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An Examination of the Metacognitive Reading Strategies Used by Native Speakers of Arabic When Reading in English and Arabic

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Abstract

This study examined the metacognitive awareness and reading comprehension strategies used by advanced proficiency ESL readers whose native language is Arabic. The study looked at the perceived use of reading strategies by Arabic native speakers in Arabic and English and their actual use of these strategies in reading academic texts in the two languages. The goal was to compare the reading strategy profiles of Arabic native speakers in English and Arabic through quantitative means using a self-report survey of strategy use (n=90), and qualitative means using a think-aloud protocol with a subset of the original sample (n=10). The topic and research questions are pertinent because they add to a relatively small database showing Arabic native speakers rely heavily on reading strategies in their L2 than when reading in their L1.

Keywords: Metacognitive Reading strategies, Arab Native speakers, Reading in two languages

1. Metacognitive Reading Strategies

A number of empirical investigations have established a positive relationship between metacognitive strategies and reading comprehension (Block, 1992; Carrell, 1989; Garner, 1987; Olshavsky, 1976-1977; Pressley & Afflerbach, 1995). These researchers found that the strategies that readers use when interacting with printed materials play an important role in reading comprehension in first and second language. Other investigators found that successful readers use more reading strategies than unsuccessful ones (Alsheikh, 2011; Block, 1992; Chamot & El-Dinary, 1999; Lau & Chan, 2003; Lau, 2006; Mokhtari, 2008; Mokhtari & Sheorey, 2008). While others, Cohen (1986) and Oxford and Crookall (1989) call for more research in the area of second language acquisition that uses think-aloud to tap readers' mental processes.

Metacognition is relatively a new concept, but the skills to which it refers have long been recognized (Brown, 1980). For example, Dewey (1933) and Thorndike (1917) recognized that reading incorporates what we now call metacognitive activities such as planning, checking, evaluating, understanding, monitoring and reasoning which is similar to Goodman's (1976) view, who emphasized that readers must test their hypotheses against the "screens" of meaning by asking themselves if what they are reading makes sense. Reading comprehension then is viewed as problem-solving activities (Olshavsky, 1976-1977; Hosenfeld, 1977; Desmet, & Duyck, 2007).

The investigation of reading strategies is a way of gaining invaluable insights into the nature of the reading comprehension (Stevenson, Schoonen & Glopper, 2003). Comprehension monitoring subsumed under the umbrella of metacognition, which consists of any attempt that allows readers to judge whether comprehension is taking place and to take compensatory action accordingly (Block, 1992). Hence, comprehension monitoring is based on cognitive learning in which learners are viewed as mentally active participants in teaching-learning interactions (Chamot & O'Malley, 1996). For example, several researchers have identified many metacognitive skills involved in reading (Brown, 1980; Mokhtari & Reichrad, 2002), such as clarifying the purposes of the reading, identifying the important aspects of the text and focusing attention on the main aspects of text rather than trivia (Brown, 1980). For example, Carrell's (1989) research on Spanish native and English native speakers college students revealed that those students

adjust their reading strategies on the basis of the language of the text and their own perceived proficiency in that language. Jimenez, Garcia and Pearson (1994, 1995, 1996) conducted research to understand the cognitive and metacognitive knowledge of proficient bilingual Latino readers; they found that those readers possessed an awareness of the relationship between Spanish and English, Jimenez et al. (1996) also found that translation and searching for cognates were strategic activities for the Latina/o students.

The number of factors influencing reading ability increases drastically when considering reading in a second language (Block, 1992). For example, Langer, Bartolome, Vasquez, and Lucas (1990) found that bilingual Spanish children used knowledge of Spanish as support when they encountered difficulty in reading English. Other studies aimed at examining the reading strategies used by Chinese native speakers when they read in English (Feng and Mokhtari, 1998; Kong, 2006), these studies found that subjects used more strategies when reading in English than in Chinese; similar results were also found by Stevenson Schoonen & Glopper (2003) when they studied Dutch high school students. Furthermore, in a study that examined the differences in the reported use of reading strategies of native and non-native readers when reading academic materials (Sheorey and Mokhtari, 2001). The authors found that both native and non-native readers display awareness of nearly 30-targeted strategies and regardless of their reading ability the readers attributed the same order of importance to the types of reading strategies used. The subjects gave more importance to Problem-Solving strategies, Global Reading strategies and Support Reading strategies respectively (Sheorey and Mokhtari, 2001). In a recent study by Malcolm (2009) which investigated the awareness of a hundred-sixty Arab-speaking medical students studying in English. The study found significant differences in reported use of metacognitive strategies in general and in translating strategies from English to Arabic with low English proficiency and the first year reported more translation than the upper-year students report.

