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Research Paper

Impact of Motivational Scaffolding on Self-Determination and Learning Achievement of Field-Dependent/Independent EFL Learners

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

[1]Ph.D. Candidate, English Department, Ardabil Branch, Islamic Azad University, Ardabil, Iran
Laleh.sohrabi1357@ gmail.com
[2]Assistant Professor, English Department, Ardabil Branch, Islamic Azad University, Ardabil, Iran
siahpoosh_h@iauardabil.ac.ir
[3]Professor Emeritus, English Department, Ardabil Branch, Islamic Azad University, Ardabil, Iran
a.mahmoudi@iauardabil.ac.ir

Abstract
The present study investigated the effects of motivational scaffolding on self-determination and learning achievement of field-dependent/independent Iranian EFL learners. To this purpose, quantitative data were elicited and analyzed from 60 intermediate learners who participated in the study as experimental and control groups. The Group Embedded Figures Test (GEFT) was administered to categorize the learner participants into field-dependent and field-independent learners. Then, the scaffold design proposed by Belland et al. was presented to the experimental group, while the control group got all tests and questionnaires with no scaffolding. At the end of 8 training sessions, a self-determination questionnaire was administered to both groups, and then a post-test was applied to examine the impact of scaffolding on learners' achievement. The statistical analysis of the elicited data showed that the learners' interaction within motivational scaffolding improved their self-determination and their learning achievement. The findings of the study have implications for teachers and learners in educational settings and help them to detect possible factors affecting EFL learners' language performance.

Keywords: *Cognitive style, field-dependent/field-independent learners, learning achievement, motivational scaffolding, self-determination*

بررسی تأثیر تکیه گاه سازی انگیزشی بر خود مختاری و پیشرفت یادگیری زبان آموزان EFL وابسته به زمینه/مستقل ایرانی
مطالعه کنونی به بررسی تأثیر تکیه گاه سازی انگیزشی بر خود مختاری و پیشرفت یادگیری زبان آموزان EFL وابسته به زمینه/مستقل ایرانی پرداخته است. برای این منظور ، داده های کمی از 60 زبان آموز با سطح متوسط که در مطالعه به عنوان گروه آزمایش و کنترل شرکت کرده بودند ، جمع آوری و تجزیه و تحلیل شد. پرسشنامه GEFT برای دسته بندی شرکت کنندگان به دو گروه وابسته به زمینه و مستقل از زمینه اجرا شد. سپس ، طرح تکیه گاه سازی پیشنهاد شده توسط بلاند و همکاران ، به گروه آزمایش ارائه شد ، در حالی که گروه کنترل تمام تست ها و پرسشنامه ها را بدون تکیه گاه سازی دریافت کردند. در پایان 8 جلسه آموزشی ، یک پرسشنامه خود مختاری برای هر دو گروه اجرا شد و سپس یک پس آزمون برای بررسی تأثیر تکیه گاه سازی بر پیشرفت دانش آموزان انجام شد. تجزیه و تحلیل آماری داده های به دست آمده نشان داد که تعامل یادگیرندگان در تکیه گاه سازی انگیزشی ، خود مختاری و پیشرفت یادگیری آنها را بهبود می بخشد. یافته های این مطالعه برای معلمان و زبان آموزان در محیط های آموزشی کاربردهایی دارد و به آنها کمک می کند تا عوامل موثر بر عملکرد زبان آموزان زبان انگلیسی را شناسایی کنند.

Introduction

The term scaffolding was used by Wood, Bruner, and Ross (1976). They described it as a teaching method used by parents in relation to their children and described it as a help and form of support that could be organized to help students improve their studies (1976). Such help and support are removed when students become more independent (Al Eissa and Al Bargi, 2017). The term scaffolding is defined

by Wood, Bruner, and Ross (1976) as a means of helping a "newcomer to solve a problem, perform a task or achieve a goal beyond his or her futile efforts" (p. 90). According to social belief, scaffolding can be traced back to Vygotsky's zone of proximal development (ZPD), and learning can be applied psychologically and socially (Al Eissa and Al Bargi, 2017). Lantolf and Appel (1994) investigated the positive effects of collecting oral work used by students. Scaffolding enables students to formulate appropriate words. Also, Ohta (2000) investigated the effects of collaborative learning and other methods students used to reproduce each other.

