A Mixed-methods Study of the Effects of MALL-Mediated Writing Strategy Awareness-raising on Writing Performance and Anxiety of IELTS Candidates

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Abstract

This study examines the effect of strategy awareness-raising on the writing complexity, accuracy, and anxiety of IELTS candidates using a social networking medium (i.e., Telegram). To achieve this goal, 72 upper-intermediate English learners performed five writing tasks (the first and the last one of which were analyzed based on T-units) and completed an anxiety questionnaire developed by Cheng (2004). In addition, the participants were divided into the two groups experimental and control where the experimental group joined discussion groups on Telegram and the teacher-researcher shared the strategies used by the participants for further discussion. The results showed that writing strategy awareness-raising had a significant positive effect on both writing complexity and accuracy, but a negative effect on writing anxiety. Think-aloud protocols were coded based on five broad categories of planning, monitoring/evaluating, revising, retrieving, and compensating introduced by He et al. (2011). The results of the analysis indicated that the frequency of writing strategies used by the participants increased significantly except for retrieving strategies. The strategies contributing to the success of writing tasks are presented and discussed in the paper.

Keywords: Mobile Assisted Language Learning (MALL), writing strategy, awareness-raising, anxiety, accuracy, complexity, IELTS candidates

Introduction

More than three million International English Language Testing System (IELTS) tests were taken in 2017 which reflects the growing importance of this test for international higher education and migration (www.ielts.org). One of the demanding skills which require different types of knowledge in testing situations is writing (Deane, 2011; Hillocks, 1987) which is, perhaps, the most complex language skill (Elbow, 1998; Negari, 2011) and creates motivational challenges

for writers (Bruning & Horn, 2000; Duijnhouwer, 2010). To write in a second language, learners are required to organize their ideas and monitor the development of the written text on the given issue. However, L2 writers have to formulate linguistically correct forms which are automatized in L1 and unautomatized in L2 lexicon and syntax (Zimmerman, 2000). The process of organizing and reorganizing such texts requires considerable cognitive effort from the L2 writers which is accompanied by the need to retrieve the required semantic resources and background information that engage their full cognitive capacity and are not automatic which requires the learners to pay close conscious attention to all these aspects simultaneously (Weigle, 2005).

To help the IELTS candidates get higher writing scores, instructors suggest using some strategies and techniques to cope with the issue. The effect of these strategies has been highlighted for improving the quality of written discourses in second language literature (Lei, 2008; Manchón, 2018; Xie & Lei; 2021). For instance, they might adopt mental actions, or cognitive operations including planning, using their L1, monitoring, and revising throughout their composition writing (e.g., Roca de Larios et al., 1999; Sasaki, 2004). Some writers might take physical actions, such as searching the internet, reading books, or listening to music to create effective writing (e.g., Cumming, 2006; Lei, 2008). Moreover, writing strategically might require the writers to take social interaction to improve their compositions like asking for help from peer tutors or course instructors (Pomerantz & Kearney, 2012). These strategies explained as behaviors adopted by learners to complete a task have proved to be effective in raising learners' awareness of the learning process and improving their L2 skills (O'Malley & Chamot, 1990).

However, there is a distinctive difference between the composition strategies used by the mature and unskilled learners (Bereiter & Scardamalia, 1987) which might result in different levels of attention in organizing the written discourse among the learners. There is some evidence that learners can perform better if they become acquainted with such awareness-raising activities as interviews, games, think-aloud, discussions, interactive lectures, and workshops (Oxford, 1990). It is also argued that awareness-raising strategies can help learners reflect and think strategically, expand the repertoire of learning strategies, and contribute to the development of lifelong learning skills (Blanco et al., 2010; Sifatu et al., 2020).

Many researchers highlight the positive role of social negotiation in helping novice writers to take useful strategies and important knowledge from the skilled EFL/ESL writers and improve their writing achievement accordingly (Farahian & Avarzamani, 2018; Teng, 2016). These interactions raise learners' awareness about strategy use rather than concentrating on identifying which strategies work best (Oxford, 2011). Thus, the students will be allowed to choose the strategies that best fit their approach to learning in different contexts. Computer-mediated communication and negotiated interaction which have recently become popular seem to be one of the great means of language acquisition and interaction (Lim & Aryadoust, 2021). Computer-supported collaborative work has also been found to be effective in increasing the awareness of different learning strategies (Peeters & Mynard, 2021).

While writing strategies improve writing achievement, other factors such as linguistic difficulties, insufficient writing practice, and low self-confidence in writing cause writing anxiety and hinder optimal writing achievement (Rabadi & Rabadi, 2020). Furthermore, whereas some researchers highlight a significant negative relationship between anxiety and writing achievement (e.g., Cheng, 2002; Daly & Miller, 1975), others have argued that anxiety alone is not to blame for writing performance and that other factors such as (lack of) self-efficacy should also be examined (Pajares & Johnson, 1994). Similarly, Çapan and Pektas (2013) maintain that such factors as the instructor's teaching style and classroom environment might impact the level of anxiety and the use of learning strategies.

According to the above-mentioned assumptions about the effect of writing strategy awareness-raising and anxiety on L2 writing, the current study was set out to explore whether and to what extent the use of mobile technology for facilitating collaborative awareness-raising activities impacted L2 learners' writing performance and anxiety. As IELTS courses in Iran are usually condensed and the learners are busy attending face-to-face classes, the authors aimed to use MALL innovative on-line educational environment to provide communication opportunities for the learners to engage in problem-based and collaborative activities more conveniently.

