Research Article 10.30495/JAL.2020.675544

The Effect of False Correction Strategy and Inference Strategy on the Paramedical Students' Reading Comprehension and Attitude

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(Received: 2020/4/19; Accepted: 2020/8/18)

Online publication: 2020/9/10

Abstract

There is a bulk of studies supporting the positive effect of strategy instruction on reading comprehension. This study examined the effect of two reading strategies (i.e., false correction and inference strategy) on English reading comprehension of Iranian paramedical students, using a pretest, posttest, control group design. It also surveyed their attitudes toward the effect and usefulness of these strategies. The participants were sixty paramedical students, selected through availability sampling from the Medical University of Kashan. They were randomly assigned to two experimental groups and one control group (CG). The first experimental group was instructed to use inference strategy (henceforth IS), whereas the second was instructed to use a strategy based on elaborative interrogation theory (i.e., false correction strategy, henceforth FCS). The experimental data were collected through a researcher-made pretest and posttest, and survey data through a researcher-made questionnaire. The results of statistical analyses indicated that IS group significantly outperformed FCS and CG on the posttest. The results of questionnaire data also showed that IS led to more positive attitudes. Moreover, IS was perceived as more useful in meeting participants' academic needs. The findings of the study imply a needs-based approach to ESP pedagogy.

Keywords: English for specific purposes, attitude, false correction strategy, inference strategy, paramedical students, reading comprehension

Introduction

Reading skill is crucial in educational curricula because it is a means of gaining new knowledge (Hellekjaer, 2009). According to Norris and Phillips (2009), reading should be acknowledged from two perspectives: a) the nature of recursion in reading which goes through iterative loops of reading, constituting deeper understanding, b) the interactive nature of reading, that come into play between the reader and the text. Moss, Schunn, Schneider, McNamara, and VanLehn (2011) suggested that the complexity of reading processes results from the strategies that learners idiosyncratically use to grasp the text. Hence, effective readers are constantly monitoring their understanding, assessing their understanding, and identifying when comprehension breaks down. That is why the knowledge, use, and regulation of reading comprehension strategies have received considerable attention in the field of reading. Furthermore, some researchers believe that multiple reading comprehension strategy instruction is beneficial in helping learners to become strategic readers and to improve reading comprehension (e.g., Fan, 2010; Klapwijk, 2012; Medina, 2011).

Recently, inferential thinking is thought of as a capacity in reading comprehension that is independent of the contributions of language proficiency (Collins, 2016), and different categories of inference are presented in the literature such as inter-sentence/elaborative inference (Kispal, 2008); lexical inference (Yin, 2013), to name but a few. Many researchers have investigated the inferential strategies on reading comprehension (e.g., Cromley, Snyder-Hogan, & Luciw-Dubas, 2010). Questioning strategies are another strand of research which have inspired researchers to assess the effects of interrogatives (e.g., why and how) on reading comprehension (Levin, 2008). Backed by elaborative interrogation theory, false correction questioning strategy triggers learners' reading comprehension (Ghent, 2008). Although a number of Iranian studies (e.g., Tavakoli & Hayati, 2011) have investigated the influence of using strategies on reading comprehension, there is scarce comparative literature on the effects of using these two reading comprehension strategies (i.e., IS and FCS) on the comprehension of general academic texts by paramedical students at Iranian universities.

Reading strategy is defined as "a deliberate, conscious, meta-cognitive act" (Afflerbach, Pearson, & Paris 2008, p.368). Grabe (2009) identified the use of reading strategy as one way to differentiate good readers from poor readers. Hence, the instruction of reading strategies can help learners to infer meaning and integrate the new knowledge with the existing schemata (Best, Floyd, & McNamara, 2008).

Making inferences is believed to create a greater connection between the reader and what is read (Zwiers, 2004). Inferential thinking, as stated by Harvey and Goudvis (2000, as cited in Johnston, 2009), happens when text clues and the reader's prior knowledge and questions merge in order to arrive at a conclusion about an underlying theme or idea in the text. Inference is considered as an important factor in activating prior knowledge, setting a purpose for reading, and engaging the reader. Accordingly, "when learners read inferentially, they are involved with the text at a higher level — reflecting on information, making judgments, and drawing conclusions in response to what they are reading" (Johnston, 2009, p.1). Moreover, Kispal (2008) has stated that inference takes place when readers want to get more from what they can understand from the text literally. According to Yin (2013), "lexical inference refers to "guessing the meaning of an unknown word using available linguistic and other clues: It is a primary lexical processing strategy to tackle unknown words while reading" (p. 29). According to Kispal (2008), there are two types of inference :a) coherence or inter-sentence inference, which involves connecting inferences as a means of establishing cohesion between sentences and integrating textual information; and b) elaborative or gap-filling inference, which draws upon schemata to realize the associations between sentences.

