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Research article

Social media and psychology of language learning: The role of telegram-based instruction on academic buoyancy, academic emotion regulation, foreign language anxiety, and English achievement☆

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ABSTRACT

The great need and tendency to apply online classes ask for using new technologies in language teaching. Social Networking (SN) tools, in particular, Mobile-Assisted Language Learning (MALL), open new perspectives in language learning and teaching. The employment of SN in language learning may affect the learners' mental health and emotional safety. Despite the attributions of the Telegram application in learning and the contributions of academic buoyancy (AB), academic emotion regulation (AER), and management of foreign language anxiety (FLA) to English achievement (EA), this field was left unexplored. To this end, the current study attempted to gauge the impact of the Telegram-based instruction on AB, AER, FLA, as well as EA. 79 EFL learners took part in the research and were randomly divided in to control group (CG) and experimental group (EG). The instruction for the CG was through regular online instruction (webinar platforms). The EG received Telegram-based instruction. The results of MANOVA displayed significant differences between the post-tests of CG and EG. The findings illustrated that the Telegram instruction improved the levels of AB, AER, and FLA management, which accelerated EA. The pedagogical implications of the study were discussed and may assist learners, teachers, teacher educators, policymakers, materials developers, as well as curriculum designers.

1. Introduction

Efficient teaching and learning are the ultimate goals of every educational system. This goal can be achieved when education moves with the recent changes in technology. The last decades have witnessed rapid changes in using technology and different fields of education were not an exception. The usage of the smartphone gave birth to social media and related applications (apps). Social media are Internet-based applications that are formulated based on Web 2.0. The usage of social media is more highlighted during the COVID-19 Pandemic Crisis, which led to school and university lockdowns and necessitated the use of remote learning modalities. Online programs and social media facilitate learning and provide two-way interaction between instructors and their learners [1–4].

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MALL is of tremendous assistance in the field of language education, as was reflected in the study of relevant literature [4–6]. The genesis of the MALL metaphor may be traced back to the convergence of digital technology and language study [1,7]. In order to supplement the education provided by the Covid 19 Pandemic lockdown, MALL is used [8,9]. Among the MALL apps, Telegram is a social network tool which becomes very popular due to ease of access, its ease of exchanging ideas and input, ability to store different files, as well as the potential for handling online classes. Telegram has the capability to be run on Android, iOS, Windows Phone, Mac, and Windows OS. Telegram app also can be accessed from multiple devices simultaneously (Vivienne, 2016).

In addition, the psychological well-being of educators, in addition to that of students, should be taken into account at every stage of the process during which curricula and educational programs are designed. That is to say, the incorporation of technology into language teaching and learning may have an effect on the mental health of both language instructors and language students. AB is a relatively recent concept that relates to a student's capacity to deal with the disorder and complexity that they encounter in their educational careers [10]. Learners who are buoyant are prepared to deal with the stresses and worries of everyday life [11,12]. They embrace good personal eligibility, sustainable practices, and the capacity to deal with challenging conditions [13].

Research conducted in the field of education found that, of all the negative feelings that students may encounter throughout the learning process, anxiety is the one that occurs the most often. The ups and downs that come with educational life as well as new challenges to be overcome in the process of learning may exacerbate emotions of unease and anxiety. According to Ref. [14], students experience anxiety when they believe they have no control over a situation. According to this definition, which addresses the anxiety that language learners may experience [15], foreign language anxiety is described as which addresses the anxiety that foreign language learners may experience. Anxiety related to learning a foreign language is situation-dependent by its very definition and may have a direct or indirect impact on a student's capacity for self-actualization, self-regulation, and attitude toward learning, as well as on their overall performance [16].

The proliferation of new technologies, their incorporation into the realm of education, as well as the presentation of a variety of new problems, have the potential to alter the psychological equilibrium of the students. The process of planning and developing effective teaching that enables students to build and practice ways to circumvent any potential roadblocks that may lie in the path of their education is referred to as instructional planning and design. There has never been a research done to investigate the links between students' AB and AER, despite the fact that both have been validated to help students better manage their anxiety, which in turn leads to improved academic performance for the students. This study lacuna is also apparent in the current literature on the contributions of the Telegram app as a sort of social media platform in language acquisition. With regard to these research gaps and the importance of these learners' attributed constructs (AB, AER, and anxiety management) in their academic success, this study set forth to inspect the role of Telegram use on AB, AER, FLA, and EA. Having this stands points in the mind, these research questions were posed:

RQ1. Does the Telegram app affect EFL students' AB?

RQ2. Does the Telegram app affect EFL students' AER?

RQ3. Does the Telegram app affect EFL students' FLA?

RQ4. Does the Telegram app affect EFL students' EA?

1.1. Literature review

In this section, the related literature on social media, Telegram, AB, AER, and FLA, are reviewed.

