Foreign language reading anxiety and metacognitive strategies in undergraduates' reading comprehension

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This study investigated the direct and indirect roles of foreign language reading anxiety (FLRA) and metacognitive reading strategies (global, problem-solving, support) in the reading comprehension of a cohort of undergraduate English as a foreign language (EFL) learners. A total of 103 college EFL participants enrolled in a private university in Lebanon took part in the study. Data were collected using a reading comprehension test, the *Survey of Reading Strategies Scale* (SORS), and the *Foreign Language Reading Anxiety Scale* (FLRAS). Results of correlational, path analysis, and Sobel testing revealed that global and problem-solving strategies were positively related to EFL reading comprehension, but not mediated by FLRA. Conversely, FLRA negatively impacted comprehension and mediated support strategies. Pedagogical implications underscore the need for integrating instruction in the global and problem-solving strategies as well as using humanistic approaches in teaching EFL reading in order to enhance comprehension and decrease FLRA. Further research is recommended to examine the generalisability of this study's findings and provide a more comprehensive perspective on the phenomenon of FLRA in EFL reading comprehension.

Introduction

English as a medium of instruction (EMI) is expanding as a global phenomenon that characterises the educational systems of various countries all over the world (Al-Issa 2017; Macaro, Curle, Pun, An & Dearden, 2018). Scholars attribute this phenomenon to a range of historical as well as other factors related to globalisation and the current status of English as a vital international language. Scholars also acknowledge the challenges of using EMI in various English as a second or foreign language (ESL- EFL) educational settings (Dreyer & Nel, 2003; Goh, Loy, Wahab & Raja Nor Safinas, 2020; Grabe &Stoller, 2013; Snow, 2002). In the same vein, Ghaith and El-Sanyoura (2019) maintained that enabling EFL learners to comprehend academic texts is one of the chief challenges that face educational systems. This is because reading is a complex psycholinguistic process impacted by a host of reader-related, text-based, and context-specific factors that include automaticity and fluency in text processing, vocabulary, and background knowledge, in addition to motivation, positive self-concept, and reading confidence (Ghaith, 2018).

The complexity of the reading process and research is quite evident in EFL settings. Learners in these settings differ from their first language (L1) counterparts particularly with regard to having limited exposure to authentic English language input in real-life contexts beyond classroom walls. Consequently, the range of factors that may impact their reading comprehension becomes very intricate and multifaceted. Because of possible interference from their L1 linguistic systems and cultural schemata, and due to their varied levels of general English language proficiency and lack of grammatical tacit knowledge, EFL readers may face considerable challenges in comprehending texts written in a language other than their own. Consequently, they may become anxious and unable to

make inferences, critique information, and utilise strategies to monitor and improve their comprehension.

Foreign language reading anxiety (FLRA) has been recognised as a distinct phenomenon that may have a negative impact on foreign language readers' metacognitive processing and comprehension (Saito, Garza & Horwitz, 1999). Likewise, numerous studies have shown a strong positive link between the reported use of metacognitive strategies, particularly problem-solving and global strategies, and EFL reading comprehension (Ghaith & El-Sanyoura, 2019). However, it is unclear at present how FLRA mediates learners' metacognitive processing and comprehension.

Therefore, the purpose of the present study is to investigate the direct and mediated relationships of FLRA, use of metacognitive reading strategies, and the reading comprehension of a cohort of Arabic-speaking college learners of EFL, using correlational, path analysis, and Sobel testing procedures.

Literature review

Foreign language reading anxiety and comprehension

Drawing on the early work of Scovel (1978), Saito et al. (1999) theorised that FLRA exists due to significant differences between the writing system of the English language and the writing systems of other languages. These researchers devised the *Foreign Language Reading Anxiety Scale* (FLRAS) and reasoned that EFL readers from native language backgrounds that employ different print directionality, orthographic, syntactic, and semantic systems from English are more likely to experience FLRA. Specifically, Saito et al. (1999) argued that, although reading would seem at first glance to be the "least susceptible to anxiety effects" given that it involves more opportunities than listening and speaking for reflection and reconsideration, foreign language reading still elicits anxiety due to "unfamiliar script and writing system" as well as "unfamiliar cultural materials" (pp. 202-203). Sellers (2000) corroborated the proposition of Saito et al. (1999) and maintained that FLRA is a separate and distinct phenomenon in language learning among learners of Spanish as a foreign language at the college level.