Although there is an overwhelming number of studies on various aspects of second and foreign language reading, there is no study that the authors are aware of that investigated the metacognitive reading strategies of successful and proficient readers in Arabic and English, except a case study of Arabic trilingual readers (Mokhtari, 2008). For example, a compelling evidence from research reveals that there is a strong relationship between the use of metacognitive strategies and reading which can facilitate learning and text information processing (Brown, 1980; Macaro, 2006). A study of the metacognitive awareness and strategies use of Arabic native speakers will result in a better understanding their reading in two languages. Therefore, this study aimed at examining the perceived use of reading strategies and the real time or actual use of the strategies by Arabic native speakers. The questions of interest include the following:

(1).Are there any significant differences in the reading strategies that Arabic native speakers report using when they read academic materials in English and Arabic?

(2).What specific reading strategies do native speakers of Arabic actually use when reading academic texts in the two languages?

(3).What is the difference between the perceived use and the actual use of reading strategies across the two languages?

2. Method

2.1 Participants

There were 90 participants in this study (79 males and 11 females). They were undergraduate (27%) and graduate (73%) native speakers of Arabic students pursuing their degrees in five Midwestern universities in the United States. The participants' age ranged from 17 to 47 years old with the age mean of 31 years. The participants' mean length of stay in the U.S. is five years. The participants reported that their GPA range is from 3.20 to 4.00 and the mean is 3.71. The participants' mean of their TOFEL scores is 578 (SD=29.91). The study consisted of two phases. In the first phase, the 90 participants reported the reading strategies that they use by completing a Survey of Reading Strategies (SORS). The second phase of the study featured an in-depth investigation of ten participants actual use of the reading strategies in the two languages.

2.2 Materials Used in the Study

All the participants completed the Survey of Reading Strategies (SORS) (Mokhtari & Sheorey (2002). The SORS uses a 5-point Likert scale, it ranges from 1= 'I never do this' to 5= 'I always do this.' The authors outlined that the SORS instrument measures three broad categories of strategies. These categories are: (1) the Global Reading Strategies (GLOB) which can be thought of as generalized or global strategies aimed at setting the stage for the reading act; (2) the Problem Solving Reading Strategies (PROB), which are localized, focused problem-solving or repair strategies used when problems develop in understanding textual information; and (3) the Support Reading Strategies (SUP) which provide the support mechanisms or tools aimed at sustaining responsiveness to reading (Mokhtari & Sheorey, 2002). The instrument was field-tested extensively with diverse student populations including native and non-native speakers of English and was found to have well-established psychometric properties including

validity and reliability data (Alpha = .93) which are described in Mokhtari & Reichard (2002). The SORS instrument was administered in Arabic and in English.

2.3 Reading Passages

Two expository reading passages in English and Arabic were used.   The readability of the passages was judged by a Flesch Kincaid readability formula for English and group judgment for Arabic by having group members rating the readability for the Arabic text. Both passages were around 12-14 readability level. The English passage "The Breath of Life" by Christine Gorman (2000) dealt with inhaled steroids and its side effects on children with Asthma. The Arabic passage [Nessamat Alassari] "نسمات العصارى" (Afternoon Breeze) by Gamal Al-Gaitani (2001) dealt with the scientific cooling system used by ancient Egyptians and continued to be used until the mid of the 20th century in Cairo.

2.4 Data Analysis

The data from the SORS was analyzed using descriptive statics while the think aloud data was analyzed using the Constant Comparative Methods. The Constant Comparative Analysis, an analytical scheme developed by Glaser and Strauss (1967) and later refined by Lincoln and Guba (1985) was used to identify the reading strategies and extract instances of strategies used. We also followed the clustering and grouping of patterns that share certain configurations described by Miles and Huberman (1996). To analyze the think-aloud data, the principal investigator was assisted by three judges to ensure the interrater reliability of the coding by following strategy identification in four iterative stages. First, examining the strategy occurrences; second, integration of categories and properties from incidents comparison; third, a formulation of a smaller set of categorical concepts, and the fourth stage involved providing the content behind the SORS categories.

