The Interaction among Using Test-Taking Strategies, Level of Language Proficiency, and Test Performance

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Abstract

This study scrutinized the interaction between linguistic and strategic variables in reading comprehension test performance of Iranian EFL learners. To this end, the interaction among the participants' reading comprehension test performance, use of test-taking strategies, and level of language proficiency was analyzed. The participants comprised 286 students who answered a reading comprehension test and a test-taking strategy questionnaire. In addition, 25 students participated in a retrospective interview at the end of the study and described their strategic processes of test taking. The findings manifested a significant interaction among the use of test-taking strategies, level of reading proficiency, and test performance of the examinees. The more proficient test takers used the strategies more frequently than did the less proficient test takers. The qualitative findings also confirmed the quantitative findings and revealed the underlying nonlinguistic reasons for the differences in the frequency and type of the strategies used by the test takers. The findings reflected that the observed scores did not manifest true ability of language learners, and true score should be calculated with regard to nonlinguistic variables, particularlytest-taking strategies. The findings provide empirical support for Bachman's classical true score measurement theory and Bachman's framework for the factors affecting test performance.

Keywords: **Classical True Score Measurement Theory; Test-Taking Strategies; True Score; Error Score.**

1. Introduction

A growing interest has been aroused among the researchers to develop profound insights into the way test-taking strategies are used in language tests as part of the process of construct validation (e.g., Phakiti, 2008; Purpura, 1999). The importance of exploring test-taking processes to make a valid judgment a bout the construct to be measured was emphasized by Bachman (1990) as well as Bachman and Palmer (1996, 2010), who believed if different sources of score

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variation are identified, reasonable inferences about the individuals' ability can be drawn. Bachman and Palmer (2010) considered the use of test-taking strategies as one essential source of score variation because theses trategies facilitate the test-taking process by reducing the negative effect of unfamiliarity with the features of a given test method. Bachman (1990) firmly insisted on the necessity for examining the processes or the strategies applied in test-taking setting, particularly at the individual level, to clarify what makes language tests authentic. Bachman (1990) believed that the detailed analysis of test-taking strategies clarifies the complicated nature of strategic competence as the most essential but elusive component in his model for the components of language ability. The importance of examining strategic process of test-taking has also been stressed by the researchers working on language program evaluation to clarify the process of construct validation in language tests (e.g., Cohen, 2006; Grotjahn, 1986; Long, 1984; McNamara &Roever, 2006).

Many studies demonstrated that readers select particular test-taking strategies to accomplish reading tasks in test-taking settings to meet the demands (e.g., Alderson, 2000; Goldman, 1997; Van Dijk, 1985). There exist a variety of factors potentially influencing the selection of strategies in testing situations, including linguistic level of texts and questions, topic, content and phrasing of questions, location of information in the texts, and level of cognitive activity of respondents (Nevo, 1989). Strategy selection in test-taking situations is further guided by the test formats. Consequently, test takers often rely on test preparation materials, which offer efficient strategies for better test performance. Reading comprehension test-taking strategies, in this regard, can be classified into general, text-related, and item-related strategies differentiated from general test-taking strategies (Allan, 1992).

As the present study is an attempt to explore the interaction among application of test-taking strategies, reading ability, and test performance, reviewing the relevant empirical studies is insightful.

2. Empirical Background

The strategic process of test taking has been of interest to the researchers investigating the relationship between language ability and using certain test-taking strategies (e.g.,Cohen, 2006; Weir, 2005, Yamashita, 2003). In some studies, the relationship between implementing test-taking strategies and certain test method facets has been investigated (e.g., Cohen, 1998; Rupp, Ferne,& Choi, 2006; Sasaki, 2000; Storey, 1997).

Storey (1997) explored EFL learners' processes of taking a multiple-choice gap-filling reading comprehension test. Through examining the learners' think-aloud verbal protocols,it was reflected that different items entailed varying degrees of construct validity. Some students used theoretically expected reading processes whereas the others reflected test-wisenessor particular test-taking strategies circumventing the need to tap their actual language knowledge. Generally, the findings proved that the items were capable of generating construct relevant processing, which indicated high validity of the test.