Similarly, Subasi (2014) and Al Faruq (2019) concluded that although FLRA is related to general foreign language classroom anxiety, it actually exists as a distinct phenomenon among Turkish and Indonesian learners of EFL, respectively. Likewise, several researchers (e.g., Brantmeier, 2005; Cheng, 2017; Yamashita, 2007; Young, 1999) further explicated that FLRA refers to a specific type of anxiety aroused by unknown vocabulary, unfamiliar topics, imperfect text comprehension, and a lack of self-confidence in reading in an additional language. More recently, Sparks, Luebbers, Castaneda and Patton (2018) reported that the FLRA of the English learners of Spanish is more likely to be associated with their L1 skills as well as their L2 aptitude and achievement. It should also be noted a number of recent studies (i.e., Abdul Razak, Yassin & Saif Mobel, 2019; Zhang, 2019) revealed that FLRA affects the performance of FL learners from a diverse range of native language and cultural backgrounds.

However, the extant research findings on the impact of FLRA on the reading comprehension of FL learners is presently inconclusive (Bahmani & Farvardin 2017). For instance, Guimba and Alico (2015) and Jafarigohar and Behroonzia (2012) reported significant negative relationships between FLRA and the EFL reading comprehension of Filipino 8th graders and Iranian college EFL learners, respectively. Conversely, Brantmeier (2005) and Mills, Pajares and Herron (2006) found that FLRA is unrelated to the reading comprehension of the advanced English-speaking learners of Spanish and French as foreign languages at the college level.

Metacognitive strategies and reading comprehension

Metacognitive reading strategies are defined in the context of the present study as means learners utilise in order to monitor their comprehension as well as act to better comprehend what they read. Mokhtari and Sheorey (2002) classified these strategies into the three categories of global, problem-solving, and support strategies, and proposed the *Survey of Reading Strategies Scale* (SORS) to assess them. Furthermore, Mokhtari and Reichard (2002) explicated that global strategies prepare the reader for reading (setting a purpose for reading, previewing, skimming, predicting, and activating background knowledge). Meanwhile, problem-solving strategies are employed to solve problems which come to surface when the text becomes challenging and difficult to read (re-reading, slowing down, reading aloud, guessing the meaning of unfamiliar words, and visualising information). Finally, support strategies help the reader while reading (using outside reference aides, paraphrasing what is read, note taking, and annotating).

Numerous studies have demonstrated a positive link between the use of metacognitive strategies, particularly global and problem-solving strategies, and EFL reading comprehension in various international and sociolinguistic contexts (e.g., Aghaei & Zhang, 2012; Al-Sobhani, 2013; Kerbalaee Kamran, 2013; Madhumathi & Ghosh 2012; Meniado, 2016; Shang, 2017; Zare, 2013). Conversely, Zuweldi, Ratmanida and Marlina (2018) reported no statistically significant correlations between the use of metacognitive reading strategies and the reading comprehension of Indonesian college EFL learners.

Foreign language reading anxiety and cognitive processing

A number of studies have investigated the interplay of FLRA and learners' use of metacognitive strategies (e.g., Lien, 2011; Lu & Liu, 2015; Sari, 2018; Tsai & Lee 2018). Lien (2011) presented some general observations about the frequency of the reported use of metacognitive strategies by Taiwanese EFL readers profiled into three levels of FLRA and gender. This researcher indicated that negative correlations exist between FLRA and the use of metacognitive reading strategies, with tendencies for highly anxious readers to use the support strategy of translation, whereas the less anxious readers tend to use general strategies such as guessing. Similarly, Lu and Liu (2015) concluded that FLRA makes Chinese EFL readers use less analysis, assessing, planning, predicting, checking, and confirming strategies. Likewise, Tsai and Lee (2018) reported that while FLRA is not associated with academic major, it is negatively correlated with strategy use. Conversely,

Sari (2018) found no significant relationship between the FLRA levels and the overall reading strategy use among Indonesian EFL readers.

The preceding review suggests a need for investigating the direct and mediating roles of variables that may impact readers' anxiety, metacognition, and comprehension. In the present study, we opted to investigate the potential interplay of FLRA and readers' abilities to monitor comprehension and take action to process and comprehend texts written in English, a language that may invoke reading anxiety for EFL learners as originally hypothesised by Saito et al. (1999). This is especially so given that the native language of the EFL participants in the present study is Arabic, a language that uses a non-Latin script, is read from right to left unlike English, and includes characters with no corresponding sounds in English.

The present study

The theoretical foundations of the present study are grounded in the Horwitz, Horwitz, and Cope (1986) proposition that foreign language anxiety is a "situation-specific" type of anxiety responsible for negative achievement. Based on the assumption that anxiety stems from "inherent inauthenticity" associated with immature foreign language communicative abilities, the self-concept of these learners is challenged. That is, unlike their native speaker counterparts who usually can easily understand each other, foreign language learners may experience reticence, self-consciousness, or even panic as they attempt to communicate in a language other than their own native language. This is because their communication attempts "will be evaluated according to uncertain or even unknown linguistic and socio-linguistic standards" (Horwitz, Horwitz & Cope, 1986, p. 128).