3. Results

3.1 Research Questions

Question # 1: Are there any significant differences in the reading strategies that Arabic native speakers report using when they read academic materials in English and Arabic?

To answer this question, the students' responses were examined for the individual strategies as well as for the three categories or subscales of the Survey of Reading Strategies (SORS) in English and Arabic. As Table 1 shows, the means of individual strategies reported show that the participants have a high level of awareness of reading strategies when reading in both languages. The mean strategy use ranged from a high of 4.38 to a low of 2.41 when reading in English (overall M = 3.58; SD= .46). Similarly, the means ranged from a high of 4.20 to a low of 1.81 when reading in Arabic (overall M = 3.48; SD = .46). The observed difference in the overall strategy means reported for the two languages was statistically significant (t (89) = 2.25; p < .05).

The data obtained show a moderate to high overall reported use of reading strategies by the participants in the two languages. When the participants reported strategies used in English, 18 of the thirty strategies (60%) fell in the high usage group (mean of 3.5 or above), while the remaining 12 strategies (40%) had means between 2.41 and 3.49, indicating medium usage of these strategies. None of the strategies in the survey was reported used with low frequency (mean values below 2.4). On the other hand, in Arabic, 20 strategies (67%) fell in the high usage group; eight strategies (27%) fell in the medium usage group; and the remaining two strategies (6%) had means below 2.50. Further, when the three SORS subscales were analyzed, the averages for these categories revealed a moderate to high strategy usage. Arabic native speakers reported using the Problem Solving Strategies, the Global Reading Strategies and the Support Reading Strategies respectively. The differences between the two groups were statistically significant in the use of the Problem Solving Reading Strategies (t (89) = 2.74, p <0.01) and in the use of the Support Reading Strategies (t (89) = 4.41, p <0.01).

Insert Table 1 here

Question # 2: What specific reading strategies do native speakers of Arabic use when they actually reading academic texts in the two languages?

To answer this question, the data collected from the ten randomly selected participants were analyzed through a think-aloud protocol. These data allowed us to find out what strategies the 10 participants used when they actually read in the two languages. For analysis purposes, the 30 reading strategies of the SORS were used as a general guide for determining the strategies used.

Strategies Used When Participants Actually Read a Text in English

Table 2 lists the strategies that were used actually by the ten participants when they read English and Arabic texts. These strategies were extracted from the participants' think-alouds while reading.

Insert Table 2 about here

An examination of the data presented in Table 2 shows that the participants actually used 18 strategies when reading the English text, which consist of Seven Global Reading Strategies (GLOB), eight Problem Solving Strategies (PROB), and three Support Reading Strategies (SUP).

Global Reading Strategies: An analysis of examples of the think-aloud transcripts showed that the participants used seven Global Reading Strategies. These strategies are: "Using prior knowledge", "Determining what to read closely", "Using context clues", "Analyzing and evaluating the text", "Checking understanding", "Predicting or guessing text meaning", and "Confirming predictions". Here, is an example of "Predicting or guessing text meaning" when reading the English text:

Samir: Um.. I think this "breath of life", I think; this could bring life to our life; the breath of life… Hum, I do not know what the passage will be about..

The following example illustrates the use of making predictions during reading and checking to see if the predictions about the text are right or wrong.

Khalid: So, for adults, it does not seem to make a big difference [reading ahead supported what he said]. So, also another study shows that adults are not affected by the inhaler in term of height, just like what I said.

The strategy of "critical analysis and evaluation of text" and "determining what to read closely," to capture the gist of what they read are used by six of the participants.   Here is an example of what Azza said:

Azza: So, the North American study results were different, in comparing those on inhaled steroids with those without inhaled steroids, there is no advantage of inhaled steroids.. ha..(.*after reading further*) Ok, so the long years of asthma have caused some damages for the subjects, which make it hard for the steroids to handle it. So, maybe that is why their results are different from what they expected.

