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Working on the 'write' path: Improving EFL students' argumentative-writing performance through L1-mediated structural cognitive modification

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Based on their scores on a proficiency test, the 894 participants in this study were grouped into three experimental groups (EG) and three control groups (CG). They attempted an argumentative writing task and the Cornell Critical Thinking Test, Form Z (CCTT-Form Z) as the pre-test. While CG participants received no treatment or placebo, EG participants received a three-week workshop treatment aimed at reconstructing their critical thinking and argumentation abilities. Two weeks after the workshop, all participants in all EG and CG groups attempted the same writing task and the Cornell Critical Thinking Test, Form Z (CCTT-Form Z) as the post test. SPANOVA analyses revealed that EFL writing performance will boost if EFL students' are helped to deconstruct, and then reconstruct, their cognitive and thought patterns for appropriate argumentation.

Keywords: Cognitive Orientation; Argumentative Writing; Mediation; Structural Cognitive Modifiability; Deconstruction

1. Introduction

Mastery of communicative skills, as part and parcel of successful communication in a second/foreign language, requires simultaneous attention to an enormous number of variables (Spack, 1984). However, in some educational systems, class time is dedicated to enhancing the mastery of target linguistic systems, and SL/FL students' mastery of communicative skills is taken for granted perhaps because it is believed that such skills are transferable across languages. Nevertheless, over two decades of experience in teaching EFL writing courses has enabled me to argue from experience that such skills need to be taught (Salmani Nodoushan, 2007a).

One of the skills that need to be taught is critical thinking. Using empirical evidence, this paper will try to answer the following questions:

- Does L1-mediated awareness-raising aimed at enhancing Iranian EFL learners' critical thinking skills aid their performance of argumentative writing tasks in English?

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- If yes, is there any threshold level of L2 proficiency at which L1-mediated learning can be transferred to L2 written task performance?

2. Background

Perhaps one of the first proponents of a cognitively-oriented approach to teaching is Mann (1970) who defined it as a 'refinement of intellectual operation' (cited in Salmani Nodoushan, 2007a, p. 37). Bruce (1987) noted that learning outcomes could be better if more attention was given to the learning process than to the learning outcomes (see also Salmani Nodoushan, 2012 and Salmani Nodoushan & Pashapour, 2016). She was not the only person to criticize product-oriented school programs; Widdowson (1984), for instance, attacked the then-current practice in ESL/EFL programs (and the permanently-in-vogue practice in EFL classes in Iran) which allocated a lot, if not all, of the class time to the enhancement of language usage. If anything, such an approach to teaching a second/foreign language is short-sighted and ill-informed (Salmani Nodoushan, 2006; 2007b; 2008a; 2008b; 2008c; 2012; 2014). Needless to say, learning a new language is not a linguistic process *per se*. To guarantee success, EFL teachers should also try to help EFL learners to develop their cognitive abilities; however, even today many EFL teachers (at least in Iran) merely focus on the problems of syntax, vocabulary, pronunciation, and other linguistic aspects of the EFL classroom. Such an approach to teaching EFL has indeed mutilated EFL programs and crippled EFL learners.

When it comes to EFL writing courses, the side effects of a product-oriented approach are even more detrimental. Teachers go to the class, teach students how to write correct sentences, put them together to form paragraphs, and put paragraphs together to form essays; they assign topics on which the students will then write. The teachers then proofread the essays and usually provide feedback in a limited number of ways (see Salmani Nodoushan, 2007c); most, if not all, of the feedback they provide relates to linguistic issues, even when the observed linguistic error has deep roots in EFL learners' cognition and thought patterns. This claim may seem clamorous, but I am making it on certain grounds. On the one hand, my 20-plus years of teaching EFL writing courses has given me access to a rich corpus of Iranian EFL learners' essays; on the other hand, I had the privilege to work in universities and schools where I had the company of several cognitive psychologists, anthropologists, education specialists, and sociologists. We spent a sizeable amount of time on the analysis of the errors found in the corpus, and came to the conclusion that many of them were cognitive errors that had turned up into unacceptable linguistic forms. A few examples (taken from the corpus) can lend support to this claim.

For one thing, I noticed that, in one of my essay writing classes, when I asked the students to describe a rural setting (i.e., a valley near a city in Iran), almost all of them used the phrase 'the height of the valley' to describe the depth of the valley they were writing about simply because the only way to access the valley was from inside, not from the mountain top, and also because the Iranian frame of mind is self-centered (i.e., the self is the point of reference). This lexical error in writing is not linguistic; it has its roots in the Iranian mental frame; hence, a 'cognition' error. The same problem can also be observed in the difference between the correct English sentence '*I am going to the cinema*; *would you like to go with me?'* vis-à-vis the problematic Penglish sentence '*I am going to the cinema; would you like to come with me?*'

For another thing, a common practice in Persian composition writing classes in Iranian junior high and high schools is to begin the 'thesis statement' with phrases that show certainty and polarity. If asked to remember the topics on which they have written Persian compositions, almost all junior high and high school students will remember a time when they were asked to compare 'knowledge' and 'wealth' and to say which one they considered more important. They will also remember their own habit of starting their thesis statements with the cliché phrase, 'It is crystal clear and known to everyone that . . . .' Twelve years of elementary school, junior high school, and high school 'indoctrination' (I-12, hereafter) rather than education—à la Salmani Nodoushan and Pashapour (2016)—gradually structures Persian speakers' frame of mind; when they enter EFL programs at university level, they carry this frame of mind over to their EFL composition writing, and it is not strange to observe that they start their thesis statements with such pompous phrases as 'It is crystal clear and vividly known to everyone that . . .,' 'Needless to say, . . .,' and so forth—phrases that are considered inappropriate in thesis statements in English writing. Here again, the problem is not rooted in Iranian EFL writers' foreign language proficiency; rather, it originates from an L1 mind frame.

