Impacts of Applying Crossword Puzzles on Improving Spelling Among Iranian Intermediate EFL Male and Female Learners

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ABSTRACT

This study aimed at investigating the impacts of applying crossword puzzles on improving spelling among Iranian intermediate EFL male and female learners and exploring Iranian intermediate EFL learners' perception of applying crossword puzzles in relation to their spelling improvement. The research method in this study was experimental and the design was pretest/posttest. To determine the impacts of crossword puzzle on improving spelling, 32 intermediate EFL learners were selected randomly. The data collection instruments and materials were a questionnaire for checking Iranian intermediate EFL learners' perceptions of using crossword puzzles for improving spelling, a spelling test administered as pretest and posttest, and some suitable crossword puzzles designed by a software named Crossword Forge (Version 5.3), according to the words incorporated in the spelling test and the book taught in the English Language Institute. The results showed that applying crossword puzzles did improve the EFL learners' spelling skills and analysis of the learners' responses to the questionnaire determined that they had positive attitude towards using crossword puzzles and they were interested greatly in learning spelling applying crossword puzzle and female learners in the experimental group benefited more than their male counterparts from the treatment to enhance their spelling.

Key words: Game, Crossword puzzles, Spelling, Intermediate EFL male and female learners

1. INTRODUCTION

For the purpose of writing a foreign language, being familiar with the target language alphabet or characters in which the language transcribed is a must. Therefore, a successful writer of English language should be skillful in proper spelling of English since spelling correctly is a key of great writing. Hildreth (1962) also assigned many of the spelling difficulties that most learners of English have to the "inconsistencies in English word structure" (p. 4). He argued four features of English writing system that

give it its infamous reputation of being irregular. The first cause is that diverse sounds are given to the same letter or combination of letters. The second case is that a single sound can be stated by diverse letters or combinations of letters. A third cause, according to Hildreth (1962), is that many English words consisted of silent letters. For Hildreth (1962), all these abnormalities and irregularities cause learners of English to find English spelling a big problem. This study aims to answer the following research questions:

RQ1: Does using crossword puzzles significantly affect spelling improvement among Iranian intermediate EFL learners?

RQ2: Is there any significant difference between using crossword puzzles and improving spelling among Iranian intermediate EFL learners in terms of gender?

RQ3: What are the Iranian intermediate EFL learners' perceptions of using crossword puzzles in relation to their spelling improvement?

In line with the above research questions, the following research hypotheses were tested in this study:

H01: Using crossword puzzle does not significantly affect the improvement of spelling among Iranian intermediate EFL learners.

H02: There is no significant difference between Iranian intermediate EFL male and female learners in improving spelling using crossword puzzles.

2. LITERATURE REVIEW

The following part includes the advantages of using games, definition of crossword puzzle, reasons that crosswords can be used in language teaching, benefits of crossword puzzles, and related studies on spelling:

2.1. The Advantages of using games

Numerous knowledgeable course book and methodology manuals writers have discussed that games are not just time-filling tasks, but have a great instructive value. Lee (1979) claimed that most language games make students use the language in place of thinking about learning the accurate forms. He also said that games should be considered as central not peripheral to the foreign language teaching plan. A similar attitude is stated by Richard-Amato (1988) who believed games to be fun but warns against ignoring their instructive value especially in foreign language teaching.

There are a lot of advantages of using games. "Games can lower anxiety, thus making the acquisition of input more likely" (Richard-Amato, 1988, p. 147). They are greatly motivating and amusing, and they can give bashful learners more chance to utter their ideas and feelings (Hansen, 1994). They also enable students to learn novel experiences within a foreign language which are not for all time achievable during a usual lesson. Moreover, to quote Richard-Amato, they "add diversion to the regular classroom activities," break the ice, "[but also] they are used to introduce new ideas" (1988, P. 147). In the stress-free, relaxed atmosphere which is made by utilizing games, learners remember things faster and better (Wierus & Wierus, 1994). Silvers (1982) claimed that a lot of teachers are enthusiastic about applying games as "a teaching device," yet they regularly consider games as ordinary time-fillers, "a break from the monotony of drilling" or vain activities (p. 29). He also uttered that many instructors often ignore the point that in a stress-free atmosphere, actual learning occurs, and learners utilize the language they have been exposed to and have applied previously.