When the 10 participants encountered difficult materials or coming across new information they used strategies such as "using contextual clues", "checking understanding", and "activating background knowledge". For example, seven participants used "checking understanding" strategy. The following example illustrates that:

Ali: That means they used to be not safe, I am thinking of what make them safe now? That means something happened either they improved the quality of steroids, or the understanding of how steroid works improved.

Many of the participants showed the importance of the activation of schemata "Integrating prior knowledge with textual information". Six participants, tried to relate what they read to their personal experience. The following example points to invoking of prior knowledge to relate to text meaning:

Faisal: This is very interesting, and this is actually is my area of specialty, but I was just wondering, I wish if the article talked about other important toxicities encountered by the usage of steroids. I mean the author just pointed the finger to a single toxicity, which is slowing of bone growth, or delaying of mineralization of bones called the osteoporosis, but the major side effects of steroids or inhaled steroids is immuno–suppressions....

Problem-Solving Strategies: The think-aloud shows that the participants used all of the "Problem Solving Reading strategies" which are: "Reading slowly and carefully", "Trying to stay focused on reading", "Adjusting reading rate", "Paying close attention to reading", "Pausing and thinking about reading", "Visualizing information read", "Re-reading for better understanding", and "Guessing meaning of unknown words". The Problems Solving Strategies were the most used strategies when reading the English text. Overall, they were reflective and careful when they read in English. For example, six participants use "Visualizing information read":

Azza: Breathing in the drugs, ha so…. breathing the drugs will allow most of it to settle in the lungs. Ha..[I can imagine that as well]…..

Many participants employed a variety of strategies for making sense of the English text such as: "guessing meaning of unknown words" by "using contextual clues to resolve the unknown word" or "guessing meaning of unknown phrases" as the following example illustrates the guessing of unknown phrase *"did not fare better"*:

Khalid: I do not know how this word "*fare better*" is used here, but it seems to be a test of the lung capacity in terms of those who took steroids and the control group who did not take anything in term of steroids. Still you know the word "fare better" I do not know how it can be used here and what it means here, but that what I understood from the context.

All the participants use "reading slowly and carefully", "trying to stay focused in reading", "adjusting reading rate", "paying close attention to reading", and "re-reading for better understanding" strategies. For example, five of the

participants deployed the re-reading strategy to maximize understanding when the text became difficult. Here is an illustrative example of resolving the difficulty of the text:

Azza: Oh. Let me [reread], OK, so the long years of asthma has caused the subjects some damages which made it hard for the steroids to handle it, so maybe that's why the results are different from what expected.

Support Reading Strategies: An analysis of the transcripts shows that the participants used only three Support Reading Strategies which were: "Asking oneself questions", "Finding relationships among text ideas", and "Paraphrasing for better understanding". Example of these strategies can be found in the following examples respectively:

Ali: I am just thinking of the chronology of steroids used in medicine, and I am just wondering if doctors knew that steroids would help asthma symptoms? Nevertheless, it would not stop the asthma attack. Did they experiment that? I would like also to know why doctors are hesitating to use steroids with children [after reading further]. Now I know why because it affects children growth, but still do the merits outweigh the demerits?

Khalid: So, very young children like infants, more studies are needed to determine that they can safely use it. Ok. So, they are trying to say that the medicine doesn't go to any part of the body or doesn't affect any part of the body but starts working within the lung itself, and therefore treats the lungs..

Strategies Used When Participants Actually Read a Text in Arabic

An examination of the data presented in Table 3 shows that the participants used few strategies in reading the Arabic text. Collectively, the participants used nine strategies, which were four Global Reading Strategies, three Problem-Solving Strategies, and two Support Reading Strategies.

Global Reading Strategies: An analysis of examples of the think-aloud transcripts showed that the participants used four Global Reading Strategies which are: "Determining what I know prior to reading text", "Using context clues", "Analyzing and evaluating the text", and "Predicting or guessing text meaning".

Reading the title of the Arabic passage entitled "نسمة العصارى" [Nessmat Alassari] meaning "The Afternoons Breeze". We noticed that six of the participants tried to guess the content of the text and they tried to make some predictions about the text. Here is an example of their different responses:

Azza: [Nessmat Alassari*] "نسمة العصارى" (Afternoon Breeze), umm, I think the passage is going to be about the Afternoons Breeze which reminded me of the afternoon breeze back home in Sudan.