As quoted in Al Eissa and Al Bargi (2017), Graves and Fitzgerald described the installation of scaffolding as a strategy that enabled students to perform the task more fully or easily than they would without the scaffold. Therefore, scaffolding can be done as a teacher's strategy, to help and support students to develop their skills, ide,as and understanding of knowledge. Scaffolding as support removes it gradually where students can plan for more governance and independence (Al Eissa and Al Bargi, 2017).

Scaffolding has been used as a new teaching strategy for teacher planning, as well as using critical support in the learning process (Hammond and Gibbons, 2005). Scaffolding has been shown to improve student performance in overcoming obstacles. It is shown that students in cognitive and cognitive situations will have better performance using these types of scaffolding (Roll et al., 2006). Cognitive divergence, by leading students to achieve appropriate goals and a supportive learning process, enables them to understand problems by modeling. This also led to the provision of training guides and strategies. In contrast, metacognitive scaffolding input supports learning by directing students' perceptions of their comprehension and the tasks they have divided (Jummat and Tasir, 2015). Encouraging complementary learning can motivate, strategize, evaluate and monitor the learning process for students according to their goals and strategies for career development (Efklides, 2008).\

One of the tasks of teachers in teaching areas is to motivate students by engaging their interests. This interest is at stake if students decide for themselves. It means they can guide their learning purpose, select and evaluate their goals. When teachers involve students in decision-making, it results in an increase in motivation, and as a result increases learning achievement (Ellis, 1996).

Self-determination is one of the psychological dimensions; shows the action of men on the basis of their will, and this kind of mental behavior stems from determination, the recognition of the chosen meaning, and the ideas of self-determination. The concept of self-determination (SDT) provided by Deci and Ryan emphasizes the motivational phase of self-determination and also highlights the role of choice in the development and improvement of student learning and education (Hui and Tsang, 2012).

Deci and Ryan (2000) have described the theory of choice by referring to three key components of psychology that are needed to motivate a person. These three attributes were named as abilities, independence, and relationships. The common denominator is the belief in free will. Competence, independence, and relevance are requirements related to the fundamental importance of self-determination (Chatzisarantis and Hagger, 2007). Competence discusses having a sense of being able to meet the needs of the settings and deal with current challenges. Such a need can be satisfied by the experience of creating and implementing preferred objectives, and with effective outcomes.

Literature Review

Motivational Scaffolding

In a study of second language acquisition (L2), after introducing Vygotsky's zone of proximal development (ZPD), scaffolding was established as one of the key platforms for building a second language, the theoretical theory developed that propagating allows and enhances the language skills of learners. But there is a change in belief in the meaning and size of fill (Hasan, 2018).

In a study on the effect of spitting on learning achievement, Aslam et al. (2018) concluded that there has been a significant change in the learning success of students developed through scaffolding services in contrast to those who have been taught traditional methods. Scaffolding can be important in explaining

challenges even at higher levels of education. In researching the impact of spitting on student learning strategies and reading ability, Mango explored the potential effects of accumulation by getting feedback from students on the pre-and post-learning curriculum. Their work and speed increased and their anxiety decreased with the giving plan provided by the teacher (2010).

Chen (2018) concluded that spraying has a positive effect on students ’motivation, enhances their interest in the learning process, and increases their confidence in ESP classes. An and Cae (2014) in their study of the impact of metacognitive fragmentation concluded that metacognitive spraying has a lasting influence on student strategic problem-solving strategies, but did not have a significant impact on design results and metacognitive skills thinking, the experimental group showed significant improvements. Chen and Law (2016) explained that the inclusion of scissors has an impact on the motivation and learning of students. One of the key elements of social commentary is scaffolding which has had a positive impact on the complexity and accuracy of the narrative of EFL students (Ali, 2015). Belland, Kim reviewed research on improving motivation and supported graphic design as one of the ways to improve motivation. The structure they have developed includes strategies such as building value for work, helping to develop artistic goals, increasing and controlling emotions, self-control, and developing self-reliance for success. Cocca and Cocca (2019) are also in the study of finding effective flexibility and motivation in developing students 'English language skills, concluding that students' success is linked to their motivation to learn English, as well as their awareness of English learning quality. Boggs (2019) goes on to explain how using a corrective response can increase their accuracy in written grammar. He selected three groups consisting of traditional scaffolding, self-scaffolding, and the unscaffold group and showed that all three groups were the same and received similar increases in obtaining accurate grammar lessons.

