



THE EFFECT OF BACKGROUND KNOWLEDGE AND READING COMPREHENSION TEST ITEMS ON MALE AND FEMALE PERFORMANCE

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Abstract

The present article reports on a study investigating the interaction of a reading comprehension test with gender in a formal testing context and the performance of males and females on reading test items with regard to demands on strategy use. Participants were 187 (59=female and 128=male) international students ranging from 17 to 20 years of age studying English at the intermediate level, at The School of Foreign Languages in North Cyprus. Three reading comprehension passages with 25 questions were given to the participants as the final exam of the course. Two of the texts according to Bügel and Buunk's (1996) classification had male topics and one had a neutral topic. The questions on these passages tapped different information and each question required the students to interact with the reading passages in a different way. The questions given to students were classified into 6 categories: identifying main idea, reading for specific information, guessing meaning from context, identifying referential information, matching titles with paragraph, and text coherence. The findings of the study suggest that males and females perform differently on different items. Females scored higher on identifying main idea, guessing meaning from context, and text coherence questions. Conversely, males outperformed females in reading for specific information, identifying referential information, and matching titles with paragraph. However, gender affected item performance in only two cases: guessing meaning from context, and text coherence in favor of the females. Nonetheless, the overall performance of males and females on the reading test was not significantly different which implies that text topic did not influence male and female performance on the reading comprehension test. The article discusses the findings and explores classroom implications.

Introduction

Text comprehension is a complex cognitive skill in which the reader should construct meaning by using all the available resources from both the text and previous knowledge. These resources assist readers in utilizing lexis and syntax, retrieving their meanings from one's mental lexicon, making inferences, and employing schemata. The correct implementation of these resources can help readers in the successful comprehension of the text (Donin et al, 2004; Fukkink et al, 2005). Readers' level of mastery in text comprehension can be assessed by different measures. Some reading test

methods are: multiple choice, open-ended question, cloze, true/false/not given, fill-in-the-blank, written recall, sentence completion, matching activity and checklist tests. These question-types can measure readers' ability to identify main idea, guess meaning from context, read for specific ideas, identify referential meaning, identify the tone of the reading passage, make inferences, identify the gist of the reading, make summaries, and many more. Based on the ability measured in each question, the reader adopts a special approach—top-down, bottom-up, or both. In other words, it is the test item that demands a reader to employ certain strategies in answering reading comprehension questions. For example, Anderson et al (1991) found that test items affect examinees' responses and their interaction with the text. Some items required test-takers to reread parts of the passage, process deep level comprehension, or scan; while items merely required a surface level understanding of the passage. Test conditions are also essential in affecting the way readers interact with the test. Phakiti (2003) states that “in a high-stakes test situation” (p.656), learners may use strategies different from normal reading conditions. He further claims that “some strategies are specifically used in test-taking contexts” (p.656).

What is more, a bulk of research findings show that males and females use different strategies in language learning particularly in reading comprehension (Abu-Rabia, 2004; Chavez, 2001; Sheorey, 1999; Kaylani, 1996; Oxford et al, 1996; Oxford et al, 1993; Bacon, 1992; Green, 1991; Ehrman & Oxford, 1989; Forent & Walter, 1989; Oxford & Nyikos, 1989; Burke, 1989; Boyle, 1987; Ludwig, 1983; Markham, 1988; Hyde & Linn, 1988; Alper, 1985). Oxford (1994), for example, states that males tend to be more analytic while females tend to be more global in their approach to language learning. Males adhere more to rules while females adhere more to cultural differences. Furthermore, males and females may use the same number of strategies in language learning but females are more skillful at applying these strategies qualitatively. Additionally, some researchers assert that males and females differ in their knowledge, interest, and experiences, hence, their performance on different reading topics can also differ (Brantmeier, 2003; Brantmeier, 2002; Schueller, 1999; Young & Oxford, 1997; Bügel and Buunk, 1996). The present study examined the performance of males and females on different reading comprehension questions in an official testing condition (at The School of Foreign Languages, North Cyprus) with regard to text topic.