To attain this goal, the easily accessible social networking medium of Telegram was utilized to reduce the cognitive load that the participants experienced in the class environment to pave the way for attending face-to-face classroom interactions. In addition, the authors used two measures of accuracy and complexity because L2 proficiency is multi-componential (Housen et al., 2012) and proficient writers write more accurate and complex texts (Kim et al., 2016).

Theoretical framework

Writing strategies and anxiety

The effect of writing strategies on L2 learners has been highlighted in the literature (O'Malley & Chamot, 1990; Oxford, 1990; Oxford & Nyikos, 1989). Previous studies have often differentiated between the strategies used by skilled and less skilled L2 writers which indicate that these two groups of writers differ in their choice of writing strategies (He, 2005). For instance, summarizing, revising, or monitoring strategies are identified to be employed less by less skilled L2 writers (Bereiter & Scardamalia, 1987). Thus, such strategies are considered to be employed more by skillful writers and hence teachers are required to raise learners' awareness of such strategies and to teach them to the less experienced writers.

However, some researchers (e.g., Storch & Wigglesworth, 2007) have questioned teacher-fronted activities and have advocated the benefits of collaborative writing in which social interaction would enhance linguistic development and where learners are assisted beyond their current level to have joint accomplishment which is thought to contribute to L2 learning tasks (Swain, 2010). Furthermore, instructors can promote learner autonomy by reducing

teacher-fronted activities by introducing collaborative writing tasks that would lead to the reduction of the writers' levels of anxiety (Almutairi et al., 2022; Lubis & Rahmawati, 2019).

Since producing a well-structured written task requires thinking strategies and a sufficient level of competence, anxiety levels might increase when the students' writing is accompanied by the potential for being evaluated (Hassan, 2001; Ravali, 2020). Daly (1978) found that high anxious students tended to produce texts of lower quality with shorter and simpler structures. Cheng (2002) reported that anxious students avoided taking writing courses and preferred to take majors which had less to do with writing.

Language anxiety might incorporate a multitude of factors. Young (1991), for instance, identified three aspects of learning anxiety which include the learner, the teacher, and the instructional practice which might be interrelated. Similarly, Zheng (2008) maintains that language anxiety is not solely a consequence of learners' lack of language coding abilities, but it also originates from such other factors as contextual factors that might influence their emotions and interfere with their language learning. As a case in point, the quality of interaction between the teachers and the students and among the students themselves might affect anxiety among the learners. Kim (2012) holds that online communication gives the learners a sense of ownership of the task and helps them overcome their anxiety and express their thought. Such web-based discussions help the students to interact with peer students and teachers and get a sense of belonging to the community (Beldarrain, 2006; Köprü & Ayas, 2021), which might consequently result in their collaboration in the task achievements. Corroborating this, Kukulska-Hulme and Viberg (2018) maintain that collaborative mobile learning generates a comfortable environment that supports self-initiated and collaborative language inquiry through which learners become more willing to express themselves in the target language and raise their awareness in active consultation.

Technology-assisted language learning and writing

In recent years, there has been considerable growth in using technology for pedagogical purposes. Thorne et al. (2009) exert emphasis on providing hybridized communication by combining print-based texts with some of the features of face-to-face communication on electronic devices as L2 classrooms provide "limited opportunities for committed, consequential and longer-term communicative engagement" (p. 804). Educators who believe in engaging learners as active and responsible participants in the learning process have always practiced certain educational methods to enhance student-centered and cooperative learning. To facilitate such learning, collaborative out-of-class activities such as complex problem-solving and creativity tasks would help teachers reduce the cognitive overload to which learners are exposed in processing complex information in class and give teachers more time to work with individuals (Roehl et al., 2013).

In this respect, such different electronic devices as mobiles, laptops, tablets, etc. can be employed for online activities which have currently been widely used for learning a language (Wu, 2018). Mobile-assisted language

learning (MALL) investigates the benefits of such portable devices like mobile phones, tablets, iPods, MP3 players, etc. which can be used for input enhancement in an authentic and socially connective context wherein the language learning environment is personalized (Lin & Lin, 2019). In addition, online social media tools (SMT) can be utilized to facilitate distance learning due to their integrative nature (Faramarzi et al., 2019).

The Telegram application which is a kind of SMT is widely used for sending/receiving texts, audio, and video files and also for creating discussion groups or forums in many countries including Iran. Telegram is largely used because of its being free and its ease of use by the applicants in Iran. Furthermore, the Telegram application can be installed on mobile phones which shows that this application can be available almost to everyone everywhere. Moreover, Telegram is an effective tool for raising learners' awareness wherein they can learn from each other in collaborative activities that are designed on such applications. They hold that mobile-mediated interactions could result in joint accomplishment, decrease teacher-fronted interactions, and help learners become more self-regulated in learner-centred interactions.

In the context of Iran, Fathi and Rahimi (2020) explored the impact of flipped learning on 51 Iranian EFL learners' global writing achievement and their writing complexity, accuracy, and fluency in a quasi-experimental study lasting for one semester. Their findings revealed that technology-based learning significantly developed Iranian EFL students' global writing achievement and their writing fluency; however, it did not make significant changes in the participants' writing complexity and accuracy.