2.2. Definition of crossword puzzle

The crossword puzzle is a famous game that can be simply employed in class. Solving crossword puzzles is as effective learning technique that can involve learners with the material more than other passive tools. Crossword puzzles assist to review course material and recognize parts for more study in an interesting way. The rationale behind this interest toward playing games such as solving crossword puzzles lies in the amusement and fun one can have in this way. EFL teachers have explored this feature of games such as solving crossword puzzles among learners especially those in elementary levels and made attempts to bring teaching and amusement to the language classroom so as to make the most use of their classes. Crossword puzzles can be utilized to reinforce cognitive information represented in class, to present new concepts, or to evaluate learner learning and remembering (Berry & Miller, 2008).

2.3. Benefits of Crossword Puzzles

Njoroge, Ndung'u, and Gathigia (2013) presented many benefits of the crossword puzzle as a method of vocabulary training. First, students got to like learning the target language since they were engaged in their own learning. Crossword puzzles could also aid students to obtain interest and decrease boredom in learning by providing an alternative of various teaching methods and by assisting students consider English as a learnable rather than a difficult issue (Wahyuningsih, 2009).

Bailey, Hsu, and Dicarlo (1999) pointed out that games in physiology create an attractive chance for teaching as it arouses interest, motivates learners and is a pleasant change in the boring repetitive lecture.

They make a challenging competitive environment that simplifies communication among learners in a welcoming and amusing atmosphere. They may not totally substitute the traditional method of achieving theoretical knowledge but can highlight acquisition of content and improve problem solving skills (Bailey et al., 1999; Kuhn, 1995).

2.4. Related studies on spelling

Spelling is the student's ability to write a word correctly and "the way in which a word is spelled" (Merriam-Webster's collegiate dictionary, 2017). Writing true spelling boosts the quality of general writing texts. One of the techniques for teaching spelling is the application of games one of which is crossword puzzles (Diniyati, 2009).

In another investigation conducted by Allred (2015), gender differences in spelling improvement were investigated for students in Grades 1 through 6. Performances of boys and girls on standardized and written spelling exams were assessed. Students from high-, medium-, and low-achieving schools in six geographic regions of the United States took both a proofreading-type standardized test and a written spelling test that involved the same vocabularies (N = 3, 024). Analyses of variance were performed on average differences across both tests by sex for each grade for all matters. A physical computation also was made for both sexes on each word on both exams. Girls scored considerably higher (all p values > .001), causing in the result that girls spell better than boys at all grade levels on both types of exams.

C. Tsai, Hsu, H. Tsai, Yu, and Huang (2016) have designed and put into action a multi-part Mahjong-like spelling game to learn English words. English vocabulary is mixed with some letters to form an English vocabulary. It is a major skill to successfully mix the correct letters to form a correct vocabulary in English learning. A vocabulary spelling game can engage the students to efficiently comprehend and learn English words. Mahjong is an old-fashioned Chinese game for gambling and amusement and entertainment. The player tries to mix the matching tiles within a certain sequence based on the game rules of Mahjong. The tile arrangement of Mahjong is like to spell letters making a term in English vocabulary learning. The learners played the Mahjong-like spelling game to compete with other learners in interactive learning. It could involve the learning outcomes to successfully spell the correct words and to develop their spelling abilities in English terminology learning.

3. METHODOLOGY

This part involves the research participants, the research instruments and materials, and procedure.

3.1. Research participants

The participants of this study were 32 Iranian intermediate male and female EFL learners. Since gender is one important variable in this study, the number of male and female learners should be equal, that is, sixteen male and sixteen female learners should be randomly chosen. Their age varied from 16 to 20 years old. The participants were assigned to two groups of experimental and control, 16 learners each.

3.2. Research instruments and materials

The instruments and materials used for collecting data were attitude questionnaire, spelling test, Crossword Forge Software, and some suitable crossword puzzles.

Attitude questionnaire:

It should be noted that the questionnaire should be a reliable one leading to the achievement of reliable results. The answers to the questions were given based on a 5-point Likert scale varying from strongly agree to strongly disagree. The questionnaire items were adopted from Salehi and Habibi (2015) and Kalanzadeh, Shirvali vand, and Javadani Mehr (2014) and then some modifications were made on the items to achieve the aims of the study. In order to validate the developed questionnaire, a panel of three experts in the field were invited to check the content of the questionnaire. Moreover, the reliability of the research-made questionnaire was calculated using Cronbach Alpha and it was reported to be 0.83.