The present study employed a correlational path analysis design in order to investigate the direct as well as indirect relationships of FLRA and the metacognitive strategies utilised in reading comprehension by a diverse cohort of Arabic native speakers studying EFL at the college level. A basic assumption behind the present study is that path analysis is a robust analytical technique to examine the direct and mediation relationships among the study variables. Likewise, we assumed that the present study would fill a knowledge void given that no previous studies have investigated the interplay between the FLRA of Arabic-speaking readers, their use of the global, problem-solving, and support metacognitive strategies, and their EFL reading comprehension. Specifically, the present study addressed the following questions:

1. What is the role of the global, problem-solving, and support metacognitive strategies in the reading comprehension of a cohort of Arabic-speaking EFL college readers?
2. Does FLRA affect the reading comprehension of a cohort of Arabic-speaking college EFL readers?
3. What are the mediation effects of FLRA on the global, problem-solving, and support metacognitive strategies and comprehension of a cohort of Arabic-speaking EFL readers?

Method

Data collection tools

The data collection tools used in this study were (a) a demographic information questionnaire; (b) the *Foreign Language Reading Anxiety Scale* (FLRAS); and (c) the *Survey of Reading Strategies Scale* (SORS); and (d) a reading comprehension test. The English versions of FLRAS and SORS were administered to all study participants and there was no need to translate them into their native language, Arabic.

Demographic information questionnaire
A background information questionnaire elicited participant information on the variables of gender, age, and intended major field of specialisation.

Foreign language reading anxiety scale (FLRAS)
FLRAS is a widely used self-reported measure of the respondents' levels of anxiety as they read a foreign language text (Saito et al., 1999). This measure comprises 20 Likert-scale items scored on a 5-point scale. The range of possible scores is from 20 to 100 with higher scores indicating more anxiety. FLRAS has good discriminant validity from general foreign language anxiety measures (Mikami, 2019), internal consistency of Cronbach alpha = . 93 as reported by its developers, and Cronbach alpha = .82 based on data from the present study (N = 103).

Survey of reading strategies scale (SORS)
SORS is a self-reported instrument which measures the participants' awareness and use of metacognitive reading strategies (Mokhtari & Sheorey, 2002). We considered this tool to be appropriate for the purpose of the present study because it is particularly designed to measure learners' metacognitive awareness and use of reading strategies, has been utilised widely, and has an internal consistency of Cronbach alpha = .89 as reported by its developers and Cronbach alpha = .82 based on data from our study. SORS measures the following three subcategories of the metacognitive strategies under investigation in the present study. Specifically, 13 items (1, 3, 4, 6, 8, 12, 15, 17, 20, 21, 23, 24, 27) measure global strategies; 8 items (7, 9, 11, 14, 16, 19, 25, 28) measure problem-solving strategies; and 9 items (2, 5, 10, 13, 18, 22, 26, 29, 30) measure support strategies. Each SORS item is measured by a 5-point Likert-type scale. In this study, the global strategies sub-scale showed an internal consistency coefficient of Cronbach alpha = .79, the problem-solving strategies sub-scale Cronbach alpha = 0.65, and the support strategies sub-scale Cronbach alpha = .74 (N = 103).

Reading comprehension test
To assess the participants' reading comprehension, we used a retired version of a TOEFL test validated by Ghaith and El-Sanyoura (2019). This test comprised 19 multiple-choice items pertaining to literal comprehension as well as higher order comprehension (see Appendix for sample questions). Specifically, the test included 7 literal comprehension questions and 12 higher-order questions according to the conceptualisation of these two types of comprehension (Roe & Smith, 2012) and as unanimously determined by three

raters and specialists in foreign language education. The raters established the test content validity focusing on content relevance and content coverage, using a test specification matrix as suggested by Bachman (1990).

Participants

In this study we report data collected from participants enrolled in a private university that uses English as the medium of instruction in Lebanon. The final sample size was 103 after deleting for missing data and outliers. Specifically, listwise deletion of missing cases resulted in an initial sample size of 115 cases, following which 10 outliers were identified and dropped by looking at the standardised score (-3,+3). In addition, inspection of multivariate probability estimates ($p < .00$) through sorting cases by Mahalanobis distance resulted in the deletion of 2 additional multivariate outlier cases. Consequently, the final sample size consisted of 103 cases with all skewness and kurtosis values within acceptable ranges as shown in Table 1 below.

