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The Interplay of Self-Actualization, Creativity, Emotional Intelligence, Language and Academic Achievement in Gifted High School Students

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The current research study aimed at exploring the relationship among self-actualization (SA), creativity, emotional intelligence (EI), language, and academic achievement in gifted high school students. A sample of 77 female students studying at a high school for gifted students was selected to complete three questionnaires about self-actualization, creativity, and emotional intelligence, respectively. To analyze data the Pearson correlation coefficient was applied as a statistical procedure. The analysis of the collected data revealed that firstly, there was a significant positive relationship between the participants' SA and creativity; the highly self-actualized individuals were highly creative as well. Secondly, there was a significant positive relationship between SA and participants' EI, i.e., those whose score were high in SA were also highly emotionally intelligent; and lastly, it was revealed that there was a significant positive relationship between creativity of the participants and their EI. This means that the more creative an individual is, the more emotionally intelligent he or she will be. In addition, the results showed that while there was a significant positive relationship between creativity and participants' language achievement, there was no significant relationship among other variables in relation to participants' language and academic achievement. This significant positive relationship meant that

highly creative participants had better grades in language achievement in comparison with other gifted participants.

Keywords: creativity, emotional intelligence, gifted student, language and academic achievement, self-actualization

It has always been a common belief that highly intelligent, creative, gifted and talented individuals are extraordinary people. But, to what extent is this claim true? In almost all different eras, there have been and there will be many individuals with these special features whose lives are known or remain unknown to most people all over the world. But unlike ordinary people, some scholars and researchers interested in concepts like self-actualization, creativity, giftedness, talent, and intelligence are constantly trying to define these terms and concepts from varied points of view or under the influence of different theories and approaches. For instance, while the theorist Goldstein (1993) first considered self-actualization as a motive to realize someone's complete and full potential, Maslow's hierarchy of needs theory considered SA as the final level of mental needs (1987). Moreover, in the past, researchers believed that in order for an idea or a solution to be considered as creative, it must only be original and functional or useful. Although this belief is true, it does not suffice. Therefore, psychologists of the twentieth century have expanded this traditional view toward creativity and made it more complicated. Akinboye (2003) stated that without creativity, no one can reach the full understanding of information and available resources, but he or she will be the follower of old habits, patterns, and perception, instead. In addition, the concept of intelligence or more specifically emotional intelligence has been defined in somewhat different ways by some scholars. For example, for the

first time that the term EQ or EI was used, it was not categorized into two different parts, namely trait EI and ability EI yet. But, this category was first introduced in 2000 (Petrides & Furnham, 2000).

By an in-depth study of theorists' beliefs and researchers' findings, one might become interested in finding out whether or not there exists an underlying relationship between SA, creativity, and EI in different individuals. It is worth mentioning that the authors of this article prefer to study these variables in relation to giftedness; therefore, the participants are all from a special school for gifted students. In the following section, a brief definition of the variables of the study, along with related research studies are presented.

Maslow (1987) put forward a complete operational definition for self-actualization. He explained that "SA is one's desire to become more and more what he or she is" (Maslow, 1943 pp. 390-392). He further stated that this desire can be fulfilled, if and only if one has already fulfilled the basic needs in life. "Self-actualizing individuals possess an unusual ability to detect the spurious, the fake, and the dishonest in personality and in general to judge the people correctly and efficiently" (Maslow, 1954 p. 203). Maslow added that self-actualizers prefer to rely on their own experiences, or to be totally independent in forming their own opinion, and to be autonomous, that is being free from external pressures and opinions of others. It is interesting to know that Maslow studied the characteristics and biography of several people like Albert Einstein, Abraham Lincoln, and Mother Teresa whom he believed to be samples of self-actualizers (Maslow, 1970).

Ilinykh, Van der Meer, Shemelina, and Landgraf's (2014) investigation on the relationship between SA and creativity in 120 Russian students revealed that although creativity and SA were predicted by different personality characters, the correlation between these two variables was in the subscale spontaneity. It was also revealed that self-esteem and locus of control can be the significant predictors for SA.