Researchers have investigated the role of inferential thinking and strategies in reading comprehension using both descriptive and experimental designs. Cromley, Snyder-Hogan, and Luciw-Dubas (2010) used the directed/inferential meditation model of reading in an ESP course to investigate the relationship between strategy use and inference. They found that reading comprehension strategies have only a significant indirect effect via inference on reading comprehension.

Mistar, Zuhairi, and Yanti (2016) investigated the effect of instructing inferential reading strategies (i.e., predicting, text mapping, and summarizing) on the Indonesian students' reading comprehension at two levels (i.e., literal and inferential). The findings revealed that the strategies under question significantly improved the participants' ability to understand literal and inferential meanings.

Ashrafzadeh, Don, and Meshkat (2015) studied the effect of schema activation, as an inferential strategy, Iranian medical students' reading comprehension. To that end, the participants were asked to respond to questions on an academic text geared with sub-technical medical terms drawn from an IELTS reading module, and a text with highly technical or subject-specific medical terms. After reading each text, a reading comprehension posttest was run. The results of quantitative data analysis indicated that this strategy significantly affected the participants' reading comprehension.

Tavakoli and Hayati (2011) studied the association between lexical inference and English proficiency. The participants were asked to underline the new words, infer their meaning, and indicate the schema they had used for inferential purposes. Considering all lexical inferences made by the students, the result revealed that the upper-intermediate participants were outperformed low-intermediate one in inferring the meaning of the target words.

Elaborative interrogation theory purports that interrogations increase learning (Levin, 2008). According to Smith, Holliday, and Austin (2010), elaborative interrogation questioning strategies encourage "students to produce verbal responses beyond copying word-for-word segments of a text" with "additional cognitive processing" (p.365). In one of the earliest studies, Martin and Pressley (1991) investigated the effects of four different types of why questions on recall learning. The participants of four experimental conditions were exposed to different why questions, ranging from questions on more relevant background knowledge to those focusing on less related text-based information. They found that the why questions that focused on relevant background knowledge was more effective. Hence, this study suggested that recall learning was dependent on relevance of why questions to the knowledge presented to the participants. Furthermore,

Woloshyn, Pressley, and Schneider (1992) found that students with more relevant schemata benefited more from why questions. Moreover, Graesser (2007) studied the effect of different interrogatives (e.g., how and what), and found that why questions resulted in more reading comprehension.

Ghent (2008) investigated the effect of false-correction strategy, as a questioning strategy, on undergraduate students of biology. He extended the literature of elaborative interrogation theory with "why-not" questions, called false correction. In this study, participants were supposed to answer the question of why the fabricated statements were not true. To that end, statements were extracted from students' course book and then falsified. They were required to explain "why each modified statement was false by rewriting the false statement as a true statement" (p.4). The results of the study indicated that false-correction strategy helped the experimental group outperform those who did not use it.

Attitude is a hotly debated strand of research in language learning studies. Leong and Austin (2006) claimed that attitudes play a very critical role in human performance and success. An attitude, as an internal condition, has the possibility of learning outcomes. Attitudes towards language learning may act either positively or negatively. Positive attitude has the effect on students' success and negative attitude results in students' failure in their learning.

According to Dörnyei and Csizér (2005), positive attitude can bridge the gaps in learning and negative attitude can hinder learning a second language. In addition, positive attitude has the role of a facilitator in learning a new language (Dörnyei & Csizér, 2005). Karahan (2007) opined that positive language attitudes give learners a high motivation to build positive direction towards learning. Also, De Bot, Lowie, and Verspoor (2005) claimed that teachers, learners and researchers believe that positive language attitude will facilitate the learning of a second language.

Researchers agree that readers' attitude is one of the factors that may affect reading comprehension (e.g., Smith, 2002). Academic reading attitude is found to be a factor influencing successful academic reading (Bastug, 2014). Mahato (2016) defined reading attitude as the reader's feeling about reading. According to Oostdam, Blok, and Boendermaker (2015), positive

reading attitudes result in higher motivational levels in readers, while negative attitudes may stop their efforts and reading practices. According to Isakson, Isakson, Plummer, and Chapman (2016), there are three main constructs that underlie reading attitude as follows: a) global value (i.e., global value placed on academic reading by students); b) academic reading self-efficacy (i.e., confidence in one's academic reading skills and abilities); and c) reading-related behaviors (i.e., behaviors to address and complete reading tasks). Hence, reading attitude has contributed to a research strand in educational environments.