1.2. Social media and education

In the new era, different ups and downs are introduced. The emergence of new technologies may be a kind of answer to the various needs of human beings in these days. In such situation, social media as an affordable and accessible information and communication technology (ICT) tool came to the fore. The introduction and usage of social media are defined in two ages: the broadcast and interactive ages [2]. In the broadcast age, one entity (e.g., radio, newspaper, and magazines) is considered to provide messages and information for different people. In this type of social media, the broadcast age, transferring the messages are indirect and delayed. In this regard, impersonal feedback is received. In the interactive age, new versions of social media applications, such as Instagram, WhatsApp, Skype, and Telegram, are generated. In these forms of social media, personal interaction and direct feedback is possible [4]. The accessibility, affordability, and accessibility of social media (in the broadcast age) are the main reasons for its fast and worldwide usage. Very soon, all fields of study started to do research and makes a plan to explore their pedagogical affordances.

Technology Acceptance Model (TAM) is the theory that explains the utility of social media in the academic domain [17]. In this model, factors such as social media that assist learning processes are the focus of attention. The review of the recent literature reflected, the trace of social media in enhancing language learning was quite rosy. Through various interesting opportunities, social media platforms open perspectives in language teaching and learning [8,18,19]. According to Ref. [20], Instagram fosters language learning skills by providing innovative and creative language learning atmosphere. For instance, short videos, such as tutorial videos, or long videos, such as a live broadcast are in touch of learners to practice speaking skills [21]. Furthermore [2], evidenced that learners can practice and improve their writing skills through text messages privately or publicly in social media applications. In another study [22], utilized Zoom (videoconferencing platform) to investigate its efficacy in learners' autonomy and academic achievement. As [23]

documented, Instagram boosts vocabulary and grammar learning.

1.3. Telegram and education

The introduction of the smartphone provides different opportunities for people to communicate more easily and their different functions. The application of mobile device technology in the realm of teaching and learning is called mobile-assisted language learning (MALL) or mobile learning (m-Learning) and is categorized as a branch of computer-assisted language learning (CALL) [2,4]. Despite the vast application of MALL, no field-specific theory was postulated to define it and its perspectives. Applied Cognitive Load Theory and Dual-Coding Theory are the two theories that stemmed from cognitive psychology [25,26]. In the Theory of Mobile Learning [27], illustrated the utility of MALL across times, topics, and locations.

The program known as Telegram is gradually becoming one of the most popular options available for use on mobile devices like smartphones. Telegram has the capability to be run on Android, iOS, Windows Phone, Mac, and Windows OS. Telegram app also can be accessed from multiple devices simultaneously [28]. Considering the merits of the Telegram app, all educational felids, in particular language learning, witnessed its application and enhancing effects [29]. validated the impact of Telegram on the improvement of reading abilities in IELTS preparation sessions. Based on their performance, the CG students surpassed their EG counterparts. In addition [30], discovered that the Telegram app assisted EFL college students in acquiring vocabulary.

By [31], it was also determined that the Telegram app may facilitate the study of writing skills among EFL students. In the same line of investigation [20], investigated the impact of the Telegram app on the writing abilities of students. They quickly discovered that the Telegram app improved the writing skills of students. In a recent study [33], examined the influence of Telegram on foreign language motivation, foreign language anxiety, and attitude toward EFL learning. They found that training through Telegram might boost the desire and propensity for language acquisition among EFL students. In addition, the beneficial impact of Telegram on lessening foreign language learners' anxiety was also proven.

1.4. Academic buoyancy (AB)

AB is a psychological construct that refers to students' capabilities to encounter everyday difficulties and challenges on the road of learning [10,13]. Although AB and resilience are often used interchangeably, there is a significant difference in how they are explained methodologically and operationally. In this sense, Martin and Marsh argued that conventional resilience and similar concepts, which demonstrate daily coping, are not the same thing as academic buoyancy. The ability to recover rapidly from the weariness and worry brought on by academic failure and poor success is what we mean when we talk about having academic resilience. On the other hand, AB refers to the students' capacity to maintain their self-assurance, motivation, and engagement in the presence of obstacles [10]. According to the findings of [11], AB is required for academic resilience; however, it is not sufficient on its own.

Despite the fact that studies on academic resilience were quite rosy, AB is still shrouded in mystery and need further study attention. According to the research that [12] conducted, AB is able to accurately anticipate the learners' emotional and physiological states. In addition [33], came to the conclusion that buoyant students participated in their learning activities, even the challenging ones, and they made an effort to keep their self-confidence. The significance of AB in students' acquisition of English and mathematics, and, as a consequence, their overall academic performance, was brought to light in the conclusions of the earlier research [33,34]. In a recent effort [35], carried out research to investigate the association among AB, L2 grit, AER, and personal best goals. They discovered that AB as well as L2 grit might help learners develop AER and personal best goals in their second language.

1.5. Academic emotion regulation (AER)

Emotion is a multi-componential concept, which is defined from various perspectives, such as physiology, philosophy, history, and sociology [36]. This idea, known as emotion, derives from the Latin word "emovere," which literally translates as "to excite" [37]. According to the principles of educational psychology, an emotion is characterized by an evaluation, an internal experience, and an external bodily change [38]. [39] defined emotion through the lens of sociology and believed that emotion is socially constructed and personally enacted reactions of individuals that trigger conscious or unconscious judgments of experiences. They believed that emotion is socially constructed and personally enacted reactions of individuals. [40], as a clinical psychologist, asserted that emotion is reflected in the antecedent cognitive appraisal, cognitive interpretation, neural systems, and expressive behavior.

