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Creativity, Learning Style, and Metacognition as Predictors of Iranian EFL Learners' Writing Accuracy and Fluency in a Mixed-Methods Study

Fatemeh Golshahian
PhD Candidate of TEFL, Isfahan (Khorasgan) Branch, Islamic Azad University, Isfahan, Iran

Elahe Sadeghi*
Assistant Professor of TEFL,
Isfahan (Khorasgan) Branch, Islamic Azad University, Isfahan, Iran

Mehdi Vaez Dalili
Assistant Professor of TEFL,
Isfahan (Khorasgan) Branch, Islamic Azad University, Isfahan, Iran

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Abstract

Creativity, learning style, and metacognition are significant factors in education. Many research studies have been conducted on these three factors, but few studies have been carried out on the correlations among these factors and second/foreign language (L2) writing accuracy and fluency. Therefore, this mixed-methods study tried to clarify the best predictors of writing accuracy and fluency among these three factors. To achieve this purpose, 120 Iranian English as a foreign language (EFL) learners were selected based on the results of the Oxford Quick Placement Test (OQPT). Three types of Questionnaires were used to collect data. In addition, the participants wrote about the intended topics to check their writing accuracy and fluency. Moreover, the accuracy and fluency frameworks were applied to rate writings. Further, a semi-structured interview was utilized. To analyze the data, the multiple regression analysis was run. The findings indicated all these three factors were the best predictors of writing accuracy among intermediate learners, while metacognition was the best predictor of writing accuracy among advanced learners. In addition, learning style and metacognition were the best predictors of writing fluency among advanced learners. This study has some significant implications for learning. The most important implication is that learners can become aware of their creativity levels, learning styles, and metacognitive activities. In addition, the findings can enrich the literature concerning the predictors of writing accuracy and fluency among these three variables.

***Keywords*:** Creativity, learning style, metacognition, writing accuracy, writing fluency

***Corresponding author's email:** elahesadeghi20@yahoo.com

INTRODUCTION

Language is used to express beliefs, feelings, ideas, and thoughts or generally communicate with others. The process of language acquisition is required to master all its skills such as writing and its sub-skills. Some research studies have shown that although writing is one of the important skills in language learning, first language (L1) or second/foreign language (L2) learners may face with some problems in mastering writing skills (Hasani & Moghadam, 2012; Hayes & Flower, 1986; Mirzaii, 2012; Richards & Renandya, 2002). Considerable numbers of studies have been conducted on influencing variables in language acquisition, among which are human beings' characteristics (Zaker, 2016). One of these characteristics is creativity which has attracted much attention (Kabilan, 2000). As a result, adopting it in educational systems could stimulate the creativity of learners and result in positive effects on learning (Robinson, 2001; Zaker, 2016).

Learning style is one of the other characteristics that has gained much attention from many research studies. It can reveal how individuals acquire, organize, receive, memorize, and comprehend materials (Lujan & DiCarlo, 2005; Zafar & Meenakshi, 2012). Therefore, learning style can be defined as the personalized style of learning (Keefe, 1982). Some problems might occur because of the mismatches between instructors' teaching styles and students' learning styles (Ehrman, 1994). Therefore, learning style plays a key role in enhancing language learning success (Macaro, 2001; Reid, 1995).

The third variable, metacognition, is concerned with the higher mental processes involved in learning like utilizing appropriate and suitable strategies and skills (Dunslosky & Thiede, 1998). In addition, research has shown that learners' performance with high metacognition can be better than learners' performance with low metacognition (Everson & Tobias, 1998).

These factors have been investigated separately or simultaneously (Asrullah & Radiah, 2024; Atkinson, 2004; Sun et al., 2024; Suzuki et al., 2022; Taneja et al., 2023), but the correlations between these three factors and writing accuracy and fluency have not been explored. Considering these

issues, the present study attempted to explore the best predictor of writing accuracy and fluency among creativity, learning style, and metacognition, and then, contribute the existing literature on the role of these three factors in writing accuracy and fluency.

LITERATURE REVIEW

Theoretical Background

Writing is a kind of skill and medium of communication through which human beings can represent their thoughts, opinions, and beliefs (Hayes & Flower, 1986). Therefore, different types of writing such as stories and poems would be generated. Writing, as a skill, differs from other skills, including reading, listening, and speaking. A piece of writing takes more time to generate compared with other skills. In addition, it is more formal and permanent than a spoken file (Ellis, 2003; Ellis & Barkhuizen, 2005; Richards & Renandya, 2002; Skehan, 1998).

Similarly, the process of language learning can mix with creativity in a way that learners can enjoy creative and attractive materials; therefore, they apply language creatively. In addition, learners have their styles of processing materials. Finally, they apply different strategies and techniques for learning including setting goals and planning (Zhao & Liao, 2021).