Smith (2004) argued that the learners' reading attitudes went positive when they felt that reading improved academic attainment. Shahriza Abdul Karim and Hasan (2007) also found that negative reading attitudes led to negative reading experiences, and therefore, poor academic performance. Guthrie and Klaudia (2014) and Taghizadeh and Khalili (2019) reported learners' positive attitude towards academic reading and academic success. Isakson et al. (2016) argued that learners' reading attitude can be affected by their past reading experiences. Rasinski et al. (2017) found that students believed they could empower their literacy by improving their reading abilities.

Although the studies, reviewed above, have investigated the influence of using various strategies on reading comprehension, and reading comprehension is found to be a main concern of ESP instructors and students in the Iranian academic context, it seems that no single experimental study has examined the effect of IS and FCS on paramedical students' reading comprehension, and their attitudes towards different dimensions of the instruction of these strategies. Hence, to fill the void in the literature, two research questions were formulated as follows:

1. Are there any statistically significant differences among the effect of inference strategy (IS), false correction strategy (FCS), and conventional reading instruction on paramedical students' reading comprehension?
2. What do the participants of the experimental groups think about the reading strategies they received as treatment?

Method

Participants

This study was conducted with 65 male and female paramedical students (i.e., laboratory sciences, radiology, and anesthesia). They were selected from Kashan Medical University through convenience sampling. The age of the participants ranged from 18 to 19 years old. Two intact classes (i.e., laboratory and radiology) were randomly chosen as the experimental groups, and one class (i.e., anesthesia) as the control group. It is noteworthy that the participants were studying in the second semester of the university.

Moreover, the results of the nonparametric Kruskal-Wallis test indicated that there were not any significant differences between the three groups' median scores on the Nelson test, $H(2) = .808$, $p = .668$, $E^2 = .010$. Thus, it was concluded that all groups were homogenous in terms of their general language proficiency prior to the main study. Furthermore, The results of the nonparametric Kruskal-Wallis test indicated that there were not any significant differences between the three groups' median scores on the pretest, representing a weak effect size, $H(2) = .689$, $p = .709$, $E^2 = .009$. Thus, it was concluded that the three groups were homogenous in terms of their reading prior to the main study.

Instruments

To accomplish the objectives of this study, four instruments were used in this study as follows:

1. Nelson English language test was used for homogeneity purposes. All participants of the study took this placement test to examine whether they had the same level of language proficiency. In the present study, the intermediate level version (i.e., 200A) was used. It consists of 50 items. The KR-21 reliability index for this test was found to be well beyond acceptable level (alpha=0.82).
2. A pretest was developed and administered to the students to assure that the participants were homogenous in terms of reading comprehension of general texts on hygiene. The test included 25 multiple-choice reading comprehension items related to MA general English questions of hygiene test booklet which was held in 2013-2014 academic year. The KR-21 internal consistency reliability value

for this test was very close to acceptability cut-off value (alpha=0.65), which may be justified by the participants' chance responses due to lack of any test practice or reading comprehension strategies prior to treatment.

3. A multiple-choice reading comprehension test was developed and administered as posttest. The test included 25 multiple-choice reading comprehension items related to English questions of MA hygiene test, which was held in 2017-2018 academic year. The KR-21 internal consistency value for this instrument was acceptable (alpha=0.72), which may have been due to the minus scoring trick, which the researcher used to decrease the effect of answering questions by chance.
4. The final instrument was an attitude questionnaire that was developed by the researchers after an extensive review of the related literature on attitude toward reading strategies. It was used to know whether they were satisfied with the strategies instructed to them (alpha=0.71).

The researcher used eleven passages from three booklets of MA entrance examination of hygiene administered from 2014 to 2016. The readability of the texts were measured using SMOG index online (https://readabilityformulas.com/freetests/six-readability-formulas.php#), which is one of the most used indicators of the readability of health-related literature. This index provides a standardized measure of readability across several various sources (Dobbs, Neal, Hutchings, Whitaker, & Milton, 2017). The SMOG index for the first passage to the eleventh were respectively as follows: 8 (8^{th} grade), 9.7 (10^{th} grade), 9.8 (10^{th} grade), 10.7 (11^{th} grade), 10.8 (11^{th} grade), 11.6 (12^{th} grade), 11.8 (12^{th} grade), 12.1 (12^{th} grade), 12.4 (12^{th} grade), 12.9 (college level), and 13.3 (college level).As the SMOG indices showed, with the exception of two college-level texts, the majority of passages were at the same level of readability (i.e., difficult to read), with SMOG values, ranging from 8 to 12. Besides, the researchers prepared and used PowerPoint slides for teaching the strategies under question, using Microsoft PowerPoint 2013.