Another study, this time about the nature and degree of SA and personal growth initiative in school teachers was done by Rapheal and Paul K (2014). To carry out the study, the researchers used the Self-actualization scale by Jones and Crandall (1986), and also the Personal Growth initiative scale by Robitscheck. Their data analysis revealed that there is a significant positive relationship between these two variables. What is more, the results also indicated that the more the teachers' years of service and ages are the higher their SA scores will be. In addition, Pajouhandeh (2013) carried out an investigation to assess the relationship between personal development and SA in university students. They were evaluated by Kettle's 16 Factor Test and SA Inventory (SAI). The participants of his study were grouped into two groups of high and low self-actualization. The correlation coefficient depicted that there was a positive correlation between personality development and SA. Moreover, a significant difference between these two groups was found. That is, those who belonged to the group, who had high self-actualization, did better on 16 Factor Test as well.

Moreover, Cameron (2012) discussed creativity within the workplace and its relationship to participants' self-actualization and also their motivation. The results of the study showed no

significant difference in SA across career groups who were highly creative or less creative, while those who were in the middle had the highest scores on SA. Moreover, the results showed that those whose career needs high creativity were more intrinsically motivated than others. Herbst (2003) studied seventy-one employees to find the relationship between self-actualization and EI. She finally came to the conclusion that in order to reach self-actualization, one should try to overcome fears and negative thoughts. The author indicated that those who want to reach this goal should develop their EI.

Franken (1982) declared that creativity is the ability to create or come up with novel ideas or solutions that may be useful in solving problems, communicating with others, and entertaining ourselves and others. Gardner (1993) also stated that a creative individual is the one who has problem-solving ability, is able to fashion products, and can look at questions from different angles. He believed that the notion of solving problems is important in both intelligence and creativity, so he claimed that creativity, talent, and intelligence are interrelated concepts.

What is more, intriguing is that the “four C” model of creativity was first developed by Kaufman and Beghetto in 2009. This model consists of Mini-c, or being creative in personally meaningful interpretations of experiences; Little-c, or creativity in solving problems; Pro-C which means being vocationally creative; and Big-C shows a highly creative individual in any field. One theory related to creative processes is incubation theory which “aids creative problem-solving” in that it enables “forgetting” of misleading and untrue hints for solving the problem (Smith, 2011). This theory suggests that if someone wants to find a solution for a problem, it is better for

him or her to put it aside for a while so that the mind can find the best solution while it ignores constantly thinking about that specific problem. Gardner (1993) talked about creativity in the classroom. "Often adventurousness is interpreted as insubordination, though more fortunate creative learners receive from teachers or peers some form of encouragement for their experimentation" (pp. 169-170). This may imply that often creative students inside the classroom are mistakenly seen as trouble-making students. But why?! As Sattler (1992) named some possible indicators of creative students such as high energy, curiosity, bizarre sense of humor, and intolerance for boredom, teachers may sometimes think of creative students with these characteristics as trouble makers and vice versa. So how can we distinguish between these two groups, namely creative students and trouble-making ones? One proper solution for teachers having problems distinguishing between these two groups of students is to ask them to find a solution for a problem or a difficult task. Then, creative students, who are persistent, will become willing to struggle and find the best solution while trouble-makers will soon become tired and give up. In this way, these students can be differentiated. Moreover, Mehry-Ramy, Amin-Beydokhty, and Jamshidy's (2014) research explored the relationship between EI and creativity among university students in Semnan, Iran. To carry out the research, cluster sampling was utilized to select three hundred and seventy five university students. Abedi creativity questionnaire and emotional intelligence scale of Shirng were used as means of collecting data. Their study showed that creativity and EI have significant positive relationships. An interesting study (Sa'nchez-Ruiz, Herna'ndez-Torrano, Pe'rez-Gonza'lez, Batey, & Petrides,

2011) was conducted to study the relationship between different variables, namely divergent thinking, creative personality, personality (Big Five), and trait emotional intelligence. For this purpose, one hundred and seventy five undergraduate students answered the determined questionnaires. Sa'nchez-Ruiz et al. (2011) concluded that there existed a strong relationship between creativity and EI. The aim of Ahmadi and Zahabiyoony's (2009) research study was to find out the relationship between creativity and university students' academic achievement. Two hundred and fifty participants were studied during this research. The results showed that those participants who have higher education are more creative as well. For instance, MA students had better scores in creativity than BA students. Moreover, their study showed no significant relationship between creativity, participants' average scores and their gender. Another study was conducted by DeSelms (1981) to explore the construct of creativity and its relationship to foreign language learning. The author concluded that students who use creative ways to learn a foreign language are more successful than others. Moreover, she mentioned that creative tendencies can be provoked in learners by different techniques. Yong (1994) examined the relation between creativity and intelligence among 181 boys and 216 girls from five secondary schools in Malaysia. His analysis showed that students who were highly creative and highly intelligent at the same time, had better academic achievement compared to the other groups in the study.