Spelling test:

A spelling test was administered to the participants in the study as pretest and posttest. For checking the reliability of the test, 10 intermediate learners were selected randomly and the scores obtained from the test were coded and entered the SPSS (Version 22), for reliability analysis. The Cronbach's alpha coefficient was found to be 0.83 and also the split-half reliability measure was found to be 0.81. The test consisted of 30 multiple choice items using the words incorporated in the textbook.

Crossword Forge Software (Version 5.3):

This software allowed the researchers to make ideal, high quality, and printable crossword puzzles. Moreover, this software provided this quality for users to add background pictures to make the puzzles more pleasing.

Crossword puzzles:

The crossword puzzles were designed using Crossword Forge and the words were chosen from the book taught in the English language institute.

3.3. Procedure

The setting of this study was two English classrooms of an English institute located in Isfahan, Iran. Prior to administering the spelling test, a pilot study was conducted on 10 intermediate EFL learners of the same institute to check the reliability index. The Cronbach's alpha coefficient was found to be 0.83; the split-half reliability measure was found to be 0.81 as well. In order to check the validity of the test, the researchers sent three copies of the test to three experts and they confirmed its validity. Then the participants were divided into two groups of sixteen. The experimental group received spelling teaching via using the designed crossword puzzle according to the word lists in the spelling test and the control group received the traditional method of teaching the same word list. Then, the spelling test was administered to all the participants at the end of their class when the stress level was low. This was the pretest for being aware of the learner's performance in the spelling test before the treatment and it was administered in the first session of the learning period. The teaching time necessary to teach spelling via the two methods was around 25 days or 10 sessions. At the end of the two instructions, the spelling test was administered once again as the posttest in the 9th session. The questionnaire was administered in the 10th session to explore the learners' perceptions of using crossword puzzles for learning spelling.

4. RESULTS OF DATA ANALYSIS

This section contains within-group analyses in control group, within-group analyses in experimental group, Comparing pretest and posttest scores of the learners in the two groups, examining gender differences, learners' attitudes towards the treatment.

4.1. Within-group analyses in control group

The learners in the control group obtained the mean scores of 12.63 on the pretest and 14.56 on the posttest. To determine if the difference between these two mean scores was statistically significant or not, the researcher had to check the paired-samples t test table below:

Table 4.1

Results of Paired-Samples t Test Comparing the Pretest and Posttest Scores of the Control Group

Paired Differences	t	Df	$Sig.$

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				(2-tailed)
					Lower	Upper			
Control	pretest - posttest	-1.938	1.569	.392	-2.774	-1.101	-4.939	15	.001

Since the *p* value under the *Sig.* (2-tailed) column in Table 4.4 was less than the significance level (i.e., .001 < .05), it could be inferred that the difference between the pretest (*M* = 12.63) and posttest (*M* = 14.56) scores of the learners in the control group was statistically significant. This is also shown in Figure 4.1 below:
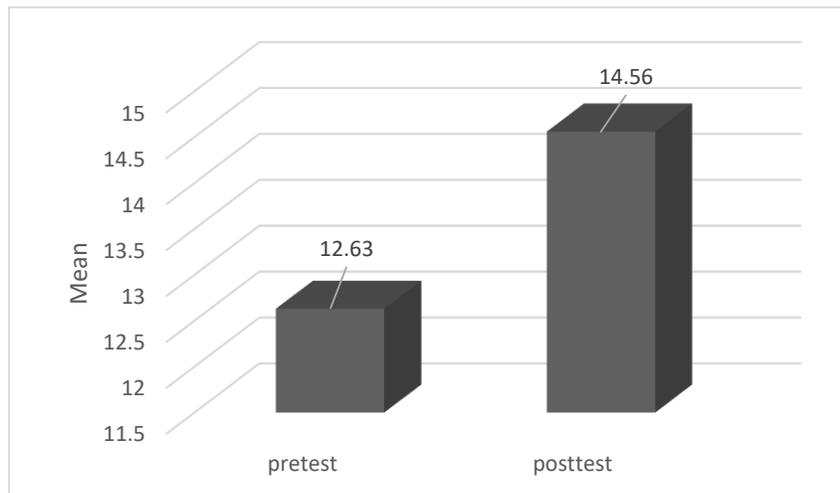

Figure 4.1: Pretest and Posttest Mean Scores of the Control Group

It is clear from Figure 4.1 that the learners in the control group had a dramatic change from pretest to posttest and improved significantly.