Creativity

The personal and mental characteristics such as creativity can impact both language learning and life skills (Fahim & Zaker, 2014; Nosratinia & Zaker, 2014; Zaker, 2016). Guilford (1950) defined it as the creative individuals' feature. In addition, Dewett (2007) described it as a novel product, process, and solution. Moreover, a further step into a new and strange world, experiencing new things, and recombining things and ideas are considered creativity. Further, two levels are involved in creativity: Big C and Little C. Big C or historical (H-creativity) can influence social and cultural settings, while Little C can impact personal levels (Feldman et al., 1994). Further, it is

claimed that creativity consists of four aspects (4 Ps): process-based, product-based, press-based (environmental), and person-based aspects (Plucker et al., 2004).

Learning Style

Learning style is the personalized methods to comprehend, process, and remember materials (Lujan & DiCarlo, 2005; Zafar & Meenakshi, 2012). Further, it is related to the cognitive, affective, and physiological features of individuals that indicate how individuals engage with materials (Keefe, 1982; Zapalska & Brozik, 2006). For instance, some learners follow materials step by step from the beginning to the end, while others just follow relevant and interesting materials.

Dunn (1984) was a pioneer in research studies about learning styles and recognized different learning styles. There are different types of learning styles in terms of specific categories (Barzegar & Tajalli, 2013). In one classification, learning style is divided into three categories: (a) visual learning style, referring to the processing of information through watching, (b) auditory learning style, related to the processing of information through listening, (c) kinesthetic learning style, concerned with the processing of information through performing.

In another categorization, three kinds of learning styles are identified: (a) cognitive styles, referring to the personalized methods of processing information, (b) personality types, connected to the affective and emotional factors, and (c) sensory preferences or kinds of memory, referring to the physical channels of perceiving information like eyes and touch (Reid, 1995). Some learners might have some of these categories, while others might have most of these categories. Therefore, learners differ from each other regarding learning styles due to education, age, culture, beliefs, motivation, gender, and many other personal features.

Metacognition

Metacognition is the third significant variable in academic achievement

(Dunning et al., 2003), which was introduced by Brown (1978) and Flavell (1979). Metacognition involves different dimensions such as strategies, conscious knowledge, and processes to control and monitor cognition (Dunslosky & Thiede, 1998; Weinert, 1987). Further, a thorough definition claims that metacognition is the ability to solve problems and have reflective thinking and critical view (Goh, 2018).

Some mental processes are involved in metacognition, such as planning and applying strategies to solve problems. In addition, metacognitive activities are different in different fields, individuals, and tasks (Glaser et al., 1992; Kelemen et al., 2000). Metacognition contains two significant variables: Metacognitive regulation and metacognitive knowledge (Schraw & Moshman, 1995).

Writing Accuracy and Fluency

Accuracy or correctness refers to the deviation of an L2 learner's production from the standard form. In other words, accuracy is connected to error-free L2 production and target-like language use (Housen et al., 2012). In addition, accuracy is concerned with L2 prescriptive grammar.

Fluency is defined as the ability to L2 production at a normal speed like a native speaker with few pauses and hesitations (Hashemifardnia et al., 2021). It is indicated that there are no clear boundaries between complexity, accuracy, and fluency (Kormos & Dénes, 2004). There is a discussion concerning the fluency of writing since learners can plan, monitor, and edit their written texts (Johnson et al., 2012; Wolfe-Quintero et al., 1998).

According to the guidelines of Wolfe-Quintero et al. (1998), the complexity, accuracy, and fluency (CAF) measure was used to gauge participants' writing accuracy and fluency. First, the number of errorless T-units was used to assess writing accuracy, in which errorless T-units are the main clauses and their subordinate clauses which are not deviant from standards in terms of lexicon, morphology, and syntax (Yousefi, 2016). Second, the number of words in T-units was measured to assess writing fluency.

Empirical Studies

Some important personal factors are helpful in language learning. One of these factors is creativity, which is crucial in each activity and field or to be more precise, in each layer of our life (Naderi et al., 2009; Otto´, 1998; Pishghadam et al., 2011). If creativity does not exist, life will be uninteresting and boring (Robinson, 2001). Many research studies have been carried out concerning the relationship between creativity and many other factors like critical thinking, course grade, writing, grammar strategy usage, and achievement (Baghaei & Baghaei, 2022; Fahim & Zaker, 2014; Ghasemi et al., 2011; Grant, 2017; Nosratinia & Zaker, 2014; Pishghadam et al., 2011; Suzuki et al., 2022). In addition, some studies have examined the relationship among creativity, language learning strategies, language proficiency, and L2 writing CAF (Nosratinia & Razavi, 2016; Rezaei & Almasian, 2007).