Emotion regulation is characterized is the product of physiological, behavioral, and cognitive processes [41] that each person employs to modify their experienced emotion. Emotion regulation is a dynamic procedure that is rooted in the stimulation of the regulatory mechanisms and the changes in the emotion trajectory [42]. The process of emotion regulation is an active one that is founded on the activation of regulatory mechanisms and the shifts in the emotion trajectory [41. Based on [43], AER is connected to the methods that students used in order to modify the emotional experiences they had during the course of their educational careers. According to the results from the previous research, the AER and academic engagement of students are dependent on their demographic characteristics [44]. In addition to this, it has been shown via research that AER is able to accurately forecast the academic motivation and EA of students [40,45].

1.6. Foreign language anxiety (FLA)

Different situations in educational contexts may evoke learners' anxiety (e.g., test anxiety, math anxiety, foreign language anxiety,

and science anxiety) and impede their improvement [46]. FLA refers to one type of anxiety that language learners may experience. According to Ref. [47], a low self-appraisal of communicative competencies in the language learning environment is the major cause of FLA [48]. defined FLA as a complex construct of self-perceptions, beliefs, and behaviors originated from the uniqueness of language learning process. Language learners' personality types (i.e., introversion or extroversion) affect the depth about learners' anxiety of foreign language classes [49].

[48] proposed the first model for anxiety related to foreign language learning which was used in different related research. Based on [48], communication apprehension, test anxiety, and fear of negative evaluation are the salient causes of FLA. In language classes, learners are supposed to be able to communicate in the target language with their teachers and peers. Students' unsuccessful interaction with others or their problems in listening comprehension may trigger their anxiety. Fear of language oral and written tests, other people's judgments, and learners' evaluation of their language aptitude are potential sources of FLA [50]. Based on the Attentional Control Theory (ACT), learners lose their attentional control due to threat-related stimuli [51]. Furthermore, Processing Efficiency Theory (PET) as the origin of ACT illustrate that anxiety leads to high levels of worry and low levels of self-confidence; thus, learners cannot concentrate on their subjects and act effectively [50,51].

The review of the existing literature on FLA reflected that FLA has negative consequences on students' learning and academic achievement. The findings of [52] witnessed that FLA was one of the major causes of language learners' academic demotivation. Moreover [53], evidenced that learners did not tend to be involved in class activities due to high levels of anxiety [44]. as well as [15] found that anxious learners did not participate in group activities and they did not perform successfully in their tests. In their recent study [54], concluded that learners' anxiety increased during the Covid-19 pandemic and it leads to learners' burnout. Skill-based anxiety and its problems were also investigated in recent research. For instance Ref. [53], conducted a study to gauge the listening anxiety.

1.7. Theoretical framework

The idea of using social media and digital connections in learning is backed by connectivism theory [55]. This theory is rooted in distributed learning [56] and considers the digital forms of communication in learning. Connectivism theory stipulates that thoughts, theories, and information should be connected together in an efficient way. Connectivism also is stemmed in self-organization and believes that learning via social media improves learners' self-dependence and autonomy [55]. The contribution of social media in learning is also supported by the constructivism theory [57]. With the help of social media platforms, social interactions, online learning, cooperation, and academic motivation are increased that guarantee the learning atmosphere of constructivism [58].

2. Method

This study is a pretest-posttest quasi-experimental design. The methodological steps involved are described as following:

2.1. Participants

A sample of 79 participants took part in this study who were studying EFL in Shokouh Institute, Mashhad, northeast of Iran. This language learners were chosen based on the results of the Oxford Quick Placement Test. As it was intended, those learners who were at the intermediate English proficiency level could participate in this study. Thus, at the beginning of this research, the English proficiency level of the learners was similar (intermediate). Additionally, no extra English classes were allowed during this project. They were 43 females and 36 males and the age of the learners vary from 15 to 19 years old. In the experimental group, there were 41 language learners (24 female and 17 male) and 38 learners (20 female and 18 male) participated in the control group. Based on their program, they were supposed to pass Top Notch 3 during 16 sessions. The participations in this study were completely voluntarily and the students gave informed consent to participate in this study. It is worth noting that this study was confirmed by the research ethics committee of Iranian English Language Institutions (Approval No: 11-9418236-09) and the participants signed written informed consent to participate in this investigation.

3. Instruments

3.1. Oxford Quick Placement Test

The Oxford Quick Placement Test was used to clarify the learners' level of English language proficiency. In the Oxford Quick Placement Test, the score range is 0.1–0.9, and the if the students' scores were between 0.4 and 0.6, they are considered at the intermediate level of English language proficiency. To check the reliability of the Oxford Quick Placement Test, Cronbach's alpha test was applied and the results indicated an acceptable reliability ($a = 0.91$).