Thorndike (1920) believed that true intelligence is not merely due to someone's IQ but rather it encompasses emotional and social components as well. In addition, EI can be generally

defined as the ability to have control on one's own feelings and emotions, and also to be aware of others' emotions. Highly EI will lead to being able to differentiate between various emotions and being capable of utilizing these feelings as suitable guidance for thinking (Salovey & Mayer, 1990).

Goleman (1995) extended the work of Salovey and Mayer, and he identified three intrapersonal and two interpersonal abilities as the aspects of EI. If you do not recognize your very own emotions and do not know how to manage your negative emotions, you will definitely face problems in making good choices in life (Baron, 2000). Also, it is said that being aware of others' feelings would help individuals monitor their relationships. (Spencer & Spencer, 1993). They further mentioned that "The major point is that success in life requires more than cognitive skills, and teachers are important influences in helping students develop all of these capabilities" (p. 113). Zirak and Ahmadian's (2015) study explored the relationship between Emotional Intelligence (EI) and creative thinking, and their relation to achievement in primary school students. To this end, one hundred and fifty six students were selected as participants. Bradberry - Greaves' EI questionnaire and Abedi's creative thinking questionnaire were the instruments of the study. Finally, the researchers found no significant relationship between EI and academic achievement, but the relationship between creative thinking and academic achievement was positive and significant. Schutte, Schuettpelez, and Malouff (2001) investigated the possible relationship between emotions and cognitive task performance by means of EI. The participants from workplaces and universities had to answer EI questionnaire developed by Schutte, and then, they were asked to unscramble

some words in 5 minutes. Finally, the results indicated that “those with higher EI would perform better on cognitive tasks” (P. 353). Flett, Hewitt, Blankstein, and Mosher’s (1991) aim of research was to see whether or not those who have a high sense of perfectionism have low self-actualization. Therefore, they asked participants to complete the Multidimensional Perfectionism Scale (Hewitt & Flett), the Short Index of SA (Jones & Crandall, 1986), and the Beck Depression Inventory. They figured out that the participants whose score in perfectionism is high, have lower self-actualization, and vice versa.

Considering the previously mentioned introduction and literature review, this study directs an investigation toward the relationship among variables, namely SA, creativity, EI, and also participants’ language and academic achievement. As a result, the following research questions are posed in order to explore the relationships among the study’s variables.

1. Is there any significant relationship between gifted students’ self-actualization and creativity?
2. Is there any significant relationship between gifted students’ self-actualization and emotional intelligence?

1. Is there any significant relationship between gifted students’ creativity and emotional intelligence?
2. Is there any significant relationship between gifted students’ self-actualization, language, and academic achievement?
3. Is there any significant relationship between gifted students’ creativity, language, and academic achievement?

4. Is there any significant relationship between gifted students' emotional intelligence, language, and academic achievement?

Method

Participants

Seventy seven Iranian female students were the participants of this research study. The participants were selected by means of convenience sampling. All of them are students in a high school for gifted students in Kerman. Participants were selected on the basis of available sampling procedure. The participants' age ranges from 15 to 17. Although having been reminded that participating in this research is optional, seventy seven of the gifted students accepted to cooperate with the researcher. Additionally, since most of them were interested to become aware of the result of the study, they were asked to write their emails next to their names.

Instruments

In order to carry out the research project, the following scales were utilized:

1. The Short Index of Self Actualization Inventory or SISA (Jones & Crandall, 1986).
2. Creativity Questionnaire (Torrance, 1979).
3. Emotional Intelligence Questionnaire (Schutte et al., 1997).