The second factor, which is essential in language learning, is learners' learning style (Ajideh & Gholami, 2014; Busato et al., 2000; Salam et al., 2020). Therefore, some studies have explored the relationship between learning style and many factors, including language achievement and speaking skill (Asrullah & Radiah, 2024; Barzegar & Tajalli, 2013; Gholami et al., 2022; Khodabakhshzadeh et al., 2017; Pranata et al., 2023). In addition, the effects and relationships between creativity and learning style have been examined (Halim et al., 2024; Taneja et al., 2023). However, some research studies claimed that there is no relationship between learning style and language achievement (Aliakbari & Qasemi, 2012; Husmann & McLoughlin, 2019; Rashvand Semiyari & Jahani, 2020).

The third factor, metacognition, is an important personal factor in language achievement. It is claimed that high metacognitive learners perform better in L2 learning (Coutinho, 2007). In addition, a study showed that metacognition results in higher proficiency and autonomy (Zhang & Zhang, 2019). Similarly, the relationship among metacognition, collaborative learning, learners' intrinsic motivation, assessment, and writing scores has been indicated in some studies (Baas et al., 2015; Coughlin et al., 2015; Desoete et al., 2019; Hidayat et al., 2018; Qin & Zhang, 2019; Septiani et al.,

2024; Siregar et al., 2024; Sun et al., 2024; Teng & Zhang, 2024; Wang et al., 2024).

PURPOSE OF THE STUDY

Far too little attention has been paid to which factor or factors (creativity, learning style, & metacognition) are the best predictors of L2 writing accuracy and fluency, so this area of study has been selected. Therefore, the aim of this study is to investigate the best predictors of L2 writing accuracy and fluency among these three factors. In this respect, the present study can contribute to the existing literature concerning the predictive power of creativity, learning style, and metacognition in L2 writing accuracy and fluency. In addition, it attempts to investigate the learners' and instructors' descriptions about the study variables in language learning. In light of these points highlighted by previous literature, the study described here is thus guided by the following questions:

1. Which factor or factors (creativity, learning style, & metacognition) are the best predictors of L2 writing accuracy among intermediate Iranian EFL learners?
2. Which factor or factors (creativity, learning style, & metacognition) are the best predictors of L2 writing accuracy among advanced Iranian EFL learners?
3. Which factor or factors (creativity, learning style, & metacognition) are the best predictors of L2 writing fluency among intermediate Iranian EFL learners?
4. Which factor or factors (creativity, learning style, & metacognition) are the best predictors of L2 writing fluency among advanced Iranian EFL learners?
5. What are the attitudes of English instructors and EFL learners towards creativity, learning style, and metacognition?
6. How do Iranian EFL learners think about creativity? What are their opinions about it?

METHOD

Design and Context of the Study

Since both qualitative and quantitative data were applied to minimize the limitations of both qualitative and quantitative data, this research study was a mixed-methods study (the sequential explanatory mixed methods design). Therefore, the quantitative data were gathered first, and then the qualitative data were collected. In addition, this study was non-experimental because there was no control or treatment on the study variables. Two English institutes (Pishraft & Parvin) in Isfahan, Iran were selected to conduct this study. In addition, because of the availability of female learners, they were selected as the participants in this study.

Participants

Two language institutes (Pishraft & Parvin) in Isfahan, Iran were selected conveniently and 120 participants took part in this study. Two groups of learners with different proficiency levels (60 intermediate & 60 advanced) were selected for two reasons: (1) intermediate and advanced learners know the meanings of these concepts such as creativity, learning style, and concepts like these, whereas beginner or elementary learners might not be aware of these concepts and even they may not know their meanings; and (b) because the selected participants have passed some courses in these institutes, sufficient information exists about them. In this respect, intermediate and advanced Iranian EFL learners were chosen in terms of the results of the Oxford Quick Placement Test (OQPT), whose first language was Persian and had never traveled to a foreign country. In addition, all of the participants were female to control gender effects, and their ages ranged between 25 and 35. These participants were some adult learners who had continued their studies in adulthood.

To observe ethical issues, these two institutes, teachers, and learners agreed to participate in the present study. In addition, they were assured that the collected data was applied just for research purposes. Moreover, the

participants completed consent forms. Further, ethical issues were observed throughout the procedures of data collection and analysis. Therefore, some codes were utilized to preserve their anonymity.

It is noteworthy that two instructors took part in this study to measure learners' writing accuracy and fluency. One of these instructors was the first researcher of this study, and the second one was her colleague who holds an MA degree. Both raters were trained concerning the rating of writing and the frameworks of rating. It is important to note that both intermediate and advanced learners had passed some courses in promoting academic writing that those courses can enable them to utilize writing conventions properly. Table 1 indicates the demographic background features of the participants:

Table 1: Demographic Background of the Participants

No. of Students	120 (60 intermediate & 60 advanced Iranian EFL learners)
Gender	Only Females
Native Language	Persian
Target Language	English
Age	25-35
Place	Two English language institutes
Academic Years	2023-2024

Instrumentation

Oxford Quick Placement Test (OQPT)

To have a homogeneous group of participants regarding the level of proficiency, The OQPT, which was developed by Oxford University Press Cambridge Local Examinations Syndicate was applied. The test, which has a reliability of 0.90, contains 60 multiple-choice items in different formats such as close passages and fill-in-the-blank items to check reading comprehension, vocabulary, and grammar. According to the OQPT test, learners' scores between 40 and 47 were considered intermediate learners, while learners' scores between 48 and 54 were considered advanced learners. This test was

run in a classroom setting, and the participants were given 45 minutes to respond it. According to the OQPT test, the intended participants were selected as follows, and other proficiency levels were ignored.

