Investigating Metacognitive Reading Strategy Awareness of Saudi Tertiary Students: Comparisons of Gender, Reading Ability and Year Level

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ABSTRACT

Students entering higher education are required to have higher order reading skills in order to succeed at the tertiary level. Comprehending complex texts requires them to possess certain strategies to compensate for any pitfalls of not grasping unfamiliar words or semantic structures especially in first-time read texts. The study, therefore, investigated the metacognitive reading strategy awareness of EFL Saudi students at the tertiary level in Saudi Arabia and its relationship with other variables such as year level and gender. A total of 355 students completed the Metacognitive Awareness of Reading Strategies Inventory (MARSI-R) (Mokhtari et al., 2018). The data analysis delineated metacognitive awareness of EFL Saudi students of reading strategies and variations in awareness and use between different levels and genders. The most and least frequently used strategies among the students and correlation between different strategies and year and ability perception levels were also analysed. The findings indicated that the participants in this study had a medium level of awareness in all metacognitive reading strategies. The analysis also showed that the most frequently used strategy amongst Saudi students was problem-solving strategies (PSS) followed by support reading strategies (SRS) and the least frequently used strategy was global reading strategies (GRS). Awareness among students according to their perceived levels varied but only result of poor readers was statistically lower compared to other levels. Gender differences were all statistically insignificant across all subscales of reading strategies. The study concludes with a number of suggested pedagogical implications and future research recommendations.

Keywords: Metacognitive awareness of reading strategies; EFL Reading; Reading comprehension; Reading strategies

INTRODUCTION

Reading is a pivotal skill which university students need in order to digest and acquire knowledge not only in their study of textbooks but in their everyday life (Daguay-James & Bulusan, 2020). Since English language is the global medium of disseminating knowledge (Al Roomy & Alhawsawi, 2019), students are required to possess strategies which allow them to handle and comprehend the abundance of information entailed in such written texts. Students entering higher education are required to have higher order reading skills in order to succeed at the tertiary level compared to what they are accustomed to while they were in school. The complexity of texts and thus comprehending these texts demands possessing certain strategies to compensate for any pitfalls of not grasping and understanding unfamiliar words or semantic structures in first-time read texts. Thus, the ability to control, monitor and evaluate their reading activity becomes a crucial necessity in reading college materials.

For Saudi students, it is important to read and comprehend their university textbooks. It is also imperative to pass proficiency tests like Standardized Test for English Proficiency (STEP), a

national test similar to international tests (i.e. IELTS) used to evaluate students joining English language or scholarship programs. It allocates 40% of the total mark on reading comprehension (Education and Training Evaluation Commission (ETEC), 2020). Unfortunately, for most EFL students, reading is a mere decoding of visual symbols into meaningful words (Baker & Beall, 2014). That is, they think that reading comprehension is mostly knowing vocabulary and having prior knowledge about the topic. Although knowing vocabulary is a key component of reading comprehension (Shihab, 2011), comprehending any text does not rely solely on vocabulary. Students should be aware that reading involves much more than that as this will enhance their reading comprehension via using strategies to compensate for any difficulties. It entails a negotiation of meaning that needs implementing certain cognitive processes that surpasses knowing the meaning of words; yet, for EFL students it might not be the case. Alkhaleefah (2017) asserts that investigating meaning does not encompass only arriving at the meaning of a text, but exploring the processes utilized (i.e. cognitive and metacognitive) that the reader uses to make sense of what he/she reads. For example, there are other processes that a reader can use to compensate for unknown words or the ambiguity of certain fragments to comprehend a text. Some scholars (e.g., Goodman (1976, 2014)) describe it as a 'guessing game' and using these strategies will help the readers to arrive at the right guesses of unfamiliar words.

Reading comprehension involves using cognitive abilities of the reader as an integral part of forming meaning from the text (Shihab, 2011). In order to attain comprehension, readers should have awareness and regulation over their cognitive processes (Di Martino & La Marca, 2019). Metacognition is a construct that includes the readers' knowledge about their own capacities as readers and possessed strategies which they know how and when to use and regulate in the reading process.

It is postulated that efficient reading is not a mere identification of symbols or elements of the texts, but rather arriving at the meaning of the texts using the readers' skills and strategies (Shihab, 2011). Thus, comprehension requires the reader to use various strategies to fill the gap when faced with unfamiliar words or ideas in the written text. If the reader is aware of these strategies, he/she will be able to take proper action to overcome any difficulties when reading a text. For EFL students, to be proficient readers, awareness of metacognitive reading strategies is essential (Yüksel & Yüksel, 2012).

