

«نشریه علمی-پژوهشی آموزش و ارزشیابی»

سال دهم - شماره ۳۸ - تابستان ۱۳۹۶

ص.ص. ۱۷۳-۱۵۷



The Effect of Teaching Critical Thinking Skills on Iranian Advanced EFL Learners' Motivation

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Date of receipt: 2016.06.12

Date of acceptance: 2017.02.25

Abstract

Critical thinking, being one of the many skills teachers should teach, might be of great advantage to learners in improving their motivation. The present study was an attempt to probe the effect of teaching critical thinking skills on the Iranian advanced EFL learners' motivation. The study was carried out at Simin language center in Tabriz. From among 60 initial participants, 42 were selected based on the results of TOEFL Proficiency test. Then, the selected participants were randomly assigned to an experimental and a control group, each consisting of 21 participants. A motivation questionnaire, adopted from Salimi (2000), including 36 items on a 5- point Likert Scale, was administered at the beginning of the study to the students in both experimental and control groups in order to evaluate their motivation. Subsequently, the Watson and Glaser (1980) critical thinking appraisal, comprising 80 items on five subtests, representing critical thinking sub skills, were instructed to the 21 students in the experimental group.. The sub skills of critical thinking included skills such as inference, recognition of assumptions, deduction, interpretation, and evaluation of arguments. The instructional treatment took 10 sessions twice a week for advanced students. In each session, 20 minutes were devoted to the treatment. The traditional instruction was conducted in the control group. Analyzing the motivation scores, attained through independent samples t-test at the end of the treatment, and showed that teaching critical thinking skills had significant effect on enhancing the participants' motivation. The obtained results have some implications for teachers. Through applying critical thinking skills in their classes, teachers can help their students enhance their motivation, and thus, improve their learning.

Keywords: critical thinking skills, motivation

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تأثیر تدریس مهارت‌های تفکر انتقادی بر انگیزه زبان‌آموزان سطح پیشرفته ایرانی

پروانه رجعتی

نسرین حدیدی‌تمجید

سعیده آهنگری

تاریخ دریافت مقاله: ۱۳۹۵/۰۲/۲۳

تاریخ پذیرش نهایی مقاله: ۱۳۹۵/۱۲/۰۷

چکیده:

تفکر انتقادی، به عنوان یکی از بهترین مهارت‌هایی که معلمان از آن بهره می‌جویند فواید زیادی برای زبان‌آموزان در افزایش انگیزه‌ی آنها می‌تواند داشته باشد. در این تحقیق سعی شده است که تأثیر تدریس مهارت‌های تفکر انتقادی بر انگیزه زبان‌آموزان سطح پیشرفته ایرانی مورد بررسی قرار گیرد. این تحقیق در مرکز آموزش زبان سیمین در تبریز انجام شده بود. از میان ۶۰ نفر زبان‌آموز ابتدایی، ۴۲ نفر براساس نتایج تست مهارتی تافل انتخاب شده بودند. سپس، زبان‌آموزان انتخاب شده به طور تصادفی به یک گروه تجربی و یک گروه کنترل و هر گروه به ۲۱ زبان‌آموز تقسیم شدند. یک پرسشنامه انگیزه، برگرفته از سلیمی (۲۰۰۰)، شامل ۳۶ آیتم در مقیاس لیکرت ۵ گزینه‌ای در ابتدای این تحقیق به دانش‌آموزان در هر دو گروه تجربی و کنترل به منظور ارزیابی انگیزه دانش‌آموزان داده شد. متعاقباً، پرسشنامه ارزیابی تفکر انتقادی "Watson and Glaser" (۱۹۸۰) شامل ۸۰ آیتم در ۵ زیر مجموعه، نشان دهنده زیرمجموعه مهارت‌های تفکر انتقادی، به ۲۱ دانش‌آموز در گروه تجربی داده شد. زیر مجموعه مهارت‌های تفکر انتقادی شامل مهارت‌هایی همچون استنتاج، شناسایی فرضیه‌ها، استنباط، تفسیر، و ارزیابی استدلال‌ها بود. آموزش تفکر انتقادی به مدت ۱۰ جلسه دوبر در هفته برای دانش‌آموزان پیشرفته طول کشید که در هر جلسه، ۲۰ دقیقه به آموزش اختصاص داده شد بود. آموزش سنتی در گروه کنترل اجرا شد. تحلیل نمرات انگیزه، بدست آمده از طریق آزمون تی- تست مستقل در انتهای آموزش، نشان داد که تدریس مهارت‌های تفکر انتقادی تأثیر معنی‌داری در بالا بردن انگیزه شرکت‌کنندگان داشت. نتایج بدست آمده می‌تواند پیامدهایی برای معلمان داشته باشد. از طریق به کار بردن مهارت‌های تفکر انتقادی در کلاس‌هایشان، معلمان می‌توانند به بالا بردن انگیزه دانش‌آموزان خود کمک کرده و یادگیری آنها را بهبود دهند.