Table 1: Descriptive statistics of metacognitive reading strategies, reading anxiety, and reading comprehension (N = 103)

Variables	Global (SORS)	Problem-solving (SORS)	Support (SORS	Anxiety (FLRAS	Comprehension (Test)
Mean	46.43	30.48	31.88	57.89	46.66
Median	46.32	30.54	31.67	57.57	45.00
SD	5.06	3.95	4.02	8.97	15.70
Skewness	-.18	-.21	-.36	-.13	.85
SE skewness	.23	.23	.23	.23	.23
Kurtosis	.06	-.40	.09	.21	.424
SE kurtosis	.46	.46	.46	.46	.46
Range	25.00	17.00	25.00	51.00	68.00
Minimum	33.00	22.00	18.00	32.00	22.00
Maximum	58.00	39.00	43.00	83.00	90.00
Cronbach's alpha	.79	.65	.74	.82	

Participants in the present study are considered academically strong and capable of pursuing their undergraduate studies in their intended fields of specialisation. They have studied English as a foreign language (EFL) and used it as a medium of instruction in their K-12 science and mathematics classes. However, the participants needed to enrol in an English communication skills course along with their introductory content specialisation courses that do not depend much on technical English proficiency. The course aimed to enhance the participants' reading proficiency and develop their readiness to function effectively in an all-English curriculum at the college level. Specifically, the course focused on the literal and higher order reading comprehension of a variety of texts with emphasis on fluency, interpretive, critical, and creative comprehension.

The age of the participants ranged from 17 to 28 years with a mean of 19.75. There were 47 males (46%) and 56 females (54%). Twenty-six (25%) were planning to major in pedagogical sciences, 41 (40%) in general sciences, 14 (13%) in humanities, and 22 (21%)

in business. All of the participants were native speakers of Arabic learning EFL in order to enhance their language proficiency use in their intended fields of study. Specifically, their *Computer Based Test of English as a Foreign Language* (CBTOEFL) scores ranged from 131 to 167, which is equivalent to the 5-6 *International English Language Testing System* (IELTS) proficiency bands.

Data collection

The researcher took the consent of the Dean of the faculty of the private university where the study was conducted and explained the purpose of the research and its expected outcomes. Six instructors who teach various sections of a common university requirement English communication skills enrichment course were identified and agreed to participate in the study. The teachers and the students enrolled in their respective classes consented to participate according to approved Institutional Research Board regulations and ethical research standards. Specifically, the researcher informed all participating teachers and students about the potential benefits, duration, confidentiality, and freedom to participate or withdraw from the study if they wish to do so without any repercussions whatsoever. The researcher did not teach the study participants and had no conflict of interest with any of them.

Data collection took place during February 2020. The participants first took the reading comprehension test within a maximum period of 60 minutes. After a short break, they completed the demographic questionnaire, following which SORS was administered to them within a period of 40 minutes. Next day, the participants completed the FLRAS within a period of 30 minutes. There was neither compensation nor any other incentives associated with participation in the study. Students who opted not to take part in the study were given free reading sessions at the library.

Data analysis

First, the reading comprehension test was scored, following which participants' responses to the FLRAS and SORS surveys were calculated. The number of correct answers on the comprehension test was counted for each participant, divided by the total number of questions on the test (19), and multiplied by 100 to get the comprehension percentile scores used in the statistical tests run in the study. In addition, sub-scores for the different types of strategies within SORS were computed by adding up scores on the three sub-scale items that correspond to each strategy type: global, problem-solving, and support. Descriptive statistics (means and standard deviations) were calculated for all the study variables. In addition, skewness and kurtosis values were assessed and used to exclude outlier cases. Furthermore, Cronbach alpha reliability values were computed for the FLRAS scale and the three sub-scales within the SORS scale of metacognitive reading strategies under investigation, following which Pearson correlation coefficient (r) values were calculated among the FLRAS and the SORS scores and the reading comprehension scores of the study participants.

Finally, two path analysis regression analyses were conducted, followed by Sobel tests to determine the mediating effects of FLRA on metacognitive strategies and comprehension. Specifically, reading comprehension and reading anxiety were alternated as dependent variables in two regression analyses and the reading strategy types with either reading comprehension or reading anxiety entered as predictor variables. A Mahalanobis distance (D2) test was used to identify and deal with outlier cases, whilst normality and collinearity of independent variable assumptions were ensured through histogram residual plots analyses. Variance inflation factor (VIF) and tolerance values were used to verify and eliminate any potential multicollinearity problems with the regression analyses run to address the study questions as recommended by Hair, Black, Babin and Anderson (2010).

Results

Table 2 shows intercorrelation of the study variables.

Table 2: Intercorrelations of metacognitive reading
strategies, reading anxiety, and reading comprehension

Variables	Global	Problem-solving	Support	Anxiety	Comprehension
1 Global					
2 Problem-solving	.63**				
3 Support	.56**	.54**			
4 Anxiety	.11	.16	.31**		
5 Comprehension	.27**	.25**	.03	-.28**	

*p < .05; **p <.01

First, all correlations among the types of metacognitive strategies are statistically significant at the .01 level: global and problem-solving $r = .63. p < .01$; global and support $r = .56, p < .01$; and problem-solving and support are $r = .54, p .01$. Second, global and problem-solving metacognitive strategies are positively correlated with reading comprehension, $r = .27, p < .01$ and $r = .25, p < .01$, respectively. Meanwhile, support strategies do not correlate with comprehension $r = .03, p > .05$. Third, there is a direct negative statistically significant relationship between FLRA and reading comprehension, $r = -.28, p < .01$.

