The Relationship between Project-based Instruction and Motivation: A Study of EFL Learners in Iran

Parviz Maftoon
Islamic Azad University, Science and Research Branch, Tehran, Iran

Parviz Birjandi
Islamic Azad University, Science and Research Branch, Tehran, Iran

Abdulali Ahmadi (Corresponding author)
Islamic Azad University, Science and Research Branch, Tehran, Iran

Abstract—**Project-Based Instruction (PBI) is believed to enjoy a strong theoretical foundation; however, the practical relevance of this sort of instruction is associated with lots of controversies. This study focused on the application of PBI to the Iranian university context. The objective was to find out whether this kind of instruction exerts positive effects on the motivation of university students majoring in English language. The measuring instrument used was the Academic Motivation Scale (AMS). Eighty BA students from Islamic Azad University (Kermanshah and Sanandaj Branches) and Payame Nour University (Eslamabad Gharb and Kermanshah Branches) participated in the study. The design of the study was Solomon four-group (SFG) in which there was one research question addressed by six complementary hypotheses. On the basis of the results, it was concluded that 1) this type of instruction leads to motivation improvement for the participants who receive the treatment both in the pretest/posttest and experimental/control groups, 2) SFG provides the necessary framework to keep the influences of the pretests under control, and 3) there are statistical justifications to be cautious when generalizing the findings.**

Index Terms—**Project-Based Instruction, motivation, self-determination theory, solomon four-group**

I. INTRODUCTION

Language teaching methods were either explicitly or implicitly influenced by general and language learning theories/hypotheses, and the employments of methods were often justified on the basis of the underlying theories (Larsen-Freeman & Anderson, 2011). This was one of the reasons why a particular way of teaching was rejected and another introduced. To provide common examples, instructional practice on the basis of Audio-lingual drew upon and received justification from Structural Linguistics and Behaviorist Psychology, Communicative Language Teaching from the notion of communicative as opposed to linguistics competence, and Natural Approach from certain learning hypotheses.

After the inauguration of the Post-method Era the focus of attention shifted from the employment of methods in language instruction due to a number of reasons. Richards and Rogers (2001) suggested five reasons in this regard including the top-down criticism, the role of contextual factors, the need for curriculum development processes, the lack of research basis, and the similarity of classroom practices. In addition, this shift from method employment was justified on the basis of the need for three main parameters in language pedagogy, namely parameters of particularity, possibility, and practicality (Kumaravadivelu, 2001, 2003).

Nevertheless, there are particular instructional procedures that have still kept their impact on language teaching. Among these instructional procedures, Project-Based Instruction (PBI) is considered to be associated with quite effective learning opportunities for teaching languages in various contexts. This can be understood based on the writings of such language teaching scholars as Ke (2010), Smith (2005), and Stoller (2002).To exemplify the case, according to Stoller (2002),

Project-based learning should be viewed as a versatile vehicle for fully integrated language and content learning, making it a viable option for language educators working in a variety of instructional setting, including general English, English for academic purposes (EAP), English for specific purposes (ESP), and English for occupational/vocational/professional purposes. (Stoller, 2002, p. 109)

However, the issue is not that straightforward and there are difficulties which might arise in practice. To clarify the point, in a study of secondary school language students reported by Beckett (2002), it was found that less than one fifth of the participants deemed PBI a favorable approach. Twenty-five percent of the students had mixed feelings towards the approach. The rest of the learners had a negative feeling, and they were of the opinion that this type of instruction

hindered them from learning the components they required in order to improve their English. In another study which focused on integrating writing and presentation skills necessary for academic success, Moulton and Holmes (2000, p. 28) noticed that the completion rate for the course was quite low. These controversies over the credibility of Project-Based Instruction are the reason why the present study is concerned with the question of whether this type of instruction exerts positive effects on a construct believed to have a lot to do with language teaching. More specifically, the objective is to assess experimentally the extent to which the employment of PBI exerts positive effects on motivation of the Iranian university students majoring in English language.

II. LITERATURE REVIEW

A. Project Based Instruction (PBI)

Particular learning activities called 'project work' and 'project approach' come under Project-Based Instruction which is a type of instruction emphasizing the role of projects. Projects are "defined as a long-term (several weeks) activity that involves a variety of individual or cooperative tasks such as developing a research plan and questions, and implementing the plan through empirical or document research that includes collecting, analyzing, and reporting data orally and/or in writing" (Beckett, 2002, p. 54). The advocates of PBI consider this type of instruction to be based upon Vygotsky's constructivist theory as well as Dewey's experiential learning (Smith, 2005).

