THE USE OF TEST-TAKING STRATEGIES AND STUDENTS' PERFORMANCES IN ANSWERING TOEIC READING COMPREHENSION QUESTIONS

Jia-Ying Lee

ABSTRACT

This article examines the test-taking strategies of high- and low-scoring Chinese-speaking participants when they answer English multiple-choice reading comprehension questions. Thirty-two participants took a TOEIC reading test, provided think-aloud protocols, and joined a post-task interview. The data come primarily from qualitative analysis and were compared with those from quantitative analysis. Strategies of four kinds emerged in the results: word/lexical-based, sentence-based, reading comprehension strategies, and overall technical approaches. The discussion provides insights into the employment of test-taking strategies and the relationship between strategy use and reading performance.

Key Words: test-taking strategies, multiple-choice format, reading comprehension assessment

INTRODUCTION

Multiple-choice questions have been widely welcomed by designers of high-stakes English reading comprehension tests for their power to elicit responses from test-takers. Although such popularity is commonly attributed to its scoring efficiency and objective ratings (Rupp, Ferne, & Choi, 2006), the process of how test-takers make sense of the reading text in a multiple-choice context has remained complex—calling for more light to be shed on it by empirical evidence (Cohen, 2014). In addition, more studies are needed to explore how proficient and less proficient readers may behave differently in their use of test-taking strategies when they process reading tests. Such research is necessary not only because it would bring further knowledge of the cognitive processes

of the readers, but because it may also identify strategies suitable for inclusion in the instructions for such tests. This is a trend urged by modern scholars (Denton et al., 2015; Wu & Zumbo, 2017) because the pedagogical implications that it generates can further benefit reading curricula in the field. The results of examining the processes that test-takers use to supply the correct answer may in some ways also strengthen the validity of the test (cf. Huang, 2016; Messick, 1996; Urquhart & Weir, 2014). Given the above, this article reports on an empirical assessment of a group of Taiwanese respondents, aiming to explore their test-taking strategies when they attempted the reading section of a TOEIC (Test of English as International Communication)—a widely taken language test among many Taiwanese college graduates. The strategies used by the participants were further cross-checked against their TOEIC reading scores so as to determine any differences between skillful and less skillful readers. Two research questions were formulated accordingly.

1. What are the types of test-taking strategies that the participants of this study used in answering the TOEIC reading section questions?
2. Are the test-taking strategies identified here from respondents with high scores different from those with low scores in the TOEIC reading test?

LITERATURE REVIEW

This section starts with a brief introduction of the key terms recurring in the paper, in order to clarify any similarities/differences among them. It then provides a theoretical and empirical framework for the study by reviewing related literature on ESL reading comprehension, strategy use by learners with different language proficiencies, and testing reading comprehension and test-taking strategies.

Definition of Terms

Comprehension strategies. In comparison to specific strategies, such as metacognitive strategies or cognitive strategies, *comprehension strategies* is a general term referring to any strategic behaviors that language users adopt to comprehend texts and extract meaning.

Metacognitive strategies. In the context of language learning, metacognition is related to "learners' awareness and consciousness in adopting appropriate [behaviors] and activities to solve problems in their

cognitive activities related to language use" (Zhang, Goh, & Kunnan, 2014, p. 77). Metacognitive strategies thus refer to readers' deliberate mental behaviors for regulating their strategy management and showing how they solve problems.

Cognitive strategies. Cognitive strategies explicitly concern language users' mental processes of obtaining, storing, or retrieving information. They enable learners to process information between new and background knowledge. Effective use of such strategies are believed to result in improved language performance (cf. Backman & Palmer, 1996; Zhang et al., 2014).

Test-taking strategies. With a precise focus on language testing contexts, the term test-taking strategies refers to the type of plans that test-takers execute to cope with testing tasks.

ESL Reading Comprehension

Once regarded as a simple receptive skill, the modern theoretical grounding in the field defines reading as a highly complicated and interactive process in which readers use various resources to construct meaning from texts (Grabe, 2009; Urquhart & Weir, 2014). In the process, "comprehension occurs when the reader extracts and integrates various [pieces of] information from the text and combines it with what is already known" (p. 4). Such a reading comprehension framework gives emphasis to the role of readers, who are portrayed as actively constructing meaning from the text by interpreting the information that the writer creates. As Grabe (2009) posits, the core of reading comprehension lies in readers' ability to mentally interconnect with the text and to form a coherent representation of the text being read. On this foundation, sheer vocabulary decoding and grammatical skills are no longer the primary focus but only aspects of successful reading comprehension. It has also been highlighted that reading for different purposes engages different cognitive processes on the part of the reader (cf. Weir, Hawkey, Green, & Devi, 2006). Since readers read differently depending on the context and goals, among other things, the strategies deployed in high-stakes tests are unique and are therefore important in research on reading comprehension.

Strategies Used by Learners with Different L2 Language Proficiencies

In recognizing the active role of readers, researchers in L2 reading

fields over past decades have shown an interest in investigating the comprehension strategies that readers adopt in various reading contexts (Alderson, 2000; Cohen, 2006, 2014; Erler & Finkbeiner, 2007; Purpura, 1997; Radojevic, 2006; Urquhart & Weir, 2014; Weir et al., 2006; Wu & Zumbo, 2017). Comprehension strategies in general are conceptualized as "mental operations involved when readers approach a text effectively and make sense of what they read" (Barnett, 1988, p. 150). This perspective links strategies to the mental behaviors that readers engage in when they interact with texts. In light of this, cognitive strategies, individual as they are, are central to comprehension.