Procedure

For fulfilling the purposes of this study, the following procedural steps were sequentially taken:

1. The participants of the study were 65 students from Kashan University, selected through convenience sampling. They were identified as intermediate EFL learners on the basis of their performance on a placement test (i.e., Nelson English Language Test 200A). They came from three classes assigned by the Medical University of Kashan. Two classes were randomly selected as the experimental groups and the third class as the control group.
2. After the administration of the pretest to all three classes, the strategy of each experimental group was presented to them. Then, the participants were orally asked if they knew anything about the strategies, which they were presented. After the researchers made sure that they were not cognizant of them, they started instructing them through PowerPoint slides.
3. Eleven passages were practiced in the experimental classes during the treatment sessions, which lasted five weeks.
4. The students in the experimental group one (EX1) answered the questions of those passages using IS based on the following procedure:
    a. Lexical training: Initially they were explained the function and added meaning of individual words. During this activity, the researcher instructed students how to identify clues that could help understand the texts. The clue words helped the students to comprehend the entire text in the phase of lexical training related to inference strategy
    b. Question generation: the interrogative words (e.g., who, when, why and where) were introduced so that the participants knew how they could be used to formulate questions about the passage. Then, the students worked on the generation of questions about the passage.
    c. Prediction: Based on the two previous steps, the students were supposed to tell their probable prediction for each paragraph of the passage.
5. The experimental group two (EX2) received FCS. In line with elaborative interrogation theory, which holds that readers should be urged to answer interrogatives (i.e., why questions) about texts to

increase their reading comprehension (Levin, 2008), some sentences were elicited from the passage and were paraphrased semantically into false ones, and then, the participants were asked about the reasons for their truth or falsehood (Ghent, 2008).

6. Afterwards, the sentences were presented in black and white to them using PowerPoint slides. The students were supposed to respond whether the sentences were true or false, and if they were false, they were supposed to explain its reason and mention the line of the related true sentences in the passage.
7. The control group received the same passages during the treatment, and they were asked to answer the questions on their own.
8. At the end of the experiment, in order to measure the efficiency of each approach, multiple-choice reading comprehension test was administered to two experimental groups and control group as the posttest. Moreover, to find out whether the experimental groups were satisfied with the strategy, a four-item attitude questionnaire was administered to them.

Design

Due to the lack of true randomization, the quasi-experimental design that best served the first phase of this study was pretest/posttest, control group design. The second phase of this study followed the requirements of survey studies as a descriptive research design (Dörnyei, 2007).

Data Analysis

The collected data were statistically analyzed to answer the research questions of this study, using Statistical Package for Social Sciences (SPSS) 22. To address the first research question, one-way analysis of variance (ANOVA) was run. Moreover, descriptive statistics were run to answer the second research question.

Results

Results for the First Research Question

One-way analysis of variances (ANOVA) was run to compare the three groups' posttest means of reading comprehension in order to probe the null-hypothesis of this study. Before presenting the results, it is noteworthy that the assumption of homogeneity of variances was met (Table 1).

Table 1
Test of Homogeneity of Variances for Posttest Data

	Levene Statistic	df1	df2	Sig.
Based on Mean	3.08	2	62	.05
Based on Median	1.79	2	62	.17
Based on Median and with adjusted df	1.79	2	43.65	.17
Based on trimmed mean	3.16	2	62	.04

As shown in Table 1, the results of the Levene's test indicated that there were not any significant differences between the three groups' variances on the posttest of reading comprehension, $F(2, 62) = 3.08$, $p = .053$).

Table 2 displays the descriptive statistics for the three groups on the posttest of reading comprehension.

Table 2
Descriptive Statistics for Posttest of Reading Comprehension

	N	M	SD	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
FCS	18	9.28	3.87	.91	7.35	11.21
IS	24	13.13	5.50	1.12	10.80	15.45
Control	23	8.65	3.03	.63	7.34	9.97
Total	65	10.48	4.72	.58	9.31	11.65

As Table 2 indicates, the IS group had the highest mean on the posttest of reading comprehension, (M = 13.13, SD = 5.50, 95 % CI [10.80, 15.45]). This was followed by the FCS (M = 9.28, SD = 3.87, 95 % CI [7.35, 11.21]) and control (M = 8.65, SD = 3.03, 95 % CI [7.34, 9.97]) groups.