In a similar vein, Shafiee Rad et al. (2022) investigated the impact of Student Team Achievement Division (STAD) and flipped learning on developing EFL learners' expository writing skills and their opinion about learning. The students watched movies and had discussions before entering the class which gave them more time to have varieties of activities in the class. The results showed that STAD flipped learning/teaching context provided more opportunities for the learners to talk with their teammates than traditional face-to-face classes which in turn facilitated social interactions and enhanced learning. They found that the students had positive perceptions and experiences regarding learning, instructor support, team support, and personal feelings.

Significance of the study and research questions

Although there is a need for Iranian IELTS candidates to practice their writing proficiency, there seem to be some hidden factors that prevent them from writing well and make them reluctant to attend writing courses. One of these factors is believed to be anxiety which has been found to have a consistent negative association with students' L2 learning attitudes (Phillips, 1992), L2 academic achievement (Horwitz, 1986), and L2 writing achievement (Cheng et al., 1999).

The present study aimed to investigate the effect of writing strategy awareness on L2 writing performance and anxiety. As many language learners in Iran adopt such social media as Telegram almost every day, there is ample

opportunity for input provision and knowledge sharing through such collaborative MALL-mediated activities. Thus, we assume that writing strategy awareness could reduce the writers' anxiety through the social networking program Telegram.

Therefore, based on what was mentioned above, the study was set out to answer the following research questions.

1. Does writing strategy awareness-raising through Telegram (as a MALL-based social media) have a significant effect on the writing complexity of Iranian IELTS candidates?
2. Does writing strategy awareness-raising through Telegram have a significant effect on the writing accuracy of Iranian IELTS candidates?
3. Does writing strategy awareness-raising through Telegram have a significant effect on the writing anxiety of Iranian IELTS candidates?
4. Does share strategies in MALL environment by IELTS candidates significantly raise their writing strategy awareness?

Method

Setting and participants

A total of 72 upper-intermediate IELTS candidates, in a well-known language academy in Tehran, Iran forming seven intact classes, participated in the study through convenience sampling. The participants were selected from a population of 78 candidates by taking a test called Oxford Quick Placement Test (OPT). They were then assigned to the upper-intermediate level based on the results of the test which assigns the scores between 40 to 47 (M = 43.36; SD = 2.15) to this proficiency level. The sample included females whose ages ranged from 15 to 29 (M = 21.06; SD = 4.20) with the average age of both groups is 21. The number of participants in each class ranged from nine to 15. The participants were all native Farsi speakers. About 55% of the participants were graduate or undergraduate university students, 25% were high-school students and the rest held a high school completion diploma. In addition, 35% of these participants were civil servants and the rest were unemployed. Almost all these participants had already experienced learning English, on average, for about five years. All the participants were taught by the second researcher of the study, a Ph.D. candidate of TEFL who has 13 years of experience in teaching EFL.

Materials and Instrumentation

Oxford Quick Placement Test (OPT). OPT was used to assign the participants to the appropriate proficiency level for the language course. The test has 60 items and takes 30 minutes to complete. The OPT system reports each learner's status on a continuous numerical state. For instance, if a learner is reported to have a score between 40-47, his/her proficiency level lies at B2 or upper-intermediate level. Based on Geranpayeh (2003, p. 8), "OPT is a test of

English language proficiency developed by Oxford University Press and Cambridge ESOL to give teachers a reliable and time-saving method of finding students' level of English". The reliability of OPT was calculated to be 0.9 by Geranpayeh (2003).

L2 essay writing performance. The topics of the essays were chosen from IELTS writing task 2 in which the participants were given 40 minutes to write over the topics. These topics were chosen based on their possibility of occurrence in the Iranian context. There was a great need to measure the written tasks analytically as they were usually scored by the teachers holistically and there seemed to be a great difference between the scores of various raters. To assess the written performance, the two measures of complexity and accuracy were adopted in the present study which enabled us to move from holistic and subjective ratings to objective quantitative measures of learners' production (Ellis & Barkhuizen, 2005; Wolfe-Quintero et al., 1998). While complexity emphasizes the organization of what is mentioned and the variety of syntactic patterning, accuracy controls the forms to be more target-like (Foster & Skehan, 1996).

To analyze the writing complexity and accuracy of the essays, the participants' written performances were coded based on T-units and clauses. T-units are defined as "minimal terminable units" (Hunt, 1966, p.737) and as "one main clause plus whatever subordinate clauses are attached to that main clause" (Hunt, 1966, p. 737). Subordination (as compared with coordination and subclausal complexity) is assumed to be the most reliable and powerful index of measurement for checking complexity in intermediate and upper-intermediate levels of proficiency (Norris & Ortega, 2009). Thus, the number of subordinate clauses to T-units was carefully measured. Some points were also considered in the study in this respect: We did not count embedded clauses as nonfinite clauses. Moreover, coordinated subordinate clauses like "I think you can study better and you learn more" were counted as two subordinate clauses and one main clause.