Comprehension strategies are also found to characterize skilled and unskilled readers (Alderson, 2000; Denton et al., 2015; Kim, 2010; Koda, 2005; Nikolov, 2006; Zhang, Gu, & Hu, 2008). The consensus is that there are clear distinctions in both quantity and quality between the strategies that proficient and less proficient readers use. This is evidenced in the positive correlations reported between the reading test performance and the number of strategies used (Grabe, 2009; Phakiti, 2008; Zhang et al., 2008). The findings of Denton et al. (2015) and Huang et al. (2006) also support this inference. While the former reports that readers who are more skilled apply significantly more strategies to support the integration of ideas, the latter specifies that greater language proficiency results in different kinds of strategies; high-proficiency readers tend to use more global or top-down strategies than less skillful readers do. Clearly, as Canale and Swain (1980) conclude, greater strategic competence, whether verbal or nonverbal, empowers learners to compensate for their (insufficient) language knowledge or performance to increase their L2 reading ability.

In addition to comprehension strategies in general, the role of metacognitive strategies has also received much attention in the field. In effect, successful readers are skillful metacognitive strategy users, people who are more aware than others of the way in which they control their reading process and are able to verbalize their awareness (Nikolov, 2006) and who can keep the meaning of the passage in mind and concentrate on conceptual processing (Zhang et al., 2008). Conversely, less proficient readers are predominately involved in decoding as they read, and they apply strategies less effectively (Alderson, 2000).

Some researchers still caution against correlating the strategies that readers adopt with their proficiency levels, despite theoretical and empirical support for this link. First, in Sarigs' (1987) study, participants'

strategy use did not affect their comprehension. Anderson (2000) also concluded that both proficient and non-proficient readers appeared to use the same kinds of strategy, corroborating the results of Brantmeier's (2005) study in which the use of global strategies led to both successful and unsuccessful reading comprehension. Clearly, the relationship between strategy use and reading performance has not been established so far. In this regard, more studies that focus on the correlation between types of strategy use and L2 reading performance are needed.

Testing Reading Comprehension and Test-Taking Strategies

Reading comprehension assessments have evolved hand in hand with the theories of reading comprehension, that is, from primarily decontextualized linguistic knowledge to a higher level of comprehensive understanding. This can be shown from the fact that the TOEIC reading section (2015 version) requires readers to use their ability to integrate a text's macrostructure, now that Text Completion and Double Reading Passages have replaced the Error Recognition questions used in the past. The modifications of reading assessments demonstrate a major concern for test validity. According to Messick (1996), validity reflects the "judgement of the degree to which empirical evidence and theoretical rationales support the adequacy and appropriateness of inferences and actions based on test scores" (p. 13). For this reason, validity is regarded as the most important consideration of test evaluation and application, because a fundamental component of a good test is that it must truly reflect the test-takers' language ability (Bachman & Palmer, 1996; Chapelle, Enright, & Jamieson, 2008).

The format of multiple-choice items is commonly implemented in reading assessments because of its practicality and scoring efficiency, especially in large-scale exams (Rupp et al., 2006). A serious concern pertaining to multiple-choice tests is that some questions can be answered without reading or comprehending the passage related to the questions (Allan, 1992; Cohen, 2006, 2014; Hill & Larsen, 2000)
. Therefore, a score on such items might indicate the ability to guess well or simply use a process of elimination to narrow the possibilities of an answer, both of which threaten test validity as neither of these processes can be identified as part of a reading construct (Phakiti, 2008). In this regard, a multiple-choice format test cannot be claimed as valid unless it presents evidence that it adequately reflects the test-takers'

reading ability.

With these concerns in mind, the reading constructs that different tests claim to measure were investigated by focusing on the test reading processes (Cohen, 2014; Cohen & Upton, 2007; Nikolov, 2006; Urquhart & Weir, 2014; Weir et al., 2006; Wu & Zumbo, 2017). This is because the understanding of the way that examinees reach their test responses has long been believed to be an important means of helping to construct test validity. More importantly, exploring the "test-taking processes which the respondents have selected and which they are conscious of" would develop effective test-taking strategies for practical use (cf. Cohen & Upton, 2007, p. 211). For example, Cohen and Upton argue that three different categories of strategies may be drawn upon in responding to a multiple-choice item: reading strategies (the process related to the way in which examinees read the passage), test-management strategies (summed up as a process of meaningfully tackling test tasks and items), and test-wiseness strategies (the ability to achieve the correct response without understanding the text). Following this line of discussion, researchers have called for a better understanding of test-taking strategies by looking into test takers' qualitative reflection upon their test-taking processes (cf. Andreassen & Braten, 2010; Cohen, 2014; Wu & Zumbo, 2017).

In the literature reviewed above, researchers have investigated strategies through a variety of contexts and within diverse populations. Inspired by the empirical research on the relationship between the types of strategies used and readers' performances, this study has examined the reported use of strategies by Taiwanese EFL learners. Given the critical lack of studies that examine test-taking strategies in high-stakes language tests, the present paper, by comparing the strategy use of high scoring participants with those of others, may bridge the gap and provide insights into TOEIC reading comprehension tests.