3.2. English pre-test and post-test

To delve into AA of the participants, a researcher-made test was developed according to the topics of Top Notch 3 and was administered to the participants as a pre and post-tests. This test included 60 items to assess the four main skills: listening (15 items), speaking (15 items), reading (15 items), and writing (15 items). Three psychometricians and five EFL instructors were asked to

evaluate the face and content validity of the test and based on their constructive comments, some modifications were applied. Then, this test was administered for a sample of 41 EFL learners at intermediate level of English proficiency to inspect the test-retest reliability. After two months, this test was re-administered to the same participant to check the consistency of the finding over time. The report of the Pearson correlation coefficients was convenient ($r = 0.921$, $p < .05$).

3.3. The Academic Buoyancy Scale (ABS)

The ABS (Appendix A) was used to explore the participants' AB. This instrument was developed and validated by Ref. [11] in 27 items on a five-point Likert scale from 1 (definitely disagree) to 5 (definitely agree). It contains four dimensions as following: sustainability, regularity adaptation, positive personal eligibility, and positive acceptance of academic life. Furthermore, the reliability of the ABS was acceptable (ranging from 0.839 to 0.889).

3.4. The academic Emotion Regulation Questionnaire (AERQ)

To gauge the participants' AER, the AERQ (Appendix B) developed and validated by Ref. [59] was used. The AERQ entails 37 items on a five-point Likert scale ranging from 1 'strongly disagree' to 5 'strongly agree'. Situation selection (4 items), developing competences (5 items), redirection attention (6 items), reappraisal (5 items), suppression (5 items), respiration (3 items), venting (5 items), and social support (4 items) are the eight subscales of the AERQ. The reports of Cronbach's alpha reflected acceptable reliability indexes (ranging from 0.864 to 0.912).

3.5. The Foreign Language Classroom Anxiety Scale (FLCAS)

To assess FLA, the FLCA (Appendix C) developed and validated by Ref. [48] was utilized. Communication anxiety, fear of negative evaluation, test anxiety, and anxiety of foreign language class are the four subscales of this instrument, which was designed in 33 items on a five-point Likert scale (ranging from strongly agree to strongly disagree). In the current research, the result of Cronbach's alpha was satisfactory (ranging from 0.841 to 0.899).

3.6. Procedures

As the first step, the Oxford Quick Placement Test was administered to examine the learners' English proficiency level. The score range of 0.4–0.6 was considered as the cut value to indicate intermediate English proficiency level. The students with the higher scores (between 0.7 and 0.9) and lower scores (between 0.1 and 0.4) showing high and low levels of language proficiency were omitted. The result was 79 students (43 females and 36 males), who were grouped into CG and EG. This study used a quasi-experimental design. During this project, the participants were asked not to attend any extra English classes to ensure the reliability of the outcomes. Before applying the treatment, a pre-test was conducted. This test comprised of five sections and evaluate the participants' AB, AER, FLCA, and EA.

Following this step, the instruction was started for both the experimental and control groups. During 16 sessions (one semester) in 2022, Top Notch 3 was taught for both EG and CG. Learners in CG attended online classes via webinar platforms (Adobe connect), but EG practiced English learning via a private group in Telegram, which was designed by the researchers. In this private Telegram group, the teacher sent related contents based on the selected material (Top Notch 3) and the lesson plan each session. During the class time, teachers and learners were able to send and receive voices, picture, messages. They could also call each other if they faced any problems. These possibilities were possible at any time (not specifically the class time). Learners were divided in groups and they could practice in pairs or groups and social relationships and supports were highly emphasized. Learners at any time and any place via their smartphones could ask and answer questions and receive feedback. This project took 16 sessions (one semester). After the treatment was finished, a post-test (i.e., the test of AB, AER, FLCA, and EA) was administered to both CG and EG to evaluate the learners' progress and the effectiveness of the project. The assessment of pre-and post-tests were done by 4 EFL instructors to confirm the reliability of the results.

3.7. Data analysis

The effectiveness of the Telegram Based Instruction on AB, AER, FLA, and AA were investigated through one-way MANOVA. In this research, the Telegram Based Instruction was the independent variable and AB, AER, FLA, and EA were assumed as dependent variables. The related assumptions such as normality, sample size, outliers, linearity, homogeneity of regression, etc.) were checked before running MANOVA.

4. Results

Before conducting any analysis, the normality distribution of the data was checked through Kolmogorov-Smirnov test. The results demonstrated that the distribution of the data was normal as all *p* values were larger than 0.05. Therefore, it was safe to run a one-way MANOVA.

Table 1 provides the mean and standard deviation for the four different dependent variables, which have been split by the

independent variable. In addition, the table provides "Total" rows, which allows means and standard deviations for groups only split by the dependent variable to be known.

Table 2 shows that there was a statistically significant difference in AB, AER, FLA, and EA posttests, $F(4, 70) = 64.68$, $p < .000$; Wilk's $\Lambda = 0.21$, partial $\eta^2 = 0.78$. Therefore, using telegram-based instruction has a significant effect on EFL learners' academic buoyancy, academic emotion regulation, foreign language anxiety, and academic achievement.