It is worth mentioning here that the framework adopted by Kroll (1990) was employed as the guideline for analyzing the accuracy of the written tasks. Kroll (1990) introduced a comprehensive indication of syntactic errors committed in compositions, namely sentence structure (e.g., whole sentence and subject formation) and verb-centered errors (e.g., tense and voice). Hence, the number of error-free T-units to the total number of T-units was calculated and considered as a measure of accuracy. However, errors related to punctuation and spelling were ignored. Two experts coded the data and the inter-rater reliability was assessed for the coding. The agreement reached 90%, then the differences were negotiated to reach a consensus.

Second language writing anxiety inventory (SLWAI). Cheng (2004) introduced SLWAI which comprises 22 items that are loaded on three factors including Somatic Anxiety (i.e., the items which are related to increased physiological arousal) (e.g., I feel my heart pounding when I write English compositions under a time constraint), Cognitive Anxiety (i.e., the items which deal with the perception of arousal e.g., I don't worry that my English compositions are a lot worse than others), and Avoidance Behavior that includes the items which indicate avoidance in writing (e.g., I often choose to write down my thoughts in English). Cheng (2004) found the reliabilities of all these factors

to be high (above .81) and provided some evidence for the construct validity of the SLWAI. The Cronbach's Alpha coefficient was estimated to be .79 in this study.

Writing strategy coding. To classify the observed writing behaviors, the coding strategy introduced by He et al. (2011) was employed. The 21 strategies in their study, which emerged from think-aloud protocols, comprised five broad categories of planning (i.e., mapping writing before composition), monitoring or evaluating (i.e., estimating the correctness and appropriateness of the written text), revising (i.e., improving the structure and increasing the accuracy of meaning through rewriting some components), retrieving (i.e., revising propositions using memories or background knowledge), and compensating (i.e., correcting the use of language or ideas). This strategy coding enjoys high consistency, as the Cohen's Kappa was calculated to be .84 (He et al., 2011).

Retrospective think-aloud. One of the widely-used methods for verbalizing thoughts is a think-aloud protocol which focuses on learners' cognitive processes during the execution of such activities as reading texts or writing. Retrospective think-aloud, which refers to thoughts afterward based on "aided subsequent verbal protocol" (Henderson et al., 1995), was adopted in the present study (Appendix). Ransdell (1990) maintains that writers could also report thoughts in written form through which comments can be added.

Procedure

Data collection took place for six weeks (Figure 1). Seventy-two participants were informed of the procedure and their consent was obtained. These participants, homogenized based on the results of the OPT, were informed of the retrospective think-aloud protocol and were asked to think about the strategies they used, write them down and submit them to the teacher-researcher right after each composition. The participants were randomly divided into two groups control and experimental wherein the former comprised three classes forming 30 learners and the latter consisted of four classes comprising 42 learners. Each session took five hours during which the learners had two 15-minute break times.

Figure 1
Data collection procedure
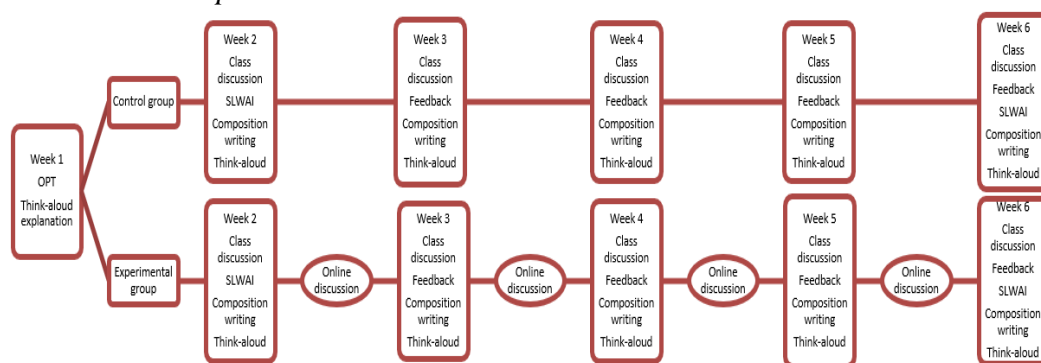
After all the participants completed the SLWAI questionnaire in the second week which took about seven minutes on average, they received the first composition topic as a pre-test and were asked to write down what they were thinking about while writing the composition and reflect on the strategies they applied. In other words, the learners were asked to have a reflection on their composition and write down the strategies they used in their composition in Persian. The participants were given an A4 piece of paper right after writing the compositions and they were free to ask for more papers if they wished so. This process took 10 minutes on average.

The experimental group members joined four groups on Telegram created by the academy to have discussions over the writing strategies. Accordingly, the strategies that the experimental group had adopted were put on Telegram by the second researcher who was also the teacher of the class. To prevent face-threatening acts and to observe research ethics, the names of the writers were not made public. The effectiveness of the strategies employed by the participants in the experimental group was only discussed on Telegram and the participants were allowed to share the writing strategies that they could encounter on the internet for promoting their writing quality. The teacher-researcher monitored the group and encouraged the participants to discuss, interact and comment on other participants' choice of strategies. She, for instance, asked such questions as, "Which strategy do you think is more practical?", "Why do you think these strategies are efficient?", and "Can you suggest any other strategies?"

