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The impact of Motivational Scaffolding on Self-efficacy and Learning Achievement of Field Dependent/ Independent EFL Learners

Masoumeh Sohrabi [1], Hossein Siahpoosh [2]*, Asgar Mahmoudi [3]

[1, 2, 3] English Department, Ardabil Branch, Islamic Azad University, Ardabil, Iran

*Corresponding author: siahpoosh_h@iauardabil.ac.ir
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Abstract

The study investigated the impacts of motivational scaffolding as one of the most effective instructional procedures on self-efficacy and learning achievement of field-dependent and field-independent English language learners. This study attempted to use both qualitative and quantitative data to get more reliable results. As qualitative part, 15 teachers in a semi-structured interview, and as quantitative part, two groups of learners participated as experimental and control groups. Motivated Strategies for Learning Questionnaire was used to determine students' self-efficacy. The Group Embedded Figures Test was administered to categorize them into groups of field-dependent and field-independent. To determine proficiency level, a pre-test and a post-test were used. As treatment, eight sessions of Bandura's training were administered to improve self-efficacy. Analysis of the qualitative data was conducted using content analysis, and as quantitative analysis, two-way Multivariate Analysis of Variance was conducted. The results showed that learners' interacting within motivational scaffolding improved their self-efficacy and their learning achievement, and there is no significant difference between learners in the dimensions of field-dependent, field-independent. The findings have implications for teachers and learners in educational settings to detect some factors affecting the English language learners' language performance and their psychological status.

Keywords: motivational scaffolding, self-efficacy, learning achievement, cognitive styles

Introduction

The term scaffolding was presented by (Wood, Bruner, & Ross, 1976). It is a kind of assistance provided in a learning environment that assists learners to solve complex skills that they are unable to do independently. The meaning of scaffolding in learning setting is similar to the structures used in the buildings to support and help workers and then removed after the construction is completed (Alias, 2012). Jafari et.al (2021) stated that scaffolding, as a new approach to language instruction, is mainly rooted in both Vygotsky's sociocultural theory of mind (SCT), on the one hand, and in his concept of the ZPD on the other hand. Scaffolding, as a supporting framework, is used as an educational technique in which support is gradually decreased when student capability is enhanced. The concept of scaffolding generates from Lev Vygotsky's theory of the zone of proximal development that is propounded in sociocultural theory. Zone of proximal development is defined as the distance between what learners can do themselves and the next level of learning that can be completed with assistance (Yantraprakorn, Darasawang, & Wiriyakarun, 2018). Therefore, the aim of scaffolding is to improve learner's performance with contingent and faded support that is related to the ZPD. Scaffolding motivates learners to perform, learn and solve complex tasks that they are unable to complete alone (Chen & Law, 2016).

Different kinds of scaffolding can be utilized in a learning setting. Type of task and the conditions that learning lies in it can determine which scaffolding learners choose. Ellis (2015) proposed that scaffolding is an interesting scheme that includes social interaction, discussion and collaboration. Different types of scaffolding involve: 1) cognitive, 2) meta-cognitive and 3) affective or motivational scaffolds. Whereas cognitive and meta-cognitive scaffolds, by regarding the contents, resources and techniques assist and support, the motivational scaffolds provide strategies to enhance learners' motivational state, like attribution or encouragement (Alias, 2012).

Jumaat and Tasir (2016) stated that several studies have proven that learning without effective guidance from peers will lead to learner's feelings

of being alone, low self-confidence, and lack of motivation and they may have problems in completing specified tasks. Some studies focus on lack of scaffolding and its effect on learner's performance. Consequently, scaffolding as guidance from instructors assists a learner in solving difficult problems and performing skills beyond their knowledge (Jumaat & Tasir, 2016).

According to Low & Robinson (2015), motivating and increasing learner's interest in the learning environment is one of the main challenges that language teachers may face. Scaffolding is vital to motivate learners and result in self-regulated learning; consequently, they can monitor, organize and take control on their own learning (Alias, 2012). One of the overriding components in the area of motivation and learning is self-efficacy. This term is described as a learner's confidence in his or her capability to categorize and perform courses needed to obtain specified types of actions (Artino, 2012)

According to Bandura, it is an individual's confidence to attain the goal in performing a task and also can modify the learner's behavior. Learners with high self-efficacy will be able to organize effectively and entirely if they have confidence in their capacities and can perform completely specified tasks. However, an individual with low self-efficacy will miss those tasks, get negative thoughts, and so unable to achieve goals (Ahmad & Safaria, 2013, Yusuf, 2011).

The causal impact of self-efficacy on academic performance is among important areas that have been considered in educational research. Whereas self-efficacy involves how individuals think and feel, it has powerful impact on academic performance in different ways. Learners with high belief in their own abilities carry out complex tasks and then indicate low anxiety and flexibility in learning processes. Hence learners with high level of self-efficacy achieve high level of intellectual performance whereas learners with low level of confidence try to perform only simple academic tasks in order to limited effort of skill (Yantraprakorn et al., 2018).

People with various criticisms in the identification of manners can also learn in different ways (Muhammad, Daniel, & Abdurauf, 2015). Sternberg, Grigorenko, & Zhang (2008) explained that to acquire knowledge and reach

to the comprehensible world, a mental process in the brain is used that is known as cognition.

Hansen (2007)stated that learners with different cognitive styles as field-dependent and independent vary according to perceiving, organizing, analyzing and recalling information. Field dependence shows a trend to depend on external strategies in cognitive activities and develop skill in interpersonal relations.

Field independent learner is regarded as a person who extends his learning environment and experience. He is not limited to immediate environment; in contrast field dependent is in need of other learning and some materials that come from others. Taking into account this psychological dimensions is crucial in learning and teaching setting (Muhammad et al., 2015).