Although there are strident calls for instructors and teachers to use effective and innovative methods to develop reading such as improving vocabulary acquisition and reading speed, less attention is given to metacognition and regulation of knowledge in the Saudi Arabian context. Research indicates (e.g., Abdelrahman, 2020; Alrabah & Wu, 2019) not only metacognitive awareness of reading strategies has improved good readers' skills, but also less competent students may overcome their weakness in reading by knowing how to use reading strategies. However, the amount of benefit which could be gained is contingent on the frequency and variation of using these strategies. Many studies (Abdelrahman, 2020; Sheikh et al., 2019) assert that metacognitive awareness plays an integral part in successful learning and can be used to measure academic performance as well. Teng (2020) affirms that it also enhances reading performance of students compared to students without metacognitive awareness. Having metacognitive awareness is significantly important for EFL students to control, monitor, revise, summarise and evaluate any text to support their comprehension (Karbalaei, 2011). Students without metacognition, as O'Malley et al. (1985) have asserted, are 'learners without direction'. Nevertheless, if students are not aware of which strategies and when to use them in comprehending a text, then the teaching-learning process has failed (Carrell et al., 2001; O'Malley et al., 1985; Schraw, 2001)

The impetus behind conducting this study sprouts from the lack of studies which have examined the use and awareness of metacognitive reading strategies in the Saudi Context. Therefore, it is the intent and goal of this study to examine the extent of metacognitive reading strategies awareness Saudi students have at the tertiary level. This would help determine proper measures and pedagogical implications to address this important issue. It also provides a good indicator of the reading level of students as many scholars (Alrabah & Wu, 2019; Cubukcu, 2008) have attested that employing reading strategies is more frequently used and a feature of good readers rather than poor readers. Accordingly, proper interventions and design of pedagogical training can be implemented based on solid data and evidence on the status quo of the students.

RESEARCH QUESTIONS

1. To what extent Saudi students are aware of metacognitive reading strategies?
2. Are there differences between male and female Saudi students in their metacognitive awareness of reading strategies?
3. Are there any differences in metacognitive awareness of reading strategies according to students' year levels and perceived reading ability?
4. Is there a significant relationship between the students' perceptions of their ability and year level and their metacognitive awareness of reading strategies?

LITERATURE REVIEW

METACOGNITION

Although there is no consensus on an exact definition of metacognition, Flavell's definition (1976), being one of the prominent scholars, is considered the first and most widely accepted one. He describes it as a knowing or awareness about one's own cognitive processes. A more recent definition describes it as "the ability of learners to take necessary steps to plan suitable strategies for solving the problems they face, to evaluate consequences and outcomes and to modify the approach as needed, based on the use of their prior knowledge" (Abdelrahman, 2020, p. 1). Metacognition also involves monitoring and regulating these cognitive processes. This means that metacognition involves awareness (i.e. what we know) and control (i.e. to know when, where and how to use this knowledge). Thus, several scholars attested that metacognition is multi-dimensional (Flavell, 1979; Schraw, 2001). Schraw (2001), for example, asserts that metacognition is comprised of two distinct components, knowledge of cognition and regulation of cognition. The first is an awareness of one's own cognitive abilities or cognition in general. Regulation of cognition, on the other hand, involves having a set of actions which enable learners to control their learning (see Schraw, 2001, for more details). Cubukcu (2008) affirms that learners can develop their metacognition abilities to have more knowledge, awareness and control over their learning. She adds that proficient readers use one or more metacognitive strategies in comprehending texts. Abdelrahman (2020) asserts that metacognition enables learners to accomplish their personal goals successfully when choosing the appropriate cognitive tool.

According to Mokhtari and Reichard (2002) and Mokhtari et al. (2018), awareness of metacognitive reading strategies is simply readers' own awareness of their cognitive abilities and strategies they use to monitor reading comprehension. The research on metacognitive awareness of reading strategies was based and conceptualised on many theories (e.g., Pressley and Afflerbach's responsive reading, Rosenblatt's reader response theory, Anderson and Pearson's schema theory, van Dijk and Kintsch's bottom-up text-processing strategies (for more details, see Mokhtari & Reichard, 2002)).

Metacognitive awareness is a vital tool for the reading process and many authors have emphasised the importance of metacognitive awareness in reading comprehension. The amount of awareness and use of reading strategies could determine how successful or unsuccessful a reader is in EFL reading (see Hosenfeld, 1977). Sheikh et al. (2019) attested that metacognitive awareness is a significant predictor of academic performance of university students. They also suggest that workshops or programs promoting metacognitive awareness may benefit the concentration of students during reading process at the universities. Being aware of their own reading processes and strategies, students will be able to monitor effectively their learning strategies (Di Martino & La Marca, 2019). According to Mehrdad et al. (2012), plethora of experts attest to the necessity of using metacognitive skills to achieve educational success. There has been several studies that corroborated the significant influence of metacognitive reading strategies on many aspects of the reading process such as reading abilities for both L1 and L2 (Tavakoli (2014), reading comprehension (Ahmadi et al., 2013), motivation (Meniado, 2016), predicting academic success and achievement (Abdelrahman, 2020; Chevalier et al., 2017; Sheikh et al., 2019), and vocabulary development (Cubukcu, 2008). Abdelrahman (2020) and Ibrahim et al. (2017) affirm that metacognition is a key determinant and a basic pillar of academic success which can be considered a good tool for assessing academic performance.

In Saudi Arabia, Meniado (2016) asserts that weakness of Saudi students in reading could be the resultant of underdeveloped cognitive and metacognitive reading strategies and skills. There have been some attempts to address the issue in Saudi Arabia, but reading has often been studied in terms of the outcome of reading emphasizing on meaning and comprehension as opposed to understanding the means to get to the meaning (e.g., Alshehri, 2014; Daradkeh, 2020). Mokhtari and Reichard (2004) claim that emphasizing the final product of reading is overlooking the means in discovering the reading problems; hence, there should be more attempts on studying students' awareness of strategies while engaging in the reading process.