The short Index of self actualization questionnaire. One widely accepted scale for measuring self-actualization is the short 15-item SISA index (Jones & Crandall, 1986). SISA was chosen for this research because it has been repeatedly validated, and its

reliability ($\alpha = .69$) has been confirmed (Ebersole & Humphreys, 1991; Flett, Blankstein, & Hewitt, 1991). The questionnaire consists of fifteen items which range from 1 to 4 (1= agree, 2= somewhat agree, 3= somewhat disagree, 4= disagree) and that relate to an individual's beliefs, attitudes, feelings, and emotions. Agreement with items 1, 3, 4, 7, 10, 12 and 15 is considered to show SA. Also, disagreement with the remaining items (2, 5, 6, 8, 9, 11, 13 and 14) is considered to show SA. The minimum and the maximum possible scores for the SISA inventory are 15 and 60, respectively. An individual scoring higher than 50 is considered to have high SA (D'Souza, Adams, & Fuss, 2015).

Creativity questionnaire. Torrance creativity questionnaire is a highly valid and reliable measure for assessing the creativity of the participants. It consists of 60 items, each with three choices. The questionnaire was selected for this study since it was easy to answer due to the items related to real life experiences of the participants. In order to calculate each participants' score, we should assign 2 scores for the third choice, 1 score for the second choice, and zero for the first choice of each item. Then, individuals with scores ranging from 100 to 120 are considered to be extremely high-creative people; the scores ranging from 85 to 100 show highly creative individuals; those who receive scores between 75 and 85 are considered as moderately creative; from 50 to 75 as low creative individuals; and finally less than 50 indicated extremely low-creative people. The internal consistency reliability of this scale was calculated by using Cronbach's Alpha and its value was found to be .72 (George & Mallery, 2007).

Emotional intelligence questionnaire. This Likert-type questionnaire has been developed by Schutte et al., (1997) to measure individuals' Emotional Intelligence (EI). This 33-item questionnaire has been reported to have alpha reliability of .81. Moreover, the scores range from 33 to 165, and the higher the scores indicates that the more emotional intelligent one can be.

Results

Table 1
Descriptive Statistics of the Variables

	N	Range	Min	Max	Mean	SD	Variance
Language Achievement	76	7.00	13.00	20.00	18.90	1.49	2.24
Academic Achievement	76	3.00	17.00	20.00	19.18	.80	.64
Self-Actualization	76	31	23	54	39.38	6.31	39.89
Creativity	76	77	43	120	85.29	16.42	269.88
Emotional Intelligence	76	87.00	73.00	160.00	115.73	20.45	418.25
Valid N (listwise)	76						

Analysis of Self-Actualization and Creativity

Pearson Product Moment Correlation was launched to investigate the first research question concerning the relationship between gifted students' self-actualization and creativity. The result of this statistical test is presented in Table 2.

Table 2**Pearson Correlations for Self-Actualization and Creativity**

		Self-Actualization	Creativity
Self-Actualization	Pearson Correlation	1	.75**
	Sig. (2-tailed)		.0005
	N	76	76
Creativity	Pearson Correlation	.75**	1
	Sig. (2-tailed)	.0005	
	N	76	76

** .Correlation is significant at the .01 level (2-tailed).

A Pearson Correlation was launched to investigate the second research question concerning the relationship between gifted students' self-actualization and emotional intelligence. The result of this statistical test is presented in Table 3.

Table 3**Pearson Correlations for Self-Actualization and Emotional Intelligence**

		Self-Actualization	Emotional intelligence
Self-Actualization	Pearson Correlation	1	.54**
	Sig. (2-tailed)		.000
	N	76	76
Emotional intelligence	Pearson Correlation	.54**	1
	Sig. (2-tailed)	.000	
	N	76	76

** . Correlation is significant at the .01 level (2-tailed).

As indicated in Table 3, since p -value (.000) is less than the alpha level of .05, it is concluded that there is a significant positive relationship between students' self-actualization and their emotional intelligence ($r = .540$). Therefore, it is concluded that the students with higher self-actualization levels have had higher scores on emotional intelligence and vice versa.

A Pearson Correlation was launched to investigate the third research question regarding the relationship between gifted students' creativity and emotional intelligence. The result of this statistical test is shown in Table 4.

Table 4

Pearson Correlations for Creativity and Emotional Intelligence

		Creativity Emotional intelligence	
Creativity	Pearson Correlation	1	.65**
	Sig. (2-tailed)		.000
	N	76	76
Emotional Intelligence	Pearson Correlation	.65**	1
	Sig. (2-tailed)	.000	
	N	76	76

** . Correlation is significant at the .01 level (2-tailed).

As shown in Table 4, since p -value (.000) is less than the alpha level of .05, it is concluded that there is a significant positive relationship between participants self-actualization and their emotional intelligence ($r = .650$). Therefore, it is concluded that students with higher levels of creativity have had higher scores on emotional intelligence and vice versa.