Table 3 displays the main results of one-way ANOVA.

Table 3
ANOVA Results for Posttest of Reading Comprehension

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	270.76	2	135.38	7.26	.001
Within Groups	1155.45	62	18.63		
Total	1426.21	64			

Based on these results in Table 3, it can be concluded that there were significant differences between the means of the three groups on the posttest of reading comprehension, representing a large effect size, $F(2, 62) = 7.26$, $p = .001$, $\omega^2 = .162$. Thus, the null hypothesis (i.e., there are not any statistically significant differences among the effect of IS, FCS, and conventional teaching technique on paramedical students' reading comprehension) was rejected.

Table 4 displays the results of the Scheffe's post-hoc comparison tests run to compare the groups two by two.

Table 4
Scheffe's Post Hoc Comparisons Tests; Posttest of Reading Comprehension

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
FCS	Control	.62	1.35	.900	-2.78	4.03
IS	FCS	3.84	1.34	.02	.47	7.22
	Control	4.47*	1.26	.00	1.31	7.63

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

The results in Table 4 indicates that the IS group ($M = 13.13$) significantly outperformed the control group ($M = 8.65$) on the posttest (Mean Difference = 4.47, $p = .00$). The IS group ($M = 13.13$) significantly outperformed the FCS group (M = 9.28) on the posttest (Mean Difference = 3.84, $p = .02$).There was not any significant difference between FCS ($M = 9.28$) and control ($M = 8.65$) groups' means on the posttest of reading comprehension (Mean Difference = .62, $p = .90$). As there was not a significant difference between these two groups on the pretest, paired-samples t-test was not run

because logically they cannot have outperformed each other (see Rubin, 2010).

Results for the Second Research Question

To address the second question, an attitude questionnaire with four items was distributed to the participants to investigate their attitudes on reading strategies. Table 5 displays the frequencies and percentages for the IS and FCS groups' answers to the first item of the attitude questionnaire (i.e., How do you assess your improvement in answering reading comprehension items?).

Table 5
Frequencies and Percentages of Improvement of Reading Comprehension Ability

			Choices					Total
			Perfect	Good	Moderate	Weak	Very Weak	
Group	IS	N	2	3	7	6	0	18
		%	11.1%	16.7%	38.9%	33.3%	0.0%	100.0%
	FCS	N	1	4	5	2	3	15
		%	6.7%	26.7%	33.3%	13.3%	20.0%	100.0%
Total		N	3	7	12	8	3	33
		%	9.1%	21.2%	36.4%	24.2%	9.1%	100.0%

As indicated in Table 5, the majority of the respondents in the inference group (p=38.89 %) believed that their comprehension ability improved moderately. This was followed by 33.33 percent who evaluated their comprehension as weak. Only 28.78 percent (i.e., 11.11 % perfect + 16.67 % good) had a positive assessment of their reading comprehension ability. The majority of the respondents in the FCS group (p=33.33 %) believed that their comprehension ability improved moderately. This was followed by 13.30 percent who evaluated their comprehension as weak, and another 20 percent who believed that their improvement was very weak. Only 33.4 percent (i.e., 6.7 % perfect + 26. 7 % good) evaluated their reading comprehension ability as perfect and good (Figure 1).

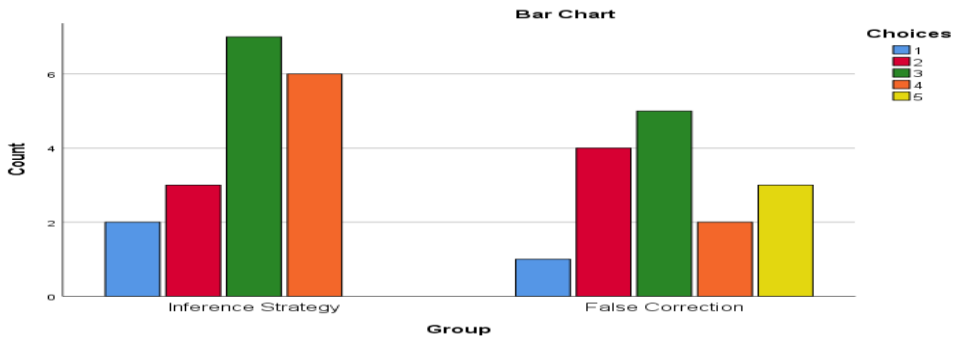

Figure 1. Frequencies of Assessment of Reading Comprehension Improvement by Groups

Table 6 displays the frequencies and percentages of the respondents' attitude towards the effect of the treatments administered in this study on the improvement of their reading comprehension ability (i.e., How do you evaluate the effects of the treatments on the improvement of your reading comprehension ability?).