To the author´s best knowledge, few studies could be found in the literature that addressed the issue of metacognitive reading strategies in Saudi Arabia. Meniado (2016), for example, has investigated the effect of metacognitive reading strategies on the motivation and reading comprehension of 60 Saudi tertiary EFL male students enrolled in all-male government college. The study aimed to find if those Saudi students, while reading academic texts, are aware of and use metacognitive reading strategies. He has found that Saudi students exhibited a moderate use of metacognitive reading strategies. The students reported using problem-solving reading strategies the most followed by support strategies and global strategies. Alsuhaibani (2019) implemented a study to investigate the correlation between reading strategies and self-efficacy of reading among 191 female Saudi English major students at Imam Mohammad Ibn Saud university. The analysis revealed that the students reported a moderate frequency use of reading strategies with problem-solving being the highest frequently used followed by global and support reading strategies. The study also showed that there was a significant positive correlation between reading

strategy and self-efficacy of students. She also reported statistically significant differences between high and low self-efficacious students in the amount of usage for both the overall and subcategories of reading strategy.

On other contexts similar to the Saudi Arabian one, a few studies have been identified that examined metacognitive reading strategies. Alrabah and Wu (2019), for example, conducted a recent study in Kuwait investigating the awareness and use of metacognitive reading strategies among 80 EFL students at a medical college using Mokhtari and Reichard's (2002) MARSI. The results indicated that students generally have high awareness of metacognitive reading strategies. They found that the most frequently used strategy was problem-solving followed by global reading strategies and the least were support reading strategies. Alrabah and Wu (2019) also reported a possible effect between years of study and use of strategies among students. Mukhlif and Amir (2017) explored the metacognitive online reading strategies of 50 fourth-year tertiary Iraqi students enrolled at Al-Salam University college. The study utilised Mokhtari and Reichard's (2002) MARSI questionnaire to gather data about the online reading strategies. They have found that their respondents' most frequently used strategy was problem-solving followed by support reading strategies. Global reading strategies were the least frequently used. The study concluded that it is imperative to teach these strategies to EFL students. Deliany and Cahyono (2020) utilised the same revised inventory tool of the current study; that is Mokhtari et al.'s (2018) MARSI-R. They investigated awareness and use of metacognitive reading strategies among 33 and 20 female and male students enrolled at Universitas Negeri Malang in Indonesia, respectively. The study reported high level of awareness in metacognitive reading strategies' overall and subscales scores. Analysis, although not explicitly reported, showed similar results to previously mentioned studies (Meniado, 2016; Mukhlif & Amir, 2017) on the most and least frequently used strategies. They also reported different levels of awareness and strategy use across gender in favour of male students but differences were not significant. Rabadi et al. (2020) investigated the metacognitive reading strategies of 240 fourth-year student at a number of universities in Jordan. The study utilised Mokhtari and Sheorey's (2002) Survey of Reading Strategies (SORS) as a tool for data collection. The results showed that students reported a moderate use of metacognitive reading strategies with global reading strategies the most frequently used followed by support and problem solving strategies, respectively. They found that students might have awareness about the strategies but may not know how to use them.

TABLE 1. Studies used SORS (Mokhtari & Sheorey, 2002), MARSI (Mokhtari & Reichard, 2002) and MARSI-R (Mokhtari et al., 2018) in the Middle East and Asia

Study	Sample	Tool	Frequency use of MARS categories
Alrabah and Wu (2019)	80 Kuwaiti medical students.	MARSI (2002)	1. problem-solving 2. global strategies 3. support strategies
Alsuhaibani (2019)	191 female Saudi EFL students	SORS (2002)	1. problem-solving 2. global strategies 3. support strategies
Mukhlif and Amir (2017)	50 4th year English program Iraqi students	SORS (2002)	1. problem-solving 2. support strategies 3. global strategies
Meniado (2016)	60 Saudi Male college- EFL students	SORS (2002)	1. Problem-Solving 2. support strategies 3. global strategies

Deliany and Cahyono (2020)	53 Indonesian Male and Female undergraduate students	MARSI-R (2018)	1. problem-solving 2. support strategies 3. global strategies
Rabadi et al. (2020)	240 fourth-year Jordanian students	SORS (2002)	1. global strategies 2. support strategies 3. problem-solving

*MARS: Metacognitive Awareness of Reading Strategies. ** SORS: Survey of Reading Strategies. ***1 : highest and 3: lowest

RESEARCH METHODOLOGY

PARTICIPANTS

The participants of this study include (n) 355 Saudi tertiary students in a public university. The students are enrolled in a four-year English program in a rural area college located in the North of Saudi Arabia. The sample was from different levels at the college ranging from freshmen to seniors; thus, creating diversity and to a certain extent representation of the population. The age group ranged from 18-22. The sample included 159 and 196 male and female students from different levels of study, respectively. This indicated a diversity in the levels and exposure to English classes from beginner to advanced levels.