Literature Review

Motivational Scaffolding

Many theorists have proposed ideas relating to scaffolding, motivation, self-efficacy, learning achievement and learner's cognitive styles. Considering metacognitive strategies, Jafarigohar & Mortazavi (2016) evaluated the impact of motivational scaffolds on Iranian EFL learners. For this study, 30 females took part and received motivational scaffolds through collaborative oral and written tasks. The results of the study indicated that motivational scaffolds significantly increased the use of metacognitive strategies. Scaffolding provided conditions for learners to engage in listening and reading activities highly and the impact of the metacognitive and motivational-based scaffolding promote EFL learners' speaking in foreign language skills (Pishadast, Mojavezi, & Okati, 2021).

Belland, Kim, & Hannafin (2013) argued on problems with ignoring motivation in learning environments and they identified scaffolding as one primary technique to solve, and help for problem-based learning and they also focused on how scaffolding can boost motivation. As a result, they found computer-based scaffolds to increase motivation and engagement.

Alias (2012) focused on the importance of using scaffolding for learner's needs in a learning environment, especially in e-learning situations. The

purpose of the study was to promote the problems that existed in learner's motivation. A learning console with four-phase design was prepared as a tool. The results from the evaluation of the learning console indicated the ability of this performance to control the motivated process of learners. Hasan (2018) studied the impacts of scaffolding on the improvement of higher-order thinking skills as proved in the writing of learners. This research asserted both motivational and demotivational aspects. Over the study, the student's improvement in the index of Vygotsky's claim determined the development of learners in writing via the instructor's implicit technique and instructors engaged with utilizing scaffolding techniques. The results of the study conveyed similar patterns which teachers, as well as students followed. Michalsky (2021) found the impact of motivational scaffolding as a potentially important means for promoting students 'science literacy and effortful perseverance with challenging science tasks, especially at the reflection-before action stage for looking ahead and also at the reflection-on-action stage for looking back.

Self-efficacy

Schunk (1995) investigated the relationship between self-efficacy and motivation. Learners with different levels of self-efficacy acquired different levels of performance, personal qualities and social support. In this study, author assessed the models and strategies which affect self-efficacy. He concluded that self-efficacy has a major role in motivation and presents a higher level of performance in the presence of self-efficacy. Cheng and Tsai (2020) concluded that self-regulation and self-efficacy may play a major role in students' learning attitudes in learning environments for science education. It was also confirmed that the learners' immersive experiences of attention and enjoyment quietly mediated their learning. Notably, the students with lower levels of self-efficacy may have been more immersed in learning environments and further held positive learning attitudes.

Yantraprakorn et al. (2018) indicated that goal setting, shift of attribution and insufficient feedback are processes that lower the efficacy of students.

Cognitive styles

Onyekuru (2015) examined the relationships among field dependence, independence cognitive style and gender, career choice, and academic achievement. The results of the study indicated a significant relationship

between gender, career choice, and dimensions of cognitive styles that most of the male participants were field-independent, whereas female participants were field-dependent. According to learning achievement, field-independent students had an outstanding performance in science, and field-dependent students had a higher mean in arts.

Ahmadi and Yamini (2003) in their study on the relationship between field dependence and independence and the use of listening comprehension strategies concluded that metacognitive strategies were significantly related to field-dependent and field-independent learners but when considered separately, neither FD nor FI correlated significantly with this strategy type. Consequently, field-independent learners used metacognitive and cognitive strategies and field-dependent learners used social strategy. Learners' different cognitive styles were determined by Group Embedded Figure Test (GEFT).

Stansfield and Hansen (1983) studied learner traits as cognitive styles by finding the influence of field-dependent and field-independent styles on second language test performance. Approximately 250 learners took apart in Group Embedded Figure Test. The consequences showed that field-dependent learners had positive tendency to second language test performance and there was significant correlation between field-independent and close test performance.   Muhammad et al. (2015) stated that there was significant relationship between male and female learners in the area of field dependent and field independent and their academic and scientific achievement.

Scaffolding helps students to become independent and self-regulating learners and problem solvers. Besides, it facilitates students' ability to build on prior knowledge and helps them to internalize new information. If students do not achieve the goal, scaffolding stimulates them with motivational messages to get them to try harder and persist in achieving it by allowing them to review the content, revise and modify their planning, and do more exercises, thus generating confidence in their knowledge. This study attempts to investigate the effects of motivational scaffolding on learners in EFL classes. The design and implementation of motivational

scaffolding within classes should favor learning achievement. This study promotes the concept of self-efficacy and its impacts on performance of learning. Self-efficacy is people's judgments of their capabilities to organize and execute courses of action required attaining designated types of performances.

Based on what was stated above, the current study addressed the following questions:

RQ1. Does motivational scaffolding have any effect on EFL learners' self-efficacy?

RQ2. Does motivational scaffolding have any effect on EFL learners' achievement?

RQ3. Is there a significant difference between the effect of motivational scaffolding on EFL learners' achievement and its effect on EFL learners' self-efficacy?

Method

Participants

As qualitative phase, many kinds of sampling can be used; however, researchers in qualitative research often focus on relatively small samples. Research participants are generally selected because they can provide detailed descriptions of their experiences and are willing to articulate their experiences (Hutchinson & Wilson, 1992).

In interview, 15 EFL teachers as participants were interviewed in this study and they were determined by the information gained during the various interviews. The selected teachers, from both genders, were English teachers at non-profit language institutes and universities in Ardabil, Iran. Interview was conducted until the data reached an acceptable saturation point, and the researcher judged that the research question could be answered adequately.