However, none of the above positive correlation values among all the independent variables (global, problem-solving, support, anxiety) represent violation of the multicollinearity assumption for path analysis conducted in the present study based on the cutoff value of $r = .80$ as suggested by Allison (1999). This is further verified by the tolerance values and variance inflation factors (VIF) data obtained from the regression analyses of the present study as shown in Table 3.

Table 3: Tolerance and variance inflation factor (VIF) statistics

Independent variable	Tolerance(a)	VIF(a)	Tolerance(b)	VIF(b)
Global	.52	1.89	.51	1.96
Problem-solving	.55	1.81	.53	1.86
Support	.57	1.73	.60	1.66
Anxiety	.89	1.11	.88	1.33

a. Dependent variable: EFL comprehension
b. Dependent variable: Foreign language reading anxiety

Specifically, multicollinearity tolerance values for all independent variables ranged from 0.51 to 0.89 (< 2.0) and the VIF values were smaller than the conservative 2.5 level and ranged from 1.11 to 1.96. This indicates that the percentages of the variance inflated for each coefficient does not cause multicollinearity concerns (Hair et al., 2010).

The path analysis results of the influence of FLRA and the global, problem-solving, and support strategies on reading comprehension are shown in Figure 1.
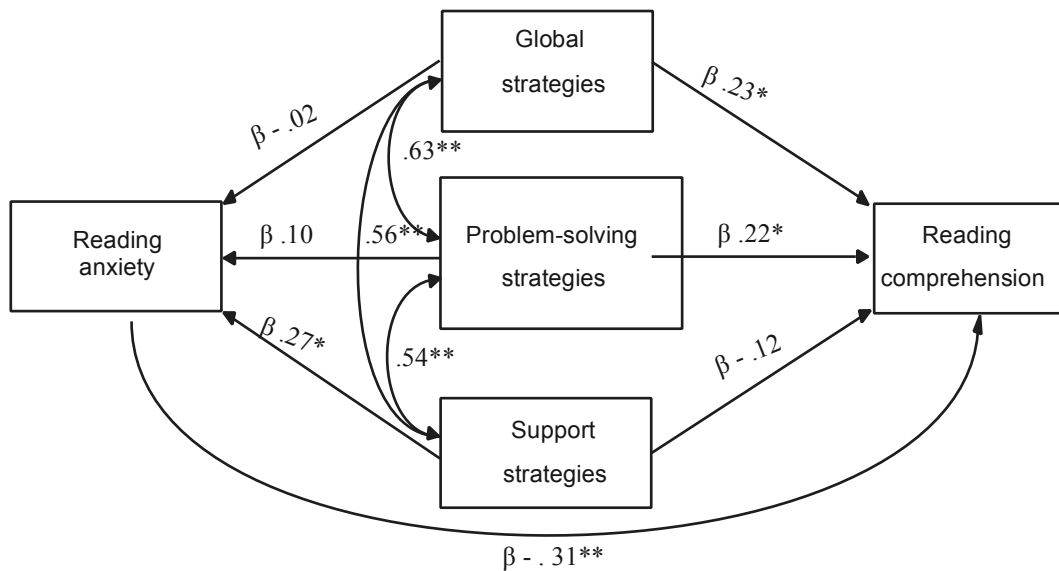

Figure 1: Path analysis results of the influence of FLRA and the global, problem-solving, and support strategies on reading comprehension

The results shown in Figure 1 indicate that all hypothesised paths reached statistical significance ($p < .05$) except support strategies and reading comprehension. This indicates that global strategies ($\beta = .23, p < .05$) and problem-solving strategies ($\beta = .22, p < .05$) made positive direct contributions to comprehension. Conversely, FLRA made a negative contribution to comprehension ($\beta = - .31, p < .01$). Finally, Sobel test results are reported in Table 4.

Table 4: Sobel test statistics of the mediation effects of reading
anxiety and metacognitive strategies on reading comprehension

Mediator		Paths	Unstandardised coefficients	Standard error	Z-value	*p*-value
Anxiety	Global	→ Anxiety	0.21	0.17	1.13	0.25
	Anxiety	→ Comprehension	- 0.55	0.16		
	Problem	→ Anxiety	0.37	0.22	1.52	0.12
	Anxiety	→ Comprehension	- 0.58	0.16		
	Support	→ Anxiety	0.57	0.17	2.28	0.02*
	Anxiety	→ Comprehension	- 0.56	0.17		

* p < .05

The results show that reading anxiety mediates support strategies ($Z = 2.28$, $p < .05$) but has no significant indirect effects on global strategies ($Z = 1.13$, $p > .05$) or problem-solving strategies ($Z = 1.52$, $p > .05$).