It can be seen from Table 3 that telegram-based instruction had a statistically significant effect on AB ($F(1, 73) = 79.97$; $p < .000$; partial $\eta^2 = 0.66$), AER ($F(1, 73) = 44.05$; $p < .000$; partial $\eta^2 = 0.68$), FLA ($F(1, 73) = 184.96$; $p < .0005$; partial $\eta^2 = 0.71$) and EA scores ($F(1, 73) = 6.87$; $p < .000$; partial $\eta^2 = 0.62$). Partial eta squares of 0.66, 0.68, 0.71, and 0.62 for AB, AER, FLA, and EA, respectively, are considered quite large effect sizes [60]. These values represented the proportion of the variance in the dependent variables, academic buoyancy, academic emotion regulation, foreign language anxiety, and academic achievement, which could be explained by the independent variable, group with two levels of the experimental group and the control group. The large effect sizes indicated that 66% of the variance in EA, 68% of the variance in AER, 71% of the variance in FLA, and 62% of the variance in EA explained by the independent variable, group.

Table 4 shows that the difference between EG and CG on all four dependent variables were statistically significantly significant ($p < .000$). It means that the mean score for the EG regarding academic buoyancy ($M = 108.53$), academic emotion regulation ($M = 120.87$) and academic achievement ($M = 16.74$) was higher than those of the CG's mean score (refer to Table 1). Regarding the FLA, mean score for the EG (67.53) was lower that the CG's mean score (105.48). Thus, using telegram-based instruction improved AB, AER, and EA and lessened FLA.

5. Discussion

The current research was an attempt to discover the efficiency of Telegram app as a social media platform on AB, AER, FLA, and academic achievement among EFL learners. Based on the data screening, Telegram app could foster language learning and higher academic achievement was reached by the learners. It was also documented that the learners in EG presented higher levels of AB and AER and lower levels of FLA due to their exposure to the Telegram based instruction. These outcomes highlighted the significant role of social media in the form of Telegram app to enhance cognitive and psychological well-beings of the learners. The study findings are discussed in detail in the following paragraphs.

The data suggested that EG outscored their colleagues in the CG when it came to the first study issue, which was whether or not the Telegram app had an effect on the academic performance of EFL students. This translates to the fact that language students are provided with a risk-free environment in which they are able to successfully articulate their AB while using telegram-based training. Learners were active in their own learning assignments because to the many chances offered by Telegram. Language learners may improve their long-term viability, regularity adaptability, positive personal eligibility, and positive acceptance of academic life if they were placed in such circumstances. There has not been single research done that is comparable to this one to investigate the influence of learners' access to social media.

A conclusion that can be drawn from the research that has been done so far is that the participation of EFL students in language activities that take place through the use of Telegram results in an increase in the learners' sense of autonomy and sense of self-efficacy. Beliefs regarding one's own capacity for success are regarded as a crucial component of AB [61]. As a result, it is possible to draw the conclusion that higher levels of self-efficacy are associated with higher levels of AB. It was also determined that a connection exists between AB, academic motivation, and social support [62]. It was clear that the use of social media could boost students' social support as well as their motivation in the classroom [4,29]. It is possible to draw the conclusion that instruction delivered through Telegram raises academic motivation, social support, and consequently AB.

Taking into consideration the second study question (Does using the Telegram app alter EFL students' AER?), the findings of the data analysis demonstrated that using the Telegram app for language learning had an effect on the AER of the learners. In other words, at the end of the treatment, the students in the EG group were better able to control their emotions than those in the CG group. It is

Table 1
Results of descriptive statistics for the AB post-test, AER post-test, FLA post-test and EA post-test.

	Group	Mean	Std. Deviation	N
AB. Post	EG	108.53	16.27	41
	CG	80.10	23.08	38
	Total	94.86	24.35	79
AER. Post	EG	120.87	22.17	41
	CG	83.92	24.49	38
	Total	103.10	29.69	79
FLA. Post	EG	67.53	12.24	41
	CG	105.48	25.36	38
	Total	85.79	27.31	79
EA. Post	EG	16.74	1.61	41
	CG	15.43	1.78	38
	Total	16.11	1.81	79

Note. AB: Academic Buoyancy; Post: Posttest; AER: Academic Emotion Regulation; FLA: Foreign Language Anxiety; EA: Academic Achievement; EG: Experimental group; CG: Control group.

Table 2
Results of multivariate tests for the AB post-test, AER post-test, FLA post-test and EA post-test.

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.59	25.29	4.00	70.00	.000	.59
	Wilks' Lambda	.40	25.29	4.00	70.00	.000	.59
	Hotelling's Trace	1.44	25.29	4.00	70.00	.000	.59
	Roy's Largest Root	1.445	25.29	4.00	70.00	.000	.59
Group	Pillai's Trace	.78	64.68	4.00	70.00	.000	.78
	Wilks' Lambda	.21	64.68	4.00	70.00	.000	.78
	Hotelling's Trace	3.69	64.68	4.00	70.00	.000	.78
	Roy's Largest Root	3.69	64.68	4.00	70.00	.000	.78

Note. Pre: Pretest.