Six of the participants employed the strategy of "Critical analysis and evaluation of information on the text" This can be illustrated by the following example:

Samir: I swear that what he is talking about is true 100%; when you were little you see things relatively different than when you get older.

Strategies such as: "Relating the text to personal experiences", "Trying to make sense of what is read" and "Integrating critical analyses" are used by eight participants, which can be found in Amina's recollection of her grandfather's house which is an extended reminiscence triggered by the text:

Amina: You can tell he is really a good author …see how he can put his memories in written words. This is really true because everything when you are young seems very big and eventually when you grow up, and all of a sudden nothing is as big as it was … and in my grandfather's house too in Alexandria [Egypt] when we stand in the balcony you can see the ceiling of other houses around and I know exactly what he is talking about ….

Relating prior knowledge to the reading of the passage is one of the most used strategies by six participants when they read the Arabic text. In fact, focusing on relating the Arabic passage to personal experiences emerged as a crucial strategy to better understand the Arabic text. Below is an illustrative example:

Amina: Ok the house where he lives reminds me of my grandfather's house that I know when he says about the height of building. But actually this is one of the things that you can see about the houses that were built in the forties in Egypt in general and in Alexandria in particular. I knew this from my grandfather's house that the ceiling is very high, I totally understand ….

Problem Solving Reading Strategies: An analysis of examples of the think-aloud showed that the participants used three Problem Solving Reading Strategies: "Visualizing information read", "Re-reading for better understanding", and "Guessing the meaning of unknown word". An example of using "Guessing the meaning of unknown word"

strategy was illustrated by six participants who tried to determine the meaning of the unknown word "ملقف" [Malkaf] *, meaning a *clerestory*:

Amir: The word - Malgaf (ملقف) means a window in the wall for pushing the air inside. This is the first time to hear about this word -Malkaf (ملقف) and I never thought before how important the - Malkaf (ملقف) is.

Five of the participants used the strategy of "Picturing or visualizing the text information" when they read the Arabic passage. Here is an illustrative example:

Amina: Once you read these words what happens is you start drawing a picture in your head of what he is describing and when he says [Alkhala Algahiri] الخلاء القاهرى (Cairo spaces), he is really describing how it is very beautiful.

Five of the participants employed the "Re-reading for better understanding" strategy to understand the text. Below is an example for that:

Moha: Let me re-read this sentence once more. Oh, Yes! That is exactly what we are talking about. It is the difference in pressures that makes the air moves, the warmer air flows upwards and the cooler replaces the warmer air .

Support Reading Strategies: The think-aloud analysis showed that the participants used two Support Reading Strategies. These strategies are "Finding relationships among ideas in the text" and "Paraphrasing for better understanding". Here is an illustrative example:

Ali: I like the way he writes about his memories when he was younger. Most of the article is talking about the mechanism of the structure working on top of the houses to cool the air.

Question # 3:   What is the difference between the perceived use and the actual use of reading strategies across the two languages?

The quantitative data collected through the SORS instrument for the 90 participants and the qualitative data collected through the think-loud protocol obtained from the ten participants revealed that there were some variations in the reported and the use of the reading strategies when actually reading in English and Arabic. The results from the quantitative data revealed that overall the 90 participants reported using a higher rate of reading strategies when reading English than when reading Arabic (see Table 1) this difference is also supported by the qualitative data where the participants actually used more strategies in reading English text than the Arabic text (see table 2). In general, the 90 participants showed a preference for using Problem Solving Reading Strategies, Global Reading Strategies and Support Reading Strategies respectively and this is also supported when the participants actually read academic passages in the two languages. However, the difference in reported strategy use in the two languages was not statistically significant for the Global Reading Strategies category.