As quantitative phase, participants in two groups were selected from different classes in Sama College of Ardabil, Iran. They were first and second-semester students. They were divided into experimental and control groups. The number of learners in each group was 30. All of them were at the age of 19 to 25 with an intermediate level of proficiency. Regarding

space, facilities, time, and other conditions, the classes were approximately the same. Learners attended classes one time a week for three months.

Instruments

Interviews are valuable tools for collecting data in qualitative research. The interview method allows the researcher to seek clarity and probe for deeper understanding (McGrath, Palmgren, & Liljedahl, 2019). As a result, the reporting and analysis of data are reflective of the views of the participants. To elicit the motivational scaffolding and its domain issues, semi-structured interviews were designed and conducted with the participants. As quantitative part, for data collection, three questionnaires were administered, namely, (1) cognitive style test (2) learners' proficiency test (3) self-efficacy questionnaire.

Cognitive style test

Many instruments have been developed to measure a person's learning style. One of the easiest to administer, especially in group situations, is the Group Embedded Figures Test (GEFT) (Witkin, Moore, Goodenough, & Cox, 1977). The GEFT is a perceptual test, which requires the subject to locate a figure within a larger complex figure. The GEFT, which comprises 18 complex figures, can be administered in twenty minutes and can be quickly scored using answer templates.

This test is designed to distinguish field-independent from field-dependent cognitive types. Field-independent people tend to be more autonomous when it comes to the development of restructuring skills, but field-dependent people tend to be more dependent on others (Maghsudi, 2007).

Learners' proficiency

To determine learners' proficiency level in EFL classes and identify their improvement, a pre-test, and a post-test were used. To check the reliability and validity of the questionnaire, the researcher passed it through the process of a pilot study, which was administered to a sample similar to that of the quantitative phase.

Self-efficacy questionnaire

To determine students' perception of metacognitive ability and academic self-efficacy, the sub-scales corresponding to the Motivated Strategies for

Learning Questionnaire (MSLQ) were used (Pintrich, 1991). The students responded to a self-report questionnaire (the Motivated Strategies for Learning Questionnaire) that included forty-four items on student motivation, cognitive strategy use, metacognitive strategy use, and management of the effort.

Procedure

After the researcher prepared the final version of the interview guide, the next phase was to run the interview sessions. The participants were called for the time of the interview, and at the due time, the interview sessions were held, either at the teacher's office, at the university or at the language institute where some of the participants were teaching English. Also, some ice-breaking questions were asked first to make the participants feel at ease. After interview sessions were held, the recorded interviews were transcribed by the researcher, and each participant was assigned a made-up name to respect their privacy.

As a quantitative part, a pre-test and a post-test for both the experimental and control groups were used. The experimental and control groups were chosen randomly. In both groups, to determine learners' different cognitive styles in the dimension of field-dependent and independent, Group Embedded Figures Test (GEFT) designed by (Witkin et al., 1977) was presented to them. Then to identify learners 'self-efficacy, groups received self-efficacy questionnaire. In the experimental group whose self-efficacy were specified, for 8 sessions, Bandura's training on self-efficacy was implemented as motivational scaffolding. Finally, along with the post test, post-self-efficacy was administered to identify the impact of motivational scaffolding.

Design

In qualitative data, content analysis was used in which the responses were collected or coded based on the finding themes from the qualitative data or interview transcripts (Barbour, 2008).

The research was experimental with a 2 x 2 factorial design. The main factors are: 1) presence or absence of the motivational scaffolding in EFL classes and 2) the study possesses an associated variable denominated cognitive style, with two values: field-dependent and independent. The dependent variables are academic self-efficacy and learning achievement.

For data processing, two-way Multivariate Analysis of Variance (MANOVA) was conducted.

Results

The present study aims to determine whether learners' self- efficacy can be increased through motivational scaffolding and whether scaffolding can be influential and particularly useful in improving learners' achievement in EFL classes. The study attempted to use both qualitative and quantitative data in order to get more reliable results.

Qualitative results

To this purpose and in order to collect some qualitative data, fifteen English teachers were invited to take part in the interview sessions. These teachers were with different teaching experiences from English language institutes, schools, and universities as well as academic degrees. They were selected through convenient sampling method and were required to answer some semi-structure interview questions. Moreover, the interviewees were selected purposefully as we needed relevant answers. The interviews lasted for approximately forty minutes.

As the interview results illustrated, most of the teachers agreed on the effective use of scaffolding in the EFL classrooms. They were also converging with each other in accepting the direct role of the motivational scaffolding on the learners' self-efficacy. The teachers also mentioned that there are different factors including age, proficiency level, etc., which should be taken into account in discussing or deciding over different types of scaffolding.

Quantitative results

This section deals with the quantitative phase of the study which was carried out through the questionnaires. Two-way analysis of variance consists of more complex set of procedures, and it contains a series of assumptions that should be considered. As noted in Pallant (2010), MANOVA has a number of assumptions. Before proceeding with two-way manova analysis, data was conformed to the assumptions. These are:

1. Sample size: N values correspond to what the study has considered about the samples,

2. Normality: results of analyses on the percentage scores obtained for self-efficacy and for both tests in experimental and control group. In the first and second performances in experimental and control groups the sig. values are respectively 0.20 and 0.06 which are more than 0.05. This means that the distribution of the scores is normal. The normality of pre and post proficiency test was examined through Kolmogorov Smirnov Test. In the first data the sig. value is 0.11 that is more than 0.05 and it is normal. As a post test the sig. value is 0.09 and the distribution is normal. In pre-test of control group, the sig. value is 0.054 that is more than 0.05 and this means that the distribution of the scores is normal. The sig. value for post-test is 0.05 and is normal.