The first theory places emphasis upon the individual's construction of reality in the social context. More specifically, according to this theory, there are two phases in children's cultural development, and any action in this process appears twice: It first appears on the social plane, between people, and inter-psychologically. Only then can it develop the potential to appear on the psychological phase, within people, and intra-psychologically (Johnson, 2004). According to Murphy (1997), "the way in which knowledge is conceived and acquired, the types of knowledge, skills and activities emphasized, the role of the learners and teacher, how goals are established; all of these factors are articulated differently in the constructivist's perspective" (p. 4). That is why this theory is considered a much more effective perspective to inform language learning practitioners than a mere attachment to the place of cognition (Johnson, 2004).

In a similar vein, the proponents of experiential learning attach importance to the role of the learners' first-hand involvement in the learning process and their direct experiences with the real world as the learning environment. This type of learning is associated most with John Dewey who believed "that children must start with direct, concrete, real-life experience to help connect learning to their world, and to set foundations for abstract notions" (Smith, 2005, p. 222). Hence, one of the fundamental principles underlying PBI can be considered as the notion that knowledge is acquired and expanded as we draw upon our previous experiences to solve new problems and that learning on the basis of books cannot be an adequate substitute for actually doing things. This is in line with the educational view suggested by Dewey where teachers are to "know how to utilize the surroundings, physical and social, that exist so as to extract from them all that they have to contribute to building up experiences that are worthwhile" (Dewey, 1938, p. 15).

B. Motivation

Motivation has been studied and defined by a number of learning scholars. As far as Keller (1983) is concerned, motivation "refers to the choice people make as to what experiences or goals they will approach or avoid and the degree of effort they will exert in that respect" (p. 389). In a similar vein, as fundamental to his social-psychological model, Gardener (1985) considers motivation the combination of three factors, namely the learners' efforts to learn, their desires to achieve this goal, and their favorable attitudes towards it. Chastain (1990) also defines motivation as "some incentive that causes the individual to participate in an activity leading towards a goal and to persevere until the goal is reached" (p. 172). He classifies it into three types, viz cognitive drive, ego enhancement, and social affiliation. The first, in this framework, is the outcome of a desire to learn, the second is a means of enhancing self-concept, and the third is the result of a desire to integrate with the members of a speech community.

Brown (2001, p. 73-4) believes that the notion of motivation can be interpreted differently by people following different schools of thought. For the advocates of the behaviorist learning theory, he argues, motivation is considered as the expectation of reinforcement while in a cognitive point of view, the argument continues, motivation is illustrated in accordance with three different theories. The first is drive theory in which motivation is an inner drive, impulse or desire that moves individuals to take particular actions as the results of their needs for exploration, activity, manipulation, knowledge, stimulation, and ego-enhancement. The second refers to the hierarchy of needs theory where motivation is approached in accordance with Maslow's hierarchy of needs, and according to which "a person is not adequately energized to pursue some of the higher needs until the lower foundations of the pyramid are satisfied" (p. 74). The third theory relevant in a cognitive perspective of motivation, according to Brown (2001), is self-control theory where "motivation is highest when people make their own choices whether they are in short-term or long-term contexts" (p. 75)

As another cognitive approach to the theory of motivation, Deci and Ryan (1985, 1991) suggested self-determination theory (SDT) which is deemed a theory concerned with individuals' goal-directed behavior. Ryan (2009) considers SDT as a macro-theory of motivation drawing on Jean Piaget and Carl Rodgers' learning views and involving five sub-theories. The first sub-theory, cognitive valuation theory, is suggested as a mini-theory accounting for "how social

contexts and interpersonal interaction either facilitate or undermine intrinsic motivation" (p. 1). Here, it is important to know that within the framework of SDT a distinction is made between intrinsic and extrinsic motivation. Intrinsic motivation concerns behavior performed for its own sake in order to experience pleasure and satisfaction such as the joy of satisfying one's curiosity. Extrinsic motivation, however, involves performing behavior as a means to an end, i.e., to receive some extrinsic reward (e.g. receiving good marks) or to avoid punishment.