Review of the Literature

Schema Theory

Schema theory gives perception into how the text and the reader's previous knowledge interact by often activating information that is relevant to the problem to be solved (Rumelhart, 1983; Nassaji, 2002). In a paper by Swaffer (1988), she mentions that schema knowledge can be more influential in reading comprehension than word knowledge. Further in the article, she claims that topic familiarity facilitates “language recognition”, recall of concepts, and “inferential reasoning” (p. 126). Afflerbach (1986) proved that familiarity with the reading topic enhances the reconstruction of the main idea. Brantmeier (2003) emphasizes that topic familiarity can be an exceedingly significant factor in affecting L2 comprehension. According to Hudson (1982), reading problems in L2 is caused by activating the wrong schemata rather than not activating any

schemata at all. In other words, comprehension of a reading text involves extracting information from the written message and the reader's schemata and matching them together. In the same line, Bransford et al, (1986) found that problems in reading comprehension can be attributed to the readers' not having the required background knowledge or schemata which leads to not being able to fill in the missing gaps. Bügel and Buunk (1996) also claim that schema theory can explain why text context can influence the sexes in giving different responses to different reading comprehension questions. Their justification is that since males and females have different interests, they read different topics which eventually results in having different schemata. Brantmeier (2004) contends that gender is an important element affecting schemata in the process of meaning making from the text. She therefore emphasizes the need to carry out more studies on gender and text topic.

Bottom-Up and Top-Down Processing

We comprehend language through the interaction of two processes: top-down and bottom-up. When we read a text, we perceptually analyze it, that is, we use the raw visual data, rearrange it and make decisions on the raw data (bottom-up). Top-down processing, on the other hand, based on our expectations and anticipations, influences the processing of information by matching the identified data (from bottom-up) to the activated concepts in one's schemata (Jay, 2003). Bottom-up processing occurs when the reader and the writer do not share the same background knowledge, have different view points, and the reader is left confused. In such circumstances, the reader focuses on the words, syntax, and vocabulary to sort out the meaning of the text. Top-down processing occurs when we interpret the writer's intentions, draw inferences, try to understand the overall purpose of the text, and make predictions about what is to come in the next part of the passage. But comprehensive comprehension is gained when these two approaches—top-down and bottom-up—are combined (Nuttall, 1998).

Nuttall (1998) refers to drawing inferences, understanding “the overall purpose of the text”, and making “a reasoned guess” (p.16) as top-down processing. She also counts understanding word meaning and sentence structure as examples of bottom-up processing. Bacon's (1992) classification of bottom-up processing includes: concentrating on “text-based aspects”, attending to “known words”, focusing on the “structure”, segmenting “words and phrases”, attending to every single word, and “linear processing”. Top-down processing, conversely, involve attending to the topic, hypothesizing, using “schemata”, making inferences, guessing “from context”, avoiding translation, and “global processing” (p.165).

Empirical Studies **The Cognitive Domain**

Gender-related cognitive differences have long attracted the attention of psychologists. Studies on cognitive abilities of males and females have suggested that males are more spatial while females are more verbal (Halpern & LaMay, 2000). Females tend to surpass verbal memory tasks, language use, reading comprehension, spelling, writing, arithmetic calculation, and the spatial location of objects. Whereas, males tend to surpass verbal analogy tasks, mathematical word problems, and activities involving the recall of the geometric arrangement of an environment, or the mental rotation of two or

three dimensional objects (Geary, 1998; Broone & Lu, 2000; Halpern & LaMay, 2000; Halpern, 2000; Hyde, 2005). However, these sex differences in task performance have been reported to be subtle (Hyde, 2005). Research also indicates that the brain structure of males and females is different with culture and sex hormone influences playing an essential role in bringing out these dissimilarities. Nonetheless, cognitive similarities between males and females override the differences (Gurian, 2002).