Considering the enhancement of internal motivation as one of the key contributors to improving student achievement, Askarzadeh and Yazdanmehr (2020) concluded that gifted students perform better than non-gifted students, and motivation is considered a better predictor of student development in the foreign language field. Also, Kumar (2020) tried to analyze the impact of motivation on learning and found that reward as an incentive influences students to consider a new strategy and know what they want to learn. Kumar also found a great role in teacher motivation in how students learn effectively.

Self-determination

Self-determination theory (SDT) is considered as a theory of motivation that uses traditional experimental procedures to form its theory and instruct its learning environment uses. The self-determination theory proposes that all learners, regardless of their nationality, socioeconomic and cultural status and also without considering their age, hold intrinsic progression in intrinsic motivation, interest, and psychological requirements that result in high and positive motivational engagement in the learning environment (Reeve, 2018). Whereas other motivation principles clarify how learners’ expectations, beliefs, and objectives lead to their learning achievement, self-determination theory emphasizes the enhancement of inner motivational capabilities.

Various studies have proven that if teachers consider learners’ psychological points, which are needed by learners as their essential needs for being autonomous, self-determining, and gaining higher performance, results in better achievement (Niemiec and Ryan, 2009). Learners who are associated with the upper levels of self-determination points as their being autonomous, being related, and having competency resulted in more satisfying learning experiences and more strongly intrinsic motivation, and consequently, learners had higher and positive academic achievement (Chirkov, 2009). Eisenman (2007), in his research on self-determination and interventions, inferred that for learners' self-determination is the main aspect in achieving success in school. The learning environment can intervene to enhance learners, self-regulation. Teaching abilities with self-determination is a strategy for promoting learners’ motivation.

Some researchers have proven that learners with the ability of self-determining informed more progressive impact and emotions, further satisfaction of academic effort (Niemiec and Ryan, 2009). In

addition, having a high level of autonomy in the learning environment is related to lower dropout degrees, minor levels of anxiety, and upper levels of positive strategies (Vallerand and Bissonnette, 1992). Otoshi and Heffernan (2018) focused to find the relationship between three basic domains of self-determination with internal motivation and found out that competence and relatedness played role in learners' internal motivation and in the case of autonomy, there was no relation with internal motivation. Learners' TOEIC scores were improved, so instructors should take into account the activities to increase language skills.

Cognitive style

Independent theory (SDT) is considered a motivational theory that uses traditional assessment methods to develop its theory and teach its use in the learning environment. The concept of commitment suggests that all students, regardless of their nationality, socio-economic status and culture, and regardless of their age, hold internal progress in inner motivation, interest, and psychological needs leading to high and encouraging participation in the learning environment (Reeve, 2018).

While some motivation principles specify how students' expectations, beliefs, and goals lead to their learning success, the optional theory emphasizes the development of internal motivational skills. Various studies have proven that when teachers consider students' psychological points, which students need as their essential needs for independence, self-determination, and achieving high performance, it leads to better success (Niemiec and Ryan, 2009). Students are associated with higher levels of self-esteem as their independence, affiliation, and ability have led to a satisfying learning experience and strong inner motivation, and as a result, students have higher and better academic success (Chirkov, 2009).

Eisenman (2007), in his study of commitment and intervention, pointed out that student independence is a key factor in achieving success in school. The learning environment can interfere with student development, self-regulation. Voluntary teaching skills are a strategy to encourage student motivation.