- 0–10 (out of 60) = Beginner
- 11–17 (out of 60) = Breakthrough
- 18–29 (out of 60) = Elementary
- 30–39 (out of 60) = Pre-intermediate
- 40–47 (out of 60) = Intermediate
- 48–54 (out of 60) = Advanced
- 55–60 (out of 60) = Proficient

Creativity Questionnaire

To check their creativity levels, Abedi's (2002) Creativity Questionnaire, which was translated by Daemi and Moghimi (2004) and validated by Nosratinia and Zaker (2013), was employed in the Persian format. The questionnaire, which contains 60 items each with three options, has no correct or false responses. It involves four sections, which are the main subsections of creativity: Elaboration, fluency, originality, and flexibility (Torrance & Wu, 1981). Abedi (2002) confirmed the coefficient of these four sections and reported the reliability of fluency, originality, flexibility, and elaboration as 0.85, 0.84, 0.82, and 0.80 respectively. In addition, the reliability of this questionnaire was checked by some English experts at Khorasgan University ($r = 0.89$), and its validity was confirmed.

The first section, fluency, contains 22 items, with scores between 22 and 66. The second section, elaboration, contains 11 items, with scores between 11 and 33. The third section, originality, consists of 16 items, with scores between 16 and 48. The fourth section, flexibility, involves 11 items, with scores between 11 and 33. The answers can indicate different levels of creativity. The sum of these four sections can show a person's creativity score, which is between 60 and 180. Therefore, a score between 3 and 90 (< 90) shows a low level of creativity, a score between 90 and 180 (> 90) indicates a high level of creativity. To answer this questionnaire, the

participants were given 60 minutes.

Learning Style Questionnaire

To check the learners' learning styles, Cohen et al.'s (2001) Learning Style Questionnaire was used in the Persian version. It includes 11 sections and five options (Never, Rarely, Sometimes, Often, and Always) regarding different types of learning styles, with no correct or false answers. Further, 110 minutes were allocated to complete the questionnaire. It is noteworthy that its reliability was checked by some English experts at Khorasgan University and its validity was confirmed.

Schraw and Dennison's (1994) Metacognitive Awareness Inventory

To check the metacognition of the participants, the Metacognitive Awareness Questionnaire (Schraw & Dennison, 1994), which contains 52 items with five options, was used. This scale, which is an updated version, contains two sections: (a) knowledge of cognition, and (b) regulation of cognition (Krosnick & Presser, 2010). Participants were given 60 minutes to respond it. The questionnaire reliability was 0.95, and some English experts at Khorasgan University confirmed its validity.

Writing

To check the participants' levels regarding the accuracy and fluency framework, at least two paragraphs were written by the participants. Three steps were needed to check the writing validity. First, some topics from their coursebooks were selected for writing. In the second step, the suitability of these topics was checked by some English experts at Khorasgan University. In the third step, some writings were written about the selected topics, and they were scored in terms of the accuracy and fluency frameworks by two raters. The first rater was the first researcher of the study, and the second rater was her colleague.

Because intermediate and advanced participants took part in this study, their coursebooks were used (Top Notch 2 B). These participants were

some adult learners who had continued their studies in adulthood. In addition, writing accuracy and fluency framework was applied to measure the participants' writings. The participants were asked to write in one session (90 minutes). Moreover, 40 participants' writings scored by two raters, were randomly chosen to check the inter-rater reliability between two raters of this study. The findings of the Pearson correlation analysis indicated that there is an agreement on the scores of writing accuracy and fluency between two raters ($r(40) = .83$, $p < 0.05$), representing a large effect size). Further, the means of two scores given by two raters of this study were regarded as the learners' writing accuracy and fluency scores.

The Accuracy and Fluency Framework

To measure the writing accuracy and fluency of the participants, the accuracy and fluency framework was applied: The number of error-free T-units was applied to measure writing accuracy. It is worth noting that a main clause and all its subordinate clauses are called a T-unit (Wolfe-Quintero et al., 1998). Error-free T-units are the correct main clauses and their subordinate clauses regarding morphology, lexicon, and syntax. Further, the number of words in T-units was measured to assess writing fluency (Yousefi, 2016).