During the class time, the experimental and control groups were given time to practice their writing skills based on their course book (i.e., *Longman Academic Writing Series*) and join collaborative activities to discuss the content of the topics provided by the teacher to get familiar with the underlying concepts and write a composition based on the given topic. The discussions were facilitated by the questions that the teacher provided based on the topics. Also, the teacher provided them with overall feedback on the previously written compositions. However, no discussion or feedback was provided regarding the strategies mentioned by the learners. Five compositions were written based on this procedure in both groups while only the experimental group had discussions over the strategies on Telegram and the control group did not have access to such discussion groups on Telegram. Finally, the experimental and control groups were asked to complete the SLWAI again to check their level of anxiety after the treatment.

The first (i.e., the pre-test) and the last (i.e., post-test) compositions were analyzed based on the two measures of complexity and accuracy. After scoring all the compositions by an expert, all the papers were submitted to another rater to check for inter-rater reliability. The inter-rater reliability coefficient for complexity and accuracy was found to be above .92 for all the measures. Then, the SLWAIs, which were administered to both groups before and after the treatment, were compared to check the possible discrepancy. Finally, the strategies used by the experimental group were translated and a coding method called the 'template organizing style' (Crabtree & Miller, 1999) was used in which the predetermined template by He et al. (2011) mentioned earlier was employed to categorize the data deductively.

Data Analysis

The Statistical Package for the Social Sciences (SPSS version 20) was used for computing descriptive and inferential statistics. To answer the first three research questions, five Independent Samples *t*-tests were run because we were interested in changes in the scores of the participants of the experimental and control groups before and after the treatment to compare their writing complexity, accuracy, and anxiety. Thus, the mean scores for the pre-test and the post-test were compared to show if there were any significant differences.

The technique of "quantizing" was used to count the presence or absence of each writing strategy in the experimental group. 'Present' was indicated by 1 for what the researchers could see while 'absent' was shown by 0 to indicate what the researchers could not see (Sandelowski et al., 2009). Then, the researchers cross-checked the credibility of the coding method through negotiation to see if an individual strategy was present or absent in the participants' transcriptions. Finally, Chi-square analysis was applied because the researchers were interested in finding the differences between the frequency of the writing strategies adopted by the participants before and after the treatment.

Results

The first research question explored the impact of writing strategy awareness on writing complexity. However, first, a One-Sample Kolmogorov-Smirnov test was run, the results of which showed that the Sig. value scores for writing complexity pretest scores of the two groups were higher than the critical value (Exp. $p = .38$ & Con. $p = .43 > 0.05$), thus, supporting the normal distribution of the sample (Tabachnick & Fidell, 2007). An Independent Samples *t*-test was then run to make sure that the two groups showed no significant difference at the outset of the study concerning their writing complexity, the results of which showed no significant difference in this respect, t (70) = 0.85, *p* = 0.39 > 0.05 (Table 1).

Table 1
Independent Samples t-test on the Writing Complexity Pretest Means

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% C I	
									LL	UL
Pre-test	Equal variances assumed	.00	.97	.85	70	.39	.12	.15	-.17	.43
	Equal variances not assumed			.85	63.43	.39	.12	.15	-.17	.42

Following the termination of the treatment, the writing complexity posttest was administered to the two groups. After making sure about the normality of the distribution (Exp. p = .50 and Con. p = .80 > 0.05), an Independent Samples t-test was run to compare the posttest scores of the two groups concerning their writing complexity, the results of which are presented in Table 2.

Table 2
Independent Samples t-test Comparing the Writing Complexity Posttest Means

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% C I	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	LL	UL
Complexity Post-test	Equal variances assumed	1.11	.29	4.77	70	.00	.76	.16	.44	1.08
	Equal variances not assumed			4.96	69.21	.00	.76	.15	.45	1.07

As is evident in Table 2, the difference between the mean scores turned out to be significant (t (70) = 4.77, p < 0.001). Thus, the participants in the experimental group (M = 1.88; SD = 0.72) outperformed their counterparts in the control group (M = 1.12; SD = 0.57) concerning their writing complexity. In other words, writing strategy awareness raising had a significant positive effect on the IELTS candidates' writing complexity.

The second research question investigated whether writing strategy awareness-raising significantly impacted the writing accuracy of Iranian IELTS candidates. First, a Kolmogorov-Smirnov normality test was run on an accuracy pretest, the results of which showed the Sig. value was higher than the critical value (Exp. p = .79 and Con. p = .30 > 0.05), hence, supporting the normality of the distribution. Then, an Independent Samples t-test was run to make sure that the two groups manifested no significant difference at the outset of the study concerning their writing accuracy, the results of which indicated no such a difference, (t (70) = 1.54, p = 0.12 > 0.05) (Table 3).

Table 3
Independent Samples t-test on the Writing Accuracy Pretest Means

	Levene's Test for Equality of Variances	t-test for Equality of Means

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% C I	
									LL	UL
Pre-test	Equal variances assumed	.15	.69	1.54	70	.12	.08	.05	-.02	.19
	Equal variances not assumed			1.53	61.36	.13	.08	.05	-.02	.19

Following the termination of the treatment, the writing accuracy posttest was administered to the two groups of the study. After making sure of the normality of the data (Exp. $p = .60$ & Con. $p = .25 > 0.05$), an Independent Samples t-test was run to compare the posttest scores of the two groups concerning their writing accuracy. The results are presented in Table 4.