4.2. Within-Group analyses in experimental group

Table 4.2 divulges the fact that the experimental group learners improved from the mean score of 12.25 on the pretest to the mean score of 20.06 on the posttest. To see if this difference between the pretest and posttest scores of the learners was statistically significant or not, the following table had to be checked:

Table 4.2

Results of Paired-Samples t Test Comparing the Pretest and Posttest Scores of the Experimental Group

	Paired Differences							*Sig.*
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		*t*	*df*	(2-tailed)
				Lower	Upper			
pretest - posttest	-7.813	2.639	.660	-9.219	-6.406	-11.84	15	.001

Results of paired-samples *t* test in Table 4.6 revealed that there was a statistically significant difference between the pretest (*M* = 12.25) and posttest (*M* = 20.06) scores of the learners in the experimental group. This difference is shown in Figure 4.2 as well:
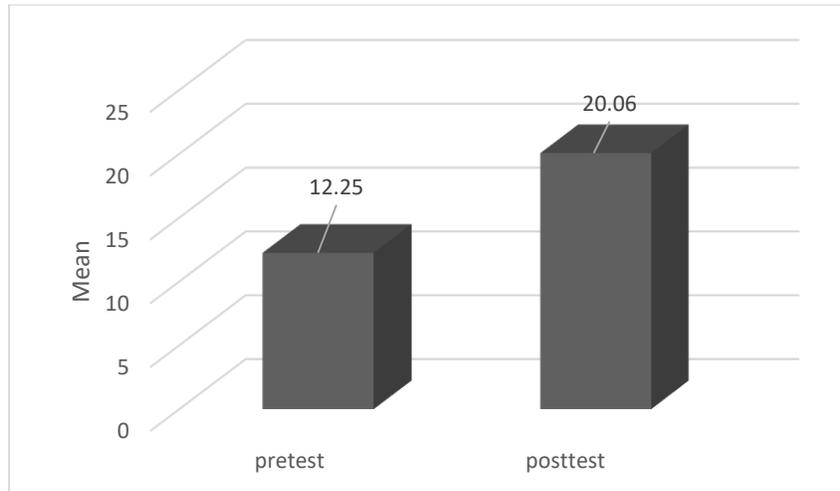

Figure 4.2: Pretest and Posttest Mean Scores of the Experimental Group

4.3. Comparing pretest and posttest scores of the learners in the two groups

On the pretest, the mean scores for control (*M* = 12.63) and experimental (*M* = 12.25) group learners were not considerably different. However, the posttest mean score of the control group (*M* = 14.56) greatly differed from that of the experimental group (*M* = 20.06). This is also graphically represented in Figure 4.3 below:
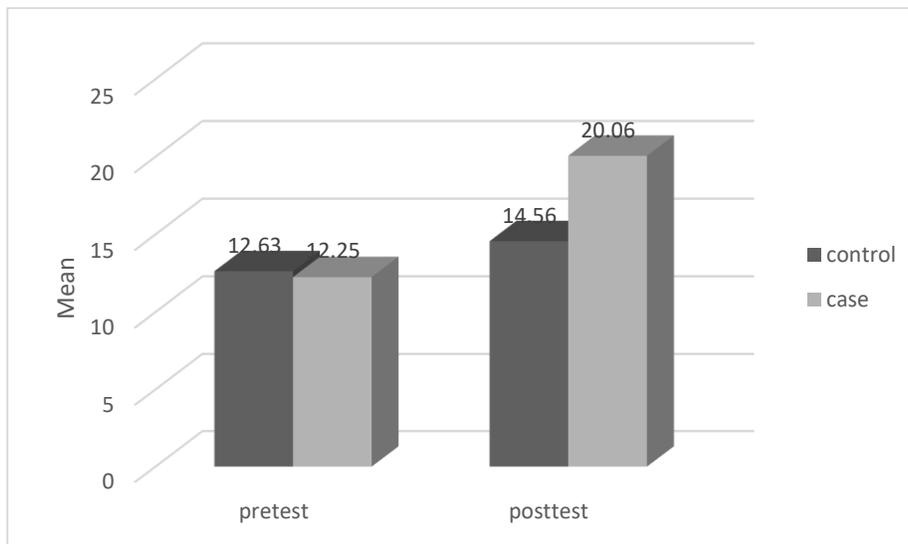
Figure 4.3: Pretest and Posttest Mean Scores of the Control and Experimental Groups