Interview

Some questions regarding the study variables were prepared and asked from 15 participants similar to the study participants in a pilot study. In the second phase, some English experts at Khorasgan University checked and revised the questions. Then, ten participants (6 intermediate & 4 advanced EFL learners) signed the consent forms and took part in a semi-structured interview session. The participants talked about their different strategies and styles in learning particularly in developing writing skills. In addition, two English instructors participated in this session and talked about the study factors. The instructors claimed that they use different kinds of materials to support different learning styles. Moreover, the interview session, which took 100 minutes (one session), was recorded and transcribed. Further, the participants were allowed

to respond the interview questions in both English and Persian.

Data Collection Procedure

First, 120 intermediate and advanced Iranian EFL learners were selected from two English institutes in terms of convenience sampling and the result of the OQPT. Then, a clear explanation of the purposes of the study was given to the participants. Next, the Persian format of these three questionnaires (creativity, learning style, & metacognition) was handed to the participants in three separate sessions. In addition, the interview session and the writing phase were conducted in two separate sessions. It is noteworthy that these three questionnaires were piloted to check their validities and reliabilities.

In addition, the participants were ensured about the confidentiality and privacy of information. Moreover, the participants' writings were scored in terms of the accuracy and fluency frameworks by two raters. Finally, multiple regression was used to examine the best predictors of writing accuracy and fluency among the study variables.

Ethical Considerations

Two English institutes, teachers, and learners were allowed to conduct this study. In addition, the participants and their instructors filled in the consent forms. Moreover, they ensured that ethical issues were observed in this research. Therefore, some codes were used for their names.

Data Analysis

Their writings were scored regarding the accuracy and fluency frameworks. Therefore, the number of error-free T-units was used to measure accuracy, in which a main clause and all its subordinate clauses are called a T-unit and error-free T-units are the correct main clauses and their subordinate clauses regarding morphology, lexicon, and syntax (Wolfe-Quintero et al., 1998). In addition, the number of words in T-units was measured to assess fluency (Yousefi, 2016). Finally, multiple regression analysis was run to answer the

research questions.

RESULTS

This study aimed to examine which factor or factors (creativity, learning style, & metacognition) could be the best predictors of writing accuracy and fluency among intermediate and advanced EFL learners.

Before providing the results of the regression analysis, it is better to look at the descriptive statistics of the intermediate and advanced Iranian EFL learners concerning the study variables, and then, investigate the underlying assumptions of the regression analysis. Table 2 provides the results of the descriptive statistic of the intermediate learners' creativity, learning style, metacognition, and writing accuracy and fluency scores:

Table 2: Descriptive Statistics Results for Intermediate EFL Learners

	N	Minimum	Maximum	Mean	Std. Deviation
Creativity	60	60.00	174.00	126.51	40.80
Learning style	60	204.00	328.00	258.85	24.83
Metacognition	60	72.00	208.00	146.50	40.30
Accuracy	60	42.00	71.40	62.94	21.58
Fluency	60	79.00	130.00	131.36	28.74

Concerning the underlying assumptions of multiple regression analysis, according to Stevens (1996), a sample size of 15 participants for each variable is necessary to have a reliable equation in social studies. Sixty intermediate learners took part in this study, and this number was greater than 45 for these three variables. In addition, the correlation results among these variables were observed for the assumptions of multicollinearity and singularity. Since the results showed that there are some degrees of correlations among the study variables, the assumption of collinearity was met. Moreover, no two factors had a very strong relationship (> 0.90), and there was no singularity between them, showing that the assumption of singularity was not violated. Because the multiple regression analysis is sensitive to outliers, the initial screening of the data indicated no outliers in the dataset. Therefore, this assumption was

met.

The results of descriptive statistics of advanced learners' creativity, learning style, metacognition, and writing accuracy and fluency scores are presented in Table 3.

Table 3: Descriptive Statistics Results for Advanced EFL Learners

	N	Minimum	Maximum	Mean	Std. Deviation
Creativity	60	60.00	180.00	148.16	33.08
Learning style	60	201.00	316.00	234.61	28.82
Metacognition	60	69.00	197.00	136.50	38.50
Accuracy	60	36.00	52.00	52.87	21.58
Fluency	60	85.00	140.00	138.80	35.05

To check the underlying assumptions of multiple regression analysis, the assumption of sample size was met. In addition, because the results of the correlation demonstrated that there are some degrees of correlations between the study factors, the assumption of collinearity was met. Moreover, no two factors had a very strong relationship (> 0.90), and there was no singularity between them, showing that the assumption of singularity was not violated. Because the initial screening of the data showed no outliers in the dataset, this assumption was met.

After ensuring the assumptions were met, multiple regression analysis was conducted to explore the best predictors of L2 writing accuracy and fluency among Iranian EFL learners.