Rupp, Ferne, and Choi (2006) investigated empirically the cognitive process of responding to reading comprehension multiple-choice tests developed from Can Test, a standardized large-scale test in Canada. After observing and interviewing 10 adult readers, the various aspects of the participants' response process in the test-taking context were investigated, compared, and contrasted with their reading process in a non-testing context. The findings showed that the participants' response behavior in the test-

taking context differed from their behavior in the non-testing context. To answer multiple-choice questions, the participants used both macro level and micro level strategies. However, they first tended to apply macro level strategies to have an overall idea of the given texts and questions and then applied micro level strategies to respond to each individual item. It further appeared that the degree of interaction between the texts and questions was significantly influenced by the perceived difficulty of a question type and the plausibility of distractersduring the logical process of selecting the correct option. Although it was generally assumed that all response options had to be read, understood, and eliminated before selecting correct responses, the responses were quickly selected as soon as the test takers perceived the items as easy items and remembered key text information. The findings revealed that where items were perceived as difficult items, the solution process was characterized by the test takers' continual back and forth between the questions and relevant text sections and the logical elimination of potentially incorrect choices. Generally, the findings indicated that the sequence and structure of multiple-choice questions provide important cues for test takers to select response strategies that may result in response processes deviating significantly from the processes predicted by the model of reading comprehension in non-testing situations.

Yamashita (2003) explored test takers' own perspective on the cognitive process of taking a reading comprehension gap-filling test by EFL Japanese university students who had to take the test and provide concurrent think-aloud verbal protocols. The findings manifested that the test tended to prompt all the test takers to activate their cognitive process by using text level information. However, there were differences between the more proficient and less proficient test takers as well. The more proficient test takers used text level information as well as wider range of textual constraints more frequently than did the less proficient test takers. The findings showed that the test-taking process was different in more proficient and less proficient test takers. The more proficient test takers were able to give proper weight to different information sources to extract the meaning and comprehend the text. On the other hand, the less proficient test takers put heavier emphasis on local grammatical information but were less able to use textual level information.

Cohen and Upton (2007) further probed how test takers' reading abilities and test-taking strategies interact in the process of completing the reading tasks of a TOEFL test by a number of advanced non-native speakers of English. The study sought to determine whether there was any variation in the type of strategies used when answering three broad categories of questions, including traditional single-selection, new selected-response, and reading to learn multiple-choice items. The participants first took the reading section of the TOEFL test, and then verbalized their test-taking processes. The findings revealed that through using appropriate test-taking strategies, the test takers were able to understand the texts, expectations of the questions, and the meanings as well as implications of different options to find correct answers. Besides, the strategies applied by the test takers were consistent with their academic reading abilities, required to gain both local and general understanding of the texts. In a similar study, Weir (2005) also emphasized the importance of exploring what test takers actually do when taking language tests to improve the validity of the tests.

The cognitive process of capturing the correct response in multiple-choice tests has been also explored by other researchers (e.g., Enright, Grabe, Koda, Mosenthal, &Mulcahy-Ernt, 2000; Gorin, 2002, 2005). The results of the mentioned studies indicate that the degree of successful comprehension depends on the readers'

ability to extract information from a reading text and integrate it with existing knowledge efficiently to form a coherent mental representation of the text. It is assumed that in both testing and non-testing situations, readers engage in similar reading processes when responding to either selected or constructed response items. However, the purpose of reading in a testing situation is not the same as the purpose in non-testing situations, in which readers read for personal interest, pleasure, and participation in society. This implies that the purpose of reading can impact the type of skills and strategies readers utilize to process reading texts and answer the questions in testing and non-testing situations. Thus, the purpose of reading can impact the type of skills and strategies utilized by readers to process reading texts and answer the questions in testing and non-testing situations.

The present study was an attempt to scrutinize the effect of applying test-taking strategies on the test performance of Iranian EAP students with regard to their level of reading proficiency. The strategies are a set of direct strategies, including cognitive, memory, and compensation strategies. The further concern of the study was to explore the extent to which different types of strategies affect the participants' test performance. As improving reading comprehension is of primary importance in many EAP courses at the universities in Iran, the study was conducted in the area of reading comprehension with many postgraduate Iranian students doing EAP courses. The findings are useful because they clarify the gap between more proficient and less proficient language learners in the use of direct strategies to extract information from academic texts.