Second language researchers have studied students' cognitive styles as one of the clues in order to discover their strategy and method of learning another language (Stansfield and Hansen, 1983). Cognitive style theory as a sustainable strategy was defined as an attitude that distinguishes and evaluates students' ways of recognizing, discovering, and solving difficulties, and refers to the student's way of inputting information. However, students with different features have different ways of transmitting, encoding, and viewing information. This reflects individual differences in cognitive style such as field dependence and independence (Onyekuru, 2015).

Sustainability and sectoral independence are defined as the differences that exist between learners in terms of perception, planning, analysis, and memory. While students who rely on the field show a tendency to focus on learning from an external and external guide, independent students on the field rely on internal rules or data processing methods (Brown, 2000).

Ahmady and Yamini (2003) emphasized the relationship between sector dependence/independence and their understanding of obedience. They explored various cognitive styles in applying a listening comprehension strategy among women. The result showed students relying on external guidance such as field relying on a variety of social strategies, while students with independent style characteristics used metacognitive, memory. Verma (2001) assessed student learning success with a variety of cognitive styles and concluded that students with an independent style on the field scored significantly higher in learning engagement than their field-dependent counterparts. Also, Geetanjali (2006) found better and higher levels of academic achievement for independent students in the field and led to a more meaningful relationship between student academic achievement and cognitive style. Alomyan (2004) in his study looked at the impact of student-centered and independent styles, their motivation, and the success of online learning. He concluded that there is no difference between students' approaches to online learning and their field-based understanding.

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

RQ1: Does motivational scaffolding have any effect on EFL learners' self-determination?

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-determination?

Method

Participants

For the purposes of the study, 60 intermediate participants were chosen through convenient sampling from different classes in Sama College of Ardabil, Iran. They were first and second-semester male-female students. Nelson test was used to homogenize them regarding their language proficiency level. They were divided into two experimental and control groups who attended classes one time a week for three months.

Instrumentation

To collect the data needed for the study, three instruments were used: cognitive style test, achievement test, and self-determination questionnaire.

Cognitive style test

One of the instruments to measure a learner's learning style is the Group Embedded Figures Test (GEFT) that was designed by Witkin et al. (1977). The GEFT is a conceptual test, which contains a larger complex of figures. The GEFT, which comprises 18 complex figures, was conducted in 20 minutes and was scored using an answer sheet.

Achievement test

To specify learners' achievement and recognize their improvement, a pre-test and a post-test were used. To check the reliability and validity of the test, the researcher conducted a pilot study, which was applied to a sample similar to that of the quantitative phase.

Self-determination questionnaire

To evaluate and get the learners' self-determination, an AMS questionnaire was used. This scale also measures motivation. AMS consists of 28 items divided into seven scales. This test consists of intrinsic motivation, extrinsic motivation, and amotivation. Both intrinsic and extrinsic motivation has three types, and one item for motivation (Varllerand and Bissonnette, 1992).

Procedure

In order to investigate the participants' proficiency level, first, a pre-test was administered to both the experimental and control groups. Then, to determine their different cognitive styles within the aspect of field-dependence and independence, Group Embedded Figures Test (GEFT) was administered.

To conduct motivational scaffolding, the scaffold design proposed by Belland et al. (2013) was presented in the experimental class. At the end of training sessions, a self-determination questionnaire was administered, and then a post-test was applied to examine the impact of scaffolding on learners' achievement in learning the English language. It should be mentioned that the control group got all tests and questionnaires, with no scaffolding in the class.

Results

The results of statistical data analysis are presented in this section through the following tables:

Descriptive Tests

Table 1

Descriptive statistics for pre- self-determination and pre-test of proficiency test

	group2	COG2	Mean	Std. Deviation	N
Pre-self-determination	Exp	FD	110.36	23.260	14
		FI	129.94	17.643	16
		Total	120.80	22.411	30
	Con	FD	112.57	19.693	14
		FI	110.00	18.924	16
		Total	111.20	18.994	30
	Total	FD	111.46	21.177	28
		FI	119.97	20.651	32
		Total	116.00	21.157	60
Pre-test 2	Exp	FD	8.2857	4.36205	14
		FI	11.6563	5.29377	16
		Total	10.0833	5.09409	30
	Con	FD	10.8929	3.84397	14
		FI	12.4375	4.32001	16
		Total	11.7167	4.10988	30
	Total	FD	9.5893	4.24712	28
		FI	12.0469	4.76946	32
		Total	10.9000	4.66214	60