TABLE 2. Demographic information of sample

		Frequency	Percentage
Gender	Male	159	44.8
	Female	196	55.2
Year Level	First	277	78.0
	Second	37	10.4
	Third	21	5.9
	Fourth	20	5.6

INSTRUMENT

The instrument employed in this study was adapted from a revised version of Metacognitive Awareness of Reading Strategies Inventory (MARSI-R) (Mokhtari et al., 2018). This is a revised version from the 30-item original scale that was reduced to a 15-item scale. Mokhtari et al. (2018) also added a new 5-point scale format to measure students' knowledge and awareness of reading strategies. The scale options range from "I have never heard of this strategy before" to "I know this strategy quite well, and I often use it when I read". The reliability of the original scale is α =.850. Reliability of the questionnaire's subscale strategies, on the other hand, are .703, .693, and .743, respectively. For validity, psychometric properties and full description of the tool see (Mokhtari et al., 2018).

The MARSI-R investigates metacognitive awareness of reading strategies of students in three categories: (1) Global Reading Strategies (GRS, henceforth) (items 1,3,5,12 and 13); (2) Problem Solving Strategies (PSS, henceforth) (items 7,9,11,14 and 15); and (3) Support Reading Strategies (SRS) (items 2,4,6,8 and 10). According to Mokhtari et al. (2018), the modification addressed to provide enhancements in the readability and comprehensibility of items and scale format to better determine the level of awareness and improving the interpretation of responses.

The items of the questionnaire measures aspect of awareness of knowledge about one's own cognition, knowledge of how to do it and knowing when and why to use these strategies while reading (see Mokhtari et al., 2018; Schraw, 2001). According to Mokhtari et al. (2018), the total score of MARSI-R is calculated by summing the scores of all reading strategies sub-scales in the inventory.

The instrument was administered to students taking courses in the English department at the faculty. The courses ranged from basic to advanced level courses. According to many researchers (Di Martino & La Marca, 2019; Harrison & Vallin, 2018; Zimmerman, 2008), using self-report questionnaires to measure metacognition is considered as the least problematic, the most convenient and popular method. Di Martino and La Marca (2019) further assert that metacognition is best assessed using direct question about the students' degree of knowledge and awareness of what they know or do.

The reliability of the adapted scale is measured using Cronbach Alpha which yielded the following results: Global Reading Strategies [items 1,3,5,12, & 13] α = .76, Problem-Solving Strategies [items 7,9,11,14, &15] α = .84, and Support Reading Strategies [items 2,4,6,8, &10] α = .79. Gliem and Gliem (2003) recommend Composite Reliability (CR) to be reported (i.e. summated, multi-item scale); hence, the CR of the current subscales is α = .90. George and Mallery (2016) provide the following rules of thumb for reliability: α > .9 is deemed Excellent, α > .8 is Good, α > .7 is Acceptable, α > .6 is Questionable, α > .5 is Poor, and α < .5 is deemed Unacceptable. Thus, the reliability of the scale in this study is deemed excellent based on George and Mallery's (2016) criteria.

RESULTS

This section illustrates the results of the analysis to answer the study's research questions. Table 3 shows a descriptive statistics of the perceptions of the female and male students about their reading ability. These perceptions are close and not significantly different from each other. The data illustrates that male and female students situate themselves between average and good readers. The percentage of perception of poor readers is unsurprisingly much higher than perceptions of excellent readers.

TABLE 3. Perceived reading ability according to gender

		Male	Female
	A poor reader	28	33
	An average reader	60	69
Reader Level	A good reader	59	66
	An excellent reader	12	28
	Total	355	

As Table 4 shows the means of individual strategy use ranged from a high of 3.73 (underlining or circling important information in the text) to a low of 2.58 (Having a purpose in mind when I read.), with an overall reported strategy usage mean of 3.26 (*SD*=1.4). A closer examination of Table 4 shows that 3 of the 15 strategies reported (i.e. 20%) fell in the high level

of awareness (i.e., mean of 3.5 or higher) while the remaining 12 strategies (80%) had means between 2.5 and 3.4 indicating medium level of awareness. When comparing the overall different clusters of metacognitive reading strategies, it seems that on average the most frequently used strategies by current study students are PSS (*M*= 3.402; *SD*= 1.45) followed by SRS (*M*= 3.30; *SD*=1.42) and the least frequently used is GRS (*M*= 2.95; *SD*= 1.44).

TABLE 4. Descriptive analyses of items and subscales of MARSI-R

Items and Subscales of Metacognitive Reading Strategies	N	Mean	SD
GRS 01. Having a purpose in mind when I read.	355	2.58	1.341
GRS 03. Previewing the text to see what it is about before reading it.	355	3.04	1.46
GRS 05. Checking to see if the content of the text fits my purpose for reading.	355	2.83	1.496
GRS 12. Using typographical aids like bold face and italics to pick out key information.	355	3.41	1.45
GRS 13. Critically analyzing and evaluating the information read.	355	2.88	1.457
Global Reading Strategies (GRS)	**355**	**2.95**	**1.44**
PSS 07. Getting back on track when getting sidetracked or distracted.	355	3.41	1.486
PSS 09. Adjusting my reading pace or speed based on what I'm reading.	355	3.23	1.487
PSS 11. Stopping from time to time to think about what I'm reading.	355	3.28	1.454
PSS 14. Re-reading to make sure I understand what I'm reading.	355	3.55	1.436
PSS 15. Guessing the meaning of unknown words or phrases.	355	3.54	1.428
Problem Solving Strategies (PSS)	**355**	**3.40**	**1.45**
SRS 02. Taking notes while reading.	355	2.88	1.352
SRS 04. Reading aloud to help me understand what I'm reading.	355	3.4	1.478
SRS 06. Discussing what I read with others to check my understanding.	355	3.31	1.44
SRS 08. Underlining or circling important information in the text.	355	3.73	1.376
SRS 10. Using reference materials such as dictionaries to support my reading.	355	3.2	1.442
Support Reading Strategies (SRS)	**355**	**3.30**	**1.42**