Investigations on cognitive abilities of the sexes reveal that males and females are likely to use different solution strategies when performing complex cognitive activities. For example, tasks in which testees are required to compare two objects at different orientations, men first construct an image of one object in their minds and then mentally rotate the object to compare it with the other object. While in such activities, females tend to compare the traits of spatial objects (Gallagher et al, 2002). Furthermore, women are likely to attend to geometric information while men are likely to attend to landmarks in direction finding tasks (Saucer et al, 2003).

fMRI and functional magnetic resonance imaging results in neuroscience show that males and females employ different mental resources or apply different strategies when carrying out cognitive tasks. Research results claim that there is a significant difference in the activated areas in the brains of males and females in performing working memory tasks for language. In other words, males and females apply different strategies when completing the same language tasks. These differences become more significant when solving complex tasks in which a problem can be approached in different ways (Shaywitz et al, 1995; Speck et al, 2000).

Language Learning

In a study on the effect of gender on cognitive and metacognitive strategy use in L2 reading of university students, Phakiti (2003) found no significant difference between both the reading performance of males and females and their cognitive strategy use. Nevertheless, males reported using more metacognitive strategies in comparison to females; however, the difference was not significant. Zoubir-Shaw and Oxford (1995) looking at gender differences in L2 learning strategies, observed that males claimed “not knowing the meaning of a word” as an important factor in obstructing their mental processes; yet, females reported using “guessing meaning from context” more significantly than males. The conclusion drawn from the study was that males probably found L2 learning context less pleasant than females. Bacon (1992) examined the strategies males and females use while listening to authentic listening passages in Spanish. The male participants in the study reported using significantly more translation strategy (bottom-up processing) especially when listening to a more difficult text. Nonetheless, female participants reported using more inferencing or guessing the meaning from context strategies (top-down processing). In another study by Ehrman and Oxford (1989) it was proved that females attempted to guess when there was lack of sufficient information. Examining self-reports of males and females on their attitudes, beliefs, strategies, and experience in language learning, Bacon and Finnemann (1992) report that the women in the study utilized a significantly larger number of global/synthetic strategies than the males. On the contrary, men utilized more decoding/analytic strategies than females. The general conclusion that can be drawn from these studies is that males attend more to words and apply a more bottom-up approach

while females favor guessing words from context and apply a more top-down approach in reading comprehension.

Schueller (1999) in a study examining the effect of top-down and bottom-up strategy instruction to males and females found that females were superior to males in comprehending literary texts irrespective of strategic training. However, the males trained in utilizing top-down strategies outperformed their female counterparts only in the multiple-choice assessment task.

A study on schemata by Bügel and Buunk (1996) indicated that prior knowledge and topic were important indicators of performance among intermediate secondary-level Dutch students. Females scored significantly higher than males on female topics such as “midwives, a sad story, marriage dilemma, and talks about style”. While males scored significantly higher than females on male topics like “laser thermometer, volcanoes, motorcycles, cars, and football players”. Another finding was that males performed significantly higher than females on a neutral topic about “letting rooms to summer students” indicating that males have a higher level of text comprehension in comparison to females. Contrary to the findings of Bügel and Buunk’s study, Young and Oxford (1997) gave English speaking men and women two Spanish texts and one English text on history, economics, and culture. The results showed no significant difference in the performance of males and females in the recall of the texts. Moreover, no significant difference with text topic and background knowledge related to topics existed. In another study investigating the effect of gender on passage content and comprehension of intermediate level students studying Spanish, Brantmeier (2002) used two reading passages (one on boxing and another on housewifery) in Spanish with advanced level students. The results of the study revealed that there was no significant difference in the performance of males and females on both texts. However, in another study using the same texts, Brantmeier (2003) found that intermediate level males outperformed their female counterparts on the “boxing match” passage while females outperformed males on the “frustrated housewife” passage. The results of the two studies led Brantmeier (2003) to conclude that the reader’s gender does not interact with gender-oriented passage content in text comprehension at advanced levels.