Discussion

The findings of this study revealed that the global and problem-solving metacognitive strategies make direct positive contributions to the reading comprehension of Arabic-speaking learners of EFL. The findings also indicate that FLRA negatively impacts EFL comprehension and may lead to bottom-up, rather than transactive text processing, given that we found that FLRA mediates the use of support strategies and is not associated with global and problem-solving strategies.

The preceding findings suggest the following. First, the positive direct effect of the global and problem-solving strategies on EFL reading comprehension reported in the present study corroborates the findings of Al-Sobhani (2013) and Kerbalaee Kamran (2013). Specifically, these researchers found significant positive associations between the categories of global and problem-solving metacognitive strategies but no association between the support category of strategies and the reading comprehension of the Arabic-speaking Yemeni college students and the Iranian university EFL learners, respectively. Conversely, Zuweldi, Ratmanida and Marlina (2018) found no significant correlations between the three categories of strategies and the reading comprehension of Indonesian EFL students. Meanwhile, Madhumathi and Ghosh (2012), Meniado (2016), and Zare (2013) reported significant correlations between all of the categories of reading strategies and the comprehension of Indian engineering students, preparatory year program Saudi EFL learners, and Persian-speaking learners of EFL, respectively. These findings suggest that the role of strategy use in EFL comprehension might be mediated by certain contextual factors such as readers' linguistic proficiency, first language reading abilities, and text difficulty levels that merit further investigation. This is because the participants in the preceding studies actually differed in terms of these variables, which may have caused variations in their use of metacognitive strategies.

Second, the findings of this study indicate that FLRA affects the EFL comprehension of Arabic-speaking college students negatively. These findings agree with those of Guimba

and Alico (2015) and Jafarigohar and Behrooznia (2012) who reported significant negative relationships between FLRA and the EFL reading comprehension of Filipino 8th graders and Iranian college EFL learners. Conversely, the results are not in agreement with those of Brantmeier (2005) and Mills, Pajares and Herron (2006), who found that FLRA is unrelated to the reading comprehension of the learners of Spanish as a second language (L2) and the 3rd and 4th semester learners of French as a foreign language, respectively. A possible explanation for these contradictory findings could be the varied degrees of similarities to English between the writing systems of Arabic and Persian (Farsi) languages on the one hand, and the writing systems of Spanish and French languages on the other. Specifically, unlike English, Persian and Arabic use the Arabic alphabet, are written and read from right to left, and spell most words as they are pronounced. Meanwhile, like English, Spanish and French use the Latin alphabet, are written and read from left to right, and include non-phonetic spelling. Furthermore, according to the Foreign Service Institute's (FSI) classification of the difficulty of language learning for English-speaking learners, Spanish and French belong to category I (most similar to English). Meanwhile, Persian belongs to category IV (have considerable linguistic and/or cultural differences from English), and Arabic belongs to category V (classified as exceptionally hard to learn). Consequently, the participants of the present study may have experienced FLRA due to differences between the writing system of Arabic, their native language, and English, their target language, which may have negatively affected their comprehension.

Finally, FLRA mediated the use of support strategies and did not have indirect effects on the use of global and problem-solving strategies. That is, the more anxious the readers were, the more they resorted to underlining or circling information, paraphrasing for more understanding, translating to native language, reading aloud, and going back and forth in the text in order to ensure literal comprehension of stated information. This corroborates the findings of Lien (2011) regarding the tendency of anxious readers to use the support strategy of translation and implies that high levels of FLRA may lead to text bottom-up processing, thereby limiting EFL readers' abilities to read interactively between the lines, figure out implied meanings, evaluate information, and problem-solve based on what is read, through drawing on their background knowledge and critical thinking skills.

Conclusion

The findings of the present study corroborate those of previous studies regarding a positive link between utilising the global and problem-solving metacognitive strategies and the reading comprehension of EFL learners. Furthermore, the findings reveal that FLRA negatively affects the comprehension of EFL readers and mediates their use of support strategies.

Pedagogical implications

The preceding findings suggest a number of pedagogical implications for improving the EFL comprehension of learners who come from Arabic-speaking backgrounds and other languages with writing systems that are likely to invoke FLRA. These implications call for integrating a well-designed scope and sequence of strategy instruction into the official and

taught curricula. Likewise, teachers would enhance the reading proficiency of their EFL readers through deliberate instruction in using the global and problem-solving metacognitive strategies as a mechanism for enhancing self-monitoring and reading for meaning. Along similar lines, it is recommended that teachers utilise teaching methods and techniques from the affective-humanistic approaches to EFL teaching and learning that would lower the reading anxiety of EFL learners and build their linguistic and pragmatic competencies.