3. Multivariate normality: in order to test multivariate normality, the Mahalanobis distance is used. Mahalanobis distance is the distance of a particular case from the centroid of the remaining cases, where the centroid is the point created by the means of all the variables.(Pallant, 2010). The numbers value of Mahal. Distance in maximum number for all variables is examined and these numbers should be compared with a critical value. This critical value is determined by using chi-square table, with the number of dependent variables that is existed as degrees of freedom value in study. The maximum value for Mahalanobis distance in all tables is less than critical value, so there are no substantial multivariate outliers.

4. Linearity: in this assumption, each pair of dependent variables has been checked for their linearity. This can be evaluated in many ways; one of the most direct ways that can be assessed separately is to create a matrix of scatterplots between each pair of variables (Pallant, 2010). The achieved plots do not show any obvious evidence of non-linearity; therefore, the assumption of linearity is satisfied.

5. Multicollinearity and singularity: in order to determine the directions of the relationship between the variables, a Pearson product- moment correlation coefficient is presented. There is a negative correlation between the two variables. It means that high scores on one of variables are associated with low scores on the other. The more score learners get, the less score they achieve in their self-efficacy questionnaire.

The presented study is settled on two-way MANOVA, and in what follows, the results of this phase will be presented and discussed.

Descriptive Tests

In Tables 1 and 2, the descriptive statistics for the pre-tests of proficiency and self-efficacy and the post-tests of proficiency and self-efficacy was given.

Table 1
Descriptive Statistics for the Pre-tests of Proficiency and Self-efficacy

Group COG1			Mean	Std. Deviation	N
Pre self-efficacy	Exp	FD	20.06	4.867	17
		FI	18.69	4.820	13
		Total	19.47	4.812	30
	Con	FD	19.83	5.659	18
		FI	20.08	5.089	12
		Total	19.93	5.349	30
	Total	FD	19.94	5.213	35
		FI	19.36	4.898	25
		Total	19.70	5.050	60
Pre-test1	Exp	FD	10.1618	4.39366	17
		FI	10.3846	4.61047	13
		Total	10.2583	4.41123	30
	Con	FD	11.9722	4.11050	18
		FI	12.0000	3.46410	12
		Total	11.9833	3.80218	30
	Total	FD	11.0929	4.28664	35
		FI	11.1600	4.09959	25
		Total	11.1208	4.17455	60

Table 2
Descriptive Statistics for the Post-tests of Proficiency and Self-efficacy

Group		COG1	Mean	Std. Deviation	N
posttest1	Exp	FD	13.0000	3.78731	17
		FI	13.5000	4.07226	13
		Total	13.2167	3.85219	30
	Con	FD	12.7500	3.83578	18
		FI	14.0000	2.82843	12
		Total	13.2500	3.47094	30
	Total	FD	12.8714	3.75802	35
		FI	13.7400	3.46747	25
		Total	13.2333	3.63536	60
Postselfefficacy	Exp	FD	16.88	4.045	17
		FI	15.85	5.047	13
		Total	16.43	4.454	30
	Con	FD	20.56	6.626	18
		FI	20.33	5.614	12
		Total	20.47	6.141	30
	Total	FD	18.77	5.755	35
		FI	18.00	5.694	25
		Total	18.45	5.694	60

As indicated in Tables 1 and 2, the largest cell size (N) is not more than 1.5 times larger than the smallest cell size (N), and the N values correspond to what is considered in the sample. It provides the mean and standard deviation for all dependent variables.

Box's Test

The results of the Box's Test of Equality of Covariance Matrices of the pre-tests of proficiency and self-efficacy are shown in Table 3.

Table 3
Box's Test of Equality of Covariance Matrices of the Pre-tests of Proficiency and Self-efficacy

Box's M	4.805
F	.498
df1	9
df2	23100.277
Sig.	.877

As Table 3 shows, Box's test of equality of covariance matrices is not statistically significant (Box's $M = 4.80$, $p < 0.88$), indicating that the dependent variable covariance matrices are equal across the levels of the independent variables. This observed homogeneity or equality of covariance matrices will allow us to use Wilk's lambda to assess our multivariate effects.

Table 4 represents the Box's Test of Equality of Covariance Matrices of the post-tests of proficiency and self-efficacy.

Table 4
Box's Test of Equality of Covariance Matrices of the Post-tests of Proficiency and Self-efficacy

Box's M	7.061
F	.732
df1	9
df2	23100.277
Sig.	.680

Similarly, Table 4 shows Box's test of equality of covariance matrices is not statistically significant (Box's $M = 7.06$, $p < 0.68$), which indicates that the dependent variable covariance matrices are equal across the levels of the independent variables. This observed homogeneity or equality of covariance matrices will allow us to use Wilk's lambda to assess our multivariate effects.

Bartlett's Test of Sphericity

The results of the Bartlett's Test of Sphericity for the pre-tests of proficiency and self-efficacy of learners are indicated in Table 5.

Table 5
Bartlett's Test of Sphericity for the Pre-tests of Proficiency and Self-efficacy

Likelihood Ratio	.171
Approx. Chi-Square	3.240
Df	2
Sig.	.198

Table 5 shows that Bartlett's test of Sphericity for pre-tests was not statistically significant (approximate Chi-square = 3.240, $p < 0.20$). This indicates that there was not a sufficient correlation between dependent variables.

Additionally, Bartlett's Test of Sphericity for the post-tests of proficiency and self-efficacy was conducted the results of which are shown in Table 6.

Table 6

Bartlett's Test of Sphericity for the Post-tests of Proficiency and Self-efficacy

Likelihood Ratio	.009
Approx. Chi-Square	8.577
Df	2
Sig.	.014

Table 6 shows that Bartlett's test of Sphericity for post-tests was not statistically significant (approximate Chi-square = 8.57, $p < 0.01$). This indicates that there was not a sufficient correlation between dependent variables.