It is clear in the bar graph that the two groups were almost equal on the pretest, but the experimental group considerably outperformed the control group on the posttest. To find if the difference between the pretest scores of the two groups and between their posttest scores had been statistically significant or not, the following table should be consulted:

Table 4.3

Results of Independent-Samples t Test Comparing the Pretest and Posttest Scores of the Control and Experimental Groups

	t	*df*	Sig. (2-tailed)	Mean Difference	*Std.* Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Pretest	.281	30	.781	.375	1.337	-2.355	3.105
Posttest	-4.031	30	<.001	-5.500	1.365	-8.287	-2.713

The results of Table 4.3 show that there was no significant difference between the pretest scores of the two groups ($p = .78$), but their posttest scores were significantly different ($p < .001$) in favor of the experimental group. This difference in the posttest scores of the learners in the control ($M = 14.56$) and experimental ($M = 20.06$) groups could be attributed to the treatment to which the experimental group learners were exposed.

Since, as was seen above, both groups improved from pretest to posttest, to see which group improved more, and to see whether the improvements had been statistically significant or not, the gain scores (i.e., posttest – pretest) for each of the groups were computed, and then the gain scores of the two groups were compared via another *t* test.

4.4. Examining gender differences

Based on the information presented in Table 4.4, the mean gain score of the male learners in the control group was 1.38 and that of females was 2.50. The *t* test analysis showed no significant difference between the gain scores of the male and female learners in the control group ($p = .15$).

As for the experimental group learners, the mean gain score of the male learners equaled 6.88, while the corresponding value for female learners was 8.75. The difference between the gain scores of male and female learners in the experimental group was not found to be statistically significant because the *p* value exceeded the significance level (i.e., $.16 > .05$). That is, female learners in the experimental group benefited more than their male counterparts from the treatment (i.e., using crossword puzzles) to enhance their spelling.

Table 4.4

Results of Comparing Male and Female Learners' Gain Scores in Control and Experimental Groups

Group		sex	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Control	Difference (posttest-pretest)	male	8	1.38	2.00	-1.491	14	.158
		female	8	2.50	.76			
Experimental	Difference (posttest-pretest)	male	8	6.88	2.36	-1.476	14	.162
		female	8	8.75	2.71			

4.5. Learners' attitudes towards the treatment

The table below shows the frequencies and percentages of the responses to each questionnaire item:

Table 4.5

Frequency and Percentage of the Responses to the Attitude Questionnaire Items

	strongly agree and agree		no idea		strongly disagree and Disagree		Mean	SD
	freq	percent	freq	percent	freq	percent		
Item 1	16	99.9	0	0	0	0	4.69	.48
Item 2	16	99.9	0	0	0	0	4.56	.51
Item 3	16	99.9	0	0	0	0	4.44	.51
Item 4	16	99.9	0	0	0	0	4.44	.51
Item 5	16	99.9	0	0	0	0	4.44	.51
Item 6	16	99.9	0	0	0	0	4.31	.48
Item 7	15	93.75	1	6.25	0	0	4.25	.58
Item 8	14	87.5	2	12.5	0	0	4.37	.72
Item 9	12	75	4	25	0	0	4.06	.77
Item 10	14	87.5	2	12.5	0	0	4.25	.68
Item 11	11	68.75	5	31.25	0	0	3.94	.77
Item 12	13	81.25	3	18.75	0	0	4.31	.79
Item 13	14	87.5	2	12.5	0	0	4.56	.73
Item 14	16	99.9	0	0	0	0	4.69	.48
Item 15	14	87.5	2	12.5	0	0	4.56	.73

Table 4.5 shows that 14 out of 15 items in the questionnaire had mean scores above 4.00 (which is the value for the Agree option in the questionnaire). Thus, it could be understood that the learners held positive attitudes towards the treatment (i.e., using crossword puzzles helps them to improve their spelling).