Table 4
Independent Samples t-test Comparing the Writing Accuracy Posttest Means

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% CI	
									LL	UL
Accuracy Post-test	Equal variances assumed	6.76	.01	9.54	70	.00	.44	.04	.35	.54
	Equal variances not assumed			10.00	69.81	.00	.44	.04	.35	.53

As shown in Table 4, the difference between the mean scores turned out to be significant (t (69.81) = 10.00, $p < 0.001$). Thus, it can be concluded that the participants in the experimental group (M = 0.62; SD = 0.21) outperformed their counterparts in the control group (M = 0.18; SD = 0.16) concerning their writing accuracy implying that writing strategy awareness-raising had a significant positive impact on the IELTS candidates' writing accuracy.

The third research question was set out to explore whether writing strategy awareness-raising had any significant effect on the writing anxiety of Iranian IELTS candidates. To answer this research question, the researchers initially opted for running ANCOVA. Thus, the normality of distributions of the scores obtained by the two groups in their pretest and posttest was measured by the One-Sample Kolmogorov-Smirnov test. However, the Sig. value for anxiety posttest

scores of the experimental group was lower than the critical value ($p = .04 < .05$). Therefore, the normality of the distribution was not supported (Tabachnick & Fidell, 2007). Due to the violation of the assumption of normality of the distribution, the difference between anxiety pretest and posttest scores of the experimental and control groups i.e. anxiety gain scores were computed (gain = posttest - pretest). First, the results of a Kolmogorov-Smirnov normality test for anxiety gain scores showed that the Sig. value of the two groups was higher than the critical value (Exp. $p = .47$ and Con. $p = .45 > 0.05$) supporting the normality of the distribution. Consequently, an Independent Samples t-test was run to compare the anxiety gain scores of the two groups, the results of which are presented in Table 5.

Table 5

Independent Samples t- test Comparing the Anxiety Gain Scores of the Two Groups

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% CI	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	LL	UL
Gain Scores	Equal variances assumed	9.17	.00	-3.26	70	.00	-6.06	1.85	-9.77	-2.35
	Equal variances not assumed			-3.52	68.65	.00	-6.06	1.72	-9.50	-2.62

As indicated in Table 5, the difference between the means of the gain scores of the experimental and control groups turned out to be significant, t (68.65) = -3.52, $p < 0.001$. Thus, it can be concluded that the participants in the experimental group (M = -5.33; SD = 9.03) had a significantly lower anxiety level than their counterparts in the control group (M=0.73; SD=5.54) due to strategy awareness-raising intervention.

The fourth research question investigated whether the frequency of writing strategies used by the experimental group changed significantly after the strategy awareness-raising intervention. To this end, a Chi-square analysis was run, the results of which are presented in Table 6.

Table 6

Chi-square Analysis Comparing the Frequency of the Strategies Used by the Participants Before and After the Treatment

Strategies	Percent	Pearson	df	Asym. Sig.	Phi

	Pre-test	Post-test	Chi-square value			
I: Planning Strategies						
1. Organizing thoughts and ideas before writing	46.3%	53.7%	1.84	1	.17	.14
2. Identifying and planning for potential audience before writing	33.3%	66.7%	5.18	1	.02	.24
3. Deductively reasoning written discourses before subsequent writing	33.3%	66.7%	9.33	1	.00	.33
4. Inductively reasoning written discourses before subsequent writing	31.6%	68.4%	3.33	1	.06	.19
II: Monitoring or Evaluating Strategies						
1. Self-monitoring for expressions of intended meanings	22.2%	77.8%	12.28	1	.00	.38
2. Self-monitoring for appropri-ateness/fulfillment of planning	21.4%	78.6%	13.71	1	.00	.40
3. Self-monitoring for organization of ideas and drafts	18.2%	81.8%	12.07	1	.00	.37
4. Self-evaluating by commenting on qualities of drafts	55.6%	44.4%	.28	1	.59	-.05
5. Self-evaluating by raising questions related to any element of writing	12.5%	87.5%	11.11	1	.00	.36
III: Revising Strategies						
1. Revising written drafts for idea/thought/formality concerns	32.1%	67.9%	5.35	1	.02	.25
2. Revising written drafts for grammar concerns	22.0%	78.0%	25.20	1	.00	.54
3. Revising written drafts for spelling concerns	15.0%	85.0%	37.41	1	.00	.66
4. Revising written drafts for punctuation concerns	12.5%	87.5%	11.11	1	.00	.36
IV: Retrieving Strategies						
1. Associating intended propositions with memorized propositions	45.5%	54.5%	.24	1	.62	.05
2. Associating intended vocabulary or expressions with	47.8%	52.2%	.06	1	.80	.02

memorized vocabulary or expressions						
3. Retrieving background knowledge to construct written discourses for expressing intended meanings	42.0%	58.0%	3.16	1	.07	.19
V: Compensating Strategies						
1. Consulting dictionaries for lexical/grammatical/semantic concerns	34.8%	65.2%	9.41	1	.00	.33
2. Directly translating intended meanings into English	35.7%	64.3%	6.85	1	.00	.28
3. Verbatim translating words/expressions from L1 into English discourses	37.5%	62.5%	.55	1	.45	.08
4. Using synonyms to substitute unfamiliar words	32.1%	67.9%	5.35	1	.02	.25
5. Adjusting/approximating intended meanings by using more certain words/expressions	32.0%	68.0%	4.61	1	.03	.23