Table 6
Frequencies and Percentages of Effect of Treatments on Improvement of Reading Comprehension

			Choices					Total
			Perfect	Good	Moderate	Weak	Very Weak	
Group	IS	N	3	5	5	5	3	21
		%	14.3%	23.8%	23.8%	23.8%	14.3%	100.0%
	FCS	N	1	3	6	5	0	15
		%	6.7%	20.0%	40.0%	33.3%	0.0%	100.0%
Total		N	4	8	11	10	3	36
		%	11.1%	22.2%	30.6%	27.8%	8.3%	100.0%

As shown in Figure 2, equal percentages (i.e., 38.1 percent) held opposite views on the effect of the treatments. The results showed that 14.3 plus 23.8 percent of the respondents in the inference group evaluated the effect of the treatments as "perfect" and "good". The same percentages showed that the effects of the treatments were "weak" and "very weak". Another 23.8 percent evaluated the treatments as "moderate". The majority of the respondents in FCS group evaluated the treatments as "moderate". This was followed by 33.3 percent who believed that the treatments had "weak" effect

on the improvement of their reading ability while 26.7 percent (i.e., 6.7 % perfect + 20 % good) held positive attitude towards the treatments.

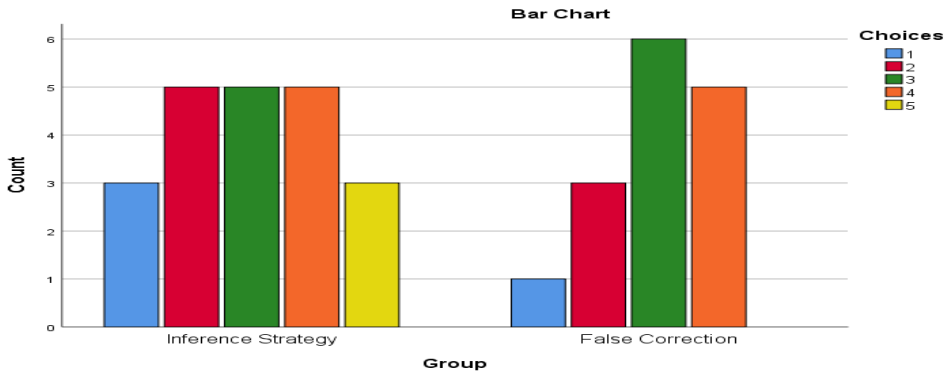

Figure 2. Frequencies of Assessment Effect of Treatments On Improvement of Reading Comprehension Ability by Groups

Table 7 displays the frequencies and percentages of the respondents' attitude towards the effect of the treatments on the improvement of their attitude towards reading comprehension (i.e., How do you evaluate the effect of the treatments on the improvement of your attitude towards reading comprehension?).

Table 7
Frequencies and Percentages of Effect of Treatments on Improvement of Attitude towards Reading Comprehension

			Choices					Total
			Profound	Perfect	Good	Moderate	Low	
Group	IS	N	3	5	5	8	4	25
		%	12.0%	20.0%	20.0%	32.0%	16.0%	100.0%
	FCS	N	0	0	5	6	4	15
		%	0.0%	0.0%	33.3%	40.0%	26.7%	100.0%
Total		N	3	5	10	14	8	40
		%	7.5%	12.5%	25.0%	35.0%	20.0%	100.0%

The results showed that 52 percent of the respondents in the inference group believed that the treatments had positive effect on their attitude

towards reading comprehension (i.e., 12 % "profound" + 20 % "perfect" + 20 % "good"). 32 percent evaluated that effect as "moderate" and only 16 percent believed that effect was "low". Forty percent of the respondents in the FCS group evaluated the effect as "moderate". This was followed by 33.33 who believed that the treatment had "good" effect on the improvement of their attitude, and another 26.7 percent evaluated the effect as "low" (Figure 3).