The Best Predictors of Accuracy in Intermediate EFL Learners

Table 4 reveals the results of the first research question, dealing with the best predictors of writing accuracy among intermediate learners:

Table 4: Model Summary for Multiple Regression Run for Accuracy for Intermediate Learners

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.65	.42	.39	.32

As indicated in Table 4, the R Square value is 0.42, which means the study factors explained 42 percent of the variance in writing accuracy among intermediate learners. Table 5 shows the statistical significance of the multiple regression results run for accuracy among intermediate learners.

Table 5: Statistical Significance of the Multiple Regression Results Run for Accuracy among Intermediate Learners

Model		Sum of Squares	*df*	Mean Square	*F*	Sig.
	Regression	4.41	3	1.47	13.62	.000
	Residual	6.04	56	.10		
	Total	10.45	59			

As Table 5 reveals the p-value was smaller ($p = 0.000$) than the significance level ($p < 0.05$), which means the study variables significantly predicted the writing accuracy among intermediate EFL learners. Therefore, Table 6 demonstrates the best predictor of writing accuracy among intermediate learners.

Table 6: Predictive Power of the Independent Variables for Accuracy: Intermediate Learners

	Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
	B	**Std. Error**	**Beta**	***t***	**Sig.**	**Lower Bound**	**Upper Bound**
(Constant)	1.297	.486		2.66	.010	.322	2.272
Creativity	-.003	.001	-.293	-2.87	.006	-.005	-.001
Learning Style	.004	.002	.221	2.17	.034	.000	.007
Metacognition	-.006	.001	-.565	-5.54	.000	-.008	-.004

As demonstrated in Table 6, the Beta values for creativity, learning style, and metacognition were (-.29), (.22), and (-.56), respectively. The p values of these three variables were lower than the significant level ($p<0.05$), which means that all of these three variables contributed to the prediction of writing

accuracy among intermediate learners. As the results show, metacognition was the best predictor of writing accuracy among intermediate learners.

The Best Predictors of Accuracy in Advanced EFL Learners

Table 7 shows the results of the second research question, dealing with the best predictors of writing accuracy among advanced learners:

Table 7: Model Summary for Multiple Regression Run for Accuracy for Advanced Learners

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.37	.14	.09	.32

As Table 7 indicates, the R Square value was 0.14, which means the study variables explained 14 percent of the variance in writing accuracy among advanced EFL learners. Table 8 makes clear the statistical significance of the multiple regression results run for accuracy for advanced EFL learners.

Table 8: Statistical Significance of the Multiple Regression Results Run for Accuracy among Advanced Learners

Model		Sum of Squares	*df*	Mean Square	*F*	Sig.
	Regression	1.00	3	.33	3.10	.03
	Residual	6.02	56	.10		
	Total	7.02	59			

In Table 8, the p-value was smaller ($p = 0.03$) than the significance level ($p < 0.05$), which means the study factors significantly predicted writing accuracy among advanced EFL learners. Therefore, Table 9 reveals the best predictor of writing accuracy among advanced EFL learners:

Table 9: Predictive Power of the Independent Variables for Accuracy: Advanced Learners

	Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
	B	**Std. Error**	**Beta**	***t***	**Sig.**	**Lower Bound**	**Upper Bound**
(Constant)	2.231	.396		5.63	.000	1.438	3.024
Creativity	-.001	.001	-.106	-.84	.402	-.004	.002
Learning Style	-.002	.002	-.166	-1.31	.193	-.005	.001
Metacognition	-.003	.001	-.297	-2.38	.020	-.005	.000

As shown in Table 9, the values of Beta for creativity, learning style, and metacognition were (-.10), (-.16), and (-.29), respectively. In addition, the p-value of metacognition was lower than the significant level ($p < 0.05$). Therefore, metacognition was the best predictor of writing accuracy among advanced EFL learners.

The Best Predictors of Fluency in Intermediate EFL Learners

Table 10 indicates the results of the third research question dealing with the best predictors of writing fluency among intermediate learners.

Table 10: Model Summary for Multiple Regression Run for Fluency for Intermediate Learners

Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.45	.20	.16	1.19

As revealed in Table 10, the R Square value was 0.20, which implies the study variables explained 20 percent of the variance in the writing fluency among intermediate EFL learners. In addition, Table 11 indicates the statistical significance of the multiple regression results run for fluency for intermediate EFL learners.

Table 11: Statistical Significance of the Multiple Regression Results Run for Fluency for Intermediate Learners

Model	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	20.48	3	6.82	4.78	.005
Residual	79.83	56	1.42		
Total	100.31	59			

It is obvious in Table 11 that the p-value was smaller ($p = 0.005$) than the significance level ($p < 0.05$), which means the study variables significantly predicted writing fluency among intermediate EFL learners. Therefore, Table 12 indicates the best predictor of writing fluency among intermediate EFL learners.