Two Pearson Correlations were launched to investigate the fourth research question concerning the relationship between gifted students' self-actualization, language, and academic achievement. The results of these statistical tests are presented in Table 5.

Table 5
Pearson Correlations for Self-Actualization, Language and Academic Achievement

		Self- Actualization	Language Achievement	Academic Achievement
Self- Actualization	Pearson	1	.16	.01
	Correlation			
	Sig. (2-tailed)		.144	.89
	N	76	76	76
Language Achievement	Pearson	.16	1	.714**
	Correlation			
	Sig. (2-tailed)	.14		.000
	N	76	76	76
Academic Achievement	Pearson	.01	.714**	1
	Correlation			
	Sig. (2-tailed)	.89	.000	
	N	76	76	76

** . Correlation is significant at the .01 level (2-tailed).

As indicated in Table 5, since p -value is not less than the alpha level of .05, it is concluded that there is not a significant relationship between participants' self-actualization and language/academic achievement.

Two Pearson Correlations were launched to investigate the fifth research question regarding the relationship between gifted students' creativity, language, and academic achievement. The results of these statistical tests are presented in Table 6.

Table 6
Pearson Correlations for Creativity, Language and Academic Achievement

		Creativity	Language Achievement	Academic Achievement
Creativity	Pearson	1	.249*	.04
	Correlation			
	Sig. (2-tailed)		.03	.70
	N	76	76	76
Language Achievement	Pearson	.249*	1	.714**
	Correlation			
	Sig. (2-tailed)	.03		.000
	N	76	76	76
Academic Achievement	Pearson	.04	.714**	1
	Correlation			
	Sig. (2-tailed)	.70	.000	
	N	76	76	76

*. Correlation is significant at the .05 level (2-tailed).

**. Correlation is significant at the .01 level (2-tailed).

As shown in Table 6, since p -value (.708) is not less than the alpha level of .05, it is concluded that there is not a significant relationship between participants' creativity and their academic achievement. Considering the relationship between creativity and language achievement, since p -value (.030) is less than the alpha level of .05, it is concluded that there is a significant positive relationship between participants' creativity and their language achievement ($r = .249$). Therefore, it is concluded that

students with higher levels of creativity have had higher scores on language achievement and vice versa.

Two Pearson Correlations were launched to investigate the sixth research question regarding relationship between gifted students' emotional intelligence, language, and academic achievement. The results of these statistical tests are presented in Table 7.

Table 7
Pearson Correlations for Emotional Intelligence, Language and Academic Achievement

		Emotional Intelligence	Language Achievement	Academic Achievement
Emotional Intelligence	Pearson	1	.22	.05
	Correlation			
	Sig. (2-tailed)		.05	.64
	N	76	76	76
Language Achievement	Pearson	.22	1	.714**
	Correlation			
	Sig. (2-tailed)	.05		.000
	N	76	76	76
Academic Achievement	Pearson	.05	.714**	1
	Correlation			
	Sig. (2-tailed)	.64	.000	
	N	76	76	76

**. Correlation is significant at the .01 level (2-tailed).

As indicated in Table 7, since p -value is not less than the alpha level of .05, it is concluded that there is not a significant

relationship between participants' emotional intelligence and their language/academic achievement.

Discussion

In this section, the research questions presented in the paper are dealt one by one. Each research question is answered and discussed based on the findings of the study. First, the obtained result indicated that there exists a significant positive relationship between SA and creativity in the participants. In fact, it can be concluded that gifted students experience more SA when they are also highly creative. The results are in harmony with the studies done by Ilinykh, Van der Meer, Shemelina, and Landgraf's (2014); Rapheal and Paul K (2014). As it has been previously said in the introduction, both creativity and SA are related to problem-solving. So, it could be true to claim that since gifted individuals can come up with novel ideas and solutions, they are creative and self-actualizers as a result of being able to solve problem with their novel solutions.