3.2Discussion

There are four major findings for the research questions. First, when the participants were asked to report what strategies they used when reading in Arabic and in English, they reported that they used all of the strategies in the SORS (see Table 1). Second, there were overall significant differences in strategy use among the 90 participants when reading in English and Arabic (see Table 1). Specifically, participants reported using more "Problem Solving Strategies" and "Support Reading Strategies" in English than they did in Arabic. However, no significant differences were found in the category of Global Reading Strategies. Third, the reported use strategies data shows the participants' preference of strategies was quite similar in both languages. In general, the strategies reported used most were "Problem Solving Reading Strategies" similarly; the Strategies least reported used were "Support Reading strategies". Fourth, the qualitative data showed that the ten participants actually used more than half of the strategies when they read in English whereas in Arabic, they actually used fewer strategies (see Table 2). Finally, both qualitative and quantitative data show there was variation in reported and in actual strategy use by the participants. Specifically, participants reported using more strategies in English than in Arabic. These findings were confirmed when the subjects read texts in these languages.

The study revealed that there were variations in the usage of strategies. These variations were evident in both quantitative and qualitative results. For example, the data from Table 1 and 2 indicate that Arabic native speakers reported using and actually using more reading strategies when reading in English than when they reading in Arabic, which is consistent with the study by Kong (2006) and Feng and Mokhtari (1998), who found that more strategies were used reading English than Chinese by adult Chinese readers.   Furthermore, the results also showed that there was a consistency between the reading strategies Arabic native speakers reported using and the reading strategies they actually used when reading in English and Arabic. In this study, Arabic native speakers triggered more strategies when they read in English than when they read in Arabic. Given their greater strategies use in English to

increase their understanding is an indication that reading in English is more difficult for them than reading in Arabic. This finding is consistent with Block (1992) who argued that second language readers can be expected to encounter more unfamiliar language and cultural references while reading authentic or unfamiliar texts, therefore they should have to "repair" more gaps in their understanding.

The fact that the Support Reading Strategies were reported as used least by the participants and rarely used when the subjects read passages in both languages seems to be inconsistent with some of the results presented by Sheorey and Mokhtari (2001) who found that "ESL students attribute high value to support reading strategies regardless of their reading abilities" (p.445). This inconsistency could be attributed to the types of students used, their native language and their reading abilities in those languages. On the other hand, the "Problem Reading Strategies" were the most used strategies. These results appear to support Olshavsky (1976, 1977), who found that effective readers often use Problem Solving Reading strategies. The findings of this study also indicated that Arabic Native speakers used many strategies to resolve unknown vocabulary when they read in English and Arabic. More specifically, when Arabic native speakers encountered unknown vocabulary in the English text, they used the Problem Solving Reading strategies such as "Reading slowly and carefully" and "Re-rereading for better understanding" strategies. This result contradicts Jimenez, Garcia, and Pearson (1995, 1996) and Malcolm (2009) who found that translation is evident for less proficient readers when they read texts in second language. These contradicting results can be explained in terms of language proficiency; the participants in this study are more proficient than the participants used in Jimenez, et al. (1996) and Malcolm (2009).

3.3 Implications and Recommendations

The findings of this study have some implications for teaching, assessment and research. From an instructional perspective, this study indicated that the participants deployed "repair" strategies in reading English. Teachers, therefore, may consciously raise students' awareness of reading strategies through explicit instructions of strategies use. The findings also have implications for assessment. Researchers should not depend exclusively on a self-report because a self-report does not provide information about actual strategy use; it gives the perceived use of strategy. Therefore, researchers may need to use think-aloud protocol which shares some limitations as the questionnaire but at least it is attached to a specific reading events. These findings also have implications for research. For example, researchers must consider other methods such as using texts with varying degrees of difficulty and see if it yields same results.

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Table 1

Differences in Reported reading strategy use by native Arabic speakers when reading in English and Arabic

English (n=90) Arabic (n=90)