Table 2

Descriptive statistics for post self-determination and post- test of proficiency test

	group2	COG2	Mean	Std. Deviation	N
Post self-determination	Exp	FD	130.64	21.135	14
		FI	141.75	12.673	16
		Total	136.57	17.751	30
	Con	FD	112.71	19.554	14
		FI	110.31	20.165	16
		Total	111.43	19.576	30
	Total	FD	121.68	21.966	28
		FI	126.03	23.011	32
		Total	124.00	22.446	60
posttest2	Exp	FD	11.3214	4.23632	14
		FI	13.7813	4.61869	16
		Total	12.6333	4.54277	30
	Con	FD	12.6429	3.65023	14
		FI	13.7187	4.09051	16
		Total	13.2167	3.86336	30
	Total	FD	11.9821	3.93814	28
		FI	13.7500	4.29178	32
		Total	12.9250	4.19122	60

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

Table 3

Box's Test of Equality of Covariance Matrices of pre- self-determination and pre-test of proficiency test

Box's M	2.862
F	0.297
df1	9
df2	33285.196
Sig.	0.976

Moreover, Table 3 indicates Box's test of equality of covariance matrices is not statistically significant (Box's $M = 2.68$, $p < 0.98$), which means 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

Box's Test of Equality of Covariance Matrices of post-self-determination and post-test of proficiency test

Box's M	5.479
F	0.569
df1	9
df2	33285.196
Sig.	0.824

As Table 4 reports, Box's test of equality of covariance matrices is not statistically significant (Box's $M = 5.48$, $p < 0.82$), 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

Table 5

Bartlett's Test of Sphericity for a pre-test of proficiency test and pre-self-determination

Likelihood Ratio	0.000
Approx. Chi-Square	92.735
Df	2
Sig.	0.000

As Table 5 shows, Bartlett's test of Sphericity for pre-tests was statistically significant (approximate chi-square = 92.73, $p < 0.00$. This indicates that there was a sufficient correlation between dependent variables to precede the analysis.

Table 6

Bartlett's Test of Sphericity for post-test of proficiency test and post-self-determination

Likelihood Ratio	0.000
Approx. Chi-Square	93.590
Df	2
Sig.	0.000

As Table 6 shows, Bartlett's test of Sphericity for pre-tests was statistically significant (approximate chi-square = 93.59, $p < 0.00$. This indicates that there was a sufficient correlation between dependent variables to precede the analysis.

Multivariate tests

Table 7

Results of Multivariate test of analysis in a pre-test in proficiency test and pre-self-determination

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	0.976	1104.866[b]	2.000	55.000	0.000	0.976
	Wilks' Lambda	0.024	1104.866[b]	2.000	55.000	0.000	0.976
	Hotelling's Trace	40.177	1104.866[b]	2.000	55.000	0.000	0.976
	Roy's Largest Root	40.177	1104.866[b]	2.000	55.000	0.000	0.976
Group	Pillai's Trace	0.090	2.706[b]	2.000	55.000	0.076	0.090
	Wilks' Lambda	0.910	2.706[b]	2.000	55.000	0.076	0.090
	Hotelling's Trace	0.098	2.706[b]	2.000	55.000	0.076	0.090
	Roy's Largest Root	0.098	2.706[b]	2.000	55.000	0.076	0.090
Cognitivedetermine	Pillai's Trace	0.106	3.267[b]	2.000	55.000	0.046	0.106
	Wilks' Lambda	0.894	3.267[b]	2.000	55.000	0.046	0.106
	Hotelling's Trace	0.119	3.267[b]	2.000	55.000	0.046	0.106
	Roy's Largest Root	0.119	3.267[b]	2.000	55.000	0.046	0.106
group * cognitivedetermine	Pillai's Trace	0.082	2.462[b]	2.000	55.000	0.095	0.082
	Wilks' Lambda	0.918	2.462[b]	2.000	55.000	0.095	0.082
	Hotelling's Trace	0.090	2.462[b]	2.000	55.000	0.095	0.082
	Roy's Largest Root	0.090	2.462[b]	2.000	55.000	0.095	0.082