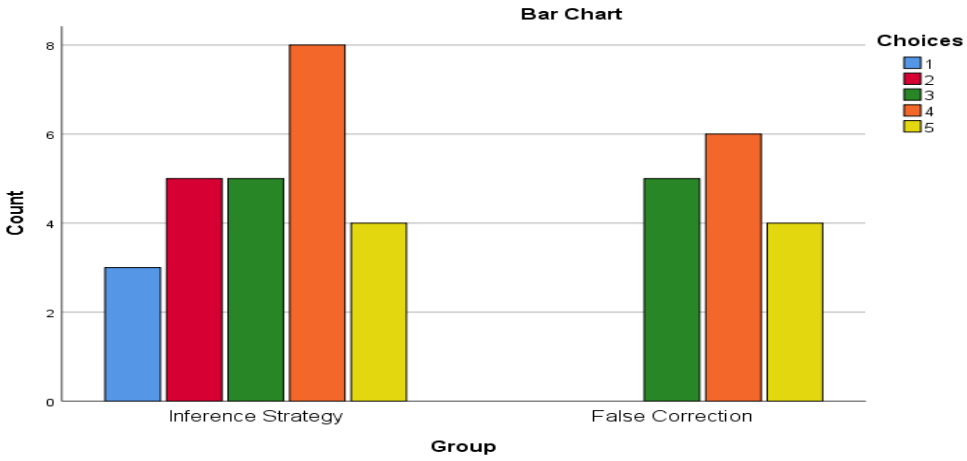

Figure 3. Frequencies of Assessment of Test Difficulty by Groups

Table 8 displays the frequencies and percentages of the respondents' satisfaction with the treatments (i.e., To what extent could the treatments satisfy your needs?).

Table 8
Frequencies and Percentages of Satisfaction with Treatments by Groups

		Choices						Total
		Profound	Perfect	Good	Moderate	Weak	Very Weak	
Group IS	N	2	4	4	7	2	1	20
	%	10.0%	20.0%	20.0%	35.0%	10.0%	5.0%	100.0%
Group FCS	N	0	0	6	7	7	1	21
	%	0.0%	0.0%	28.6%	33.3%	33.3%	4.8%	100.0%
Total	N	2	4	10	14	9	2	41
	%	4.9%	9.8%	24.4%	34.1%	22.0%	4.9%	100.0%

The results in Table 8 showed that 50 percent of the respondents in the inference group believed that their treatment was satisfactory (i.e., 10 % "profound" + 20 % "perfect" + 20 % "good"). The same percentages for the FCS group were zero. Another 35 percent in the IS group and 33.3 % in the FCS group estimated their satisfaction as "moderate". The results also indicated that the FCS group 33.3 % weak" + 4.8 % "very weak" did not like the treatment. The same percentages were 10 % weak" + 5 % "very weak" for the IS group (Figure 4).

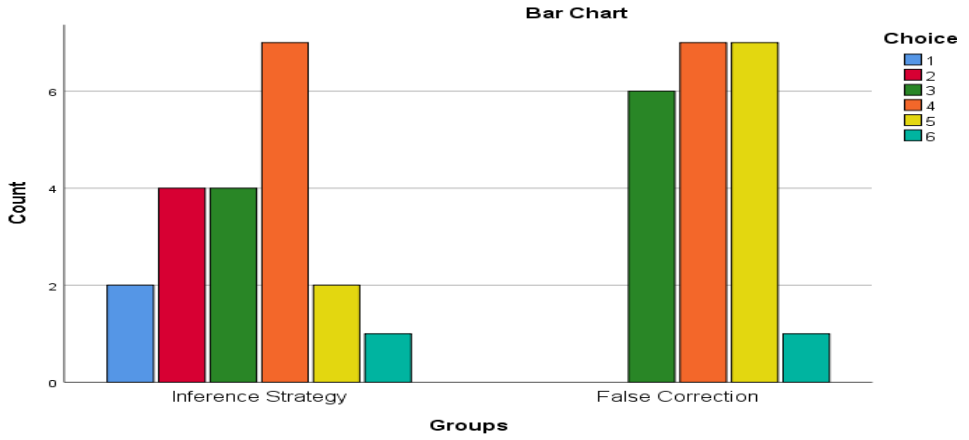

Figure 4. Frequencies of Satisfaction with Treatments by Groups

Discussion

The present study investigated the possible effect of IS and FCS on the improvement of the paramedical students' reading comprehension. The results of this study revealed that the IS group significantly outperformed the FCS group on the posttest of reading comprehension. Because the performance of the two experimental groups was not equal under the two conditions, an explanation for the effectiveness of inferential strategy is the deeper processing involved in to-be-learned knowledge. This finding supports Ashrafzadeh, Don, and Meshkat's (2015), and Silva and Cain's (2015) findings that revealed inferential skills contribute to reading comprehension development. This may be justified on the ground that drawing inferences is a process in reading comprehension (Nassaji, 2002),

which may involve deeper cognitive processing. In other words, since why/why-not questions draw on authors' messages via retrieval and activation of background knowledge (Levin, 2008), it may be argued that the processing which happens in FCS is a kind of "Type I processing (or maintenance rehearsal)" which maintain "processing at the same level of analysis" whereas the cognitive processing involved under IS condition may have involved "Type II processing (or elaborative rehearsal)" which involve "deeper or more extensive processing of the stimulus" (Lockhart & Craik, 1990, p.88).