METHODS

The research methods and procedure are presented in Figure 1 and elaborated below:
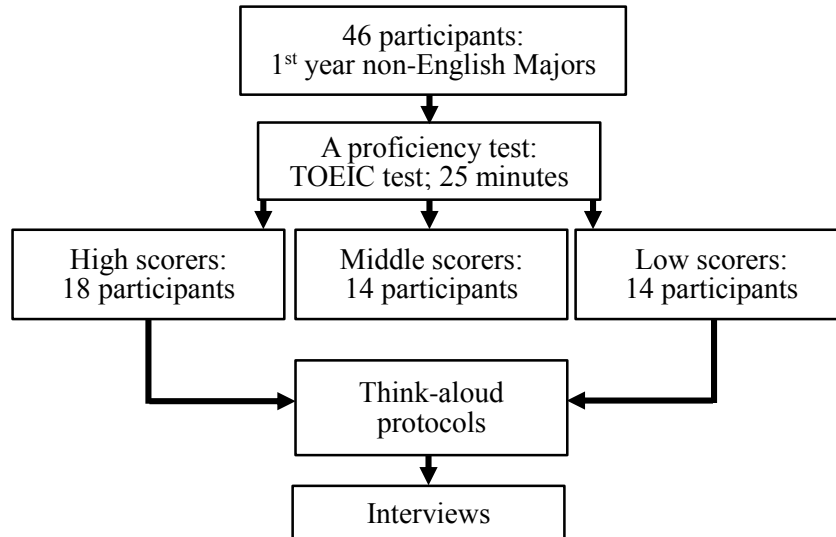
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┌─────────────────────────────────┐
│         46 participants:        │
│   1st year non-English Majors   │
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│      A proficiency test:        │
│   TOEIC test; 25 minutes        │
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| High scorers: 18 participants | Middle scorers: 14 participants | Low scorers: 14 participants |

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              ┌─────────────────┐
              │   Think-aloud   │
              │    protocols    │
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              │   Interviews    │
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Figure 1. Flowchart of the research design

Participants

A university situated in the northern part of Taiwan provided the testing context for the current study. This university, like many others in Taiwan, requires an English curriculum for those enrolled in the freshman and sophomore years and also a graduation benchmark from a high-stakes English proficiency exam. The purpose of setting up this policy has been to increase students' overall English proficiency and competitiveness in the job market. It can thus be seen that TOEIC performance is a key concept included here at the experimental site, and one that also made TOEIC reading tests a suitable tool to use in this study.

A total of 46 first-year non-English majors, mostly aged between 19 and 21, enrolled at this university joined the study. They came from a wide array of academic disciplines, including Computer Science, History, Business Administration, Mass Communication, and so forth; all participants had an average of nine years of formal education in English in Taiwan. To distinguish their proficiency levels in English, a modified TOEIC test (about which detailed information is given below) was distributed to the participants. To comply with the research focus, only

those whose scores were in the top 1/3 (i.e., high scorers) and those whose scores were in the bottom 1/3 (i.e., low scorers) (cf. Gelman & Park, 2009) were involved in the follow-up research procedure. The respondents whose marks spanned the middle 1/3 were eliminated from further inquiries and analysis. Finally, 18 participants (seven males) were assigned to the group of high-level readers, and 14 (six males) were assigned to the group of low-level readers. The distinction of the groups was then determined using statistics, the results of which are reported in the Results section below.

Data Collection and Instruments

The TOEIC test. The TOEIC Official Test-Preparation Guide (Vol. 4) produced by ETS was used to examine participants' reading proficiency. The TOEIC reading test contains questions relevant to daily scenarios that can be found in an international workplace. The material chosen for designing the questions included information adapted from various magazines, newspaper articles, business letters, and advertisements. A total of 100 multiple-choice questions included 40 items under Incomplete Sentences (part 5), 12 items under Text Completion (part 6), and 48 items under Reading Comprehension (part 7).

However, some modifications were made to the test for this study due to constraints of time and resources. In practice, the test material was divided into three different versions of equal item difficulty that was done after meaningful discussions with other experienced reading instructors. Each version contained 33 questions in total, including 13 Incomplete Sentences items, 3 Text Completion items from one passage, and 17 Reading Comprehension items. One of the three versions was then randomly selected to assess participants' reading proficiencies, with the time allocation also adjusted to one third of the official time, 25 minutes.

Think-aloud protocols. In exploring what test-taking strategies readers apply when they complete a reading task, experts in the field, such as Bang and Zhao (2007), Cohen and Upton (2007), and Tian (2000), commonly suggest compiling oral reports from the examinees. Such verbal reports are helpful for gaining insight into what readers are thinking as they respond to test questions, since their thoughts are hidden from outside observers. In particular, as Green (1998) comments, verbal protocols can serve as a method for researchers to use in "directly

gathering evidence that supports judgments regarding validity" (p. 3). For this purpose, a retrospective think-aloud protocol was performed. This particular method was considered because it had the advantage of keeping the process and task intact and not diverting readers' attention to simulating the TOEIC test given them. Although retrospective think-aloud protocols are blamed for giving some readers difficulty in recalling what they did or thought during the reading process, this disadvantage can be "minimized if there is only a short delay between task performance and verbalization" (Bowles, 2010, p. 14). For this reason, the participants of this study were asked to think-aloud immediately after completing their tests. Specifically, they first learned about the purpose of creating a recall protocol. They were then given the TOEIC questions back and were asked to think-aloud how they had tackled the questions one after another. The recall had no set time limit. However, the test had only 33 items, and the participants completed their recall using between 16 and 20 minutes. It should be explained that the four minutes' difference was a result of either more frequent pauses or more detailed explanations, but neither of these affected the participants' major descriptive accounts.

Interview. Following the think-aloud protocols, a semi-structured interview was conducted. It was composed of a set of leading interview questions exploring how they tackled the multiple-choice reading test (see Appendix A), with follow-up questions asked when necessary. The semi-structured interview is constantly used as an effective approach to complement recall protocols (cf. Joh & Schallert, 2014) because of its advantage of allowing individuals to lead the discussion and offers relatively varied information for analysis. The interview accounts in turn help clarify any ambiguous descriptions about each participant's retrospective think-aloud protocol.

All of the high and low scoring participants participated in an interview. To enhance the ease of expression, the interview used the participants' native language, Mandarin Chinese. Each interview, digitally recorded, was at least 30 minutes. The recording was then transcribed for purposes of analysis.