واژگان کلیدی: مهارت‌های تفکر انتقادی، انگیزه

Introduction

Although critical thinking was traditionally well thought-out and practiced by philosophers, psychologists, and educators, according to educational psychologists such as Thomas and Smoot (1994) and Huitt (1998), even in the present 21st century, it is a very important element of schooling. Huitt (1998) argues that in the information age, thinking plays an important role in one's success in life. Similarly, Chaffee (1985) and Paul (1995) note that enhancing students' critical thinking (CT) abilities is the core of meaningful education.

Various definitions have been proposed for critical thinking. Halpern (1999) defines critical thinking as the use of cognitive skills or strategies that increase the probability of a desirable outcome. In another definition, proposed by Ennis (1996), critical thinking consists of particular skills, such as being able to assess reasons appropriately, or to identify false arguments. For many reasons, educators have been very interested in teaching 'thinking skills' of various kinds in contrast with teaching information and content. In this regard, Fisher (2001, as cited in Fahim & Mirzaii, 2014) noted that teaching critical thinking skills should be done directly and explicitly so as to ensure transfer ability. Never the less, the main problem is the ignorance of critical thinking skills in most educational systems and learning activities. Stapleton (2002) argues that Asian learners of English are characterized by constructs claiming that they lack an individual voice and critical thinking skills. Learners should be taught how to think rather than what to think. Moreover, according to Satariyan (2010), Iranian learners are brought up in a way that their study directs them only to be followers, which will contribute to their loss of sense of curiosity and motivation.

In general, there is no doubt that motivation is viewed as an essential factor in all aspects of our lives. A closer look at our personal lives, careers, education, even religion and many other domains reveals the significance of motivation. Dörnyei and Ottó (1998) portray motivation in second language (L2) learning as "the dynamically changing cumulative arousal in a person that initiates, directs, coordinates, develops, terminates, and assesses the cognitive and motor processes whereby initial wishes and desires are selected, prioritized, operationalized and (successfully or unsuccessfully) acted out" (p. 45). This definition reflects on a variety of influential factors that compel learners' desire or arousal to acquire an L2 (Noels, Clement, & Pelletier, 1999). Moreover, learners' motivation differs because of numerous endogenous (i.e., internal or inner inspiration) and exogenous (i.e., external to human personality) factors, such as sociocultural circumstances or professional needs. Intrinsic factors bring pleasure and

satisfaction to a student, and extrinsic factors relate to the tangible benefits attached to an activity (Noels, Clement, & Pelletier, 1999).

In fact, as Chomsky (1988, p.181) puts it, “about 99 percent of teaching is making students feel interested in the material” since motivation is one of the key variables leading to the successful acquisition of a foreign or second language (Kormos & Csizer, 2010). Undeniably, as Cohen and Dornyei (2006, as cited in Zahedi & Tabatabaei, 2012) maintain, most other learner variables take for granted the existence of some degree of motivation. Above and beyond, Dornyei (1998) illumined that without sufficient motivation, even individuals with the most remarkable abilities cannot accomplish long term goals, and that neither appropriate curricula nor are good teaching enough on their own to ensure student achievement.