The relevant Box's *M* test was not statistically significant, and it indicates the equality of covariance matrices. Therefore, all 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 evident in Table 7, Wilks's lambda value is 0.91 which, is next translated into an *F* value of 2.70 and evaluated at hypothesis (between groups) and error (within groups) degrees of freedom of 2 and 55. This *F* value is not statistically significant ($p< 0.07$), indicating no differences between groups on the dependent variate.

Then, we should analyze the multivariate main effect of cognitive determines. The Wilks's lambda value of 0.89 is translated into an *F* value of 3.27 and evaluated at 2 and 55 (between- and within-groups degrees of freedom, respectively). This *F* value is statistically significant ($p < 0.05$) and indicates a difference in the dependent variate.

Finally, the multivariate interaction effect produced a Wilks's lambda value of 0.92 which, is translated into an *F* value of 2.46 and evaluated with degrees of freedom of 2 and 55. This *F* value is not statistically significant ($p < 0.09$), showing that the multivariate interaction effect of Group and Cognitive Style does not account for a significant proportion of the variance.

Table 8

Results of Multivariate test of analysis in post-test of proficiency test and post-self-determination

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Effect
Intercept	Pillai's Trace	0.984	1696.110b	2.000	55.000	0.000	0.984
	Wilks' Lambda	0.016	1696.110b	2.000	55.000	0.000	0.984
	Hotelling's Trace	61.677	1696.110b	2.000	55.000	0.000	0.984
	Roy's Largest Root	61.677	1696.110b	2.000	55.000	0.000	0.984
Group	Pillai's Trace	0.321	12.985b	2.000	55.000	0.000	0.321
	Wilks' Lambda	0.679	12.985b	2.000	55.000	0.000	0.321
	Hotelling's Trace	0.472	12.985b	2.000	55.000	0.000	0.321
	Roy's Largest Root	0.472	12.985b	2.000	55.000	0.000	0.321
Cognitive determine	Pillai's Trace	0.063	1.850b	2.000	55.000	0.167	0.063
	Wilks' Lambda	0.937	1.850b	2.000	55.000	0.167	0.063
	Hotelling's Trace	0.067	1.850b	2.000	55.000	0.167	0.063
	Roy's Largest Root	0.067	1.850b	2.000	55.000	0.167	0.063
group * cognitive determine	Pillai's Trace	0.044	1.254b	2.000	55.000	0.293	0.044
	Wilks' Lambda	0.956	1.254b	2.000	55.000	0.293	0.044
	Hotelling's Trace	0.046	1.254b	2.000	55.000	0.293	0.044
	Roy's Largest Root	0.046	1.254b	2.000	55.000	0.293	0.044

The relevant Box's *M* test was not statistically significant, and it indicates the equality of covariance matrices. Therefore, all 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, Wilks's lambda value is 0.68 which, is subsequently translated into *F* value of 12.98 and evaluated at hypothesis (between groups) and error (within groups) degrees of freedom of 2 and 55. This *F* value is statistically significant ($p < 0.000$), indicating a difference between groups on the dependent variate. As shown in the last column of Table 8, the partial eta=squared value tells us that this main effect accounts for approximately 32% of the total variance.

Then, we should analyze the multivariate main effect of cognitive determines. The Wilks's lambda value of 0.94 is translated into an *F* value of 1.85 and evaluated at 2 and 55 (between- and within-groups degrees of freedom, respectively). This *F* value is not statistically significant ($p < 0.17$) and indicates no difference in the dependent variate.

Finally, the multivariate interaction effect produced Wilks's lambda value of 0.96, which is translated into an *F* value of 1.25 and evaluated with degrees of freedom of 2 and 55. This *F* value is also not

statistically significant ($p < 0.29$), showing that the multivariate interaction effect of Group and Cognitive Style does not account for a significant proportion of the variance.