Table 12: Predictive Power of the Independent Variables for Fluency: Intermediate Learners

	Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
	B	**Std. Error**	**Beta**	***t***	**Sig.**	**Lower Bound**	**Upper Bound**
(Constant)	3.303	1.768		1.86	.067	-.239	6.845
Creativity	-.004	.004	-.127	-1.06	.293	-.012	.004
Learning Style	.022	.006	.423	3.53	.001	.010	.035
Metacognition	-.005	.004	-.139	-1.16	.249	-.012	.003

It is clear in Table 12 that the values of Beta for creativity, learning style, and metacognition were (-.12), (.42), and (-.13), respectively. In addition, the p-value of learning style was lower than the significant level ($p < 0.05$). Therefore, learning style was the best predictor of writing fluency among intermediate EFL learners.

The Best Predictors of Fluency in Advanced EFL Learners

Table 13 demonstrates the results of the fourth research question, dealing with the best predictors of writing fluency among advanced learners.

Table 13: Model Summary for Multiple Regression Run for Fluency for Advanced Learners

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.58	.33	.30	.90

As Table 13 shows, the R Square value was 0.33, which implies that the study factors explained 33 percent of the variance in writing fluency among advanced Iranian EFL learners. Table 14 demonstrates the statistical significance of the multiple regression results run for fluency for advanced EFL learners:

Table 14: Statistical Significance of the Multiple Regression Results Run for Fluency for Advanced Learners

Model		Sum of Squares	*df*	Mean Square	*F*	Sig.
	Regression	23.12	3	7.70	9.45	.000
	Residual	45.65	56	.81		
	Total	68.77	59			

It is obvious in Table 14 that the p-value was smaller ($p = 0.000$) than the significance level ($p < 0.05$), which implies the study factors significantly predicted writing fluency among advanced EFL learners. Therefore, Table 15 indicates the best predictor of writing fluency among advanced EFL learners.

Table 15: Predictive Power of the Independent Variables for Fluency: Advanced Learners

	Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
	B	**Std. Error**	**Beta**	***t***	**Sig.**	**Lower Bound**	**Upper Bound**
(Constant)	5.606	1.090		5.14	.000	3.423	7.789
Creativity	-.002	.004	-.059	-.54	.591	-.009	.005
Learning Style	.017	.004	.458	4.14	.000	.009	.025
Metacognition	-.011	.003	-.408	-3.72	.000	-.018	-.005

As can be seen from Table 15, the values of Beta for creativity, learning style, and metacognition were (-.05), (.45), and (-.40), respectively. In addition, the p values of learning style and metacognition were lower ($p = 0.00$) than the significant level ($p < 0.05$). Therefore, learning style and metacognition were the best predictors of writing fluency among advanced EFL learners.

The Results of the Interview

Ten female participants (six intermediates & four advanced), who voluntarily took part in one single interview session and answered some questions regarding the study factors. In this session, the participants and English instructors discussed the methods and strategies of learning materials and their learning styles.

Some intermediate and advanced learners claimed that they like reading materials to learn better. Some claimed that they must take notes to comprehend new materials, while others claimed that they must record the classroom sessions to listen again and take notes. Some learners claimed that they prefer to see the materials on the whiteboard or in their books to learn better. Some intermediate and advanced learners claimed that they must do something to learn. One of the advanced learners claimed that she tries to use different strategies creatively. Another advanced learner claimed that she mixes different styles in the process of learning. It indicated learners apply different strategies and styles to learn better.

One of the intermediate learners claimed that she likes learning materials in novel and creative methods and environments. Another intermediate learner claimed that she loses her interest and attention when materials are repetitive and uninteresting. It can be concluded that learners pay attention to creativity in their learning context.

In addition, English instructors talked about the importance of creativity in teaching. They claimed that they try to have a creative and novel teaching environment to stimulate learners' interest and motivation. Moreover, the instructors claimed that they usually apply different activities

in their classes to support different styles of learning. Further, they claimed that at the beginning of writing courses, learners are asked to write some texts about a same topic, and then, they talked about the different structures of texts, the word choices, text organizations, and how to make more accurate and fluent sentences. Because learners were adults and they were not knowledgeable enough in English, the basic materials were practiced in some sessions. After some sessions, learners could use language fluently and accurately. For instance, they could make cause and effect paragraphs correctly.

These transcribed data revealed that the interview session made it possible for some learners to be aware of these concepts technically; most of them had positive views on these concepts. In addition, some learners became aware of their learning styles. They claimed that creativity and novelty provoke their enthusiasm and interest to learn better. They believed that these concepts are essential in language learning. They thought among these three factors, creativity is important in every activity.

In addition, two English instructors had positive attitudes towards creativity. They claimed that creativity in educational settings can lead to the promotion of learners' self-esteem and motivation, and finally language success. Finally, they believed that the educational settings should support the application of creativity in teaching to get the best results in teaching and learning.