Table 3
Results of tests of between-subjects effects for the AB post-test, AER post-test, FLA post-test and EA post-test.

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	AB. Post	36988.65	5	7397.73	58.26	.000	.80
	AER. Post	44428.21	5	8885.64	26.62	.000	.64
	FLA. Post	45905.63	5	9181.12	54.49	.000	.78
	EA. Post	81.03	5	16.20	6.74	.000	.31
Intercept	AB. Post	317.29	1	317.29	2.49	.118	.03
	AER. Post	1059.30	1	1059.30	3.17	.079	.04
	FLA. Post	2473.69	1	2473.69	14.68	.000	.16
	EA. Post	165.91	1	165.91	69.03	.000	.48
Group	AB. Post	6344.84	1	6344.84	49.97	.000	.66
	AER. Post	14705.51	1	14705.51	44.05	.000	.68
	FLA. Post	31160.82	1	31160.82	184.96	.000	.71
	EA. Post	16.51	1	16.51	6.87	.011	.62
Error	AB. Post	9268.81	73	126.97			
	AER. Post	24364.97	73	333.76			
	FLA. Post	12298.17	73	168.46			
	EA. Post	175.43	73	2.40			
Total	AB. Post	757144.00	79				
	AER. Post	908553.00	79				
	FLA. Post	639653.25	79				
	EA. Post	20769.50	79				
Corrected Total	AB. Post	46257.46	78				
	AER. Post	68793.19	78				
	FLA. Post	58203.80	78				
	EA. Post	256.47	78				

Table 4
Results of pairwise comparisons for AB post-test, AER post-test, FLA post-test and EA post-test.

Dependent Variable	(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
						Lower Bound	Upper Bound
AB. Post	EG	CG	20.51	2.90	.000	14.73	26.30
	CG	EG	−20.51	2.90	.000	−26.30	−14.73
AER. Post	EG	CG	31.23	4.70	.000	21.85	40.61
	CG	EG	−31.23	4.70	.000	−40.61	−21.85
FLA. Post	EG	CG	−45.47	3.34	.000	−52.13	−38.80
	CG	EG	45.47	3.34	.000	38.80	52.13
EA. Post	EG	CG	1.04	.39	.011	.25	1.84
	CG	EG	−1.04	.39	.011	−1.84	−.25

possible to deduce that an environment conducive to learning activates helpful skills to moderate the students' emotional experiences, apply efficient AER (situation selection, developing competences, redirection attention, reappraisal, suppression, respiration, venting, and social support) and assist them in engaging in reflective self-evaluation. This finding is plausible due to the fact that AER, which entails situation selection, developing competences, redirection attention, reappraisal, suppression, respiration, venting, and social support, is directed skillfully in the case of friendly relationships between teachers and learners as well as learners' encouragement in their own evaluation [55,56]. Furthermore [62], found that learners' levels of self-efficacy, emotional cognitive adjustment, and ability to handle stress all had reciprocal links with one another.

According to the third research question (Does the Telegram app affect EFL students' FLA?), the finding displayed that instruction via the Telegram app decreased the EFL students' FLA. This finding was not unexpected because the FLA depends on the factors that

learners experience in their classroom. When they feel at ease during learning processes and motivated to do their learning tasks, they would not experience anxiety or the depth of anxiety would decrease a lot. Communication anxiety, fear of negative evaluation, test anxiety, and anxiety of foreign language class are the components of FLA. Based on the opportunities provided by the Telegram app, learners can easily communicate and the anxiety of being judged by the peers would decrease. This outcome is in accordance with [61], who concluded that the Telegram application could help learners manage their anxiety in language classes.

In response to the third study question, which posed the following inquiry: "Does teaching delivered through the Telegram app have an effect on the FLA of EFL students?" the findings demonstrated that instruction delivered via the Telegram app led to a reduction in the FLA of EFL students. This discovery did not come as a surprise since the FLA is dependent on the conditions that students are exposed to in their respective classrooms. They will not suffer anxiety or the intensity of their anxiety will diminish significantly if they feel at ease throughout the learning processes and are driven to complete the activities associated with their learning. The components of foreign language anxiety consist of communication anxiety, fear of unfavorable assessment, exam anxiety, and anxiety associated with taking foreign language classes. Learners will have less concern about being assessed by their peers as a result of the options afforded by the Telegram app, which will allow for easy communication between them. According to Ref. [32], who came to the conclusion that the Telegram application might assist students better control their anxiety while taking language lessons, this result is consistent with their findings.

The participants in EG got better grades than those in CG on their posttest, which was created for the purpose of evaluating the four language skills. This was another result that mirrored the findings of the research. As a result, the Telegram app has the potential to boost English success among EFL students. This conclusion is consistent with the findings of [64], who discovered that the Telegram app made it easier for people to improve their writing skills. In addition [30], reached the conclusion that the Telegram app was beneficial in terms of getting students involved in language learning and increasing the level of motivation that they had. Both [31,65] provided evidence that the Telegram app was used for the purpose of improving vocabulary knowledge in the context of Iranian EFL, and the results were deemed to be adequate. According to the data that [29] compiled, the effectiveness of the Telegram app in improving reading methods taught in IELTS preparing classes has been proven.