In order to answer question two, an Independent Sample t-test between subscale of MARS-R according to gender was carried out. Independent sample t-test presumes normal distribution of data across groups. Shapiro-Wilk is used to test for normality and data is found to be non-normally distributed. Thus, a nonparametric test should be used in the analysis (i.e. Mann-Whitney's *U* test). Nonetheless, according to Ghasemi and Zahediasl (2012) and Pallant (2020), large sample sizes (e.g., >30) which violate the normality assumption should not be considered a cause for major concerns especially in social sciences and current parametric tests are robust to violations of normality.

As Table 5 and Histograms in Figure 1 show, the preliminary test of Shapiro-Wilk showed a significant departure from normality for all subscales of MARSI-R which rejects the null hypothesis of normality. Nevertheless, since the sample of the study is 355 which is bigger than threshold of 30 (cf. Pallant, 2020), an independent sample t-test will be conducted along with Mann-Whitney U's non parametric test for verification purposes.

TABLE 5. Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
GRS	.073	355	.000	.976	355	.000
PSS	.103	355	.000	.947	355	.000
SRS	.112	355	.000	.957	355	.000

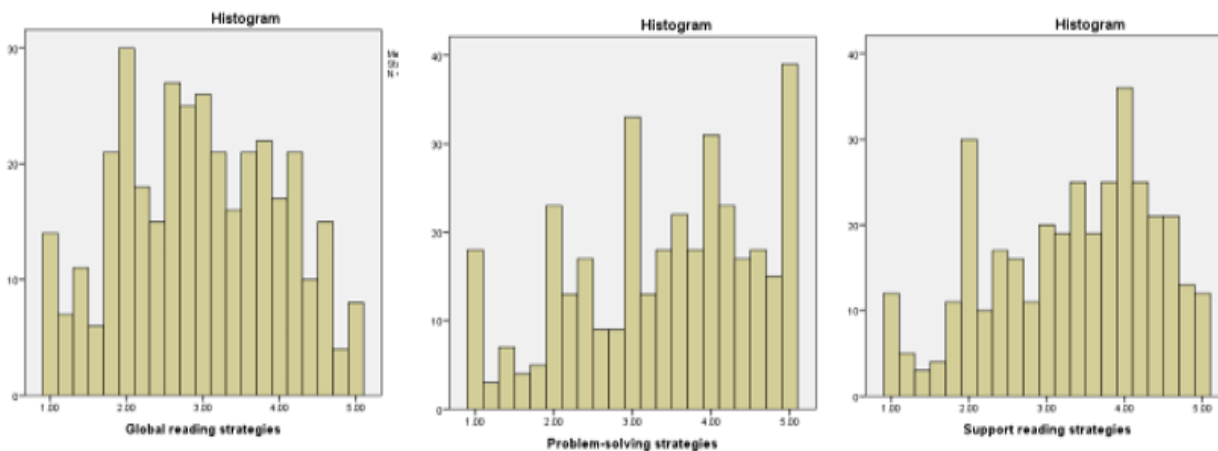a.   Lilliefors Significance Correction

FIGURE 1. Histograms of the MARSI-R Subscales

The following tables illustrate the data of the analyses. Table 6 shows the overall mean of the subscales of MARS-R according to gender. The mean of males and females in all the subscales is close and the independent sample test (Table 7) did not show any significant difference according to gender in metacognitive awareness of reading strategies. The independent sample t-test showed that there was no significant effect for gender in GRS $t(353) = -.111$, $p = .911$, SRS $t(353) = -.128$, $p = .899$ or PSS $t(353) = -.436$, $p = .663$.

TABLE 6. Overall mean of the subscales of MARS-R according to gender

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Global reading strategies	Male	159	2.9459	1.04668	.08301
	Female	196	2.9582	1.01884	.07277
Problem-solving strategies	Male	159	3.3723	1.19439	.09472
	Female	196	3.4255	1.09991	.07857
Support reading strategies	Male	159	3.2969	1.04889	.08318
	Female	196	3.3112	1.05950	.07568

According to Table 6, there were no differences in the strategy order of frequency used by male and female students in this study. Both male and female used problem-solving strategies the most with (M=3.37, S.D=1.19) and (M=3.42, S.D=1.09), respectively. Meanwhile, the least frequently strategy used by both male and female students was global reading strategies with (M=2.94, S.D=1.04) and (M=2.95, S.D=1.01).