Data Analysis

The study employed both quantitative and qualitative enquiries. Quantitatively, descriptive statistics was first performed on participants'

TOEIC scores to distinguish the high- and low-level groups. Independent *t* tests were then conducted to verify whether the groups were significantly different from each other. A descriptive statistical analysis was then conducted a second time to capture the frequency of each category of strategy reported across all readings in the think-aloud and interview responses after these responses to strategy had been analyzed and coded. Another set of independent *t* tests then examined whether there were any significant differences among the group's mean scores in terms of participants' strategy use and their reading scores. Finally, Pearson's correlation *r* was used to suggest the relationship between test-taking strategy use and test reading achievement.

Qualitatively, the oral responses from the high and low scoring participants were first coded and then analyzed. Several steps were taken to develop the coding scheme. This first stage of coding was for two raters who specialize in reading to transcribe the responses. Specifically, the raters identified verbal statements that included descriptions of processes/approaches that participants used in answering TOEIC tests and extracted instances of strategy use from the verbal reports. Second, each item/statement coded was then analyzed to determine if any part met the definition of a strategy, that is, skills, techniques, or approaches that readers use to understand the text (Barnett, 1988). For example, when a description verbalized by a participant met the definition of a strategy, it was counted as one time for that particular strategy (cf. Cohen & Upton, 2007). When another participant also articulated the same practice, the total number of times that this specific strategy was used was two. The strategy inventory based on the coded transcripts was then generated. After a list of all the strategy transcripts had been compiled, previous research (Alsheikh, 2011; Cohen 2014; Cohen & Upton, 2007; Urquhart & Weir, 2014; Wu & Zumbo, 2017; Zhang et al., 2014) was consulted to determine if the strategies used by the participants in this study had been addressed in the literature and, if so, how they were categorized. Next, the two expert raters in the field then examined the strategies listed, determined the collective concepts among them, and categorized the strategies according to their shared features, such as wording or sequencing. After the raters had agreed on the categories, the researcher made additional modifications and clarifications based on the interview responses to finalize the strategy categories.

In summary, the qualitative data analysis of this study included (a) the verbatim transcript of the responses from all the high and low scoring

participants, (b) the creation of categories of related strategies based on the participants' responses, and (c) the patterns of answering multiple-choice questions, derived from the participants' interviews. Finally, a total of 24 strategy items in four sections was reached. The first three sections are word-based/lexico-grammatical, sentence-based, and reading comprehension strategies specific to TOEIC's three types of language tasks, namely, Incomplete Sentences (part 5), Text Completion (part 6) and Reading Comprehension (part 7). The last section listed technical approaches applicable to all of the TOEIC test questions.

RESULTS

This section first demonstrates initial statistical results to justify the distinction between the high and low groups. The presentation of comprehension strategies for the modified TOEIC reading test was then divided into two parts: qualitative descriptions of strategy use and quantitative comparison of high versus low scoring participants.

Distinction of the Groups

A set of independent *t* tests verified the grouping principle used to create two distinct groups of high and low scorers. Specifically, as Table 1 shows, the high-level group had better scores than the low-level group did in the overall TOEIC scores (High: $M = 27.94$, $SD = 3.11$; Low: $M = 7.00$, $SD = 2.22$) and in all three subsections. Table 2 further confirms that those differences were all statistically significant (Total: $t(30) = 21.28$, $p = .000$; Incomplete Sentence: $t(30) = 11.97$, $p = .000$; Text Completion: $t(30) = 5.59$, $p = .000$; Reading Comprehension: $t(30) = 26.42$, $p = .000$).

Table 1

Descriptive Statistics of TOEIC Test Results for the Groups

Item	Group	N	M / Test item total	SD
Incomplete Sentence	High	18	10.39 / 13	1.85
	Low	14	3.29 / 13	1.38
Text Completion	High	18	2.50 / 3	0.62
	Low	14	1.07 / 3	0.83
Reading Comprehension	High	18	15.06 / 17	1.43
	Low	14	2.64 / 17	1.15
Total	High	18	27.94 / 33	3.11
	Low	14	7.00 / 33	2.22

Table 2

Independent T test Results of TOEIC Test for the Groups

	T test for equality of means						
					SD Error diff.	95% confidence interval	
Item	T	df	Sig.	M diff.		Lower	Upper
Incomplete Sentence	11.97	30	.000	7.10	0.59	5.89	8.31
Text Completion	5.59	30	.000	1.43	0.26	0.91	1.95
Reading Comprehension	26.42	30	.000	12.41	0.47	11.45	13.37
Overall	21.28	30	.000	20.94	0.98	18.93	22.95

Additionally, from a comparative sense, the results presented in Table 1 also liken the high-level group to advanced scorers and the low-level group to low achievers. This is because in this 33-item test, the former had an average of 84.67% accuracy rate (i.e., 27.94 correct answers out of a total of 33 items) and the latter 21.21% (7.00 correct answers out of a total of 33 items). The great differences between the groups should attest to both groups' proficiency levels for this study.

Identification of Strategy Use

Four broad categories of 24 strategies were identified in this study. Strategy Category 1 consists of strategies from the Incomplete Sentences section (part 5) that measures the reading ability to comprehend a sentence. Strategy Category 2 is made up of strategies from the Text Completion section (part 6) that aims to measure short text comprehension. For these two parts, the participants needed to identify a missing word or phrase by choosing the best answer from the four options. Strategy Category 3 identifies strategies from Reading Comprehension (part 7) which assesses readers' reading ability through a diverse text. Last, the strategy use pertaining to technical approaches across all sections are presented in Strategy Category 4. Examples are provided when strategies are not self-explanatory.

Strategy Category 1: word-based/lexico-grammatical strategies. The first of the identified categories referred to the reasoning processes focused on individual items of vocabulary, which contained basic word knowledge about its meaning or grammatical usage. Strategies used in this category reveal the understanding of word recognition, lexical access, usage appropriateness and propositions of the target vocabulary. The first category contains six strategies.