6. Conclusion

All in all, the current investigation intended to shed light on the benefaction that the Telegram based instruction can endow to language learning in EFL context. It was also intended to uncover the effect on the Telegram app on enhancing AB and AER as well as managing FLA among EFL intermediate learners. The research findings displayed that the progress of the students in the EG was great in comparison to their peers in the CG. The EG achieved higher grates in all four main skills than CG due to their exposure to the Telegram app than online classes in adobe connect. The data analysis also depicted that the EG improved a lot in AB, AER, and controlling FLA. The outcomes of this study offer a new window to the sparse literature on the efficacy of the Telegram app in fostering all four main skills as well as psychological health of the learners.

Based on the findings of the study, some pedagogical implications are suggested. Due to vast development of new technologies and the need for holding online and virtual classes, integration of MALL into curricula can increase can expand student access to course content at anytime and anywhere even outside of the class. MALL platforms are also assumed as affordance and a readily available for the new generation. Thus, teachers need to acquire the digital literacy to apply MALL platforms, particularly the Telegram app for language teaching. Language learning can also be enhanced by applying MALL because language learners can listen to audios, watch clips, record their voices, negotiate meanings, and type sentences. As the it was discussed before, positive psychology of the learners should also be supported during their educational lives. In this regard, both teachers as well as learners need to be aware about the self-aid constructs and their attributions in their well-beings. The related strategies should be trained directly or indirectly among the academic subjects. Curriculum designers and materials developers are suggested to modify academic materials and consider these findings among other academic subjects. Teachers also need to pass pre-service and in-service training courses in this regard. Policy makers, curriculum designers, materials developers and teacher educators are recommended to ponder over language instruction based on MALL and teaching self-aid strategies to guarantee the academic achievement of the learners and more importantly the well-being of the society.

Similar to other empirical research, the outcomes of this study should be analyzed with some limitations. The present research is quasi-experimental design and the intact groups took part in the sampling procedures. Future research is suggested to apply other methods to complement the findings of the present research. Additionally, the number of learners in EG and CG were limited and may affect the generalizability of the findings. Further studies with more participants are recommended in future. The possible effects of the demographic information of the participants and their social-cultural variation were not studies in this investigation; future studies can address these variables and inspect whether theses variables affect AB, AER, FLA, and EA of the EFL learners. This research was also limited in its focus on language proficiency of the learners at intermediate level. Future research may consider other felids of study and investigate wether.

Furthermore, the Telegram based instruction and its impact on AB, AER, FLA, and EA were the target of this research. The possible contributions of other social media and MALL platforms on AB, AER, FLA, and EA can be considered as another future agenda. Also, the effects of social networking tools and MALL platforms on other learner related constructs can be fertile field for future research.

Author contribution statement

Xiaoyi Zheng: Contributed reagents, materials, analysis tools or data; Wrote the paper.

Sayed M. Ismail: Conceived and designed the experiments; Wrote the paper.
Tahereh Heydarnejad: Performed the experiments; Analyzed and interpreted the data; Wrote the paper.

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Data availability statement

Data included in article/supp. material/referenced in article.

Declaration of interest's statement

The authors declare no conflict of interest.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. The Academic Buoyancy Scale (ABS)

A. Sustainability
1. If I face a failure while learning the language (such as a low grade or a negative reaction from my teacher), he copes well with it and I don't get disappointed, but I learn from it.
2. I don't let the pressure of studying and language lessons control me, but I control it myself.
3. I think I can cope with the pressure of studying and my homework.
4. I never let a bad grade in a language class affect my self-confidence.
5. I can overcome difficult things while learning the language because I have experienced difficulties in the past.
6. If I find myself in a difficult situation while learning the language, I usually find a way to clear it.
7. Having a constant interest in learning a language is very important to me, and if I fail, I am never interested It does not decrease.

B. Regularity Adaptation
8. While learning the language, I first plan and then act on it.
9. I am a disciplined person.
10. Sometimes I force myself to do something whether I want it or not (I define a goal for myself, for example, this week I have to learn twenty new words.
11. Learning a new language that I am currently involved in is in line with my personal values.

C. Positive Personal Eligibility
12. I have the ability to rely more on myself than on others in learning the language.
13. I feel proud that I have been able to learn a lot while learning the language.
14. I usually have enough energy for the work that I have to do (for example, assignments that my teacher sets).
15. In times of need, I am a person whom my classmates can trust.
16. I am determined to learn the language.
17. If I have to, I can learn the language on my own.
18. I feel that I can handle several coursework in a period of time.
19. The belief that I have in myself and my abilities in learning the language makes me overcome the difficulties.

D. Positive Acceptance of Academic Life

20. 1. I am friendly and honest with myself while learning the language.
21. I rarely come to the conclusion that trying to learn a language is futile.
22. I don't worry about the future while learning a language and I live in the moment and enjoy it.
23. I usually find something to laugh and be happy about while learning a language, even when there is a lot of academic pressure.
24. I believe that my life has a goal and purpose, and learning a language is part of it.
25. I usually don't involve my mind in an unpleasant issue that I can't change while learning a language.
26. It's not a problem if there are people in my class who don't like me or don't want to communicate with me.
27. I usually look at a subject from several different perspectives (for example, the positive aspects of doing homework, exams, or I consider the strictness of my teacher, not to look at them negatively.