Multivariate Tests

In Table 7, the results of the Multivariate Test of Analysis in the pre-tests of proficiency and self-efficacy in the first group are represented. This analysis was conducted in order to evaluate the main effects.

Table 7

Results of Multivariate Test of Analysis in the Pre-tests of Proficiency and Self-efficacy in the First Group

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.962	703.968[b]	2.000	55.000	.000	.962
	Wilks' Lambda	.038	703.968[b]	2.000	55.000	.000	.962
	Hotelling's Trace	25.599	703.968[b]	2.000	55.000	.000	.962
	Roy's Largest Root	25.599	703.968[b]	2.000	55.000	.000	.962
Group	Pillai's Trace	.048	1.394[b]	2.000	55.000	.257	.048
	Wilks' Lambda	.952	1.394[b]	2.000	55.000	.257	.048
	Hotelling's Trace	.051	1.394[b]	2.000	55.000	.257	.048

Cognitivestyle	Roy's Largest Root	.051	1.394[b]	2.000	55.000	.257	.048
	Pillai's Trace	.003	.086[b]	2.000	55.000	.918	.003
	Wilks' Lambda	.997	.086[b]	2.000	55.000	.918	.003
	Hotelling's Trace	.003	.086[b]	2.000	55.000	.918	.003
	Roy's Largest Root	.003	.086[b]	2.000	55.000	.918	.003
group * cognitivestyle	Pillai's Trace	.006	.176[b]	2.000	55.000	.839	.006
	Wilks' Lambda	.994	.176[b]	2.000	55.000	.839	.006
	Hotelling's Trace	.006	.176[b]	2.000	55.000	.839	.006
	Roy's Largest Root	.006	.176[b]	2.000	55.000	.839	.006

Since the relevant Box's *M* test was not statistically significant, indicating equality of covariance matrices, all the multivariate tests can be reported to evaluate both main effects and interaction. However, Wilks's lambda is the most commonly used test. At first, the multivariate main effect of Group (Group) was examined. As it is clear in Table 7, the Wilks's lambda value is 0.95, which is subsequently translated into a *F* value of 1.39 and evaluated at hypothesis (between groups) and error (within groups) degrees of freedom of 2 and 55. This *F* value is not statistically significant ($p < 0.26$). It indicates no differences between groups on the dependent variate.

Then, we should analyze the multivariate main effect of cognitive styles. The Wilks's lambda value of 0.997 is translated into an *F* value of 0.09 and evaluated at 2 and 55 (between- and within-groups degrees of freedom, respectively). This *F* value is not statistically significant ($p < 0.92$) and indicates no difference in the dependent variate.

Finally, the multivariate interaction effect produced a Wilks's lambda value of 0.99, which is translated into an *F* value of 0.18 and evaluated with degrees of freedom of 2 and 55. This *F* value is also not statistically significant ($p < 0.84$), showing that the multivariate interaction effect of Group and Cognitive Style does not account for a significant proportion of the variance.

The results of Multivariate Test of Analysis in the post-tests of proficiency and self-efficacy are presented in Table 8.

Table 8
Results of Multivariate Test of Analysis in the Post-tests of Proficiency and Self-efficacy

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.966	775.002[b]	2.000	55.000	.000	.966
	Wilks' Lambda	.034	775.002[b]	2.000	55.000	.000	.966
	Hotelling's Trace	28.182	775.002[b]	2.000	55.000	.000	.966
	Roy's Largest Root	28.182	775.002[b]	2.000	55.000	.000	.966
Group	Pillai's Trace	.130	4.102[b]	2.000	55.000	.022	.130
	Wilks' Lambda	.870	4.102[b]	2.000	55.000	.022	.130
	Hotelling's Trace	.149	4.102[b]	2.000	55.000	.022	.130
	Roy's Largest Root	.149	4.102[b]	2.000	55.000	.022	.130
Cognitivestyle	Pillai's Trace	.016	.461[b]	2.000	55.000	.633	.016
	Wilks' Lambda	.984	.461[b]	2.000	55.000	.633	.016
	Hotelling's Trace	.017	.461[b]	2.000	55.000	.633	.016
	Roy's Largest Root	.017	.461[b]	2.000	55.000	.633	.016
group * cognitivestyle	Pillai's Trace	.005	.126[b]	2.000	55.000	.882	.005
	Wilks' Lambda	.995	.126[b]	2.000	55.000	.882	.005
	Hotelling's Trace	.005	.126[b]	2.000	55.000	.882	.005
	Roy's Largest Root	.005	.126[b]	2.000	55.000	.882	.005

The relevant Box's *M* test was not statistically significant, and it indicates the equality of covariance matrices. Therefore, all of the multivariate tests can be reported to evaluate both main effects and interaction. However, Wilks's lambda is the most commonly used test. At first, the multivariate main effect of Group (Group) was examined. As it is clear in Table 8, the Wilks's lambda value is 0.87, which is subsequently translated into a *F*

value of 4.10 and evaluated at hypothesis (between groups) and error (within groups) degrees of freedom of 2 and 55. This F value is statistically significant ($p < 0.02$). It indicates differences between groups on the dependent variate. As indicated in the last column of Table 6, the partial eta=squared value tells us that this main effect accounts for approximately 13% of the total variance. Then, we should analyze the multivariate main effect of cognitive styles. The Wilks's lambda value of 0.98 is translated into an value of 0.46 and evaluated at 2 and 55 (between- and within-groups degrees of freedom, respectively). This F value is not statistically significant ($p < 0.63$) and indicates no difference in the dependent variate.