On the other hand, according to a number of researchers, critical thinking and motivation are interrelated. For instance, Facione (2000), emphasizing that critical thinking consists of both skills or abilities, and dispositions, defines the disposition to critical thinking as the “consistent internal motivation to engage problems and make decisions by using critical thinking” (p.65). This means that student motivation is viewed as a necessary precondition for critical thinking skills and abilities. Likewise, Halonen (1995) remarks that a person’s propensity, or disposition, to demonstrate higher-order thinking relates to their motivation. To provide evidence on the relationship between critical thinking and motivation, Rugutt and Chemosit (2009), using a regression model, examined whether an emphasis on critical thinking skills in the classroom affects student motivation. It was found that the three factors of student-to-faculty interaction, critical thinking skills, and student-to-student interaction, in that order, were statistically significant predictors of student motivation. After controlling for the other two variables of student-to-faculty and student-to-student interactions, the findings showed that critical thinking skills accounted for six percent of the variance in motivation (Rugutt & Chemosit, 2009).

Critical Thinking

Even if, since the last decades, many definitions of critical thinking have been suggested, none has been totally agreed upon. With reference to Halpern (1998), the use of cognitive skills or strategies that increase the probability of a desirable outcome could be labeled as critical thinking. Willingham (2007) defines critical thinking as "seeing both sides of an

issue, being open to new evidence that disconfirms your ideas, reasoning dispassionately, demanding that claims be backed by evidence, and deducing and inferring conclusions from available facts" (p.8). Based on the results of the two- year research on critical thinking conducted by The Delphi Project of 1990, Facione (1990, as cited in Bessick, 2008) mentions six cognitive elements of critical thinking including: (1) interpretation, (2) analysis, (3) evaluation, (4) inference, (5) explanation, and (6) self-regulation that are considered the core elements of critical thinking. The definition proposed by Jones et.al (1995, cited in Bessick, 2008) involves seven facets of critical thinking such as: 1)interpretation, 2)analysis, 3)evaluation, 4)inference, 5)presenting arguments, 6)reflections, and 7)disposition. Besides, Watson and Glaser (2002), the designers of the world's most widely-used measure of critical thinking, connect it with the following abilities: discriminating among degrees of truth or falsity of inferences; recognizing unstated assumptions in a series of statements; interpreting whether conclusions are warranted or not; determining if conclusions follow from information in given statements, and evaluating arguments as being strong and relevant or weak and irrelevant.

Meyers (1986, as cited in Ghanizadeh & Moafian, 2011) explains that teachers can foster critical thinking through the activities they assign, the tasks they set, and the feedback they provide. In the realm of language teaching, Liaw (2007), based on the findings of his study, argues that the implementation of content-based approach can promote EFL learners' critical thinking skills. The findings of such studies confirm Davidson and Dunhams' (1997) disputation that critical thinking skills could be taught as part of EFL instruction. In the same thread of thought, Davidson (1998, p. 121) maintained that since "part of the English teacher's task is to prepare learners to interact with native speakers who value explicit comment, intelligent criticism, and intellectual assertion", introducing learners to critical thinking is even more essential for L2 teachers than L1 teachers. To continue, he added that "if we do not, our students may well flounder when they are confronted with necessity of thinking critically, especially in an academic setting" (p. 121).

Motivation

One of the definitions of motivation, according to Gardner and Lambert (1972), characterized it as the combination of effort plus desire to achieve the goal of learning the language, which directs to a conscious decision to act, and gives rise to a period of sustained intellectual and physical effort in order to attain previous set goals. On the other hand, Noel, Clement, and

Pelletier (2001) disputed that motivation is illustrated as being intentional and directional. Despite the fact that the word 'intentional' refers to personal choice and persistence of action, 'directional' denotes the presence of a driving force aimed at attaining a specific goal. What seems evident in this definition is that a motivated person is always aware of the fact that a specific goal must be achieved, and would direct their effort at attaining that goal.

