided between them. They have quite different roles in behaviour. The left brain, highly literate and analytical, tends to dominate personality. It specializes in language skills such as speech and writing, as well as in mathematics and reasoning. The right brain, endowed with special powers of intuition and spatial perception, is particularly important creativity, music, art and athletics.

The idea units identified:

1. Everyone has two minds.
2. Most people feel that way sometimes.
3. Recently scientists have learnt that this feeling reflects physical reality.
4. There are two brains.
5. The left hemisphere is placed on top of the brain stem.
6. The right hemisphere is placed on top of the brain stem.
7. The brain stem is inside the human skull.
8. The two hemispheres are interconnected.
9. The two brains work together.
10. The two brains share the work of the brain.
11. Each brain can take over many of the functions of the mind as a whole.
12. The two brains are not alike.
13. The two brains share a number of important responsibilities.
14. The have quite different roles in behavior.
15. The left brain is highly literate.

16. The left brain is highly analytical.
17. The left brain dominates personality.
18. The left brain specializes in language skills.
19. Speech is an example to language skills.
20. Writing is an example to language skills.
21. The left brain specializes in mathematics.
22. The left brain specializes in reasoning.
23. The right brain is endowed with intuition.
24. The right brain is endowed with spatial perception.
25. The right brain is particularly important to creativity.
26. The right brain is particularly important music.
27. The right brain is particularly important art.
28. The right brain is particularly important athletics.

---

[1] A higher number of independent variables would have required a larger sample size.