Name strategy	M	S.D.	M	S.D.	t	p-value
GLOB1 Setting purpose for reading	4.07	.86	4.20	1.05	-1.44	0.153
GLOB2 Using of prior knowledge	3.81	1.07	3.79	.94	0.21	0.834
GLOB3 Previewing text before reading	3.46	1.18	3.57	1.25	-0.86	0.391
GLOB4 Checking how text content fits purpose 3.49	1.09	3.46	.98	0.37	0.716	
GLOB5 Noting text characteristics	3.58	.99	3.54	1.07	0.35	0.724
GLOB6 Determining what to read closely	3.64	1.14	3.64	1.05	0.00	1.00
GLOB7 Using text features (e.g., tables)	4.04	1.04	3.87	1.04	1.42	0.158
GLOB8 Using context clues	3.69	1.02	3.54	1.02	1.21	0.231
GLOB9 Using typographical aids (e.g. italics)	3.24	1.27	3.36	1.28	-0.93	0.352
GLOB10 Analyzing and evaluating the text	3.53	3.64	.92	-1.12	.266	
GLOB11 Checking understanding	3.96	.792	3.88	.79	0.87	.388
GLOB12 Predicting or guessing text meaning	3.44	1.15	3.53	.96	-0.76	.449
GLOB13 Confirming predictions	3.10	1.17	3.33	1.08	-1.77	.079
PROB1 Reading slowly and carefully	3.94	.916	3.86	.98	0.82	.417
PROB2 Trying to stay focused on reading	4.26	.68	4.09	.895	1.71	.092
PROB3 Adjusting reading rate	4.00	.91	3.84	.898	1.58	.118
PROB4 Paying close attention to reading	4.31	.83	4.19	.78	1.16	.251
PROB5 Pausing and thinking about reading	3.62	.96	3.58	1.03	0.40	.689
PROB6 Visualizing information read	3.73	.99	3.62	1.01	1.19	.234
PROB7 Re-reading for better understanding	4.38	.77	4.01	.91	3.60	.001
PROB8 Guessing meaning of unknown words	3.88	1.11	3.74	1.12	1.18	.241
SUP1 Taking notes while reading	3.12	1.27	2.98	1.19	1.29	.197
SUP2 Reading aloud for better understanding	2.77	1.39	2.60	1.44	1.32	.192
SUP3 Underlining information in the text	3.79	1.26	3.79	1.24	0.00	1.00
SUP4 Using reference materials	3.19	1.19	2.77	1.34	3.74	.000
SUP5 Paraphrasing for better understanding	3.26	1.28	3.24	1.19	.093	.926
SUP6 Finding relationship among text ideas	3.71	1.05	3.56	1.01	1.52	.132
SUP7 Asking oneself questions	3.20	1.23	3.22	1.14	-.207	.836
SUP8 Translating from English to Arabic	2.41	1.31	1.81	1.15	5.04	.000
SUP9 Thinking in both languages when reading	2.92	1.39	2.14	1.29	5.98	.000
GLOB Global Reading Strategies	3.62	.535	3.64	.489	-.455	.650
PROB Problem Solving Reading Strategies	4.02	.479	3.87	.497	2.74	.007
SUP Support Reading Strategies	3.15	.658	2.90	.652	4.41	.000
ORS Overall Reading Strategies	3.58	.457	3.48	.456	2.25	.027

Table 2

Strategy	English	Arabic
GLOB1 Setting purpose for reading	-	-
GLOB2 Using of prior knowledge	+	+
GLOB3 Previewing text before reading	-	-
GLOB4 Checking how text content fits purpose	-	-
GLOB5 Noting text characteristics	-	-
GLOB6 Determining what to read closely	+	-
GLOB7 Using text features (e.g., tables)	-	-
GLOB8 Using context clues	+	+
GLOB9 Using typographical aids (e.g. italics)	-	-
GLOB10 Analyzing and evaluating the text	+	+
GLOB11 Checking understanding	+	-
GLOB12 Predicting or guessing text meaning	+	+
GLOB13 Confirming predictions	+	-
PROB1 Reading slowly and carefully	+	-
PROB2 Trying to stay focused on reading	+	-
PROB3 Adjusting reading rate	+	-
PROB4 Paying close attention to reading	+	-
PROB5 Pausing and thinking about reading	+	+
PROB6 Visualizing information read	+	+
PROB7 Re-reading for better understanding	+	+
PROB8 Guessing meaning of unknown words	+	+
SUP1 Taking notes while reading	-	-
SUP2 Reading aloud for better understanding	-	-
SUP3 Underlining information in the text	-	-
SUP4 Using reference materials	-	-
SUP5 Paraphrasing for better understanding	+	+
SUP6 Finding relationship among text ideas	+	+
SUP7 Asking oneself questions	+	-
SUP8 Translating from English to Arabic	-	-
SUP9 Thinking in both languages when reading	-	-

(+) Indicates use of the strategy (-) Indicates absence of the strategy use