Despite radical changes in ELT and the growing interest in teaching critical thinking skills, a small number of empirical studies have been conducted in Iranian EFL context. Fahim and Hajimaghsoodi (2014), for instance, tried to examine the relationship between motivation and critical thinking ability of Iranian pre-intermediate EFL learners. To yield this purpose, 101 male and female learners, majoring in teaching English as a foreign language (TEFL), were given two questionnaires: a questionnaire of motivation and a questionnaire of critical thinking. Unlike the present study, there was no treatment in Fahim and Hajimaghsoodi's study and the students did not receive any instruction on critical thinking. The results of their study demonstrated that there was a significant relationship between Iranian EFL learners' motivation and critical thinking ability.

Similarly, in another study, Soodmand Afshar, Rahimi, and Rahimi (2014) investigated the relationships between instrumental motivation, critical thinking, autonomy and academic achievement of Iranian undergraduate university students. To do so, 100 Iranian learners majoring in English language participated in the study. The results of multiple correlation analysis revealed that the relationships between critical thinking and autonomy, and instrumental motivation and autonomy were significant, but critical thinking and instrumental motivation did not correlate significantly. Moreover, they found that among the independent variables of the study, critical thinking was a significantly stronger predictor of academic achievement, with autonomy and instrumental motivation. In the same vein, Garcia and Pintrich (1992) studied the relationship between critical thinking and motivation (intrinsic goal orientation), learning strategies, and classroom experiences. The study concerned students (N= 758) attending three midwestern colleges during the 1987-1988 school year. The institutions were described as a community college, comprehensive university, and small private college. The sample consisted of students enrolled in three biology classes (n=219), three English classes (n=110) and six social science classes (n=429). Participants in the study were given the Motivated Strategies of Learning Questionnaire at the beginning and end of

the semester. The posttest differed from the pretest only in that it was inclusive of questions allowing the researchers to gain information about students' perceptions of their classroom experiences. The researchers concluded that there were strong positive correlations between critical thinking and motivation and learning strategies at the time of both pretest and posttest. More specifically, they reported a correlation between critical thinking and intrinsic goal orientation, $r=.50$ at time one (pretest); and $r=.57$ at time two (posttest). Concerning the relationship between motivation and critical thinking, Yang and Chang (2013) also carried out a study in which they observed that, after increasing motivation towards the subject of biology through an intervention based on a video game design, students' between 13 and 14 years managed to think and analyze the contents of the subject more critically. Equally, Semerci (2011) found a positive and significant correlation between achievement motivation and critical thinking in a sample of 772 university students.

Therefore, the present study seeks to investigate the effect of critical thinking skills instruction on the Iranian advanced EFL learners' motivation in the light of employing techniques to teach critical thinking skills in improving and enhancing the Iranian EFL learners' motivation. Having this purpose in mind, the researchers tried to answer the following research question:

Does teaching critical thinking skills have any significant effect on the Iranian advanced EFL learners' motivation?

Methodology

Participants

Sixty Iranian advanced female students from Simin language institute in Tabriz participated in this study. Out of 60 participants, 42 participants whose scores were within one standard deviation above or below the mean were selected based on their scores on the TOEFL test. Then, these 42 participants were assigned to two groups: one experimental group and one control group. The number of the participants in each of the control and experimental groups was 21. The participants' age varied between 15-25 years old. The students' native language was Azari Turkish and their foreign language was English.

Instruments

Initially, to ensure the homogeneity of the participants in terms of their language proficiency, a sample of TOEFL test was administered. Yet, due to

administrative issues, only the reading and writing subtests of TOEFL test were administered to the participants.

Moreover, a motivation questionnaire, adopted from Salimi (2000), was used in this study. It included 36 items on a 5- point Likert Scale which was administered initially and after the treatment to the students in the experimental and control groups in order to evaluate their motivation. The participants selected a number on a five-point Likert scale reflecting their degree of preference or their tendency towards the items of the questionnaire. The choices ranged from 1 'strongly disagree' to 5 'strongly agree'. It should be mentioned that in order to avoid any misunderstanding, the questionnaire was translated into Farsi. The reliability of the questionnaire has been confirmed by Salimi (2000) which was .80. Also, in this study, the reliability of the questionnaire, calculated through cronbach's alpha, came out to be .84. The content validity of the questionnaire was also confirmed by consulting three experts.