Limitations

The participants in the present study are undergraduate Arabic-speaking readers of EFL enrolled in their first semester of academic study at the college level. As such, the study findings cannot be generalised to "college-bound" learners who enrol fulltime in "foundation year" or intensive English programs that aim to bridge the gap between high school and college education. Likewise, the study findings may not be applicable to advanced undergraduate students in their final years of academic study. Furthermore, the findings need to be validated in other linguistic and cultural EFL contexts, particularly with EFL readers from language backgrounds that use dissimilar writing systems and orthography rules from English.

Directions for future research

Further observational and naturalistic studies are needed in order to examine the generalisability and validity of the findings of the present study into other, similar linguistic and socio-cultural contexts. Of particular importance would be conducting further studies that would illuminate under what conditions and circumstances are metacognitive strategies effective in improving EFL reading comprehension. It is also important to determine what types of metacognitive strategies are effective in improving the comprehension of learners from varied linguistic proficiency levels, different first language reading abilities, and from diverse cultural backgrounds, especially as they read texts of various types and difficulty levels. Future research should also examine the interplay of FLRA and learners' types of comprehension, including literal comprehension of stated information as well as interpretive comprehension (implied meaning) critical comprehension, and creative comprehension.

Future studies should also investigate a number of unanswered questions in the present study, thereby providing a more comprehensive perspective on the phenomenon of FLRA in EFL reading comprehension. Specifically, additional studies are needed to address questions regarding (1) whether FLRA is affected by general trait or state anxiety, and (2) whether learners who have higher FLRA levels are also more anxious when reading in their native language. Finally, it would also be in order to examine the interplay of metacognitive reading strategies and the comprehension of the specialised content area texts of pedagogical sciences, general sciences, humanities, and business, given that these texts use discipline specific vocabulary and technical expressions that are not used or easily understood by non-specialist readers.

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Appendix: Examples of test of reading comprehension questions

Reading comprehension

Please answer questions based on following passage from the article "Against the undertow: Language-minority education policy and politics in the 'Age of Accountability'" by Terrence G. Wiley and Wayne E. Wright (Wiley & Wright, 2004).

Language diversity has always been part of the national demographic landscape of the United States. At the time of the first census in 1790, about 25% of the population spoke languages other than English (Lepore, 2002). Thus, there was a diverse pool of native speakers of other languages at the time of the founding of the republic. Today, nationwide, school districts have reported more than 400 languages spoken by language-minority students classified as limited English proficient (LEP) students (Kindler, 2002). Between 1991 and 2002, total K-12 student enrollment rose only 12%, whereas LEP student enrollment increased 95% during this same time period (National Clearinghouse for English Language Acquisition, 2002b). This rapid increase and changing demographics have intensified the long debate over the best way to educate language-minority students.

Historically, many groups attempted to maintain their native languages even as they learned English, and for a time, some were able to do so with relatively little resistance until a wave of xenophobia swept the country during World War 1 (Kloss, 1977/1998). Other groups, Africans, and Native Americans encountered repressive politics much earlier. During the 1960s, a more tolerant policy climate emerged. However, for the past two decades there has been a steady undertow of resistance to bilingualism and bilingual education. This article provides historical background and analyzes contemporary trends in language-minority education within the context of the recent national push for accountability, which typically takes the form of high-stakes testing.

The origins of persistent themes regarding the popular antagonisms toward bilingual education and the prescribed panaceas of "English immersion" and high-stakes testing in English need to be scrutinized. As background to the contemporary context, we briefly discuss the history of language politics in the United States and the ideological underpinnings of the dominant monolingual English ideology. We analyze the recent attacks on bilingual education for what this attack represents for educational policy within a multilingual society such as the United States. We emphasize multilingual because most discussions of language policy are framed as if monolingualism were part of our heritage from which we are now drifting. Framing the language policy issues in this way masks both the historical and contemporary reality and positions non-English language diversity

as an abnormality that must be cured. Contrary to the steady flow of disinformation, we begin with the premise that even as English has historically been the dominant language in the United States since the colonial era, language diversity has always been a fact of life. Thus, efforts to deny that reality represent a "malady of mind" (Blaut, 1993) that has resulted in either restrictionist or repressive language policies for minorities.

As more states ponder imposing restrictions on languages of instruction other than English-as California, Arizona, and Massachusetts have recently done-it is useful to highlight several questions related to the history of language politics and language planning in the United States. Educational language planning is frequently portrayed as an attempt to solve the language problems of the minority. Nevertheless, the historical record indicates that schools have generally failed to meet the needs of language-minority students (Deschenes, Cuban & Tyack, 2001) and that the endeavor to plan language behavior by forcing a rapid shift to English has often been a source of language problems that has resulted in the denial of language rights and hindered linguistic access to educational, social, economic, and political benefits even as the promoters of English immersion claim the opposite.