The literature presents inconsistent results on studying the effect of background knowledge (schemata) and reading scores on gender. Bügel & Buunk (1996) and Brantmeier (2003) found males better at male topics and females better at female topics. Brantmeier (2002) and Young & Oxford (1997), on the other hand, found no difference between male and female performance on gender-biased texts. And Schueller (1999) found females generally superior to males in comprehending literary texts. This may be due to different research design methods implemented in these studies (Brantmeier, 2004). Furthermore, all the researches mentioned above were not carried out in a formal testing condition.

In a comprehensive study conducted by the Educational Testing Service (ETS), it was reported that females were markedly superior to males in writing and language use and performed only slightly higher than males in reading and vocabulary reasoning tests (Cole, 1997). Data from American College Test (ACT) of 2001 also revealed that females scored higher than males in reading. However, the differences in mean scores of males and females were subtle (Zwick, 2002). A study was conducted by Lin & Wu (2003) examining the performance difference at the item level of male and female

Chinese university graduates on an English proficiency exam. The proficiency test used was EPT modeled after the TOEFL containing listening comprehension, grammar and vocabulary, cloze test, and reading comprehension. T-tests revealed that females significantly outscored males in the listening comprehension section, while males performed significantly better than females in the cloze and grammar and vocabulary section of the test. However, the results combined together revealed no significant difference in the overall scores of both males and females. In addition, no significant difference was found in the performance of both genders on the reading comprehension section of the test. These explorations suggest that in a real testing condition on language abilities, females subtly surpass males on the reading comprehension section of the test. Nonetheless, these reports have not taken the interaction of gender with topic familiarity into account.

Restatement of the Problem

In general, little research has been conducted in EFL/ESL language testing pertaining to gender (Lin & Wu, 2003). In a L2 reading context, test makers need to regard gender differences in designing reading comprehension tests so that one gender will not be favored over another (Alderson, 2000). According to Brantmeier (2004), gender needs to be considered as an essential element in both the process of L2 reading test design and the analysis of its results. However, very little investigation has been conducted in this area. It should also be mentioned that the majority of researches on gender performance in reading comprehension have been carried out in low-stakes contexts. Testing conditions can extensively influence the performance of learners. Hence, there is a need for investigating the interaction of gender differences with L2 reading tests (Phakiti, 2003). The review of the literature on male and female strategy use and testing in reading comprehension also reveals that no study to this date has looked into the relationship between the strategy demands (top-down, bottom-up or both) of reading test items and the performance of males and females.

Research Questions

The present study aims to investigate the interaction of a reading comprehension test with gender in a formal testing context and the performance of males and females on reading test items with regard to demands on strategy use. The research questions are:

1. Do males and females perform differently on different items in a reading comprehension test?
2. Do males' and females' overall score on a reading comprehension test differ?

Participants

The 187 participants (59 = female and 128 = male) in the study were recruited from among students studying English at the intermediate level at The School of Foreign Languages at the Eastern Mediterranean University, in North Cyprus. Participants ranged from 17 to 20 in terms of age (mean = 19). The students had received approximately 140 hours of instruction in English before taking the test and were of different nationalities. The majority of the students were from Turkey, a smaller number consisted of Turkish Cypriots, a smaller number were students from Iran, Lebanon, Palestine, Kazakhstan,

Azerbaijan, Syria, and Albania. The nationality factor was not taken into consideration. The school provided an educational environment to cater to the language needs of learners by developing their oral and written as well as productive and receptive skills with the aim of preparing them for studying at their departments, in which language of instruction is English. For this reason, the 140 hours of instruction at the intermediate level was allocated to teaching vocabulary, grammar, reading/listening comprehension, speaking, and writing skills.