TABLE 7. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
GRS	Equal variances assumed	.161	.688	-.111	353	.911
	Equal variances not assumed			-.111	334.237	.912
PSS	Equal variances assumed	1.529	.217	-.436	353	.663
	Equal variances not assumed			-.432	325.392	.666
SRS	Equal variances assumed	.032	.857	-.128	353	.899
	Equal variances not assumed			-.128	339.399	.898

For verification purposes, nonparametric procedure using Mann-Whitney's *U* test has been conducted. The following table shows the actual significance values of the test. It provides the *U* statistics, as well as the asymptotic significance (2-tailed) *p*-value of GRS, SRS and PSS. The results concur with the results of parametric results of t-test showing no significant values, see Table 8.

TABLE 8. Mann-Whitney U Test Statistics

	GRS	SRS	PSS
Mann-Whitney U	15432.000	15496.500	15340.500
Wilcoxon W	28152.000	28216.500	28060.500
Z	-.156	-.089	-.252
Asymp. Sig. (2-tailed)	.876	.929	.801

a. Grouping Variable: Gender

Research question three in this study investigates the differences between the current sample year levels and perceptions about their ability. To this end, One-way ANOVA has been utilized to check if there are significant differences between subscales of Metacognitive Awareness of Reading Strategies (MARS) and classification of students according to year level and perceived reading ability. As previously stated, One-way ANOVA test, being a parametric test, assumes that data are normally distributed. Nevertheless, One-way ANOVA is considered a robust parametric test against violation of normality if sample number is above 30 (Ghasemi & Zahediasl, 2012; Mena et al., 2017; Pallant, 2020). According to one-way ANOVA analysis, there were no statistically significant differences between sub-scales of MARSI-R and year levels. The results of the analysis are as follows: GRS (F(3,351) = 2.217, p = .086), PSS (F(3,351) = 1.380, p = .249) and SRS (F(3,351) = 1.655, p = .177).

Table 9 illustrates means descriptive of MARSI-R subscales as the dependent list and perceptions of reader levels as the factor variable. It is noticeable that the more advanced the perception of reading level, the higher the mean of awareness.

TABLE 9. Mean differences between students' perception of their abilities and subscales of MARSI-R

	Reader Level	Mean	Std. Error	SD
Global reading strategies	A poor reader	2.3738	.10778	.84180
	An average reader	3.0264	.08737	.99228
	A good reader	3.0736	.09741	1.08911
	An excellent reader	3.2200	.14777	.93458

Support reading strategies	A poor reader	2.7607	.14454	1.12890
	An average reader	3.3721	.08801	.99961
	A good reader	3.4864	.09232	1.03217
	An excellent reader	3.3500	.14637	.92570
Problem-solving strategies	A poor reader	2.6820	.14721	1.14971
	An average reader	3.5364	.09549	1.08455
	A good reader	3.5184	.10608	1.18597
	An excellent reader	3.7000	.10766	.68087

In order to check if the differences between subscales of MARSI-R and perceptions of students about their reading ability are statistically different, one-way ANOVA has been conducted. The results of the analysis, see Table 10, show that at least one of the group mean differences was statistically significant from the others. The statistically significant differences between perceptions of reading levels and all subscales of MARSI-R are as follows: GRS $(F(3,351) = 8.642, p = .000)$, PSS $(F(3,351) = 10.860, p = .000)$ and SRS $(F(3,351) = 7.228, p = .000)$.

TABLE 10. One-way ANOVA Test between reading levels and subscales of MARSI-R

		Sum of Squares	df	Mean Square	F	Sig.
Global reading strategies	Between Groups	25.830	3	8.610	8.642	.000
	Within Groups	349.695	351	.996		
	Total	375.525	354			
Problem-solving strategies	Between Groups	39.202	3	13.067	10.860	.000
	Within Groups	422.357	351	1.203		
	Total	461.559	354			
Support reading strategies	Between Groups	22.850	3	7.617	7.228	.000
	Within Groups	369.892	351	1.054		
	Total	392.742	354			

Since the differences between groups were statistically significant, post-hoc multiple comparisons using Tukey HSD test indicated that the mean score for Global reading strategies of poor readers (M=2.3738, SD=.84180) was significantly different from average readers (M=3.0264, SD=.99228), good readers (M=3.0736, SD= 1.08911) and from excellent readers (M=3.2200, SD=.93458). The mean score for Problem solving strategies of poor readers (M=2.7607, SD=1.12890) was also significantly different from average readers (M=3.3721, SD= .99961), good readers (M=3.4864, SD=1.03217) and from excellent readers (M=3.3500, SD=.92570). In addition, poor readers (M= 2.6820, SD=1.14971) had statistically significant mean differences from other reading levels (i.e. average readers (M=3.5364, SD= 1.0845), good readers (M=3.5184, SD=1.1859) and from excellent readers (M=3.7000, SD=.68087)) in Support Reading Strategies (see Table 11). The other groups had no statistically significant differences between them.