As Table 6 indicates, significant differences were observed among the participants in the experimental group before and after the treatment in most cases ($p < 0.05$) except for items I1 (i.e., organizing thought which was high in both cases) ($\phi = .14, p = .17$), I4 (i.e., inductively reasoning written discourse) ($\phi = .19, p = .06$), II4 (i.e., self-evaluating by the comments) ($\phi = -.05, p = .59$) and all the retrieving strategies (i.e., IV1, 2 and 3) including associating intended propositions with memorized propositions ($\phi = .05, p = .62$), associating intended vocabulary or expressions with memorized vocabulary or expressions ($\phi = .02, p = .80$) and retrieving background knowledge to construct written discourses for expressing intended meanings ($\phi = .19, p = .07$) and V3 (i.e., verbatim translation from L1 into English discourses from compensating strategies) ($\phi = .08, p = .45$).

To categorize different types of strategies, this study used the predetermined template adopted by He et al. (2011). However, using the three-level coding system of the Glasarian Grounded Theory Approach (Glaser & Strauss, 1967; Strauss & Corbin, 1990), our results showed that the template lacked a category related to the participants' feelings during the writing process. For instance, the participants frequently talked of getting stressed when they wanted to begin writing. One of the participants, for instance, asserted,

I had a lot of stress for not having a lot of time. I had a lot of ideas but I couldn't manage them; it was something like having a chain around my ankle. My eraser was making the situation worse because it was leaving a black sign when I was cleaning the mistakes. Suddenly, I remembered my school time when I had exams. I didn't remember anything and my mind went blank.

Another participant remarked,

I didn't understand the question, I mean I had something in my mind but I wasn't sure about it. Then I said to myself that I would write the first thing which came to my mind but I remembered my mother when she was saying, "don't use your mobile phone a lot".

However, the predetermined categories introduced by He et al. (2011) could clearly show the type of composing processes employed by the writers. Planning, for instance, could help the participants organize their thoughts prior to writing. The majority of the participants (nearly 74% before and 86% after the treatment) mentioned that they tried to organize their thoughts before writing.
One of the participants stated,

I spent some time thinking about the topic and finally I decided to write about entertainment and shortage of time.

The participants did not pay enough attention to the reader or the reasoning before subsequent writing at the beginning of the study. However, after the awareness-raising intervention, one of them mentioned:

I was thinking about my teacher when she was reading the text and the use of the past tense because I wanted to write about my experience of traveling and try not to jump to a new topic without planning.

Moreover, self-monitoring was found to be markedly used by the participants after the activities done on Telegram:

I read the text loudly to see if the vocabularies were used correctly or not. I tried to pay attention to the structures and match them with the meaning in my mind.

One of the strategies which was significantly changed after the treatment and for which a large effect size was reported, was associated with revising strategies. The writers mentioned that they needed to edit the papers in terms of ideas, grammar, spelling and punctuation. Echoing this, one of the participants stated,

I thought it was better to use "provided that" instead of "if".

The Fourth strategy was *Retrieving* which indicates a wide range of ideas and grammar and vocabulary coming to the writers' mind. The study findings showed only some participants mentioned retrieving strategies; however, they used background knowledge for constructing the written discourse. One of the participants remarked,

> *When I wanted to write about travelling, I remembered my last trip and the ways that I could find a good hotel through reading the travel agencies' advertisements.*

Finally, the most common strategy which was mentioned by the majority (65.2%) of the participants after being exposed to strategy awareness-raising experience on Telegram was consulting with dictionaries. There is also a need to say that, the participants had also considered the teacher as a reference; thus, this was also counted as consulting dictionaries in this study:

> *I asked the teacher if "good" was true or "will" in that sentence.*

These findings show that on-line interactions between the teacher and the learners might have raised the learners' writing strategy awareness and have motivated them to improve their collaborative language learning from their peers, which might, consequently, have effectively reduced their anxiety.

Discussion

The present study was designed to probe the effect of awareness-raising strategies on L2 writing complexity, accuracy, and anxiety of IELTS candidates using a social media tool (i.e., Telegram). The results indicated that while strategy sharing and strategy awareness-raising were positively correlated with complexity and accuracy scores, they were negatively associated with anxiety levels. This finding supports the idea that social interaction would enhance linguistic development where joint accomplishment would contribute to L2 learning tasks (Swain, 2010) and lower anxiety (Rashid et al., 2019). In addition, the strategies that EFL writers in the experimental group used before and after the treatment were compared to indicate the changes that occurred in the participants' composing process. The results showed that the participants tended to use a varied range and a significantly higher number of strategies after the treatment.

As mentioned earlier, the first and second research questions probed whether writing strategy awareness-raising through such social media as Telegram had any significant impact on the writing complexity and accuracy of Iranian IELTS candidates, respectively. The findings showed that the independent variable (i.e., MALL-mediated writing strategy awareness-raising) affected both dependent variables (i.e., writing complexity and accuracy) significantly positively. The results of the study are aligned with those of Wu (2015) who pointed out that online collaborative learning could help teachers use effective instructional strategies in terms of enhancing learners' writing accomplishment

and decreasing their writing anxiety. The findings also corroborate the ideas of Teng (2016) who highlighted the role of social interaction in facilitating higher-order thinking skills and developing learning strategies that can consequently improve learners' writing performance and metacognitive awareness. Similarly, Chen (2018) demonstrated that online communication tasks promoted EFL learners' noticing of linguistic forms which led to accuracy and complexity in their language production. It could, thus, be argued that online collaboration can provide process-oriented activities which might help learners achieve their goals.