Finally, the multivariate interaction effect produced a Wilks's lambda value of 0.99, which is translated into an F value of 0.12 and evaluated with degrees of freedom of 2 and 55. This F value is also not statistically significant ($p < 0.84$), showing that the multivariate interaction effect of Group and Cognitive Style does not account for a significant proportion of the variance. Therefore, to investigate which dependent variable has the main effect separately concerning the significance of statistics, the independent samples t-test was done.

In Table 9, independent samples test for the posttest of self-efficacy was statistically determined to find significant difference in the mean scores.

Table 9
Independent Samples Test for the Posttest of Self-efficacy

| | | 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% Confidence Interval of the Difference | |
									Lower	Upper
Postselfefficacy	Equal variances assumed	1.881	.176	-2.912	58	.005	-4.033	1.385	-6.806	-1.261
	Equal variances not assumed			-2.912	52.901	.005	-4.033	1.385	-6.811	-1.255

By referring to Sig. (2-tailed) under the t-test for equality of means, the value in the Sig. (2-tailed) equals to .005 and is less than .05. It means that there is a significant difference in the mean scores on the findings of post self-efficacy.

Table 10 illustrates the results of the independent samples test for the posttest of proficiency to find significant difference in the mean scores.

Table 10
Independent Samples Test for the Post-test of Proficiency

		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% Confidence Interval of the Difference	
									Lower	Upper
posttest1	Equal variances assumed	.664	.418	-.035	58	.972	-.03333	.94669	-1.92834	1.86168
	Equal variances not assumed			-.035	57.381	.972	-.03333	.94669	-1.92878	1.86211

By referring to Sig. (2-tailed) under the t-test for equality of means (Table 10), the Sig. (2-tailed) is equal to .972 and the value is above .05. It means that there is no significant difference in the mean scores on the findings of post-test in learning achievement of the first group.

Levene's tests

Levene's Test of Equality of Error Variances examines the assumption of MANOVA that is, whether the variances of each variable are equal across the groups, the results of which are shown in Tables 11 and 12.

Table 11
Levene's Test of Equality of Error Variances of the Pre-tests of proficiency and self-efficacy

	F	df1	df2	Sig.
Preselfefficacy	.189	3	56	.903
pretest1	.388	3	56	.762

In Table 11, the p value in the pre-test of self-efficacy is .903 and is more than .05, and Sig. value in pre-test is .762 and is more than .05 (p > .05). These are non-significant for all dependent variables, and the assumption of homogeneity of variance has been met.

Table 12
Levene's Test of Equality of Error Variances of post-test of proficiency test and post self-efficacy

	F	df1	df2	Sig.
posttest1	.632	3	56	.598
Postselfefficacy	1.322	3	56	.276

As indicated in Table 12, the p value in the posttest of self-efficacy is .598 and is more than .05, and sig. value in post-test is .276 and is more than .05 (p > .05). These are non-significant for all dependent variables, and the assumption of homogeneity of variance has been met.

Discussion

The main purpose of this study was to investigate the effect of motivational scaffolding on self-efficacy and learning achievements of EFL learners. It was done across two cognitive styles, which are filed-dependent and field-independent. The study's analyses showed that learners' interacting within motivational scaffolding improved their self-efficacy and learning achievement. In other words, the results obtained from MANOVA measures reported that the significant interaction did not exist between experimental groups' (with and without scaffolding) main factors across cognitive styles as far as learning achievement, self-efficacy was taken into account. However, it was found that there was a significant main effect of grouping (with and without scaffolding) on both self-efficacy and learning achievement.

Moreover, analyzing the data collected from interviews suggests that scaffolding is vital for improving self-efficacy in learners. Almost all of the teachers who participated in the interview sessions believed that motivational scaffolding makes students more confident in their performance and consequently, it can be useful in improving both their learning achievements and self-efficacy.

This result supported the general findings of previous studies in which self-efficacy is in a strong relationship with motivation toward learning (Hodges, 2008). This result can also be explained by the fact that

motivational scaffolding provides more confidence for the learners and it, in turn, results in more self-efficacy and learning achievement. Moreover, as one step of motivational scaffolding, self-evaluation can provide a more appropriate learning pace for learners to perform, which leads to a more perception of self-efficacy. As a result, it was implied that providing scaffolding was an opportunity for learners to improve their self-efficacy. This result was also found by analyzing the collected qualitative data.

In addition, the positive effect of motivational scaffolding on learners' self-efficacy can be explained within Bandura's framework. Working within this framework can improve learners' self-evaluation, self-monitoring, and self-assessment and result shows positive effect on their self-efficacy. In other words, the activities within this model can provide some opportunities for learners to become an information processor (Valencia-Vallejo, López-Vargas, & Sanabria-Rodríguez, 2019) and has a positive effect on their self-efficacy perception.

These results are partly in line with the study of Valencia-Vallejo et al's (2018) study, which reported a significant difference between groups differing from each other in terms of scaffolding availability. However, this study did not show any significant difference between these two groups regarding their language performance. However, the results of this study diverged from the findings of DeTure (2010), who showed that self-efficacy is not predictor of learning achievement.

The findings of the study supported that of Yantraprakorn et al. (2018) results on the usefulness of scaffolding in enhancing learner's self-efficacy and consequently scaffolding helped language learners, who had low sense of self-efficacy in writing, to write independently. Moreover, scaffolding helped them to understand and master on writing tasks. Therefore, strong self-efficacy gave confidence to learners' abilities to do tasks successfully. Furthermore, Schunk (1995) investigated different models of self-efficacy and got the possible effects of motivation on learning performance. The results of the study emphasized the different ways that goals influenced self-efficacy, motivation and performance.