The second mini-theory suggested is organismic integration theory, which is believed to be a mini-theory addressing "the process of internalization of various extrinsic motives" (Ryan, 2009, p. 1). The focus of consideration here is internalization and how it is accomplished in accordance with extrinsic motivation which is believed to run the gamut from "external regulation, to introjection (for example, engaging in behaviors to avoid guilt or feel approval), to identification, to integration" (p. 1). The third mini-theory proposed for SDT is causality orientations theory which is expected to describe "individual differences in how people orient to different aspects of the environment in regulating behavior" (Ryan, 2009, p. 2). As still another sub-theory, basic psychological needs theory is concerned with "the concept of basic needs by connecting them directly with wellness" (p. 2). According to this theory, "each need exerts independent effects on wellness, and moreover that the impact of any behavior or event on well-being is largely a function of its relations with need satisfaction" (p. 2). Finally, the fifth mini-theory underlying SDT is goal contents theory on the basis of which,

Materialism and other extrinsic goals such as fame or image do not tend to enhance need satisfaction … even when one is successful at attaining them. In contrast, goals such as intimate relationships, personal growth, or contributing to one's community are conducive to need satisfaction. (Kasser & Ryan, 1996 cited by Ryan, 2009, p. 2)

Among all the motivational formulations discussed above, Deci and Ryan's (1985) self-determination theory has recently been one of the widely-adopted approaches to study motivation in accordance with other constructs of importance in language instruction. Conttia (2007), for example, used SDT as a motivation theoretical foundation to study the impact of learner motivation on the development of learner autonomy in an English-for-specific-purposes course. Ziahosseini and Salehi (2008), however, drew upon SDT to investigate the relationship between motivation and the use of language learning strategies by university students in Iran. The motivation instrument used in both of the studies was the Academic Motivation Scale (AMS) suggested by Vallerand et al. (1992, 1993).

III. RESEARCH QUESTION

What are the effects of Project-Based Instruction on language students' motivation as measured by the Academic Motivation Scale?

IV. RESEARCH HYPOTHESES

Since the design used in this study was Solomon four-group (SFG), the research question was addressed from six complementary perspectives. Hence, there are six hypotheses as follows:

1) There is a significant difference between the means of T2 (posttest for the experimental group A) and T6 (posttest for the control group C).

2) There is a significant difference between the means of T1 (pretest for the experimental group B) and T3 (posttest for the experimental group B).

3) There is a significant difference between the means of T3 (posttest for the experimental group B) and T5 (posttest for the control group D).

4) There is no significant difference between the means of T4 (pretest for the control group D) and T2 (posttest for the experimental group A).

5) There is no significant difference between the means of T2+T6 (posttests for the experimental group A and control group C) and T3+T5 (posttest for the experimental group B and posttest for the control group D).

6) There is a significant difference between the means of T2+T3 (posttests for the experimental groups A and B) and T5+T6 (posttests for the control groups D and C).

V. METHOD

A. Participants

The participants of this study were 80 undergraduate students from Islamic Azad University (Kermanshah and Sanandaj branches) and Payame Nour University (Eslamabad Gharb and Kermanshah Branches). All the students were freshmen majoring in English Language. They included four classes (each class from one university branch) altogether. They all had Conversation One as their specialist course for the term.

B. Instruments

The measuring instrument employed in this research, the motivation questionnaire was originally developed in French and called the Echelle de Motivation en Education (Vallerand et al., 1992). This questionnaire was developed in accordance with the tenets of self-determination theory in the sense that it was composed of items aimed at assessing

intrinsic versus extrinsic motivation along the lines suggested by Deci and Ryan (1985, 1991). To accomplish such an objective, all the 28 items of the scale are divided into seven sub-scales assessing (a) three types of intrinsic motivation (intrinsic motivation to know, to accomplish things, and to experience stimulation), (b) three types of extrinsic motivation (external, introjected, and identified regulation), and (c) amotivation. Due to the language, this questionnaire could not be used for students learning English in the majority of other communities than France. Thus, Vallerand et al. (1992) attempted to first translate this measuring instrument into English and next to cross-culturally validate it in this language. The validation results demonstrated that the English version of the scale, relabeled the Academic Motivation Scale (AMS), enjoys an internal consistency reliability level of 0.81 (α = .81). Furthermore, the results of a confirmatory factor analysis established the factorial validity of the instrument on the basis of balanced loading of the items on the seven-factor structure of the AMS. Another study, Vallerand et al. (1993), focused on the analysis of the Concurrent and Construct Validity of the instrument and found support in these respects as well.