Appendix B. The Academic Emotion Regulation Questionnaire (AERQ)

A.1. Situation selection

1. When I am very nervous about an exam, I decide to skip classes that day.
2. When going to school is stressful for me, I stay at home.
3. When I am afraid of an oral exam, I stay at home that day.
4. When I feel too much pressure from school obligations, I 'get sick' for a couple of days.

A.2. Developing competences

1. Browsing through the answers in my head helps me to reduce the pressure in exam situations.
2. Good organization of time for studying and fun reduces my tension.
3. Through investing additional effort in learning, I reduce shame due to failure at school.
4. When I feel insecure in my knowledge, I revise the material additionally.
5. If the amount of learning material scares me, I carefully organize my schedule of studying.

A.3. Redirection attention

1. My thoughts stray to more pleasant matters when I feel frustrated by studying.
2. I start to think about something more fun when studying becomes boring to me.
3. When I get bored by the lesson, I put my mind on something interesting.
4. When I get frustrated by the teacher, I try to think about something that brings me joy.
5. When I am bored in school, I have fun with something else (I draw, chat with a friend).
6. When I am anxious in classes, I 'shut myself down' and think of something else.

A.4. Reappraisal

1. When I am afraid of an exam/test, I tell myself that there is always a second chance.
2. When I feel bad about failing an exam, I tell myself that it is not so important to be the best.
3. I reduce exam tension by reminding myself that there are more important things in life.
4. When I am ashamed of bad grades, I remind myself that grades don't always reflect real knowledge.
5. If I'm sad because of poor grades, I comfort myself with the thought that study is not the most important thing in life.

A.5. Suppression

1. I try to suppress the anger and rage I feel in class.
2. I try to hide the anger I feel towards the teacher.
3. I do not want others to see how disappointed I feel about my failures.
4. When I feel bad because of the teacher's comments, I do not want others to see that.
5. I try not to show how angry I am when the teacher is not fair.

A.6. Respiration

1. I breathe deeply in order to reduce the tension that I feel in exam situations.
2. When I do a test paper, I breathe deeply to calm down.
3. When I become enraged because of a difficult task that I have to resolve, I take a couple of deep breaths.

A.7. Venting

1. When I become very angry in school, I vent my rage on others.
2. When I become furious because of studying and tasks, I start to throw things round the room.
3. I yell at someone when I become anxious in school.
4. When I fail in school, I kick or punch the first thing in my way.
5. When I become very upset in school, I start to yell at people around me.

A.8. Social support

1. When I'm nervous about some exam, I talk about it with someone who is close to me.
2. When school demands frustrate me, I share my troubles with friends.

3. When I feel miserable due to my poor grades, I pour out my troubles to someone.
4. When I feel bad due to failure at school, I talk about it with my friends.

Appendix C. The Foreign Language Classroom Anxiety Scale (FLCAS)

1. I never feel quite sure of myself when I am speaking in my foreign language class.
2. I don't worry about making mistakes in language class.
3. I tremble when I know that I'm going to be called on in language class.
4. It frightens me when I don't understand what the teacher is saying in the foreign language.
5. It wouldn't bother me at all to take more foreign language classes.
6. During language class, I find myself thinking about things that have nothing to do with the course.
7. I keep thinking that the other students are better at languages than I am.
8. I am usually at ease during tests in my language class.
9. I start to panic when I have to speak without preparation in language class.
10. I worry about the consequences of failing my foreign language class.
11. I don't understand why some people get so upset over foreign language classes.
12. In language class, I can get so nervous I forget things I know.
13. It embarrasses me to volunteer answers in my language class.
14. I would not be nervous speaking the foreign language with native speakers.
15. I get upset when I don't understand what the teacher is correcting.
16. Even if I am well prepared for language class, I feel anxious about it.
17. I often feel like not going to my language class.
18. I feel confident when I speak in foreign language class.
19. I am afraid that my language teacher is ready to correct every mistake I make.
20. I can feel my heart pounding when I'm going to be called on in language class.
21. The more I study for a language test, the more confused I get.
22. I don't feel pressure to prepare very well for language class.
23. I always feel that the other students speak the foreign language better than I do.
24. I feel very self-conscious about speaking the foreign language in front of other students.
25. Language class moves so quickly I worry about getting left behind.
26. I feel more tense and nervous in my language class than in my other classes.
27. I get nervous and confused when I am speaking in my language class.
28. When I'm on my way to language class, I feel very sure and relaxed.
29. I get nervous when I don't understand every word the language teacher says.
30. I feel overwhelmed by the number of rules you have to learn to speak a foreign language.
31. I am afraid that the other students will laugh at me when I speak the foreign language.
32. I would probably feel comfortable around native speakers of the foreign language.
33. I get nervous when the language teacher asks questions which I haven't prepared in advance.

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