Materials

Three reading comprehension passages with 25 questions were given to the participants as the final exam of the course. The first passage was on *the latest technology used in the design of houses*, the second was on *how to make changes in life*, and the third passage was on *space travel*. According to Bügel and Buunk's (1996) classification, passages 1 and 3 are male topics and passage 2 is a neutral topic. As a result, it can be inferred that the reading test is gender-biased favoring males. The questions on these passages tapped different information and each question required the students to interact with the reading passages in a different way. Some questions required the students to rely mainly on top-down processing and some on bottom-up processing and some others on both (parallel processing). For each passage a variety of question-types—fill-in-the-blanks, multiple-choice, true/false—were utilized. However, question-type was not studied in this paper. All the questions in the three passages were divided into six categories according to how they made the students interact with the texts. These six categories, along with the number of items in each category, are given in Table I. The items were grouped as top-down, bottom-up, or both types according to two criteria: 1) Bacon (1992) and 2) Nuttall's (1998) classification (More explanation is provided in the discussion section of the paper).

Table I.

Item type	Number
identifying main idea	2
reading for specific information	4
guessing meaning from context	4
identifying referential information	5
Matching titles with paragraph	5
text coherence	5

An expert testing team was responsible for the process of passage selection and question writing. The testing team attempted to select passages relevant to the students' level whose topics were attractive and up to date. The item types used in the test were completely familiar for the students due to the fact that they had already encountered those types in their previous tests (pop quizzes and mid-term) during the 140 hours of instruction. The Kuder-Richardson reliability coefficient for the three reading passages computed together was .81.

Variables

Gender: The independent variable in this study was the gender of the participants. Among the 187 participants, 59 were females and 128 were males.

Item Type: The first dependent variable was the grades of the participants on each of the six groups of items separately.

Overall Grade: The second dependent variable was the overall grades males and females obtained in the reading comprehension section of the test. As a result, seven dependent variables were studied. Each correct response was graded 1 and each incorrect response was graded 0. No penalty was considered for the incorrect responses.

Procedure

At the end of the 140 hours of instruction, the students were given two separate tests on separate days (final examinations). In the first test, the students were examined on listening and writing abilities. Afterwards, on a different day, they were tested on vocabulary, grammar, and reading respectively. For the second test, the students were given 90 minutes. Only the reading comprehension section in the second test was considered in this study. The 187 students' correct and incorrect responses were both tabulated on each of the 25 items onto the SPSS program (version 13). Six two-tailed independent t-tests were used to calculate the performance of males and females on the six groups of items. Another two-tailed independent t-test was used to compare the performance of males and females on their overall performance on the reading section of the test.

Results

Mean scores for each group of items are presented in Table II. Mean scores on, "identifying main idea", "guessing meaning from context", and "text coherence" were higher for females while mean scores on, "reading for specific information", "identifying referential information", and "matching titles with paragraph" were higher for the males. In addition, females scored higher than males on the overall performance on the test. However, Table II shows that significant mean differences were found only for "guessing meaning from context" and "text coherence" in favor of the females.

Table II.

	SEX	N	MEAN	Std. Deviation	t
Identifying main idea	Female	59	0.2031	0.23563	1.032
	Male	128	0.1610	0.26942	
Reading for specific info.	Female	59	0.3809	0.20263	-1.474
	Male	128	0.4280	0.20323	
Guessing meaning from context	Female	59	0.1610	0.17222	2.571*
	Male	128	0.0996	0.14149	
Identifying referential info.	Female	59	0.2915	0.17149	-0.024
	Male	128	0.2922	0.17551	
Matching titles with paragraph	Female	59	0.1322	0.12097	-1.412
	Male	128	0.1609	0.13295	
Text Coherence	Female	59	0.0881	0.10681	2.005*
	Male	128	0.0547	0.10564	
Overall test performance	Female	59	0.2103	0.07194	1.008
	Male	128	0.1986	0.07496	

P<0.05

Discussion

Research Question 1: Do males and females perform differently on different items in a reading comprehension test?

As predicted, the results of this study suggest that differences do exist in the performance of males and females on the different items. The “identifying main idea” items tapped general understanding (the gist) of the reading at the passage level. These items required the students to identify the main idea of the text by extracting the general meaning from the whole reading passage (top-down processing). Females scored higher than males in these items although not significantly. The “matching main idea with paragraph” items were designed to involve the testees in merely identifying keywords in the first sentence of each paragraph and matching them with their synonyms, in the form of phrases, from a list. Mean scores show that males were better than females in finding the correct answer. The reason can be attributed to males’ more preference to attend to words and focus on word meanings than females. However, Table II shows that this difference was not significant.