TABLE 11. Tukey HSD Post Hoc Test

Dependent Variable	(I) Reader Level	(J) Reader Level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Global reading strategies	A poor reader	An average reader	-.65259*	.15510	.000	-1.0530	-.2522
		A good reader	-.69983*	.15589	.000	-1.1022	-.2974
		An excellent reader	-.84623*	.20308	.000	-1.3704	-.3220

Problem-solving strategies	A poor reader	An average reader	-.85447*	.17045	.000	-1.2945	-.4145
		A good reader	-.83643*	.17133	.000	-1.2787	-.3942
		An excellent reader	-1.01803*	.22318	.000	-1.5941	-.4419
Support reading strategies	A poor reader	An average reader	-.61144*	.15951	.001	-1.0232	-.1997
		A good reader	-.72574*	.16033	.000	-1.1396	-.3119
		An excellent reader	-.58934*	.20886	.026	-1.1285	-.0502

*. The mean difference is significant at the 0.05 level.

The results in Table 11 indicate that poor readers' mean scores of metacognitive awareness strategies are significantly less than other students with higher perceptions of their reading ability. Mean analysis also showed that excellent readers had the highest awareness among other groups in almost all the of metacognitive reading strategies except for problem solving strategies where average readers scored the highest.

In order to answer research question four, correlation between sub-scales of metacognitive reading strategies and year level and students' perceptions of their reading ability level is utilised. A Pearson correlation was used to determine the relationship between them. The results indicated that there was no significant correlation between subscales of metacognitive reading strategies and the students' year level. However, there was a positive correlation between students estimate of their reading ability level and each of the sub scales of metacognitive reading strategies. The correlation was statistically significant with Global Reading Strategies t (r(353) = .21, p < .001), Problem-solving strategies (r(353) = .22, p < .001) and with Support reading strategies (r(353) = .17, p < .001)

TABLE 12. PEARSON correlation between subscales of MARSI and reader and year level

		Reader Level	Year Level	Global Reading Strategies	Problem-solving strategies	Support reading strategies
Reader Level	Pearson Correlation	1	.134*	.219**	.226**	.177**
	Sig. (2-tailed)		.012	.000	.000	.001
	N	355	355	355	355	355
Year Level	Pearson Correlation	.134*	1	-.012	.056	-.070
	Sig. (2-tailed)	.012		.823	.296	.189
	N	355	355	355	355	355

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

The findings of this study indicate that, in general, Saudi students at the tertiary level have moderate awareness level of reading strategies when they engage in reading English texts. Perhaps one of the reasons for this is due to lack of proper and adequate training on reading strategies from high school onwards. Another possible reason is due to the general weakness in the English language among Saudi tertiary students. Moreover, the moderate awareness of metacognitive reading strategies could be attributed to limited exposure to English in their daily life and reading habits which has probably contributed to their lack of practice using these strategies when reading. For foreign language reading comprehension, it is insufficient to know about the strategies, it is crucial to know what, when and how to implement these strategies. Readers should be able to apply these strategies strategically and when needed (Carrell et al., 2001). This finding corroborates with the general findings of other studies (e.g., Al-Sobhani, 2013; Kazi et al., 2020;

Meniado, 2016; Rabadi et al., 2020) which reported that their EFL respondents exhibited a moderate awareness and use of metacognitive reading strategies. In these studies, a common justification for moderate awareness of metacognitive reading strategies is knowing about the strategies but inability to utilize them properly. This study also shares partial commonality with Alrabah and Wu (2019) where in both studies, students had medium awareness level in support reading strategies (SRS); however, the students exhibited high level of awareness in problem-solving strategies (PSS) and global reading strategies (GRS) in their study. The study findings contradict with findings of Deliany and Cahyono (2020) who found that their students had high awareness in all subscales of metacognitive reading strategies. This could be due to the educational system implemented in Indonesia since English language is taught from elementary, though optionally, which gives more exposure to English language than Saudi Arabian's educational system which just recently (i.e. starting 2021) started teaching English from grade one (Salama, 2021).

The analysis also showed that the most frequently-used strategies among Saudi students were problem-solving strategies (PSS) followed by support reading strategies (SRS) and the least frequently used strategies were global reading strategies (GRS). This order of frequency seems to be consistent in most EFL studies (e.g., Daguay-James & Bulusan, 2020; Deliany & Cahyono, 2020; Meniado, 2016) that tackled metacognitive awareness of reading strategies. Alrabah and Wu (2019) and Deliany and Cahyono (2020), for instance, assert that the most widely used and preferred strategy type reported by most EFL students from different contexts is problem-solving compared to other strategies. Deliany and Cahyono (2020) add that problem solving strategies are frequently used to overcome problems which may impede comprehension while reading. For students from Arabic-speaking contexts, a number of studies (e.g., Al-Mekhlafi, 2018; Alsheikh & Mokhtari, 2011; Meniado, 2016) also reported similar findings concerning high frequency use of problem-solving strategies while reading English texts. Moreover, other EFL studies from non-Arabic backgrounds also supported this finding. For example, Kazi et al. (2020) reported that Pakistani EFL university students' most preferred strategies are problem-solving. In Saudi Arabia, Alsuhaibani (2019) found that problem-solving strategies are the most frequently used strategies among Saudi female EFL students. For most EFL students, it seems that overcoming comprehension problems is apparent. Respondents in this study seem to perceive reading and comprehending English texts as challenging and full of problems and barriers which need implementing problem solving strategies more than other strategies. The students feel the need to compensate their weakness and lack of proficiency in the language with strategies to fully comprehend unknown elements in the text.