Also, this finding is in line with Low & Robinson (2015) assertion that the role of motivational scaffolding, as a meaningful experience that led to effective learning, would be obvious that learners found the scaffolding as a

useful tool to increase knowledge and concluded that excitement and motivation in school-based learning are crucial. Tuckman (2007) stated the results of motivational scaffolding in the form of synchronous, online supporting and instruction that had a better conclusion in procrastinating learners than traditional one and enables them to stay on tasks and resulted in better course performance.

The present finding is similar to that of Jafarigohar & Mortazavi (2016), who investigated the impact of motivational scaffolding on groups of learners in to enhance their familiarity with using metacognition and concluded that motivational scaffolding could be useful in improving the use of metacognition strategies.

Concerning cognitive styles (FD & FI), there is no significant difference in terms of self-efficacy and learning achievement. It meant that scaffolding equally favors learners with both cognitive styles. Moreover, it was found that there was not any significant difference between the learners with FD and FI cognitive styles in terms of their learning achievement, self-efficacy. This result concurs with that of López et al. (2011), as they found that cognitive style in the FDI dimension did not affect the learning achievement of students who learned mathematical content in hypermedia environments.

In contrast to the result of this study, Onyekuru (2015) found the variation of learning achievement in learners with different cognitive styles as field-dependent and field-independent. Field-dependent learners had higher achievement in art while field-independent had higher dominance in science. Also, most of male participants were field-independent learners while most of female participants were field dependent.

Teachers of English language try to detect the means by which learners learn and gain abilities. One of the strategies to help learners in this respect is scaffolding. It provides learners with more skills during primary stage of learning. Alias (2012) defines scaffolding as an educational support for students in shaping and internalizing their learning. One kind of scaffolding is motivational scaffolding. It includes techniques designed to gain or develop the learners' motivational state, such as attribution or encouragement.

The current study showed that learners' interaction with motivational scaffolding improved their self-efficacy and learning achievement. In other words, the results reported that significant interaction do not exist between experimental learners' (with and without scaffolding) main factors across cognitive styles as far as learning achievement and self-determination are concerned. However, it was found that there is a significant influence of grouping on both self-efficacy and learning achievement.

The present study was an attempt to explore motivational scaffolding has impacted on the motivation of EFL learners in Ardabil, Iran. It can be said that my study found certain results that lead to several directions for future research. First of all, future research should further investigate different types of scaffolding based on its functions and mechanisms that focus on levels and intensities of the scaffolding used as well as consider learners' needs. Second, future research can be employed more participants to interview. Third, different levels of learners should take into account in quantitative part to generalize the findings. Fourth, according to psychological appointment, a trainer may be better and results will be faced with higher quality. Longitudinal case studies are another area of research that researchers might be interested in since these types of research allow to check for any changes in the motives of learners to study English.

The findings of the study can be useful and inspiring for all teachers, learners, authorities, book writers, etc., in EFL educational settings. They can be used in detecting some factors affecting EFL learners' language performance and their psychological status, like self-efficacy. Moreover, the findings can assist researchers working in psychological fields. They may be interested in shedding more light on the nature of self-efficacy and its possible usefulness in learning processes.

Declaration of interest: none

References

Ahmadi, A. R., & Yamini, M. (2003). Relationship between field dependence/independence and
listening comprehension strategy used by female Iranian English majors. *Journal of Faculty of Letters and Humanities (Tabriz), 46*(187), 61-72.
Ahmadzade, L., & Shojae, M. (2013). *Investigating the relationship between cognitive style (filed dependence/independence) and academic*

achievement in male and female students of Behbahan Islamic Azad University. JLSB, 3(3), 245-249.

Alias, N. A. (2012). Design of a motivational scaffold for the Malaysian e-learning environment. *Journal of Educational Technology & Society, 15*(1), 137-151.

Artino, A. R., Jr. (2012). Academic self-efficacy: from educational theory to instructional practice. *Perspect Med Educ, 1*(2), 76-85. doi:10.1007/s40037-012-0012-5

Barbour, R. (2008). *Introducing qualitative research: A student guide to the craft of doing qualitative research*. London, UK: Sage Publications Ltd.

Belland, B. R., Kim, C., & Hannafin, M. J. (2013). A framework for designing scaffolds that improve motivation and cognition. *Educational Psychologist, 48*(4), 243-270. doi:10.1080/00461520.2013.838920

Chen, C.-H., & Law, V. (2016). Scaffolding individual and collaborative game-based learning in learning performance and intrinsic motivation. *Comput. Hum. Behav., 55*(PB), 1201–1212.

Cheng, K. H., & Tsai, C. C. (2020). Students' motivational beliefs and strategies, perceived immersion and attitudes towards science learning with immersive virtual reality: A partial least squares analysis. *British Journal of Educational Technology, 51*(6), 2140-2159.

DeTure, M. (2010). Cognitive style and self-efficacy: Predicting student success in online distance education. *American Journal of Distance Education, 18*, 21-38. doi:10.1207/s15389286ajde1801_3

Ellis, R. (2015). *The study of second language acquisition*. Oxford: Oxford University Press. .

Hasan, M. (2018). Impact of motivational scaffolding on the acquisition of writing skills in L2 situation. . *International Journal of Humanities and Social Science Invention, 7*(12), 39-45.

Hodges, C. B. (2008). Self-efficacy in the context of online learning environments: A review of the literature and directions for research. *Performance Improvement Quarterly, 20*(3-4), 7-25. doi:https://doi.org/10.1002/piq.20001

Hutchinson, S. A., & Wilson, H. S. (1992). Validity threats in scheduled semistructured research interviews. *Nursing Research, 41*(2), 117-119. doi:10.1097/00006199-199203000-00012

Jafari, S., Talebinejad, M. R., & Ketabi, S. (2021). Comparative effects of technology-, motivational-, and metacognitive-based scaffolding on male

and female Iranian adult advanced EFL learners' speaking. *Research in English Language Pedagogy, 9*(2), 259-282.