The “Identifying referential information” items tested the students’ ability in referring words and phrases back to their antecedents in the reading passages which required bottom-up processing. Table II shows that males scored very slightly higher than females (males = 0.2922, females = 0.2915) on these items which shows that both sexes performed more or less at the same level. Although the literature shows that males are better at bottom-up processing, these items did not reveal much difference in male and female performance.

The “reading for specific information” items required the testees to look for specific details, or identify correct, false, or irrelevant information. These items made the subjects interact with the text chiefly through bottom-up processing. For they had to rely mainly on the text to answer these types of questions. Table II shows a higher mean score for males on these items but still no significant difference emerged.

The only significant differences in the mean scores were found for the “guessing meaning from context” and “text coherence” items. The mean scores on Table II for both types of items show that females outscored males. In the “guessing meaning from context” items, students had to focus on the context around a special word whose meaning was unknown to guess its meaning. In such items, the main attention was on the known words and phrases which required bottom-up processing. At the same time, students had to find the relationship between the known words and their contextual meanings and connect them with the unknown word to guess its meaning. This necessitated getting help from background knowledge to fill in the missing gaps (top-down processing). As a result, “guessing meaning from context” involved the readers in parallel (top-down and bottom-up) processing.

The “text coherence” items, again, were designed in a way that both processes had to be used. In this part, some sentences containing linkers were omitted from the text and were provided at the bottom of the passage. In answering this part, students had to have both a general understanding of the passage (top-down processing) and at the same time focus on the linkers in the options part (bottom-up processing) to give correct responses. The results show that females in this study were significantly better at handling both types of processes (top-down and bottom-up) in comparison to males.

The findings suggest that females surpass males in items testing both top-down and bottom-up strategies. To be more precise, significant difference lies in carrying out the more complicated task (parallel processing). From a cognitive point of view, it can be said that males and females show greater cognitive divergence when doing more complicated tasks than basic ones (Shaywitz et al, 1995; Speck et al, 2000). And from a L2 point of view, females use strategies qualitatively better than males Oxford (1993).

Research Question 2: Do males and females score differently on reading comprehension tests?

The study suggests that although the texts used in this study favored males more than females, the overall performance of females on the whole reading test was higher than the males. Table II shows that females' mean score on the whole reading test was 0.2103 while males' mean score was 0.1986. However, this difference was not significant. It can be concluded that text topic did not affect the performance of both males and females in this study. These results support the findings of Young and Oxford (1997) and Barntmeier (2002) who claimed that text topic does not affect gender. Nevertheless, the results are contradictory to Bügel & Buunk's (1996) claim that text topic affects comprehension and that males may have a higher level of understanding. The findings are also in disagreement with Barntmeier's (2003) claim that gender interacts with L2 reading comprehension at the intermediate level. Furthermore, the present study, which was conducted in a real testing context, supports the same findings in investigations by Lin & Wu (2003), Zwick (2002), and Cole (1997). These studies, as indicated in the literature review section, explored the relationship between readers' performance on reading tests and gender irrespective of text topic. As a result, it can be claimed that in real test contexts, at the intermediate level, there is no significant difference in male and female grades on male-oriented reading texts.

Discussion

The present study confirms research findings in foreign language learning study that gender differences play a role in strategy use. However, the research suggests that sex differences in reading comprehension tests are affected by what is tested rather than text topic.

Reading is an active process involving the three main approaches of top-down, bottom-up, and parallel processing. The present paper suggests that similar to the Anderson et al. (1991) study, items in a reading comprehension test do affect examinees' performance and interaction with the text. Some items required the testees to focus mainly on a top-down approach, some on a bottom-up approach and some on both (parallel processing). Moreover, consistent with Zoubir-Shaw and Oxford (1993), Ehrman and Oxford (1989), Bacon (1992), and Bacon and Finnemann (1992) research findings, females are more global and prefer guessing meaning from context while males are more analytic and attend more to words. In other words, women utilize more top-down strategies and men more bottom-up strategies when reading a text.