The research questions addressed in this study are:

1. Does the participants' level of reading proficiency significantly affect the use of direct test-taking strategies in reading comprehension test performance?
2. To what extent do direct test-taking strategies affect reading comprehension test performance?

3. Method

To explore the research questions, the participants, instruments, and procedures for conducting the research are discussed.

3.1. Participants

The accessible sample consisted of 286 Iranian MA students doing EAP courses in different academic disciplines of the Arts and Humanities at Islamic Azad University of Mashhad. Based on their scores in the reading comprehension section of a paper-based TOEFL Test (Longman, 2005), the participants were divided into three levels of high, intermediate, and low reading proficiency. The participants comprised 184 female (%64.3) and 102 male (% 35.7) students, ranging in age from 24 to 30. The frequency and percentage of the participants across the three groups of reading proficiency are shown in Table 1.

Table 1. *Frequency and Percentage of the Participants*

Reading Proficiency	Frequency	Percent	Valid Percent	Cumulative Percent
Low	56	19.6	19.6	19.6
Intermediate	186	65.0	65.0	84.6
High	44	15.4	15.4	100.0
Total	286	100.0	100.0	

As demonstrated in Table 1, the students at the intermediate level of reading proficiency formed the highest proportion whereas the students at the high level of proficiency formed the lowest proportion of the accessible participants. In addition, 25 students (% 8.7) voluntarily participated in a retrospective interview and explained their test-taking process at the end of study.

3.2. Instruments

The following research instruments were used to collect data in the study:

3.2.1. Reading Comprehension Test

A reading comprehension section of a TOEFL test, derived from the paper-based version of Longman (2005), was utilized in this study to assess the reading ability of the participants. The test included five reading comprehension passages. Each passage was followed by 10 multiple-choice items. Thus, the test comprised five reading passages and 50 multiple-choice items. The standard time for taking the reading comprehension test was 55 minutes.

3.2.2. Test-Taking Strategy Questionnaire

A test-taking strategy questionnaire derived from the fifth version of Oxford's Strategy Inventory for Language Learning (1990) and Purpura's (1999) cognitive test-taking strategy questionnaire was utilized in this study. The questionnaire consisted of 30 statements, contextualizing the use of three distinct subcategories of direct reading test-taking strategies to answer reading comprehension questions. The three subcategories of direct strategies are cognitive, memory, and compensation strategies. The questionnaire was organized on a 5-point Likert scale, in which the participants had to indicate the frequency of using each strategy during the test-taking process through selecting one of the following adverbs of frequency:

a) never 1b) seldom 2c) sometimes 3 d) often 4e) always 5

The questionnaire was reviewed by some instructors in TEFL, who provided useful feedback on the content of the questionnaire and offered some helpful hints to remove the probable ambiguities. The questionnaire was also piloted by a sample of 30 Iranian MA students. The reliability estimate of the questionnaire, calculated by Cronbach alpha formula, was (α =.925), which is high and acceptable.

3.3. Procedures

All the participants first took the reading test and then filled out the test-taking strategy questionnaire successively in one session. The time allotted to accomplish the test was 55 minutes. The dedicated time to complete the test-taking strategy questionnairewas 15 minutes. The participants were initially briefed about the structures of the test and questionnaire and were given necessary guidelines for answering them. At the end of the study, 25 voluntary participants went for an interview and explained their strategic processes of test taking. Prior to the actual administration of the questionnaire, it was checked by some experts in TEFL and administered to a sample of 30 students for the validation purpose.

3.4. Data Analysis

The statistical procedures utilized in the study were Cronbach alpha, descriptive statistics, one-way analysis of variance, and regression analysis through using the 18th version of SPSS software. Cronbach alpha formula was utilized to calculate the reliability estimate of the questionnaire. Descriptive statistics were applied for calculating the participants' mean scores and standard deviations in the implementation of test-taking strategies. One-way analysis of variance was utilized to determine if there were any significant differences among the participants' mean scores at different levels of reading proficiency in implementing test-taking strategies. Regression analysis was used to check the linear relationship between the

use of test-taking strategies and the participants' test performance as well as the degree to which the implementation of test-taking strategies affected the participants' test performance.