C. Data Collection

The data in this research was collected within the framework of the Solomon four-group design. Thus, in each of the two four university branches focused on in the study, a class (Conversation One) was randomly selected and each was randomly assigned to either an experimental or to a control group. At the beginning of the term, among the four participating classes two were randomly selected (one experimental and one control) and tested to decide students' pretest scores on the variable under study. The next step involved the question of treatment. The control groups did not receive any special instruction and followed the language instructional procedures common for Iranian university context. The experimental groups, however, over fifteen sessions held during the same number of consecutive weeks, received treatment on the basis of PBI procedures involving the following steps.

(1) In collaboration with the students, attempts were made to identify a theme that was of interest to all, and if not possible, at least the majority of the students. (2) The grounds were paved to decide collaboratively the objective of the course as regards both content and language and to determine the steps to be taken by the students to reach the final outcome. (3) The teacher took into consideration all possible dimensions of the students' learning needs to pave the way for the language demands associated with the following steps. (4) The students were assisted to gather information inside and outside the classroom, individually, in pairs, or in groups. (5) Working individually or in groups and drawing upon the teachers' guidelines, students presented the materials the way they found appropriate. (6) Students got motivated as well as assisted to reflect on (a) the steps taken to accomplish their objectives and (b) the language, communicative skills as well as information acquired in the process. (7) In collaboration with the students, the teacher decided on a framework to evaluate the students and decide their final marks.

This sequence shared features with and differed in a number of ways from the procedures suggested project work by such scholars as Sheppard and Stoller (1995, p. 10) and Heilman and Stout (2005, pp. 589-91). Nevertheless, due to the importance attached to student collaboration and the primary part it has in this sort of project based learning, the sequence was naturally affected by such factors as the interest and motivation of the students, the amount of cooperation between the students and the teacher, and the educational setting in which the instructional program materialized. At the end of the term, all four groups of the participants were given the posttests using those same two measuring instruments employed for the pretest.

Furthermore, the design used in this study was Solomon four-group (see Braver & Braver, 1988; Kirk, 2009 among others for more on this). This design is believed not only to control the majority of factors threatening internal validity but also to provide the researcher with the opportunity to check the influence of the pretest. That is because this design is a combination of pretest-posttest two-group design and the posttest only control design as we can see according to the following table.

TABLE I
SCHEMATIC REPRESENTATION OF THE DESIGN

Group		Pretest	Treatment	Posttest
Experimental 1	A	--	X	T2
Experimental 2	B	T1	X	T3
Control 1	C	--	--	T6
Control 2	D	T4	--	T5

D. Data Analysis

Regarding data analysis in current study, there are several issues to pay attention to. First, the participants of the study, as a requirement of the design, involved four groups: two experimental (A and B) and two control groups (C and D). Among these groups only two were pretested while all the four groups were given posttests. Secondly, since one of the tenets of SFG is the credibility of test/retest for measuring purposes, we needed to pay attention to the reliability limitations of the stability estimates pointed out by such testing scholars as Bachman (1990, pp. 181-182; 2004, pp. 166-167). Hence, it should be noted that (1) the differential practice effects argued to lead to drawbacks in test/retest estimates was accounted for since the time duration between the pretest and the posttest was well over two months. (2) Learning/unlearning effects believed to exert negative consequences was also accounted for since it was the purpose of

the study to find out about the systematic gains and improvements students experienced on the two variables. (3) The internal consistency reliability turned out to exceed what Vallerand et al. (1992) had statistically proposed for the scale (they had suggested an Alpha Cronbach level of .81 and here it turned out to be .85)

There are some other issues to address in relation with the data analysis in this study: (1) the collected data on motivation consisted of the performances of the participants on the AMS for six different situations which were represented as T1, T2, T3, T4, T5 and T6. In addition, the tests were combined in four different ways as T3+T6, T2+T5, T5+T6 and T2+T3. (2) The data on the pretest and posttest for group B were analyzed in the same way as pretest/posttest designs. (3) The data for groups B and D were analyzed in the same way as in an experimental/control design.