1. *Using the understanding of vocabulary to select the correct answer.*
Ex: There's an object in this sentence, a professional financial advisor, so I should select a transitive verb, such as "consult". The other options here are all intransitive verbs, so they should be changed to talk "to", speak "with", and discuss "with".

2. *Considering the word form by the knowledge of English grammatical rules.*
Ex: When scanning the options, I recognized four different word forms from the word "accurate". Then I jumped back to the sentence that mentioned the action as "answer the questions". From my English grammatical knowledge, I selected its adverb "accurately".

3. *Considering the word tense voice by the knowledge of English grammatical rules.* This type of question asked participants to identify the vocabulary tense by referring to its voice, such as the active or passive voice.

4. *Considering the fixed expression or English idiom.* The options in answering such questions were designed to have similar or overlapping meanings, and participants were asked to identify which

of the four options constituted the most natural and appropriate usage. Participants often checked the preferred option, or sometimes even all the options, before making a final decision.

Ex: In order to take _____ of…., the options provided here had very similar meaning: benefit, advantage, profit…etc. But I think "take advantage of" is the fixed expression.

5. *Considering the verb tense by focusing on a time phrase*. Normally the TOEIC questions test three basic tenses, the past, the present and the future, and sometimes combines the passive voice to make the question more advanced.

6. *Figuring out the target vocabulary by focusing on its word roots.* Strategy 6 specifically featured four options with similar spellings, such as words with the same prefix or suffix.

   Ex: I thought the word "renewing" fits here. "Recurring" means something keeps happening, renewing means to recreate, "restoring" means something fixed, and "reviving" means energetic or life-giving.

   Strategy Category 2: sentence-based strategies. The second identified category referred to the reasoning processes focused at the sentence level, which included contextual information. This category varied from previous word-based strategies in that participants integrated the critical information from different parts of the sentence to help them define the missing information. Since certain texts may involve content dependency, participants took advantage of the semantic or syntactic clues in the context to clarify the relationship between the pieces of information. Five strategies emerged in this category.

7. *Using the understanding of the overall context to infer the option*. As earlier parts of sentences may predict correct responses to later parts, participants searched for semantic clues from the text to make more inferences when identifying a missing word.

   Ex: I looked for the previous sentences to search for clues. The key words "improve" and "install new… equipment" gave me the idea that the answer should be "upgrade."

8. Taking advantage of semantic clues. This strategy was particularly used when the logical connectors gave clues of the way in which different parts of a sentence were connected. For example, they might indicate similar or contrasting meaning, cause and effect, comparison and contrast, etc.

   Ex: The sentence mentioned that the plan was delayed …inclement

weather, so the missing phrase to connect these two parts should be "due to".

9. *Paraphrasing or translating sentences to enhance understanding.* Participants tended to paraphrase the text questions or to translate the sentences into Chinese to aid understanding.

   Ex: According to the second sentence, the painting is available for purchase through the gallery…So I matched the key word "available for purchase" with "sell" some of his paintings.

10. *Jump immediately to the part which contained the missing word and focus on its neighboring part.* This strategy was particularly employed in the Text Completion, since it contained longer texts and participants tended to skip the part which was not being asked about. If a decision could be reached, other parts of the sentence or text would be skipped. Otherwise, participants would read the sentence before or after the part containing the question to look for more clues to a possible answer.

11. *Reread the sentences that are not clear or understandable.*

   Strategy Category 3: reading comprehension strategies. Strategies in the third category referred to the approaches used in the Reading Comprehension section. This part is intended to measure examinees' ability to comprehend an argument or a major idea that is stated in the text. Participants employed strategies in this category to make inferences by locating and synthesizing critical information in the text. Some strategies are also the acts employed to facilitate the reading processes. Eight strategies were identified.

12. *Reading all the questions first as a mental note before going on to the passage.* This strategy was commonly employed, both in Single and Double passages. Since participants were aware that the objective of this TOEIC reading task was to answer the questions as fast as possible in a very limited time, they made a mental note of the questions to help search for ideas when reading.

13. *Skimming the passage quickly to note the chief points before reading the questions.* Some participants preferred skimming the text first in order to absorb the gist of the whole passage, if the passage seemed not too difficult or too long. The title of the passage, and the first sentence and the concluding sentence in each paragraph were focused on.

14. *Reading the question before looking for clues in the related text.* As TOEIC reading questions are multiple-choice questions, participants

took advantage of this format, realizing that the questions were used as indicators of which portions of the text tended to be more important or worth reading.

15. *Rereading a portion of the passage carefully if it seemed to contain a possible answer.* This strategy was particularly often used when participants encountered questions pertaining to supplementary details. In such cases, participants tried to locate the related portion of the text and concentrated on understanding this specific part.
Ex: Which statement was NOT mentioned about Elsa? So I read the beginning of the paragraph again….. traveled the world, a professor at Arizona University, and a host of her own TV show. Thus, the last option, publishing several books was not mentioned.

16. *Extracting the key sentences that convey the main information.* When participants were asked to identify the main points based on the text, they wrestled with the appropriate inference and tried to locate the target sentences which contained the main idea.
Ex: Why will the store's hours be changed? I think this sentence gave the answer: to foster more tourism and shopping…, so the store changed its opening hours in order to boost business in town.

17. *Matching the key word in the question/options to the text.*
Ex: Why does this person write this email? Here, the text mentioned "I want to call your attention to a few inaccuracies"…, so I know the purpose of this email is to "report factual errors in an article".

18. *Focusing on titles, names, numbers, quotations or examples.*

19. *Identifying the relationship between the two passages.*
Ex: This question asked "why did Mr. Whitman receive a check?" Well, "the enclosed check" was mentioned in the second passage. From the first passage, it was mentioned that everything was "in good condition." As revealed, the landlord checked the property and then returned the deposit by check to his tenant.