4. Results and Discussion

The findings of this study are reported and discussed in two subsections.

4.1. The Relationship between Reading Ability and Use of Test-Taking Strategies

To explore the first research question concerning the relationship between the participants' level of reading proficiency and using direct reading comprehension test-taking strategies, the descriptive statistics were calculated, the results of which are presented in Table 2.

As shown in Table 2, among the three categories of direct test-taking strategies, the mean score of using cognitive strategies was the highest (M =3.2579) whereas the mean score of using compensation strategies was the lowest (M = 2.9396) by all the test takers. The high proficiency test takers got the highest mean scores in using overall strategies (M =3.2525), cognitive strategies (M=3.3666), memory strategies (M=3.2198), and compensation strategies (M =3.1607). In comparison, the low proficiency test takers used overall strategies (M =3.0252), cognitive strategies (M =3.2287), memory strategies (M =2.9300), and compensation strategies (M =2.8625) least frequently. Figure 1 demonstrates the relation between the test takers' reading level and mean score of using overall test-taking strategies.

Table 2. *Des*criptive *Statistics for Using Test-taking Strategies*

Test-taking Strategies	Level of Reading Proficiency	N	Mean	Std. Deviation
Overall Strategies	Low	56	3.0252	.54276
	Intermediate	186	3.0419	.58567
	High	44	3.2525	.56643
	Total	286	3.0710	.57789
CognitiveStrategies	Low	56	3.2287	.56480
	Intermediate	186	3.2410	.59165
	High	44	3.3666	.56963
	Total	286	3.2579	.58303
Memory Strategies	Low	56	2.9300	.86099
	Intermediate	186	2.8893	.85661
	High	44	3.2198	.82408
	Total	286	2.9481	.85765
Compensation Strategies	Low	56	2.8625	.60215
	Intermediate	186	2.9105	.73809
	High	44	3.1607	.70980
	Total	286	2.9396	.71336

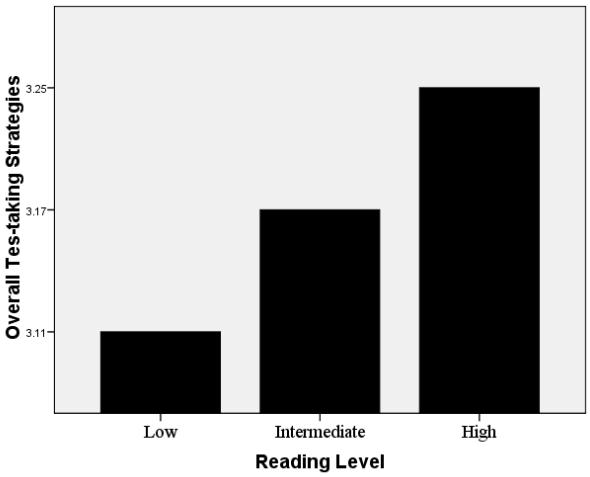

Figure 1. *Relation between reading level and use of overall test- taking strategies*

As demonstrated in Figure 1, the students at the high level of reading proficiency used overall test-taking strategies more frequently than did the students at the intermediate and low levels of reading proficiency. The mean score of using the strategies by the students at the low level of proficiency was the least. To probe the significant differences among the three proficiency groups in using direct test-taking strategies, a one-way analysis of variance was run. The results are presented in Table 3.

As manifested in Table 3, no significant differences were found among the mean scores of the three proficiency groups in using overall strategies F (2,283) = 2.611, p =.075; cognitive strategies F (2, 283) = .912, p = .403; memory strategies F (2, 283) = 2.689, p = .070; and compensation strategies F (2, 283) = 2.625, p = .074.