In addition, we were aware of the statistical significance of several issues as follows: (1) the comparison between the group D pretest and the group A posttest could help our understanding on the impact of pretest to some extent. In addition, the comparison between the posttest results of groups A+C versus B+D could provide further assistance giving us the chance to determine if the actual act of pretesting influenced the results. In other words, these two could furnish sufficient statistical justification on whether the experimental groups with no pretest were performing differently from the other groups in terms of mean gain. (2) The comparison of the group D pretest (T4) with group C posttest (T6) could help us decide whether external factors had exerted impacts. For instance, it could provide clues to the role of a particular factor other than the treatment. And (3) A comparison between the posttest results for groups A and B (the two groups receiving treatment) with the posttest results for groups C and D (the two control groups) could help us decide the strength of the treatment and decide whether it would lead to mean gain in the two groups considered together.

VI. RESULTS

As pointed out above, the objective of this research was to find out whether Project-Based Instruction exerts positive effects on the motivation of university students majoring in English. The design employed was SFG and the research question was hypothesized from six different perspectives. The first hypothesis was that there is a significant difference between the mean of the T2 and that of the T6. The t-test result for this first hypothesis comes in the following table.

TABLE II
T-TESTS RESULTS FOR HYPOTHESIS ONE

Tests	N	Mean	Std. Deviation	Mean Difference	T	Sig. (2-tailed)
T2	20	148.3500	17.39412	-4.47500	-.576	.572
T6	20	152.4250	24.17550			

As the table shows (Sig. = .572), H1 does not find support in this hypothesis demonstrating that there is not a significant difference between the mean of the posttest for the experimental group A and that of the posttest for the control group C. Regarding the second research hypothesis, we need to know whether there is a significant difference between the means of T1 and T3. We have the t-test information for the second hypothesis in Table 3 below.

TABLE III
T-TESTS RESULTS FOR THE HYPOTHESIS TWO

Tests	N	Mean	Std. Deviation	Mean Difference	T	Sig. (2-tailed)
T1	20	144.2756	14.50772	16.71107	-6.317	.000
T3	20	160.9867	15.80522			

Taking into account the significance level, H0 is rejected for this second hypothesis and H1 finds support meaning there is a significant difference between the mean of the pretest for the experimental group B and that of the posttest for the same group. Nonetheless, since SFD paves the grounds for approaching the research question from various complementary perspectives, we need to move on further to the third hypothesis according to which there is a significant difference between the means of T3 and T5. Table 4 below provides the statistical t-test information for this hypothesis.

TABLE IV
T-TESTS RESULTS FOR THE HYPOTHESIS THREE

Tests	N	Mean	Std. Deviation	Mean Difference	T	Sig. (2-tailed)
T3	20	160.9867	15.80322	11.67184	2.148	.045
T5	20	149.3149	19.62908			

Taking into consideration the significance level, contrary to the first and similar to the second hypothesis but of course not as strong (Sig. = .045), this third hypothesis finds support. Nonetheless, there are other factors to take into account important among which whether the pretests are exerting negative effects on the results of the research. One way to do this is to check whether the experimental group which does not have a pretest is performing differently from the other group in terms of mean gain. Hence, we need to make a comparison between the mean gain in T2 and T4. The t-test information for this hypothesis comes next.

TABLE V
T-TESTS RESULTS FOR THE HYPOTHESIS FOUR

Tests	N	Mean	Std. Deviation	Mean Difference	T	Sig. (2-tailed)
T4	20	136.6833	17.42896	11.66667	2.008	.059
T2	20	148.3500	17.39412			

Paying attention to the significance level (Sig. = .059), hypothesis four supported revealing that the experimental group with no pretest is not performing differently from the other group in terms of mean gain. This takes us one step further to our certainty about the positive impact of PBI on motivation. However, in order to make sure that the treatment has actually been the source of improvement, the t-test results for hypothesis five (Table 6) can provide further insights.

TABLE VI
T-TESTS RESULTS FOR THE HYPOTHESIS FIVE

Tests	N	Mean	Std. Deviation	Mean Difference	T	Sig. (2-tailed)
T2+T6	20	301.1750	23.78482	9.12658	1.043	.310
T3+T5	20	310.3016	26.06539			

What understood on the basis of the table is that the mean gains for posttests of the two groups lacking pretests (groups A and C) are not significantly different from those of the groups pretested. This strengthens our certainty even more regarding the positive effects of PBI on motivation. Nonetheless, SFG design furnishes another complementary perspective which in this study provides statistical information to question the results in part (Table 7).