Jafarigohar, M., & Mortazavi, M. (2016). Promoting metacognition in EFL classrooms through scaffolding motivation. *Iranian Journal of Applied Linguistics, 19*, 73-98.

Jumaat, N. F., & Tasir, Z. (2016). A framework of metacognitive scaffolding in learning authoring system through Facebook. *Journal of Educational Computing Research, 54*, 619 - 659.

López-Vargas, O., Hederich-Martínez, C., & Camargo-Uribe, Á. (2011). Cognitive style and academic achievement. *Educación y Educadores, 14*(1).

Low, D. E., & Robinson, T. (2015). A motivation scaffold to improve the learning engagement of students. *Teach Journal of Christian Education, 9*, (1), 30-38. Retrieved from https://research.avondale.edu.au/teach/vol9/iss1/7

Maghsudi, M. (2007). The interaction between field dependent/independent learning styles and learners' linguality in third language acquisition. . South Asian Language Review, 17 (1)100- 112.

McGrath, C., Palmgren, P. J., & Liljedahl, M. (2019). Twelve tips for conducting qualitative research interviews. *Medical Teacher, 41*(9), 1002-1006.

Michalsky, T. (2021). When to scaffold motivational self-regulation strategies for high school students' science text comprehension. *Frontiers in Psychology, 12*:658027. doi:10.3389/fpsyg.2021.658027

Muhammad, T., Daniel, E., & Abdurauf, R. A. (2015). Cognitive styles field dependence/independence and scientific achievement of male and female students of Zamfara State College of Education Maru, Nigeria. *Journal of Education and Practice, 6*, 58-63.

Onyekuru, B. (2015). Field dependence-field independence cognitive style, gender, career choice and academic achievement of secondary school students in Emohua Local Government Area of Rivers State. *Journal of Education and Practice, 6*, 76-85.

Pallant, J. (2010). *SPSS survival manual : a step by step guide to data analysis using SPSS (4th edn.).* Maidenhead :Open University Press/McGraw-Hill.

Pintrich, P., Smith, D.A.F., Garcia, T., & McKeachie, W.J. (1991). Module for the Use of the Motivated Strategies for Learning Questionnaire (MSLQ). Retrieved from http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb

Pishadast, A., Mojavezi, A., & Okati, F. (2021). Development of speaking ability through motivational and metacognitive-based scaffolding. *Language and Translation, 11*(3), 75-90.

Schunk, D. H. (1995). Self-efficacy, motivation, and performance. *Journal of Applied Sport Psychology, 7*(2), 112-137. doi:10.1080/10413209508406961

Stansfield, C., & Hansen, J. (1983). Field Dependence-Independence as a Variable in Second Language Cloze Test Performance. *TESOL Quarterly, 17*(1), 29-38. doi:https://doi.org/10.2307/3586422

Sternberg, R. J., Grigorenko, E. L., & Zhang, L.-F. (2008). Styles of learning and thinking matter in instruction and assessment. *Perspectives on Psychological Science : A Journal of the Association for Psychological Science, 3*(6), 486-506. doi:10.1111/j.1745-6924.2008.00095.x

Tuckman, B. (2007). The effect of motivational scaffolding on procrastinators' distance learning outcomes. *Computers & Education, 49*, 414-422. doi:10.1016/j.compedu.2005.10.002

Valencia-Vallejo, N., López-Vargas, O., & Sanabria-Rodríguez, L. (2018). Effect of motivational scaffolding on e-learning environments: Self-efficacy, learning achievement, and cognitive style. *Journal of Educators Online, 15*.

Valencia-Vallejo, N., López-Vargas, O., & Sanabria-Rodríguez, L. (2019). Effect of a metacognitive scaffolding on self-efficacy, metacognition, and achievement in e-learning environments. *Knowledge Management & E-Learning: An International Journal, 11*, 1-19.

Witkin, H. A., Moore, C. A., Goodenough, D., & Cox, P. W. (1977). Field-dependent and field-Independent cognitive styles and their educational implications. *Review of Educational Research, 47*(1), 1-64. doi:10.3102/00346543047001001

Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Child Psychology & Psychiatry & Allied Disciplines, 17*(2), 89-100. doi:10.1111/j.1469-7610.1976.tb00381.x

Yantraprakorn, P., Darasawang, P., & Wiriyakarun, P. (2018). Self-efficacy and online language learning: causes of failure. *Journal of Language Teaching and Research, 9*, 1319-1329.

Yusuf, M. (2011). The impact of self-efficacy, achievement motivation, and self-regulated learning strategies on students' academic achievement. *Procedia - Social and Behavioral Sciences, 15*, 2623-2626. doi:https://doi.org/10.1016/j.sbspro.2011.04.158

Biodata

Hossein Siahpoosh is an assistant professor in ELT at Islamic Azad University of Ardebil. He has been teaching English for more than 20 years in different universities and institutions in Iran. He has published more than twenty papers and attended several international conferences. His areas in research include language skills, individual differences, CALL, etc.

Masoumeh Sohrabi is a PhD candidate in TEFL. She got her M.A in 2008 from Islamic Azad University of Tabriz. Her research interests include investigating teaching professional development and finding out the methods to improve learning proficiency in EFL learners. She is currently working on her dissertation focusing on the role of motivational scaffolding in learners' achievement. The study is supervised by Professor Hossein Siahpoosh.

Asgar Mahmoudi was born in Ardabil, Iran in 1962. He got his PhD in ELT from Tabriz University in 2010 and followed his career as a full-time faculty member at Islamic Azad university Ardabil Branch. He retired in 2019 but he is still cooperating with the same university as an adjunct professor.