The findings showed a relationship between the participants' reading ability and frequency of using direct test-taking strategies. The students with more linguistic knowledge used overall, cognitive, memory,

Table 3. *One-way Analysis of Variance for Direct Test-taking Strategies*

Direct Test-taking Strategies		Sum of Squares	df	Mean Square	F	Sig.
Overall Strategies	Between Groups	1.724	2	.862	2.611	.075
	Within Groups	93.454	283	.330		
	Total	95.178	285			
Cognitive Strategies	Between Groups	.621	2	.310	.912	.403
	Within Groups	96.258	283	.340		
	Total	96.879	285			
Memory Strategies	Between Groups	3.909	2	1.954	2.689	.070
	Within Groups	205.725	283	.727		
	Total	209.633	285			
Compensation Strategies	Between Groups	2.641	2	1.321	2.625	.074
	Within Groups	142.390	283	.503		
	Total	145.032	285			

and compensation test-taking strategies more frequently to comprehend the reading texts and answer the questions. The findings imply that the students at the high level of reading proficiency used test-taking strategies as learning strategies which facilitated and improved the comprehension process. In contrast, the students with lower linguistic knowledge used test-taking strategies as compensatory strategies which helped them fill their linguistic gap to comprehend the reading texts and answer the questions. The findings also proved that the test-taking process was different in more proficient and less proficient test takers. Thus, the test was a valid measure for assessing reading comprehension ability of the test takers because it could discriminate between more skilled and less skilled test takers. The findings pertain to the findings of the earlier studies investigating the relationship between test-taking processes and implementing test-taking strategies (e.g., Cohen, 2006; Phakiti, 2008; Rupp et al, 2006; Sasaki, 2000; Storey, 1997; Weir, 2005; Yamashita, 2003).

Detailed analyses of the participants' explanation of the strategic process of test taking in the retrospective interview showed that the most frequent test-taking strategies used by the participants at the high level of reading proficiency were linking the main ideas of the reading texts with the questions, finding the main ideas of the reading texts through scanning and skimming, comprehending the reading texts without translating word for word, and guessing the meaning of unknown words through using the contextual clues. In comparison, the most frequent test-taking strategies used by the students at the low level of proficiency were grouping the words with similar meanings, visualizing new words, grouping the words with similar pronunciation, writing the main ideas of reading texts in key sentences, and reading passages several times.

The qualitative findings also showed the differences among the participants at the three levels of proficiency in using test-taking strategies. The learners at the high level of reading proficiency used test-taking strategies more frequently than did the learners at the intermediate and low levels of reading proficiency. The participants at the high level of reading proficiency used certain strategies more frequently than did the other participants. As an example, underlining the main ideas and key words; guessing the meaning by using contextual clues, grammatical structures, and discourse markers; relating the sentences and paragraphs; and skipping unknown words were the strategies used most frequently by the participants at the high level of reading proficiency. In comparison, reading the texts several times, writing down the Persian translation of the texts, and writing down the difficult words with their equivalents in Persian were the strategies used most frequently by the participants at the low level of reading proficiency.

4.2. The Extent of Relationship between Test Performance and Use of Test-Taking Strategies

To probe the second research question concerning the extent to which direct test-taking strategies affected the participants' test performance, a linear regression analysis was applied. The summary of the model is shown in Table 4. In the analysis, the participants' reading test performance was considered as the dependent variable and the use of overall test-taking strategies was considered as the independent variable.

As shown in Table 4, the bivariate correlation between using overall test-taking strategies and the participants' reading ability was (R =.135). The R square value (R *square* =.018) indicated that 18% of the variance in the test performance was related to the use of direct test-taking strategies. Table 5 presents theregression

coefficients between the use of overall test-taking strategies and the reading test performance.

As revealed in Table 5, the standardized coefficient between using direct test-taking strategies and the test performance was (*Beta* =.135) at *p*=.023, indicating a positive linear relationship between using direct test-taking strategies and the test performance. The t value (*t*=2.291) was significant at *p*=.023, indicating that the effect of using test-taking on the participants' test performance was significant and not due to chance. The linear regression equation between the participants' test performance, as the dependent variable, and the use of overall test-taking strategies, as the independent variable, is formulated as the following,

Test performance (predicted) = 14.046 + 2.054 X

The equation shows that the observed score on the test comprises two factors or components. The first factor is the observed score of test takers, and the second factor is the use of test-taking strategies. The use of test-taking strategies can be considered as one major source of error of measurement based on Bachman's (1990) classical true score measurement theory and Bachman's framework for the factors affecting test performance. As mentioned earlier, 18 percent of the variance in the test performance was due to the use of direct test-taking strategies. Thus, the effect of test-taking strategies on the test taking process cannot be ignored, and the observed scores are not reflective of the actual ability of language learners all on their own. The findings can help language teachers gain a better understanding of linguistic and psychological aspects of test-taking process and improve the design and validity of the tests. In addition, the findings can help language teachers interpret test scores carefully to make a sound judgment about the actual language ability of language learners.