TABLE VII
T-TESTS RESULTS FOR THE HYPOTHESIS SIX

Tests	N	Mean	Std. Deviation	Mean Difference	T	Sig. (2-tailed)
T2+T3	20	309.3367	24.27832	-7.19684	-.785	.442
T5+T6	20	302.1399	27.00734			

As the result of the statistical information provided by this table, we see that the added mean of the two experimental groups is not significantly different from that of the two control groups. In other words, among the four groups of participants two receiving the treatment and two lacking it (and for each pair one pretested), the mean gain for the two groups having the treatment has not significantly improved in comparison with the other two groups.

VII. DISCUSSIONS

As it is understood on the basis of the t-test table for the first hypothesis (Sig. = .572), there is not a significant difference between the means of posttest for the experimental group A and posttest for the control group C. These two groups of participants share features in the sense that they do not have any pretests, but they are different in another respect: one group receives the treatment (PBI) while the other does not. Thus, the first impression is that the treatment does not exert any effects on the motivation of university students majoring in English in Iranian context. Nevertheless, within the framework of Solomon four-group statistical design, we are not justified to take a one-dimensional approach towards any research question. Hence, we move to the second hypothesis in which H0 is rejected and H1 finds support. This reveals that, contrary to the result of the first hypothesis, there is a significant difference between the mean of the pretest for the experimental group B and that of the posttest for the same group. Therefore, under the condition that the design used for the study was narrowed down to this second hypothesis and the pretest/posttest framework underlying it, on the basis of the result here, we could have concluded that PBI is suitable for the Iranian university context at least as far as those majoring in English are concerned because, as we see in Table 3, the alpha decision level was set at a conservative level of lower than .01.

Regarding the third hypothesis as we can see according to the significance level (Sig. = .045), contrary to the first and similar to the second hypothesis but of course not as strong (since the alpha decision level is more liberal), H1 once again finds support showing that there is a significant difference between the mean of posttest for the experimental group B and that of the posttest for the control group D. Data collection procedures for T3 and T5, if considered separately, enjoys all the features of a true experimental design (random selection, pretests, treatment and posttests). Therefore, it seems quite reasonable to think that the treatment did have positive effects on the motivation of the participants particularly considering that the treatment led to significant mean gain for the previous hypothesis as well. Nevertheless, one of the problems with the pretest/posttest and true experimental designs is that we are not certain how much of the posttest gain is due to the treatment because it might be due to the mere impact of the pretests per se. Within the framework of the current design, this difficulty is accounted for in a number of ways. One way to do this is to make a comparison between the pretest mean of the control Group D (the one pretested) with the posttest mean of the experimental group which is not pretested (Group A), and this is the issue which is addressed by hypothesis four.

The significance level for this hypothesis equals .059 meaning there is no significant difference between the mean of the pretest for group D and the posttest for the experimental group. Data collection procedures for these two groups, if considered alongside each other can be considered a pretest/posttest framework in which we do not have the possible

side effects of the pretest. Here, we have a mean difference of 11.66667 which, although not significant, is similar in direction and even in amount for those we have regarding the t-test results in hypothesis two (mean difference = 16.71107) and hypothesis three (mean difference = 11.67148). In addition, we have the t-test results for hypothesis five (Table 7) according to which the mean gains for posttests of the two groups lacking pretests (groups A and C) are not significantly different from those of the groups pretested. In other words, as far as treatment is concerned, each pair is similar to the other. Hence, the only source of variance (in addition of course to the uncontrolled variables) could have been learning/unlearning and practice effects due to the pretests which as we see have not led to any significant mean difference (Sig. = .310). Thus, another line of justification is provided to believe that the motivation improvement of participants is due to PBI and not the impact of the pretests. In sum, hypotheses four and five furnished sufficient statistical justification to say that the experimental groups with pretests were not performing differently from the other groups in terms of mean gain.

Nonetheless, the design furnishes another complementary perspective. This last line of reasoning on the basis of SFG statistical information seems to question our findings at least in part (Table 7). As the result of the statistical information provided by this table, we see that the added mean of the two experimental groups is not significantly different from that of the two control groups. In other words, among the four groups of participants two receiving the treatment and two lacking it (and for each pair one pretested), the mean gain for the two groups having the treatment has not significantly improved in comparison with the other groups. This could mean that the impact of the treatment in the two groups together cannot be considered as the source sufficient mean gain in motivation which if true can question the results reached in this study.