Secondly, a significant positive relationship was found between SA and EI. This result, which is in harmony with the findings of Sa'nchez-Ruiz, Hern'andez-Torrano, Pe'rez-Gonza'lez, Batey, and Petrides' (2011) study and also Herbst's (2003) findings, made it clear that those gifted participants who had better understanding of their own and others' feelings, thoughts, and emotions also had a higher sense of SA. The explanation could be that individuals who are aware of their emotions and can also understand other people's emotions will successfully pass the more basic needs, as named by Maslow in 1943, toward reaching SA because with higher EI they face little problem in building relationships with others in different

situations, and as a consequence, they become able to pay attention to their higher needs, that is SA with no concern. However, this result is partially in contrast with what Ilinykh et al. (2014) found. In fact, they concluded that SA and creativity have a significant relationship in just some of their subcategories.

Third, the significant positive relationship between creativity and EI means that those participants who were highly creative, got high scores in the EI questionnaire as well. According to the items in the EI questionnaire which ask about different situations, an intriguing conclusion is that since the participants had different EIs in different situations, the overall EI can be treated as a flexible trait. Therefore, teachers must become fully familiar with this concept in order to help their students enhance their EI in every situation. Increasing their EI, individuals can become more creative, high self-actualizers and as a result, more successful human beings. This finding is in line with Akinboye's (2003); Guastello, Guastello, and Hanson's (2004); Mehry-Ramy, Amin-Beydokhty, and Jamshidy's (2014) results.

Moreover, according to the obtained data, no significant relationship has been found between SA, language, and academic achievement. That is, by analyzing participants' language and academic achievement we figured out that gaining a high score in the SA questionnaire does not necessarily guarantee the participants' success in gaining high scores in English exams or in GPAs (grade point average). As an example, one of the high self-actualizer participants got 16 out of 20 on her English exam while some other participants who were low self-actualizers got higher than 18 on their exams, and vice versa.

Although no significant correlation was found between SA, language, and academic achievement of gifted students, a significant positive relationship was found between creativity and participants' language achievement which was the concern of the next research question, along with the relationship between creativity and the academic achievement which is in line with DeSelms' (1981) research study. Additionally, no significant relationship was observed between participants' creativity and their academic achievement which is not in line with what Emeke, Adeoye, and Torubelli (2006) observed in secondary students. The implication could be that gifted students can make effective and practical use of strategies with the help of their high level of creativity to learn English and to gain better scores. The final research question asked whether there is a relationship between participants' EI and their language achievement as well as their academic achievement. The researcher did not notice any significant relationship between these variables.

Conclusion

Now is the time for teachers and students to believe that it is not just IQ which leads to better achievement. In fact, students should learn to develop and develop their other abilities as well. Moreover, teachers must learn to value students' creativity instead of ignoring it since having a high opinion of their creativity will help students believe in themselves. This may facilitate language learning in the EFL context as well. Furthermore, it is essential that teachers get familiar enough with the concepts of CA, creativity, and EI so that they become able to identify students with these features and then to help

them flourish, because in this case the society will move toward a brighter future.

Teachers and students must value the sense of creativity since being familiar with this concept and the way that it enhances students creativity will help the students utilize their creativity to find easier and better ways and methods to study English. Further research studies in future can shed light on the relationship between these variables in a broader statistical population so as to see whether these significant relationships are also true in those who do not study in high schools for gifted students. The interested researchers may also want to investigate whether SA, creativity, and EI can predict each other, or to find out whether one of the variables has a mediating role between the other two variables. What is more, two limitations must be stated here. Firstly, since the participants of this study have been selected from a single educational setting, it may influence the generalizability of the obtained results. Secondly, because the data gathering is through responding to self-perceived scales, the social desirability might affect the data to some extent.

Suggestions for Further Research

This study examined the significant relationships among self-actualization, creativity, emotional intelligence, language, and academic achievement of gifted high school students. It is recommended that interested researchers include demographic factors like gender and age in similar studies as well. This inclusion might result in other intriguing findings which could help language teachers and learners. Furthermore, the researchers might want to carry on similar studies in more varied educational settings like language institutes. A wide

range of educational settings would make the results even more valuable because of the generalization of the findings in larger populations of language learners. Moreover, although this study has reached great constructive findings, if sufficient time and budget allow, one could also conduct a longitudinal design exploring such relationships among variables whose findings would be of great importance in language teaching and learning literature.

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