Design

The design of this study was quasi-experimental, including experimental and control groups with pretest and posttest. The participants were randomly assigned to one experimental and one control groups. Teaching critical thinking skills were considered as the independent variable and motivation was considered as the dependent variable.

Procedure

First, 60 advanced Iranian EFL learners, studying at advanced level at Simin language institute, participated in this study. In order to ensure the homogeneity of the students in terms of their language proficiency, the researcher administered the reading and writing subtests of TOEFL test. Based on the results, the number of participants decreased to 42 who were randomly assigned to an experimental group and a control group. Moreover, the participants completed the motivation questionnaire, which was administered with the interval of one session after the TOEFL test. The results represented that the participants' were also homogeneous in terms of motivation at the beginning of the study.

The treatment was based on the Watson-Glaser Critical Thinking Appraisal and the five sub skills of critical thinking, including inference, recognition of assumptions, deduction, interpreting information, and analyzing arguments. This appraisal was used for two reasons:

- 1) According to Watson and Glaser (1980), the designer of this critical thinking measure, this appraisal and categorization of critical thinking skills in it is one of the most used ones.
- 2) There were different versions of this appraisal with reading texts and items on different critical thinking sub skills available that were used in the treatment sessions.

The five abilities of inference, recognition of assumptions, deduction, interpreting information, and analyzing arguments involved in critical thinking were instructed to the participants in the experimental group only after the TOEFL pretest was administered. The Passage 2 book was used as the instructional material in both the experimental and control groups, from which five units were covered. It should be mentioned that critical thinking skills instruction was initially based on the sentences and short texts taken from different versions of Watson and Glaser (1980) critical thinking appraisal, and then, applied to the reading texts of their textbook. Watson and Glaser (1980) critical thinking appraisal comprised 80 items and included 5 subtests representing critical thinking sub skills. Each subtest of critical thinking involved a number of statements along with alternatives out of the which participants had to choose one. The sub skills of critical thinking included skills such as inference, recognition of assumptions, deduction, interpretation, and evaluation of arguments. The treatment took 10 sessions twice a week for the experimental group. Each session lasted for 90 minutes, from which 20 minutes was devoted to the treatment. The teacher /researcher raised the awareness of the participants about critical thinking and explained about the critical thinking skills, which is explained in details below. The only difference between the two experimental and control groups was in the treatment which was only provided to the participants in the experimental group. The traditional instruction was conducted in the control group.

In the experimental group, the sub skills of critical thinking mentioned in the Watson and Glaser (1980) critical thinking appraisal were explained one by one as follows:

1. **Inference**: In the first session, the researcher / teacher wrote a sentence taken from different examples provided in different versions of Watson and Glaser critical thinking appraisal on the board and asked all of the participants to tell what the meaning of the sentence was. Each of the participants told their own meanings. Then, the researcher explained the correct meaning of the sentence by using inferencing skill. Also, the researcher defined an inference as a result drawn from observed facts that may be correct or incorrect. After the researcher / teacher's explanations,

the participants read a sample text taken from one of the versions of Watson and Glaser critical thinking appraisal and did the exercises according to the explanations provided by the teacher. This means that, after they read the statements, they were asked to read each of the inferences and select the correct one.

2. **Assumptions:** In the third session, the researcher / teacher wrote another sentence on the board and asked the students to look at the sentence and tell what they can learn from the sentence or what the sentence says. Each of the participants expressed their own ideas. At the end, the researcher again, told the correct meaning of the sentence and explained that recognizing unstated assumptions skill was utilized in order to reach the correct meaning of the sentence. The researcher explained that an assumption is something which is presupposed or something which is proposed before a true thing happens. Based on the discussions, the researcher told participants to read the texts and do the exercises.
3. **Deduction:** In the fifth session, like the previous sessions, the researcher / teacher wrote a sentence on the board and wanted all of the participants to look at the sentence and tell what the conclusion was. After the students draw the correct conclusion, the teacher stated that it was a deduction skill. Following the explanations, the participants were asked to read the texts and choose the suggested conclusion among the options provided.
4. **Interpreting Information:** Similarly, in the seventh session, the researcher /teacher wrote a paragraph on the board and asked the participants to tell or assume that all the words and information in the paragraph was true. The researcher / teacher called this interpreting information skill. The task was to judge whether or not each of the proposed conclusions logically flows beyond a reasonable doubt from the information given in the paragraph. Referring to the explanations, the participants read the statements and were asked to choose the correct option related to the paragraph.
5. **Analyzing arguments:** Like the previous skills, in the ninth session of the treatment, the researcher / teacher wrote two sentences on the board related to the question and asked the participants to distinguish the important sentence from less important sentence. This was called, analyzing argument skill, which implied distinguishing among a strong argument and a weak argument when an important decision was made; A strong argument is both important and directly related to the question, but a weak argument is not directly related to the question, or is of minor importance or may be related to a trivial aspect of the question, or