Strategy Category 4: technical approaches. The last kind of strategy referred to technical approaches. These strategies emerged across all of the TOEIC questions to optimize the performance of this reading task. Since TOEIC reading questions are known to be administered under critical time constraints, test-takers need to find the correct answer as quickly as possible. In this regard, participants employed certain strategies to increase their reading speed because these strategies help their use of time to be more efficient use of time. Five strategies were identified

20. *Using the process of elimination to achieve an answer.* As TOEIC reading questions are all administered in the single selection multiple-choice format, eliminating the options which are contradictory to or not mentioned in the text was very common. This type of strategy has been called test-wiseness (Allan, 1992; Cohen, 2012; Tian, 2000).

21. *When struggling with answer options, focusing on the part that may contain potential answers.* In order to best allocate the limited time when wrestling with the answer options, participants employed this strategy by concentrating on the text deemed worth reading. Once participants identified the related portion of the text, they devoted their attention to understanding that specific part and skipped the parts that were not covered in the questions.

22. *Skip the questions that are perceived to be difficult and time-consuming.* In order to complete as many questions as possible, participants did not follow the questions in order. Instead, they first tackled the questions that they perceived to be easier and less time-consuming.

23. *Using background knowledge in educated guesses.*
Ex: The question asked "why was the postcard sent (from the dentist)?" And from my personal experience, I only received the postcard when the dentist wanted to remind me to make an appointment. So option A (welcome a new patient), C (announce a change in office hours) or D (recommend a dental product) were not considered.

24. *Calculating the remaining time in order to adjust the reading speed.*
Ex: When I only have 5 minutes left for the reading comprehension, I would hurry up finishing the passages and go back to check the unanswered questions from the previous two sections.

Strategy Use and Test Score

To determine whether student readers of different proficiency levels exercised different test-taking strategies, the frequency of the strategies practiced by high and low scoring groups were first numbered and then computed for descriptive statistics and a set of independent *t* tests.

As Table 3 shows, the high-scoring group employed more strategies overall ($M = 82.67$; $SD = 11.32$) than the low-scoring group did ($M = 72.35$; $SD = 11.67$). Interestingly, in detailed comparisons, the former

group used more strategies from Categories 1, 2, and 3, but the latter group exercised more strategies from Category 4.

Table 3

Means and Standard Deviations of Strategies by High and Low Scorers

Strategy Frequency				
Group	Category	*N*	*M*	*SD*
High	1	18	27.39	5.96
	2	18	11.39	2.43
	3	18	31.56	5.23
	4	18	12.33	4.19
	Total	18	82.67	11.32
Low	1	14	22.64	6.87
	2	14	10.50	4.33
	3	14	20.00	6.79
	4	14	19.21	3.93
	Total	14	72.36	11.67

The differences found in Table 3 are also supported by *t* test results. As shown in Table 4, there were overall significant differences in strategy patterns between the high and the low scorers when they undertook the reading comprehension tests. Specifically, significant differences were found in Strategy Categories 1, 3 and 4. The results indicate that whereas high scorers employed more strategies in Category 1 (word-based/lexico-grammatical strategies) and 3 (reading comprehension strategies) than the low scorers did, the latter adopted strategies in Category 4 (technical approaches) significantly more often than the former. No significant difference was detected in terms of Strategy Category 2 (sentence-based strategies), which suggests that in reading tests, high and low scoring candidates in this study shared sentence-based strategies.

Table 4

Results of the Independent T test for Strategy Frequencies between High and Low Scoring Groups

Strategy Category	M Differ-ences	Std. Error Differ-ence	95% Confidence Interval		t	df	p
			Lower	Upper			
1	4.75	2.27	.11	9.38	.14	30	.045
2	.89	1.29	-1.81	3.59	.69	19.26*	.499
3	11.56	2.12	7.22	15.89	5.44	30	.000
4	-6.88	1.45	-9.85	-3.91	-4.74	30	.000
Total	10.31	4.09	1.96	18.66	2.52	30	.017

Note. *Equal variances not assumed for the Levene's test ($F = 4.457$, $p = .043$)

Table 5 shows additional evidence substantiating the different strategy patterns used by the high and low scoring groups and explaining the relationship between strategy use and different proficiency levels. First, the overall strategy use was in a statistically significant positive correlation with the total TOEIC scores ($r = .463$, $p = .008$) and subsection scores (Incomplete Sentence: $r = .465$, $p = .007$; Text Completion: $r = .432$, $p = .014$; Reading Comprehension: $r = .436$, $p = .013$). This suggests that in general the more proficient participants used relatively more test-taking strategies; in contrast, the less proficient participants (lower scores) were found to use less strategies.

Table 5

Correlation between Test-Taking Strategy Use and Test Reading Performance

TOEIC Section		Strategy Category				
		1	2	3	4	Overall
Incomplete Sentence	*r*	.422*	.129	.685***	-.594***	.465**
	Sig.	.016	.481	.000	.000	.007
	N	32	32	32	32	32
Text Completion	*r*	.340	.248	.546**	-.426*	.432*
	Sig.	.057	.172	.001	.015	.014
	N	32	32	32	32	32
Reading Comprehension	*r*	.371*	.152	.710***	-.649***	.436*
	Sig.	.037	.407	.000	.000	.013
	N	32	32	32	32	32
Total	*r*	.401*	.159	.714***	-.634***	.463**
	Sig.	.023	.386	.000	.000	.008
	N	32	32	32	32	32