In order to investigate which dependent variable has a main effect separately with the significance of statistics, the independent samples t-test was done.

Table 9

Independent Samples Test for post-self-determination

		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
Postself determination	Equal variances assumed	0.444	0.508	5.209	58	0.000	25.133	4.825	15.476	34.791
	Equal variances not assumed			5.209	57.453	0.000	25.133	4.825	15.474	34.793

By referring to Sig. (2-tailed) under the t-test for equality of means, the value in the Sig. (2-tailed) equals 0.000 and is less than 0.05. It means that there is a significant difference in the mean scores on the findings of post-self-determination.

Table 10

Independent Samples Test for post-test of learning achievement in the second group

		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
posttest2	Equal variances assumed	0.811	0.372	-0.536	58	0.594	-0.58333	1.08877	-2.76274	1.59607
	Equal variances not assumed			-0.536	56.542	0.594	-0.58333	1.08877	-2.76393	1.59727

By referring to Sig. (2-tailed) under the t-test for equality of means, the value in the Sig. (2-tailed) is equal to 0.594, and the value is above 0.05. It means that there is no significant difference in the mean scores on the findings of post-test in learning achievement.

Levene's tests

Levene's Test of Equality of Error Variances investigates the assumption of MANOVA that the variances of each variable are equal throughout the groups.

Table 11

Levene's Test of Equality of Error Variance of pre-self-determination and pre-test in proficiency test

	F	df1	df2	Sig.
Preseli determination	.153	3	56	.927
pretest2	.436	3	56	.728

The Sig. value in pre-self-determination is 0.927 and is more than 0.05, and Sig. value in pre-test is 0.728 and is more than 0.05 ($p > 0.05$). There are non-significant for all dependent variables, and the assumption of homogeneity of variance has occurred.

Table 12

Levene's Test of Equality of Error Variance of post-self-determination and post-test in proficiency test

	F	df1	df2	Sig.
Postselfdetermination	1.248	3	56	0.301
posttest2	0.249	3	56	0.862

The Sig. value in post-self-determination is 0.301 and is more than 0.05, and, Sig. value in post-test is 0.862 and is more than 0.05 ($p > 0.05$). These are non-significant for all dependent variables, and the assumption of homogeneity of variance has happened.

Discussion

The primary aim of this study was to investigate the effect of motivational scaffolding on self-determination and the learning achievements of EFL learners. It was done across two cognitive styles: filed-dependence and field independence.

The results of data analysis showed that learners ' interaction within motivational scaffolding improved their self-determination and learning achievement. In other words, the results revealed that significant interaction did not exist between experimental groups (with and without scaffolding) main factors across cognitive styles as far as learning achievement and self-determination were concerned. This finding supports the general findings of previous studies in which motivational scaffolding proved effective on learning (Law and Robinson, 2015 and Hasan, 2018). Alias (2012) found the potentiality of scaffolding to regulate motivation and result in enhancing and improving self-evaluation. But Bogges (2019), in his study on the impact of corrective feedback as one of the elements of scaffolding, found no possible influence with scaffolding in improving learners' accuracy in grammar.

Concerning cognitive styles; that is, field dependence and field-independence, it was found that there is no significant difference in terms of self-determination. It means that scaffolding equally favors learners with both cognitive styles. Moreover, it was found that there was not any significant difference between learners with cognitive styles in terms of their learning achievement and self-determination. In line with this finding, Alomyan (2004) investigated the impact of learners' cognitive styles, motivation, and learning achievement in a web-based environment and concluded that there was no significant difference between learners' approaches towards web-based learning and their cognitive styles. In contrast, Verma (2001) and Geetanjali (2006) claimed that learners' different cognitive styles, field-independent learners gained significantly higher levels in mean scores in learning engagement than their field-dependent learners.

Conclusions

Teachers of the 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 the primary stage of learning. Alias (2012) defines scaffolding as 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-determination 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-determination and learning achievement.

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

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