Moreover, it was found that there was not any significant difference between the FCS and control groups on the posttest of reading comprehension. However, it contradicts the findings of Martin and Pressley (1991), Woloshyn, Pressley, and Schneider (1992), Graesser (2007), and Ghent (2008), who found that students using the why/why-not questioning strategies significantly outperformed other groups who did not use them. This mixed finding may be justified on the ground that why/why-not questions work best when they target relevant background knowledge, while the participants in the present study were asked why-not questions on the passages, which came from Iranian MA test batteries and may have contained new challenging information not related to their prior schemata (see Levin, 2008).

The first two findings of the second research question revealed that majority of both experimental groups showed positive views regarding the instruction and effect of inference and false correction; however, the reason for the poorer performance of the FCS group in comparison to the inference group might be found in two other findings of the second research question: a) The results for the third questionnaire item showed that false correction could not positively change the participants' attitudes toward reading comprehension whereas IS had led to more positive attitudes toward reading comprehension in the majority of the participants, which is in line with Smith (2004), Shahriza Abdul Karim and Hasan (2007), Guthrie and Klaudia 2014), and Taghizadeh and Khalili (2019); and b) the results for the fourth item showed that the majority of the participants in the inference group considered their treatment as useful in meeting their academic needs while the majority of the participants of the other experimental group held

opposite views on the usefulness of the treatment (i.e., false correction) with regard to their needs. With regard to the importance of needs analysis, Jordan (1997) has stated that, "needs analysis should be the starting point for devising syllabuses, courses, materials, and the kind of teaching and learning that takes place" (p. 22). Meanwhile, learners' needs are at the core of ESP course design (Bosher & Smalkoski, 2002), and ESP needs analysis is considered a major step in planning such courses (Long, 2005). Hence, it may be argued that there may have been a mismatch between the requirements of false correction and learners' needs and attitudes.

All the same, reading competence has become increasingly critical nowadays to the extent that our academic life depends greatly on the reading. Therefore, developing learners' reading competence is influential in the medical curriculum. That is why language teachers may feel the necessity of using IS for their students to benefit from its profits. In Iran's medical universities there is no, or at least there are a few, universities that are familiar with IS in reading comprehension. This study revealed that teaching students through IS would solve medical students' problems in English reading comprehension. Moreover, instructors and program developers should pay attention to reading comprehension strategies in order to upgrade their learners' attitudes toward reading comprehension as a prominent factor contributing to the students' reading achievement and comprehension skills.

The findings of this study demonstrate that exposing learners to reading comprehension strategies creates an effective environment for reading English texts. Hence, IS might be more useful for medical students who are getting ready for MA exams or other entrance exams. Finally, material designers should make their minds on the most effective modes of presentation; it seems necessary that material developers highlight the importance of inferential reasoning as a useful strategy in reading comprehension textbooks.

It can be concluded that inference strategy which needs more explanation and cognitive processes than the false correction strategy leads to reading comprehension improvement. Actually, the students in the present study were more at ease with the strategy and were involved with it by looking for

the clue words, asking questions, and predicting what will happen next. Moreover, the results demonstrated that the participants of the study took the advantage of IS more than conventional techniques they used before. Moreover, the results showed that IS had significant impact on Kashan paramedical students. It means that using IS in comparison to the FCS and conventional teaching techniques appears to be a useful way to increase reading comprehension of paramedical students. Reminding the findings and limitations of the study, it is worthwhile to study other reading comprehension strategies among other ESP samples in medical universities. Moreover, other researchers can repeat this study with other ESP participants of different proficiency levels. There are also some limitations related to the current study. The first one is that the study may not be generalized to other contexts because it was conducted with paramedical students in Kashan Medical University, Iran. Secondly, the major problem with this research was the number of the participants of the study. Finally, classes were held in the afternoon, causing the students tiredness in the study. Otherwise, it would get more accurate results.

Declaration of interest: none

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