DISCUSSION

This study aimed to explore the best predictors of L2 writing accuracy and fluency among Iranian EFL learners. The OQPT was used to check the proficiency levels. In so doing, 120 Iranian female learners participated in the study and completed three types of questionnaires. In addition, the accuracy and fluency frameworks were used to score writings. Finally, a semi-structured interview was run. To analyze data, multiple regression analysis was run.

Regarding the first research question of the study, addressing the best

predictors of L2 writing accuracy among intermediate Iranian learners, the findings indicated that creativity, learning style, and metacognition were the best predictors of writing accuracy. Concerning the second research question, referring to the best predictors of L2 writing accuracy among advanced Iranian learners, the study revealed that metacognition was the best predictor of writing accuracy.

Regarding the third research question, addressing the best predictors of L2 writing fluency among intermediate Iranian learners, the findings demonstrated that none of these three variables were the best predictor of writing fluency. Concerning the fourth research question, addressing the best predictors of L2 writing fluency among advanced Iranian EFL learners, the findings showed that learning style and metacognition were the best predictors of writing fluency.

Theoretically, there are two hypotheses to support these findings: (a) the cognition Hypothesis, and (b) the trade-off hypothesis. The cognition Hypothesis suggests that because humans have different attention resources, increase in the levels of creativity can provoke learners in applying more accurate and complex structures (Robinson, 2001). The trade-off Hypothesis claims that due to the humans' limited processing capacity, increase in one language dimension such as accuracy can lead to decrease in other dimensions such as complexity or fluency (Skehan, 1998, 2003).

These findings support those of Khodabakhshzadeh et al. (2017), which demonstrated that all these three factors are essential in learning. In addition, their findings showed that metacognition is more effective in language achievement. Similarly, the findings align with previous research studies which have indicated the importance of metacognition in achievement and academic writing (Coughlin et al., 2015; Hidayat et al., 2018; Qin & Zhang, 2019; Siregar et al., 2024).

Moreover, the findings are in agreement with Nosratinia and Razavi's (2016) findings, which indicated a significant relationship between creativity and writing CAF. In the same vein, the findings support those of earlier research studies showing the positive effects of learning style on development

of language skills and success (Ajideh & Gholami, 2014; Asrullah & Radiah, 2024; Barzegar & Tajalli, 2013; Pranata et al., 2023).

However, the findings of the study contrast with those of Aliakbari and Qasemi (2012), Husmann and McLoughlin (2019), and Rashvand Semiyari and Jahani (2020), which have indicated that there is no correlation between learning style and achievement scores.

Concerning the fifth and sixth research questions, investigating the attitudes of instructors and EFL learners toward the study variables, the findings showed that they have positive attitudes toward using creativity in language learning. The findings of the interview indicated that some learners did not know these concepts technically, but they preferred a creative learning context. In addition, participants had different learning styles and used considerable strategies and techniques to learn better. Moreover, instructors agreed on the application of creativity in educational settings.

To sum up, the study and its findings agree with the existing literature which has indicated that the study variables are significant in language achievement (Atkinson, 2004; Ghasemi et al., 2011; Grant, 2017; Naderi et al., 2009; Rezaei & Almasian, 2007; Suzuki et al., 2022).

CONCLUSION AND IMPLICATIONS

This study attempted to explore the best predictors of writing accuracy and fluency among Iranian learners. The findings confirmed that creativity, learning style, and metacognition were the best predictors of writing accuracy among intermediate learners. In the case of advanced learners, metacognition was the best predictor of writing accuracy. In addition, the findings demonstrated that learning style and metacognition were the best predictors of writing fluency among advanced learners.

This study can have some micro and macro implications. Learners can become aware of their learning styles, creativity levels, and metacognitive activities. Moreover, a creative educational setting can suggest learners a sense of empathy, freedom, and self-evaluation (Fisher, 2005). Further,

instructors can teach based on students' learning styles. At the macro level, the study can be helpful for decision-makers, material developers, and syllabus designers to apply different kinds of materials in textbooks, including films, charts, and diagrams to support different learning styles and attract students' attention.

This study has some limitations that need to be taken into consideration in future studies. One of them is gender. Females were chosen to control gender effects. Further research could investigate more fully the effects of gender on the study variables. The second one is that only intermediate and advanced proficiency levels were selected. The third weakness is that the study was limited in having a small number of participants (120), and the findings clearly cannot be extrapolated to other learning settings. The fourth limitation is that this study was confined to the variables in the study. Fifth, this study focused on just writing, and other language skills, including listening, speaking, and reading were not examined. Further research is also required by considering other factors, other language skills, and a larger number of participants with different levels of proficiency in a wide variety of contexts such as schools and universities. Finally, other natural ways of assessment of personal factors can be considered to assess personal characteristics such as creativity and learning style in further studies.

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No potential conflict of interest was reported by the authors.

ORCID

Elahe Sadeghi http://orcid.org/0000-0003-3082-9170
Mehdi Vaez Dalili http://orcid.org/0000-0003-1805-662X

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