VIII. CONCLUSION

To know if PBI exerts positive effects on the motivation of Iranian university students majoring in English, drawing on SFG design, six complementary hypotheses were tested in this study. As regards the first hypothesis and whether there is a significant difference between the means of posttest for the experimental group A and the posttest for the control group C, the hypothesis was rejected. Regarding the second hypothesis, the result was different from the first, and it was found that there is a significant difference between the mean of the pretest for the experimental group B and that of the posttest for the same group. This was also the case with the third hypothesis as well, and it was found that there is a significant difference between the mean of the posttest for the experimental group B and that of the posttest for the control group D. In other words, the treatment led to significant mean gain for two of the first three hypotheses.

Since the second hypothesis rested on a pretest/posttest statistical basis and the data collected for the third hypothesis enjoyed all the features of a true experimental design (random selection, pretests, treatment and posttests), the conclusion is that the treatment (PBI) did have positive effects on the motivation of the participants. Nevertheless, one of the problems with the pretest/posttest and true experimental designs is that we are not certain how much of the posttest gain is because of the treatment since it might be due to the mere impact of the pretesting per se.

The design furnished the opportunity to account for this difficulty by testing three more hypotheses. The first hypothesis in this respect (the forth of the study) concentrated on the difference between the mean of the pretest for the control group D and that of the posttest for the experimental group A. The data collected for these two groups, considered alongside each other, can be considered as a pretest/posttest framework in which we do not have the possible side effects of the pretests. Making a comparison between the mean gain here (mean difference = 11.66667) and those for hypothesis two (mean difference = 16.71107) and hypothesis three (mean difference = 11.67148), it was concluded that the pretest has most possibly not distorted the results and that the treatment has led to motivation improvement. In order to change this possibility into certainty in our conclusion, we drew on the results for the test combinations underlying the last two hypothesis of the research (the fifth and the sixth).

For hypothesis five, H0 was not rejected: the mean gains for posttests of the two groups lacking pretests (groups A and C) were not significantly different from those of the groups pretested, and because of which it was concluded that the motivation improvement of participants was due to PBI and not the impact of the pretest. Regarding hypothesis six, we expected to have a significant difference between the means of T2+T3 (posttests for the experimental groups A and B) and T5+T6 (posttests for the control groups A and B) due to the combined effects of the treatment, but we had the opposite result: the mean gain for the two groups having the treatment had not significantly improved in comparison with the other groups. Hence, it was concluded that there is the need to handle the results with caution when we intend to generalize the findings.

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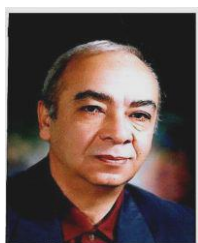
Parviz Maftoon is Associate Professor of teaching English at Islamic Azad University, Science and Research Branch, Tehran, Iran. He used to be a full time professor with Iran University of Science and Technology. He received his Ph.D. degree from New York University in 1978 in Teaching English to Speakers of Other Languages (TESOL). He has been teaching M.A. and Ph.D. courses at different Iranian Universities for the past thirty years. He has published and edited various research articles and books in TEFL. He is currently on the editorial board of a number of language journals in Iran. His main research interests are EFL writing, second language acquisition, language teaching methodology, and language syllabus design.

Parviz Birjandi is a full professor of TEFL. He has an M.A in applied linguistics from the Colorado State University and a Ph.D. in English education (research methods and statistics) from the University of Colorado. He got his B.A. from the University of Tehran in the 1970s. Dr. Birjandi established the first curriculum for Ph.D. in TEFL at Islamic Azad University, Science and Research Branch. He has been teaching M.A. and Ph.D. courses at different Iranian Universities for the past thirty years. He has published various articles in TEFL and he is the author of English textbooks for high school and pre-university levels and a number of other textbooks used nationwide. His main research interests are foreign language testing and statistics, first language acquisition, and dynamic assessment.

Abdulali Ahmadi is a Ph. D. student in TEFL with Islamic Azad University, Tehran Science and Research Branch. He has taught English language for fourteen years in various schools, institutes and universities in Kermanshah Province, Iran. He is now the dean of and a lecturer with Islamic Azad University, Eslamabad Gharb Branch. He received his BA in English literature and his MA in TEFL both from the University of Tehran. His main research interests are English language teaching, applied linguistics, and Project-Based Language Instruction.