Many research studies have been conducted to differentiate between successful and less successful writers (Mu, 2005) some of which suggest teaching explicitly in EFL classrooms the writing strategies attributed to successful learners (De La Paz & Graham, 2002). The present study, however, showed that strategies could, alternatively, be learned in socially-oriented learner-centered MALL-mediated environments specifically in the form of blended learning.

Currently, some experts have investigated interactive writing using the computer (Tsai, 2019), the use of Google application on smartphones for writing essays on a wiki platform (Vurdien, 2020), and Online Collaborative Writing (OCW) tools like Google Docs (Liu et al, 2018). Given the fact that Telegram has been found as a practical application in facilitating learners' engagement in Iran (Faramarzi et al., 2019; Fathi & Rahimi, 2020), the researchers employed it for enhancing collaboration in the current study. The findings showed that Telegram was a convenient tool for the participants and that they eagerly got involved in collaborations through the social medium of Telegram.

The possible justification for the findings might be related to the assertion made by Roehl et al. (2013) holding that collaborative out-of-class activities can act as a tool for reducing learners' cognitive overload so that they would have more time to deal with complex information. In addition, online social media are thought to be practical tools wherein the interactive nature of these programs could facilitate distance learning (Shih & Huang, 2019).

The third research question sought to address if writing strategy awareness-raising carried out in the experimental group, had any significant effect on their writing anxiety. The findings showed that the treatment reduced the anxiety of the participants. Aloairdhi (2019) holds that writing anxiety could be the result of such factors as being evaluated by others, the need to generate ideas and use correct grammar, time pressure, and lack of confidence, most of which might fade in socially-mediated collaborative learning environments. Another reason for the reduction of anxiety in collaborative learning environments might be associated with the reduction of teacher-fronted activities in such environments (Storch & Wigglesworth, 2007). They maintain that the interaction among learners promotes L2 learning and is one of the practical remedies for decreasing anxiety. The findings of the study in this respect, are also consistent with the argument of Zheng (2008), who holds that social interactions need to be seriously taken into account and that appropriate (socially-mediated) intervention could reduce anxiety among IELTS candidates wherein they can use strategies more effectively and improve their language achievement.

The last research question addressed the strategies that the experimental group used before and after sharing strategies on Telegram. The finding showed

that IELTS candidates used different strategies to carry out their writing tasks, most of which were significantly affected by writing strategy awareness-raising on Telegram. The learners were reported to use more planning, monitoring/evaluation, revising, and compensating strategies after the online interaction. This might indicate that MALL-mediated social activities might motivate the learners to spend more time reflecting upon their written discourse and attain mastery over the strategies that they use.

Shih and Huang (2019) maintain that 'peer learning' is one of the factors affecting the learners' use and choice of strategies as the learners strive to meet group goals and attain their desired future self. He et al. (2011) also confirm that learners with strong achievement goals criticize, question, and comment about their drafts more often. In other words, online interactions can (re)ignite the flame of learners' motivation to improve their language proficiency which might justify our findings in this respect.

Conclusion and implications of the study

This empirical study investigated whether writing strategy awareness-raising through socially-mediated MALL activities enhanced IELTS candidates' writing accuracy and complexity and reduce their anxiety.

The study results showed that through the socially-mediated MALL tool of Telegram, the participants' compositions were improved in terms of complexity and accuracy; however, their anxiety level was reduced. Also, the results of the retrospective think-aloud protocols showed that the strategies which were highly correlated with success in writing compositions of Iranian EFL writers included planning, monitoring or evaluating, revising, and compensating strategies.

These findings could have some implications. Firstly, such social media as Telegram, which can provide a quick and easy platform for communicative activities, can, thus, improve EFL writers' written proficiency and can especially raise their awareness of their writing strategies. It can also decrease their anxiety level as found in the present study. Secondly, teachers are recommended to expand their knowledge of various writing strategies and also provide their learners with opportunities to share their strategies through interaction and collaboration with the help of social media which could be used as a useful pedagogical practice in the classrooms which might consequently reduce the anxiety levels of EFL writers as found in the current study. Thirdly, teachers can allow in-class writing time for learners to ask for the strategies that could help them deal with lexical and grammatical points instead of giving direct answers to questions and thus open up discussions for upcoming difficulties to invite others in the class to suggest remedies.

This study, like many others, suffers some limitations. First, more studies need to be done to probe stressors among the learners and the reasons for their occurrence and provide some pedagogical remedies to enhance L2 learning especially L2 writing. For instance, learners could verbalize their concerns regarding the writing process and teachers might reflect on the types of instructions and interventions which could ease the learners' tension. Moreover,

future studies can examine the role of such metacognitive strategies and self-monitoring activities of EFL writers as technology-enhanced corrective feedback through such programs as Grammarly (www.grammarly.com) in improving EFL learners' writing. Finally, this study was a quasi-experimental study that was done for a short period. Thus, true-experimental studies are required to investigate the longitudinal effect of collaborative activities through such social media as Telegram, WhatsApp, etc. on EFL writing.

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Appendix

Examples of Learners' Written Retrospective Think-aloud