The findings provide empirical evidence for Bachman's (1990) model for the factors affecting test performance as well as Bachman and Palmer's (2010) conceptual framework of language use showing the interaction between test performance and use of test-taking strategies.

Table 4. *Model Summary for Regression Analysis*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.135[a]	.018	.015	8.74669

Table 5. *Regression Coefficients*

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
Constant	14.046	2.802		5.014	.000
Test-taking Strategies	2.054	.897	.135	2.291	.023

5. Conclusion and Pedagogical Implications

The findings of this study reflected an interaction between the participants' reading ability and use of direct test-taking strategies in reading comprehension test performance of Iranian postgraduate EAP students. The findings provide some empirical evidences for the conceptual frameworks of language use offered by Bachman and Palmer (2010) as well as the theoretical framework of language use offered by Bachman (1990) due to the significant relationship between the participants' reading ability and use of test-taking strategies, reported in this study. The positive interaction found between the participants' language ability and use of test-taking strategies implies that linguistic and strategic aspects of language use cannot be dissociated and should be taught simultaneously in instructional programs. Language teachers should tailor their instructional approaches to the linguistic as well as strategic needs of the students to fill the gap between more proficient and less proficient learners. Language teachers should provide less proficient learners with effective remedial instructional programs and supplementary materials to improve their reading ability. In practice, strategic aspects of language learning and test taking are often totally ignored in language teaching programs, and most of language teachers devote their time and attention to teaching linguistic components to improve reading ability of language learners. As a result, there exist many students with enough linguistic foundation yet they are unable to extract meaning from English sources and overcome their difficulties strategically. Although improving reading comprehension is the major focus of English language teaching at the universities in Iran, many students have serious problems in comprehending English texts. Lack of effective reading comprehension ability poses serious problems for many postgraduate students who have to extract academic information from English sources independently. Thus, language teachers should be skillful enough to provide the most effective teaching approaches, drawing on the linguistic, academic, and strategic needs of the students to improve efficiency of academic reading programs.

Detailed analysis of the findings revealed that more successful test takers used certain strategies more frequently, which made contributions to their successful test performance. As an example, successful learners reported more frequent use of certain memory strategies such as relating the main ideas in a reading text, visualizing new words, and grouping the words based on their similarities in meaning. More proficient learners also utilized particular cognitive strategies more frequently such as underlying the main ideas of reading texts, skimming reading texts, taking notes of the main points, dividing the unknown words into their components, and writing a summary of texts. Besides, more successful learners used certain compensation strategies such as using grammatical knowledge to comprehend reading passages and guessing the meaning of unknown words to compensate for their insufficient linguistic knowledge. Consequently, language teachers should place particular emphasis on teaching certain strategies used most frequently by more successful learners to narrow the gap between the strategic preferences of more successful and less successful learners.

The findings can provide useful information helping language teachers tailor effective instructional programs to the particular needs of the students. The findings can remind language teachers of different factors affecting test scores, particularly test-taking strategies that are often totally ignored in many English teaching programs. The findings can

encourage language teachers to interpret test scores from different sides to decrease error of measurement and make professional judgments about language learners rather than traditional subjective judgments.

In general, the findings revealed that language competence and strategic competence act as the two major components of language ability, the combination of which provides language learners with the ability to comprehend reading comprehension texts and answer the questions. In addition, the significant interaction among reading ability, use of test-taking strategies, and test performance, reported in this study, reflected that both linguistic and non-linguistic variables play an important role in the process of learning and test taking. Thus, in any assessment settings, language teachers should be skillful enough to interpret the observed scores from different angles to form professional judgments on language learners' true ability.