The highest mean scores in Table 4.5 belonged to items 1 and 14, while the lowest mean scores were those of items 2 and 11. Hence, the learners showed the highest degree of agreement with the statements in item 1 (Using crossword puzzles helps me to improve my spelling) and item 14 (Learning the spelling of the often-misspelled words is effective by using crossword puzzles). On the other hand, they demonstrated the lowest degree of agreement with item 2 (Using crossword puzzles in class is fun and enjoyable) and 11 (Crossword puzzle increases the chance of having a more accurate spelling).

5. DISCUSSION AND CONCLUSIONS

This part presents discussion and general conclusions which can be drawn from the analysis of the obtained data and the following research questions were answered:

5.1. Addressing research question one

The findings of the study were in line with the results of the research reported by Diniyati (2009) who conducted an action research in relation to the use of crossword puzzles for improving learners' spelling. The results of her study showed that using crossword puzzles for improving learners' spelling is a useful action. Williams (2007) conducted a study using his own crossword puzzles and those selected from other sources in relation to the use of crossword puzzles as a revision technique for the learners before exams. Those using the technique completely found that their scores and performance were little by little on the demand. Thus, the first hypothesis stating that "Using crossword puzzle does not significantly affect the improvement of spelling among Iranian intermediate EFL learners" is safely rejected.

5.2. Addressing research question two

The results of the study pointed to a significant difference between the gain scores of the male and female learners in the experimental group but there is no study related to the impacts of using crossword puzzles on improving spelling in terms of gender and there was no significant difference between male and

female in these studies or gender did not considered as a variable in them; however, there are some studies related to spelling and writing in which gender differences were investigated.

The findings of the study were in the line with the results of the research conducted by Allred (2015), gender differences in spelling achievement were explored for students in Grades 1 through 6. Performances of boys and girls on standardized and written spelling exams were assessed. Students from high-, medium-, and low-achieving schools in six geographic regions of the United States took both a proofreading-type standardized exam and a written spelling exam that included the same words (N = 3, 024). Analyses of variance were performed on average divergences across both exams by sex for each grade for all matters. A physical computation also was made for both sexes on each word on both tests. Girls scored significantly higher (all p values > .001), causing in the conclusion that girls spell better than boys at all grade levels on both types of tests. Therefore, the second question can be answered in a way that **t**here is a significant difference between Iranian intermediate EFL male and female learners in improving spelling using crossword puzzles.

5.3. Addressing research question three

To answer the third question, a 15-item questionnaire was filled out by the learners in the experimental group. Analyzing the responses, it was revealed that the learners held positive attitudes towards the treatment (i.e., using crossword puzzles helps them to improve their spelling). In order to make sure this positive attitude was of statistical significance, the highest mean scores belonged to items 1 and 14, while the lowest mean scores were those of items 2 and 11. Hence, the learners showed the highest degree of agreement with the statements in item 1 (Using crossword puzzles helps me to improve my spelling) and item 14 (Learning the spelling of the often-misspelled words is effective by using crossword puzzles). On the other hand, they demonstrated the lowest degree of agreement with item 2 (Using crossword puzzles in class is fun and enjoyable) and item 11 (Crossword puzzle increases the chance of having a more accurate spelling).

The findings of the study supported some relevant studies such as the study conducted by Franklin, Peat, and Lewis (2003), on using crosswords as a medium of language teaching, it was found that crossword puzzles will lead to the increase of motivation and interest concerning the selected topic to be taught among the learners. Childers (1996) also showed that the use of the crosswords boosted learners' self-confidence in their ability, helped them in comprehending some of the concepts and motivated them to think about what they were learning.

6. IMPLICATIONS AND SUGGESTIONS

As the results showed, the learners' attitudes towards using crossword puzzles were positive; therefore, the teachers and instructors can apply crossword puzzles to motivate learners for learning process and to make a fun and enjoyable environment for them. The findings of this study have significant implications for L2 teachers, learners, and those who are involved in the field of language teaching and learning.

The following research areas can be recommended to those who are interested in pursuing the same line of research:

• The same variables can be examined with learners with different proficiency levels.

• Further researches can be conducted to examine the mentioned variables in relation to other language skills.

• Other affective factors such as self-efficacy, self-esteem, motivation, self-concept, and risk taking can be investigated in other studies.

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