confusing correlation with causation (incorrectly assuming that because two things are related, they cause each other to happen).

It should be mentioned that each session was devoted to teaching one critical thinking skill, and every skill was practiced for two sessions. After the treatment was carried out for 10 sessions, the participants in both experimental and control groups filled out the motivation questionnaire once more at the end of the study.

Results and Discussion

Results of Normality Distribution of Motivation Scores

Having collected the data, the researcher analyzed those using SPSS. To ensure the normality of the distribution of the participants' motivation scores in the control and experimental groups, Shapiro-wilk test was used. The results of this test are shown in Table 1.

Table 1
Results of Shapiro-Wilk Test for the Participants' Motivation Scores in Control and Experimental Groups

Shapiro-Wilk

Groups of students	Statistic	df	Sig.	
Pre-study motivation scores	Control group	.920	21	.085
advanced level	Experimental group	.274	21	.101
Post-study motivation scores	Control group	.978	21	.890
advanced level	Experimental group	.132	21	.200

Note.CG: Control group, EG: Experimental groups, $P < 0.05$.

As is indicated in Table 1, the significant value of the participants' motivation scores was higher than alpha level .05. It means that the participants' motivation scores had a normal distribution because normal data is an underlying assumption in parametric testing.

Results of the t-test between the Experimental and Control Groups

The null hypothesis formulated in the present study stated that teaching critical thinking skills has no significant effect on the Iranian EFL learners' motivation. In order to check the participants' motivation, the researcher applied a pre-study motivation questionnaire to 42 participants of the study. Before embarking on the independent samples t-test, it was vital to consider the descriptive statistics of the participants' pre-study motivation scores. Table 2 demonstrates the results.

Table 2
Results of Descriptive Statistics of the Participants' Pre-Study Motivation Scores between Two Groups

Groups of students		N	Mean	Std. Deviation
Pre-study motivation scores advanced level	Control group	21	71.05	11.98
	Experimental group	21	77.24	10.77

As is clear from Table 2, the means of the control group (71.05) and the experimental group (77.24) regarding the pre-study motivation scores were in close proximity to each other. However, an Independent samples t-test was used to see whether there was a significant difference between the participants' pre-study motivation scores in the control and experimental groups or not. The results of the independent samples t-test are shown in Table 3.

Table 3
Results of Independent Samples T-test for the Participants' Pre-Study Motivation Scores

		Levene's Test for Equality of Variances		t-test for Equality of Means			Mean Difference		95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Difference	Std. Error	Lower	Upper
Pre-study motivation scores advanced level	Equal variances assumed	.474	.495	-1.762	40	.086	-6.19	3.51	-13.29	.91
	Equal variances not assumed			-1.762	39.553	.086	-6.19	3.51	-13.30	.91

With regard to Table 3, the significant value in Levene's test for equality of variances was .495, implying that equal variances were assumed and the statistics of the first row should be read. As t value was larger than alpha level.05, $t(40) = -1.762$, $p=.086$, it was revealed that there was no significant difference between the participants' pre-study motivation scores; in other words, the participants were at the same level of motivation before the treatment.

The same motivation questionnaire was used to measure the students' motivation after the treatment; thus, the students' post-study motivation scores were added up and then, the final scores were calculated as the mean of the participants' motivation scores. Once more, an independent samples t-test was used to find out whether there was a significant difference between the participants' post-study motivation scores in two groups or not. Table 4 represents the related descriptive statistics.