This study had some limitations that make generalizations about the findings difficult. The findings are the result of using certain quantitative and qualitative research instruments and the particular setting in which the study was carried out. The instruments used for gathering data were limited to a multiple-choice reading comprehension test, a Likert-scale questionnaire, and a retrospective interview. Due to the multidimensional nature of language use, the questionnaire may have failed to document the full array of strategies the participants used in the test-taking setting. In addition, due to many administration problems, the retrospective interview was conducted with a limited number of the participants. Thus, further studies can be conducted to explore the strategic behaviors of a large number of participants in test-taking settings through using different qualitative data collection methods. Besides, a retrospective verbal report was used in this study to elicit the cognitive processes of test taking from the participants. Although the retrospective verbal report provided useful information on how the participants comprehended reading passages and took the reading test, further studies can be conducted to explore the participants' mental strategic processing in test-taking settings using think aloud or introspective verbal report.

References

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

Allan, A. (1992). Development and validation of a scale to measure test-wiseness in EFL/ESL reading test takers. *Language Testing, 9*, 101–122.

Anderson, J.R. (2000). Learning and memory: An integrated approach (2nd Ed.). New York: John Willeyand Sons.

Bachman, L. F. (1990). *Fundamental considerations in language testing*. Oxford: Oxford University Press.

Bachman, L. F., & Palmer, A. S. (1996).*Language testing in practice*. Oxford: Oxford University Press.

Bachman, L.F., & Palmer, A.S. (2010).*Language assessment in practice*. Oxford: Oxford University Press.

Cohen, A.D. (1998). Strategies and processes in test taking and SLA. In L. F. Bachman, & A. C., Cohen (Eds.), *Interfaces between second language acquisition and language testing research* (pp.90–111). Cambridge: Cambridge University Press.

Cohen, A.D. (2006).The coming of age of research on test-taking strategies.*Language Assessment Quarterly, 3*(4), 307-331.

Cohen, A. D., & Upton, T. A. (2007). I want to go back to the text: Response strategies on the reading subtest of the new TOEFL. *Language Testing*, *24* (2), 209 – 250.

Enright, M.K., Grabe, W., Koda, K., Mosenthal, P., Mulcahy-Ernt, P. &Schedl, M. (2000).*TOEFL 2000 reading framework: A working paper*. (TOEFL Monograph Series MS No. 17). Princeton, NJ: Educational Testing Service.

Goldman, S.R. (1997). Learning from text: Reflections on the past and suggestions for the future. *Discourse Processes*, *23*, 357–398.

Gorin, J. S. (2002). *Cognitive and psychometric modeling of text-based readingcomprehension GRE-V test items.*Unpublished doctoral dissertation, University of Kansas.

Gorin, J.S. (2005). Manipulation of processing difficulty of reading comprehension test questions: The feasibility of verbal item generation. *Journal of Educational Measurement, 42,* 351 – 73.

Grotjahn, R. (1986). Test validation and cognitive psychology: Some methodological considerations. *Language Testing,3,* 159-85.

Long, M. H. (1984). Process and product in ESL program evaluation. *TESOL Quarterly,8*, 409-25.

McNamara, T., &Roever, C. (2006).*Language testing: The social dimension*. The University of Melbourne: Blackwell Publishing.

Nevo, N. (1989). Test-taking strategies on a multiple-choice test of reading comprehension.*Language Testing*, *6*(2), 199-215.

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

Purpura, J. E. (1999).*Learner strategy use and performance on language tests: A structural equation modeling approach*. Cambridge: Cambridge University Press.

Rupp, A.A., Ferne, T., & Choi, H. (2006). How assessing reading comprehension with multiple-choice questions shapes the construct: A cognitive processing perspective, *Language Testing, 23*(4), 441-474.

Sasaki, M. (2000). Effects of cultural schemata on students' test-taking processes for cloze tests: A multiple data source approach, *Language Testing, 17* (1), 85–114.

Storey, P. (1997).Examining the test-taking process: A cognitive perspective on the discourse cloze test.*Language Testing, 14,* 214-31.

Van Dijk, T. (1985).Strategic discourse comprehension.In T. Ballmer (Ed.).*Linguistic dynamics: Discourses, procedures, and evolution* (pp. 30–61).Berlin: Walter de Gruyter.

Weir, C. J. (2005).*Language testing and validation: An evidence-based approach*. Oxford: Palgrave.

Yamashita, J. (2003). Processes of taking a gap-filling test: Comparison of skilled and less skilled EFL learners. *Language Testing, 20*(3), 267-293.