The dominance of English was established under the British during the colonial period, not by official decree but through language status achievement, that is, through "the legitimization of a government's decisions regarding acceptable language for those who are to carry out the political, economic, and social affairs of the political process" (Heath, 1976, p. 51). English achieved dominance as a result of the political and socioeconomic trade between England and colonial administrators, colonists, and traders. Other languages coexisted with English in the colonies with notable exceptions. Enslaved Africans were prohibited from using their native tongues for fear that it would facilitate resistance or rebellion. From the 1740's forward, southern colonies simultaneously institutionalized "compulsory ignorance" laws that prohibited those enslaved from acquiring English literacy for similar reasons. These restrictive slave codes were carried forward as the former southern colonies became states of the newly United States and remained in force until the end of the Civil War in 1865 (Weinberg, 1977/1995). Thus, the very first formal language policies were restrictive with the explicit purpose of promoting social control.

1. What is the primary purpose of including the statistic from the 1790 census in the introductory paragraph?
    A. To explain how colonising the US eradicated language diversity;
    B. To show concrete evidence that language diversity in the US is not a new phenomenon;
    C. To note that before that time, there was no measure of language diversity in the US;
    D. To demonstrate that census data can be inaccurate.

2. The article compares two sets of statistics from the years 1991-2002, increases in K-12 enrollment and increases in LEP students, to highlight:
    A. That the two numbers, while often cited in research, are insignificant;

    B. That while many people with school-age children immigrated to the US during this time, an equal amount left the country as well;

    C. That language diversity had no impact on US student enrollment during this time;

    D. That while the total amount of students enrolled in US schools may have grown slowly, the amount of those students who were LEP increased dramatically.

3. According to the second paragraph, many groups maintained their native languages without resistance into the 20th century EXCEPT:
   A. Native Americans and African Americans;
   B. Irish Americans and African Americans;
   C. Mexican Americans and Native Americans;
   D. Native Americans and Dutch Americans.

4. Why is the word "undertow" emphasised in the second paragraph?
   A. To explain how certain groups continued to carry their native languages with them despite the opposition from those against language diversity;
   B. To show the secretive and sneaky nature of those opposed to language diversity;
   C. To call attention to the ebb and flow of language resistance during the 20th century, experiencing periods of both rest and extremism;
   D. To explain that, while many groups tried to maintain their native languages, many gave in to social and political pressure to use only English.

5. What is the best way to describe the function of the third paragraph in this excerpt?
   A. The paragraph provides its primary thesis as well an outline of the article's main points;
   B. The paragraph is an unnecessary and irrelevant inclusion;
   C. The paragraph serves to reveal the conclusions of the article before detailing the data;
   D. The paragraph firmly establishes the article's stance against language diversity

6. What is the best summary of why the phrase "multilingualism" is emphasised in the third paragraph?
   A. Language repression stems from the US's unwillingness to recognize the languages of its foreign allies;
   B. Because language is constantly changing and often goes through multiple phases over time;
   C. The authors firmly believe that speaking more than one language gives students a substantial benefit in higher education;
   D. Language policy discussions often assumes that the US has a monolinguistic history, which is untrue and poses language diversity as threatening.

7. Phrases such as "prescribed panaceas" and "malady of the mind" are used in the third paragraph to:
   A. Defend the point that the US must standardise its language education or there will be severe results;
   B. Point out that language is as much a physical process as an intellectual one;

C. Illustrate how certain opponents of language diversity equate multilingual education with a kind of national disease;

D. Demonstrate how the stress of learning multiple languages can make students ill.

8. According to the fourth paragraph, all of the following are potential negatives of rapid English immersion EXCEPT:
   A. It can lead to a denial of language rights for particular groups;
   B. Students become more familiar with conversational expressions and dialect;
   C. It can prevent access to certain benefits that are always available to fluent speakers;
   D. It can promote feelings of alienation among groups that are already in a minority status.

9. The best alternate definition of "language status achievement" is:
   A. When enough scholarly work has been produced in a language, it is officially recognized;
   B. Those who are in power socially and economically determine the status of a language;
   C. Languages fall into a hierarchy depending upon the numbers of populations that speak them;
   D. The position of a language in which no others may coexist with it.

10. From the context of the final paragraph, what does "compulsory ignorance" mean?
    A. Populations at the time were required only to obtain a certain low level of education;
    B. Slave populations were compelled to only speak in their native languages and not learn English;
    C. That slaves were forcibly prevented from developing their native language skills out of fear that they would gain power;
    D. Slave owners would not punish slaves who did not wish to learn and speak only English.

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