Table 4
Results of Descriptive Statistics of the participants' post-study motivation scores

		Groups of students	N	Mean	Std. Deviation
Post-study motivation advanced level	Control group		21	86.43	22.28
	Experimental group		21	106.14	19.85

As illustrated in Table 4, the means of the participants' post study motivation scores in the experimental and control groups are 106.14 with the standard deviation of 19.85 and 86.43 with the standard deviation of 22.28 respectively. Table 5 represents the results of the independent t - test conducted on the participants' post - study motivation scores.

Table 5
Results of Independent Samples T- test for the Participants' Post Study Motivation Scores

		Levene's Test for Equality of Variances		t-test for Equality of Means		95% Confidence Interval of the Difference				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Post-study motivation advanced level scores	Equal variances assumed	.738	.395	-3.027	40	.004	-19.71	6.51	-32.88	-6.55
	Equal variances not assumed			-3.027	39.478	.004	-19.71	6.51	-32.88	-6.55

The results acquired from the first row of Table 5 revealed that in Levens' Test p- value of .395 was higher than .05, and equal variances were assumed, implying that there was a significant difference between the participants' post - study motivation scores in the control and experimental groups, $t(40) = -3.027$, $p = .004 < .05$. Thus, the null hypothesis was rejected.

The findings achieved from the analyses of the data collected through the pre- and post- study motivation scores confirmed that there was a significant difference between the participants' pre- and post- study scores in the experimental group as compared with those of the control group, indicating a significant effect of teaching critical thinking skills on the learners' motivation. Although the result of the present study is not compatible with the finding of the Soodmand Afshar, Rahimi, and Rahimis' (2014) study in which they found that there was not a significant correlation between critical thinking and instrumental motivation, it is in agreement with the overall findings from most studies such as Fahim and Hajimaghsodi (2014), Garcia and Pintrich (1992), and Valenzuela, Nieto, and Saiz (2011). As Rashidian (2009) maintains, this significant effect of critical thinking on motivation can be due to the fact that people with high critical thinking have more motivation for achievement in general. In addition, as Xu (2011)

argues, motivation and critical thinking both are significant and influential in achieving better foreign language; for that reason, an English teacher should understand more about students' motivation and critical thinking ability in order to assist them to achieve better results in language learning. Valenzuela, Nieto, and Saiz (2011) argue that the greater association between skills and motivation suggests that the motivational perspective could have greater explanatory power regarding performance in critical thinking than the dispositions perspectives. Moreover, Fahim and Hajimaghsoodi (2014) discuss that the positive relation may be a replication of many previous studies concerning the effectiveness of critical thinking on the ultimate success of language learners in the challenging process of foreign language learning. In other words, the results of the study done by Fahim and Hajimaghsoodi (2014) can serve as a starting point for English teachers to evaluate their current teaching practices, and incorporate critical thinking skills in their classroom.

Conclusion

The present study investigated the effect of teaching critical thinking skills on Iranian EFL learners' motivation. The results indicated that critical thinking instruction can promote students' motivation. This work can be helpful in creating a new understanding about the role of critical thinking in language learning and teaching process. Critical thinking is a vital factor and method in language teaching and education, so it needs to be integrated in language classrooms. As it was also evident in the present study, critical thinking can promote motivation which in turn can help L2 learning. Because of the remarkable role attached to motivation by teachers and researchers alike, L2 motivation, as a primary aim of education (e.g., Dewey, 1933; Passmor, 1974, as cited in Thadphoothon, 2005), has always been emphasized in a number of studies during recent years. It is argued that students equipped with critical thinking skills, can be more cooperative, open-minded, and autonomous (Thadphoothon, 2005). Thus, the results of the present study regarding critical thinking can have considerable potential in promoting EFL learners' motivation. In the present study, the effect of critical thinking skills on the Iranian learners' motivation was examined. Definitely, eliminating the limitations imposed upon the present study, such as the small sample size or convenience sampling method, more research is needed to investigate various factors which might be associated with critical thinking, such as attitudes, anxiety, beliefs and the like which all can have a role in students' motivation and their ultimate language achievement.

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