*$p < .05$, **$p < .01$, ***$p < .001$

    Second, while Strategy Categories 1 and 3 were almost always significantly correlated to the total TOEIC scores and subsection scores (except for the marginal significance, $r = .340$, $p = .057$, between Category 1 and Text Completion), Category 1 was found with the strongest correlation with Incomplete Sentence ($r = .422$, $p = .016$) among the subsections, and Category 3 with Reading Comprehension ($r = .710$, $p = .000$) (see Table 5). These multiple positive correlations suggest that the more frequently the strategies in both Categories 1 and 3 were used, the better score the participants received in the TOEIC subsections. On a related dimension, this finding may suggest that instead of using Category 1 solely for Incomplete Sentence or Category 3 for Reading Comprehension, the high scorers might have also exercised more strategies of different categories across different TOEIC

subsections, thus leading to the multifaceted positive correlations between different categories and test sections. This being suggested, it seems also feasible to interpret the stronger correlation between Category 1 and Incomplete Sentence as most capable of reflecting the features of the Incomplete Sentence section. Likewise, the stronger correlation between Strategy Category 3 and Reading Comprehension may also be interpreted as best coping with the nature of the Reading Comprehension section. By and large, this in turn justifies the categorization of Strategy Categories 1 and 3.

Third, Strategy Category 4 alone is in a statistically significant *negative* correlation to all of the test scores (Total: $r = -.634$, $p = .000$; Incomplete Sentence: $r = -.594$, $p = .000$; Text Completion: $r = -.426$, $p = .015$; Reading Comprehension: $r = -.649$, $p = .000$). This consistency suggests that the more proficient participants tended to use less Category 4 strategies while the less proficient students used more of them. Likewise, this specific correlation between Category 4 and all the test items confirms the categorization process.

Finally, although positive correlations were found between Strategy Category 2 and the TOEIC scores, they were statistically non-significant (Total: $r = -.159$, $p = .386$; Incomplete Sentence: $r = .129$, $p = .481$; Text Completion: $r = .248$, $p = .172$; Reading Comprehension: $r = .152$, $p = .407$). This suggests that the participants' TOEIC scores were neither significantly better nor worse when they had more or less frequent use of Category 2 strategies.

DISCUSSION

This study examined the test-taking strategies employed by high and low scorers for completing TOEIC multiple-choice reading comprehension questions. The study results reveal that in general the high-scoring participants' use of test-taking strategies outnumbered those of their low-scoring counterparts. While such a finding supports a fundamental conclusion from previous researchers who submit that a positive correlation exists between strategy use and language outcome (e.g., Alderson, 2000; Phakiti, 2008; Urquhart & Weir, 2014), a closer examination of the participants' use of specific strategies shows mixed results, meriting further discussion.

First, the specific finding that the high-scoring group employed more word-based/lexico-grammatical strategies echoes a statement by Koda

(2005) and Lin (2002), to the effect that word recognition plays a vital role in L2 reading comprehension. In other words, the knowledge of vocabulary is one factor leading to successful reading comprehension, which in turn probably explains why the high scorers in this study were capable of demonstrating more word-based skills than were the low scorers. Such interpretation can be further validated when considering the submission of Macaro and Erler (2008), that "automaticity of word recognition frees up higher level processing for meaning across phrases, sentences, paragraphs and whole texts" (p. 92).

That the high-scoring group outperformed the other group in using word-based/lexico-grammatical strategies also advances the findings of Urquhart and Weir (2014) and Zhang et al. (2014). This is because the studies by Urquhart and Weir (2014) and Zhang et al. (2014) submit that lexico-grammatical reading ability is one influential component of test-takers' reading test performance, whereas the present study confirms how the use of word-based/lexico-grammatical strategies distinguishes skilled from unskilled reading test-takers. Furthermore, this particular finding also supports the finding of Zhang et al. (2014) alone, in that test-takers' lexico-grammatical reading performance is subject to their use of strategy.

Though the present study affirms the finding about the value of using candidates' word-based/lexico-grammatical strategies to separate high from low scorers, it is also important to further consider possible reasons for this. First, it is likely that high scorers are more capable of deploying sufficient word knowledge, including meanings, forms and fixed expressions. Given such skills, they may even be able to infer the meaning of unknown words by detecting prefixes and suffixes, as evidenced in their interview responses about the skills needed for the strategies in Category 1. This automatic word recognition may allow high scorers to focus on overall sentence meaning and to take advantage of syntactic structures, which in turn facilitates the process of discerning an author's communicative intent. In contrast, however, low scorers, even though they depend on bottom-up strategies, are more likely to suffer from their limited word recognition, which causes them to struggle with interpreting the meaning of what they read. In other words, low scorers in this study may have faced the difficulty of extracting lexical information and, therefore, spent most of their time on decoding the text (cf. Alderson, 2000). To sum up, with lower-level decoding skills, low scorers are less likely to read fluently and attend to the sentence meaning

without being slowed down by word-recognition demands.

Second, the finding about the use of reading comprehension strategies, such as those defined in Category 3, corroborates the current literature in the field. On the one hand, the result verifies the statement by Grabe (2009), who highlights the significance of teaching or learning about reading comprehension strategies because they help reading comprehension. As the present study results reveal, the high-scoring group did indeed successfully demonstrate more varied strategies in this dimension than did the low-scoring group. This is probably because, compared to the low scorers, the high scorers were more able to attend to higher-level global comprehension processes and were thus more skillful at locating the correct text to get the right answer. That is, high scorers not only tried to understand the text literally but also reconstructed and summarized the text. Some strategies that they practiced confirm this interpretation, such as extracting the key points of the text, matching the key points in the questions to the text, and successfully distinguishing the relationships of two passages in terms of text meaning.