Among all the items in MARSI-R, the highest used individual strategy by Saudi students is *underlining or circling important information in the text*. This is consistent with Di Martino and La Marca (2019). This is likely to be due to constant requests of instructors in EFL teaching institutions to highlight important information in the texts. This strategy seems appropriate for the learning system in Saudi Arabia which encourages memorization of important information. On the other hand, the least frequently used set of strategies are global reading strategies (GRS) which yielded the lowest on both the individual and overall mean average compared to other MARSI-R subscales. This finding was also reported by Di Martino and La Marca (2019) and Meniado (2016).

For gender differences, this study reported a slight difference in the use and awareness means of metacognitive reading strategies in favour of females; however, these differences were not significant between male and female Saudi students. This finding is in accord with Ganji et al. (2018) and Deliany and Cahyono (2020) who found no significant difference between males and

females in this regard. However, the findings of the current study do not support the previous research conducted in the Saudi context. For example, Alluhaydan (2019) found that male students reported using subscales of metacognitive reading strategies more often than female students when reading in English. A possible explanation for this might be that the researcher used an adapted survey different from the one used in this study and the proportion of males outweighed the females, 38 and 23, respectively. Abdelrahman (2020) also found the female had a higher level in the metacognitive awareness than males.

Moreover, according to the analysis, this research did not find any difference between the order of frequency use of metacognitive reading strategies subscales as both genders most and least frequently used strategies were the same. This, however, contradicts with other research conducted in Asia. Deliany and Cahyono (2020), for example, found that female and male students had different order of frequency use between both. A possible explanation could be due to differences in cultural and study habits of both samples.

This study asked students to categorise themselves according to their perceptions of their reading abilities into poor, average, good and excellent readers. The analysis illustrated group difference between perceptions of reading ability and metacognitive awareness of reading strategies. Post-hoc analysis showed that poor readers are significantly less aware of metacognitive strategies, and they do not use them as much as other students with higher perceptions of their reading ability. Mehrdad et al. (2012) attest that poor readers are less in their awareness, usage and monitoring of strategies when engaging in reading activities. Moreover, the mean scores clearly indicate that excellent readers had the highest awareness among other groups in almost all the of metacognitive reading strategies except for problem solving strategies where average readers scored the highest. These differences can be explained due to exposure to English texts, that is, the more EFL students advance and became better in English, their command and awareness of reading strategies will become better.

The correlation analysis has yielded a statistically significant correlation between Saudi's reader level, which asks students to estimate their perceptions of reading abilities and MARSI subscales. This suggests a relationship between ability of the students in reading and their awareness and effective use of reading strategies. Previous research findings into metacognitive awareness of reading strategies have been consistent and congruent (e.g., Alrabah & Wu, 2019; Endley, 2016) that good readers are able to utilise reading strategies not only more frequently but also more effectively and accurately than poor readers. Alrabah and Wu (2019), for example, attest that good readers normally have more awareness and better usage of reading strategies. This finding confirms with the results reported in the study of Mokhtari et al. (2018) who developed the inventory. Cubukcu (2008) reiterates this and asserts that proficient readers comprehend texts by using one or more metacognitive strategies. Moreover, no significant correlation was found between students' year level and the MARSI subscales. Although this finding is somewhat counterintuitive, it contradicts also with some studies (e.g., Alrabah & Wu, 2019). A possible explanation is the discrepancies in the distribution of students according to their year level. This finding also matches those reported in Mokhtari et al. (2018) study; however, their correlation was with MARSI and grade level.

CONCLUSION

This study provides evidence that metacognitive reading strategies awareness of Saudi tertiary students' is moderate which indicates also the moderate use of metacognitive reading strategies while reading English texts. The results also revealed that although female students' awareness was slightly higher than male students', the difference in the level of awareness between both genders was not significant. Also, there were no significant differences in all subscales of metacognitive reading strategies according to year levels. Nevertheless, differences between students' perceptions of reading ability and metacognitive reading strategies awareness were present. Poor readers demonstrated a significantly less awareness of metacognitive strategies. They do not use them as much as other students with higher perceptions of their reading ability. Further analysis of correlation provided a statistically significant correlation between students' reader level and MARSI subscales.

PEDAGOGICAL IMPLICATIONS AND RECOMMENDATIONS

The findings of this research suggest that more practice and implementation of metacognitive reading strategies are needed for Saudi students on all levels of education especially at the tertiary level. This study provides a testimonial on the need for teachers, reading specialists and curriculum designers to incorporate more metacognitive reading strategies practices in textbooks, activities and pedagogies. These interventions will help develop EFL students' use of reading strategies which lead to a better reading comprehension. It also adds to the existing research on highlighting the current status of EFL Saudi students at the tertiary level for education policy makers to re/design current curricula. It also provides an evidence-based evaluation of the quality of instruction in institutions in order to suggest training workshops and courses for instructors and teachers in all academic institutions. This study suggests conducting more extensive training on how to use metacognitive reading strategies which may enable all students especially low achievers develop their comprehension strategies while reading.

Further research is recommended to conduct quasi-experimental studies to see the effect of direct training and instruction of reading strategies among Saudi tertiary students on reading performance and comprehension. Another recommendation is to conduct research investigating whether reading comprehension difficulties is due to low proficiency in language or rather a low awareness and use of reading strategies.

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