Females in this study were better at maneuvering from top to bottom and from bottom to top in their interaction with the reading passages. This involves the reader in a higher level of processing, for the reader should know how to efficiently use the written

text and his/her background knowledge at the same time. This paper supports Oxford's (1994) claim that females are qualitatively better at using strategies.

The study also shows that although the overall reading grade of females was higher than males, this difference was not significant. The findings can imply that sex differences in verbal ability are fading. It can be the effect of the changes in the attitudes of the new generation due to shifts in sex-role stereotyping (Halpern, 2000). Halpern (2000) suggests that research needs to be done exploring cognitive abilities by gender in countries with structures different from the United States. Since she believes most studies on gender differences and cognitive abilities have been carried out in industrialized societies especially the United States. The participants in the study were all from developing societies and it can be suggested that sex-role shifts also pertains to developing countries. However, more research needs to be done since the focus of the research was not nationality.

Despite Bügel and Buunk's (1996) claim that owing to the sexes' different interests they have different schemata, it seems likely that male and female topics do not have a strong effect on the reading comprehension performance of both sexes. This may be the result of the fact that both genders are exposed to different reading topics at schools and encounter issues of interest related to both genders in daily life. Furthermore, it can be claimed that it is not the topic that affects reading performance but it is the type of approach test items require the examinees to take in answering questions. Hence, more research needs to be devoted to studying the effect of items on processing information for both males and females in reading tests.

Implications

The present study proposes that gender can influence performance on reading questions in a foreign language learning context. Males and females perform differently on different items of a reading comprehension test. If teachers are aware of these differences, they can help learners of both sexes in different ways. By concentrating on learners' limitations, teachers can provide successful learning situations. In this way, differences do not impede achievement but are handled efficiently.

The male students in this study attended to word meanings and were more skillful than females at using contextual cues in text reading. However, "... simply knowing the meanings of words or having a good knowledge of L2 grammar may not be enough. A fluent reader is one who is also able to process words and their relationships in texts as efficiently as required for fluent processing and understanding of text" (Nassaji, 2003: 271). One way to solve this problem is incorporating meaningful instruction of strategies in L2 through extensive reading. In this way, learners will develop greater skill in coordinating lexical and syntactic knowledge with their previous knowledge (Nassaji, 2003).

Female readers, on the other hand, tend to take a more global approach in text comprehension. Relying more on a global method means that the reader is satisfied with only an imperfect understanding of the text and does not attend to the cues in the context that aid in better understanding. Hence, such global readers need to be instructed on paying more attention to context cues and *when* and *how often* to look up words in a dictionary when reading (Frantzen, 2003).

Moreover, the findings suggest that language learners, especially males, need to be taught comprehension monitoring techniques by being constantly aware of the connections they make between text knowledge and world knowledge (Morrison, 2004). Strategy training can be done by working with students in small groups or individually through using various reading texts and questions to check students' processing problems through question and answering. Teaching learners comprehension monitoring and reading comprehension test taking strategies can help them to take a more reflective and self-directed approach to text reading. Additionally, it can assist learners in reducing anxiety which debilitates comprehension in reading tests.

Suggestions for further studies

There is no study in the literature focusing on one question-type—fill-in-the-blanks, multiple-choice, True/False, open-ended, etc—at a time and the genders' strategy use—top-down, bottom-up, or parallel—in real reading test conditions. A more in-depth study is needed to explore the interaction of question-type, processing strategy, and gender. Significant difference in test-item performance of males and females does not guarantee that they use different strategies in doing the same task in a reading comprehension test. Retrospective interviews with testees of both sexes is required to give more insight into male and female strategy use in reading task performance to assist us in making more solid conclusions.

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