On the other, the specific strategies of Category 3 used by the participants of this study substantiate findings in previous studies that indicate how readers adjust and optimize their comprehension strategies to suit different reading materials and purposes (Andreassen & Braten 2010; Rupp et al., 2006). As seen in the interview accounts, when faced with the multiple-choice items that formed the section where the strategies of Category 3 were elicited, participants considered different approaches in responding to each given language assessment measure. Additionally, in coping with this section, participants described how they found ways to take advantage of the multiple-choice format. For example, strategy 12 (*Reading all the questions first as a mental note before going on to the passage*) and strategy 14 (*Locating the related text to look for clues after reading the question*) were the most common strategy choices. The participants all revealed that they were aware of the multiple-choice format and were using the questions as indicators of which parts of the passage were likely to be more important or worth reading, although readers of different levels of proficiency used the strategies differently, in terms of both the type and the frequency of a strategy.

Third, interestingly, the low-scoring group adopted more technical approaches than the high-scoring group did. While such a finding seems to contradict previous research findings, it actually shows that such

different choices of strategy type between the low and the high scoring groups further endorses the wide difference in the modes of employing test-taking strategies adopted by proficient and less proficient readers. The fact that significantly negative correlation test results were only found for this Category and learner proficiency further highlights the difference between high and low scorers in terms of strategy use. The main cause for the variance may result from the difference between the nature of Strategy Category 4 and that of the others. As introduced earlier, the strategies employed in the first three categories are cognitive strategies, which require learner abilities in processing information between new and background knowledge, so they are more likely to be exercised by relatively advanced language users. In contrast, the overall approaches in Strategy Category 4 fall into the realm of metacognitive regulation, where readers execute plans for solving problems. Strategies as such demand relatively less linguistic knowledge.

This being so, it is not surprising to see why in this study the less skilled participants tended to adopt technical approaches more often than the skilled readers did. First, the interview responses show that both groups of participants knew about the cognitive demands of the given task, so they shared an awareness of metacognitive strategy use during the reading process. However, not every type of strategy use helps test performance. As Cohen (2006) concludes, test-taking strategies are not inherently effective or ineffective; their successful use relies on whether they are suitable for the task. Although both groups in this study adopted the strategy of elimination, tried to focus on the important parts, and adjusted their reading speed by calculating the remaining time, these strategies benefited the high scorers more, because this group adopted them more effectively and often in accordance with attempts to make meaning.

In contrast, however, the low scorers had limited understanding of the text due to either word or grammar recognition problems and this probably resulted in their having difficulty when it came to choosing between accurate and inaccurate options. So, even though they also used the process of elimination, tried to locate the important parts of the text and relied on their background knowledge, it did them little good. In addition, one possible reason why they applied more metacognitive strategies, albeit ineffectively, may be that they were trying to compensate for their limited understanding of the text.

Apart from the differences between the groups' use of strategies in

Strategy Categories 1, 3, and 4, it is also important to discuss possible reasons why no significant difference was found between the groups in terms of their use of Strategy Category 2: sentence-based strategies. One possibility concerns the Chinese pedagogical background where bottom-up and detailed reading methods are preferred (Abbott, 2006). Since the strategies in Category 2 belong to more top-down reading models, the habitual reading model of the Chinese participating students probably prevented them from using strategies in this category, regardless of reading proficiency. By and large, the fact that the Category 2 strategies were the ones least used by both groups confirms this interpretation. The interview results also support such a possibility, for the participants revealed that they relied more on individual words and were not confident enough to approach the text from a broad grasp of it. In light of this, sentence-based strategy instruction could well be implemented in a future reading curriculum that aimed to enable readers from a Chinese educational background to become more familiar with top-down reading approaches.

CONCLUSION

The overarching goal of this study was to gain a better understanding of the way that test-taking strategies were used on the reading section of the TOEIC and how they were deployed by high and low scorers. The findings suggest that the multiple-choice questions appeared to provide important cues for test-takers, which may result in a processing mode distinct from the modes of non-test situations. In addition, the findings of this study showed that the employment of strategies can readily differentiate a good from a poor performance. Drawing on this information, one clear implication for instruction is to teach students to become strategic readers, in particular by focusing reading pedagogies on the strategies used by high scorers in order to better prepare future subjects of reading tests. As the evidence of this study shows, high scorers were highly aware of this reading task; they employed a repertoire of strategies which helped their comprehension. By treating test-taking strategies as part of the L2 reading curriculum, rather than as a separate topic, particular groups of student readers, especially low-level achievers, could benefit considerably.

Finally, although this study reveals a number of interesting findings, they should not be considered conclusive, due to the study's limitations.

For example, since the participants in this study were, to some extent, different from real TOEIC test-takers, their use of strategy may vary. In addition, the study considers only 32 participants from one university, which limits the generalizability of the findings.

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Jia-Ying Lee

CORRESPONDENCE

Jia-Ying Lee, Department of English, Tamkang University, New Taipei City, Taiwan
Email address:jylee@mail.tku.edu.tw

APPENDIX

Interview Questions

1. In general, please describe your experience of coping with the TOEIC questions.
2. How did you perceive such a multiple-choice format reading test?
3. Please describe how you answered the questions in the TOEIC Incomplete Sentence section.
4. Please describe how you answered the questions in the TOEIC Text Completion section.
5. Please describe how you answered the questions in the TOEIC Reading Comprehension section.

應考策略之運用與多益閱讀理解測驗之表現

李佳盈
淡江大學

本研究檢驗以中文為母語的高、低學習成就者在進行多益閱讀測驗時的應考策略使用表現。三十二名考生完成一項多益試驗、參與試後「放聲思考」（think-aloud protocols）、並接受一對一訪談。所收集的研究資料以質性分析為主，並佐以量化分析參照。研究結果帶出四類應考策略模式：一、詞彙與詞彙語法策略（word-based/lexico-grammatical strategies），二、以句子為基礎之判斷策略（sentence-based strategies），三、文意閱讀理解策略（reading comprehension strategies），四、技術性答題策略（technical approaches）。本文最後討論應考策略的運用效益，並深究策略使用與閱讀表現之間的關聯。

關鍵詞：應考策略、多選題模式、閱讀理解測驗