Another problem with the Iranian I-12 system is that the mechanical content covered in this system is taught in a procedural way which strands I-12 students in the 'remembering' domain of Bloom's taxonomy of learning domains[1] (Bloom 1956; Salmani Nodoushan & Pashapour, 2016); the common teaching practices in Iranian schools prevent students from moving to the higher domains, and their intellectual development is blocked. Teachers are tacitly told to cover the curriculum content in such a way as to guarantee that any "informed outsider could predict what was happening in any classroom at one particular time" (Williams & Burden, 1997, p. 36). This is why I would rather call it a system of indoctrination, not one of education (see also Hamachek, 1977 and Salmani Nodoushan & Pashapour, 2016). Such a system stands in sharp contrast to humanistic approaches to education

described in the works of such scholars as Erikson (1963, 1968), Frankl (1964), Maslow (1968, 1970), Rogers (1969, 1982), Gattengo (1972), Curran (1972), Stevick (1976, 1980) Pine and Boy (1977), Hamachek (1977, 1988), Levi (1979), Lozanov (1979), Marcia, Waterman, Matteson, Archer and Orlofsky (1993), and Dreyer (1994).

In such a system, critical thinking finds very little occasion for development. In this system of indoctrination, a huge portion of the curricular activities is allocated to courses and tasks that are mechanical in nature. The course books that are used in this system frequently employ quotations from certain non-scientific ideological figures to support the claims they make about different scientific and non-scientific topics (especially in humanities and specifically in theology, economics, sociology, and psychology). This practice is in itself corrosive to the roots of critical thinking; it replaces 'reasoning' with 'quoting', 'false authority', and many other logical fallacies (see Salmani Nodoushan, 2016). Learners who are indoctrinated in such a system gradually develop modes of thinking that are fraught with logical fallacies, and when it comes to argumentation in EFL writing classes, this background turns up into fallacious argumentation in EFL composition.

Such learners are slaves to mechanical course books, mechanical teachers, and mechanical teaching and learning practices; they are deprived of access to critical thinking abilities and only develop certain mechanical modes of thought. When it comes to argumentative writing in a target language, they transfer such modes of thinking to their target language written performance. My main aim here is to claim that a great many of the goofs which are observed in Iranian EFL compositions happen to be there as a result of the cognitive training students have received in an ill-informed educational system prior to their entry into the university. It seems as if Iranian EFL learners enter the EFL writing class with an already ill-constructed archetypal cognitive structure which looms above their heads to shape their performance any time they are asked to write on a topic. This archetype needs to be deconstructed before the target-language-ready cognitive construct can be suggested into their minds. This requires a modification of the cognitive orientation and structure of Iranian EFL learners by an informed mediator.

Feuerstein (1990) argues that such a modification is possible. I do not want to claim that Iranian junior high and high school graduates are exactly the same as the learners whom Feuerstein refers to as 'culturally deprived', but I want to suggest that Feuerstein's ideas, by extension, will apply to Iranian junior high and high school graduates as well. I am well aware that Feuerstein argues that all cultures have ways to prepare their children for adulthood, and that an important part of the process of passing along cultural patterns of thought and behavior is individualized 'mediated' learning experience (i.e., interaction

between a learner and an adult or more advanced peer), but, at the same time, I believe we can extend Feuerstein's concept of 'culturally deprived' and suggest that it can be applied to a (larger portion of a) society provided that that (portion of the) society has somehow been deprived of access to certain modes of thinking (cf., Salmani Nodoushan & Pashapour, 2016). I would like to argue that it seems that the Iranian junior high and high school graduates who have been deprived of access to modes of critical thinking by being focused on mechanical thought patterns which are mostly based on quotations from certain non-academic figures can be compared to 'culturally deprived' learners in a Feuersteinian sense, and that they can be called 'indoctrinated' learners (or 'critical-thinking-deprived learners'). My main argumentation is that hammering learners' minds into an indoctorinationally-aspired shape is nothing less than the mass production of a generation of 'culturally deprived' learners. What I am suggesting is that the Iranian culture is—ignorantly or otherwise—using 'indoctrination' (instead of 'education') to produce Iranian citizens, with a particular set of orientations toward knowledge, authority, and rhetoric. My premise is that being raised in Iran, including being educated in Iranian schools, constitutes learners' deprivation of critical thinking which is comparable to Feuerstein's notion of 'cultural deprivation', albeit partially and by way of analogy. Nevertheless, I do not intend here to theorize the possible roles of family, religious, governmental, and other community institutions in this deprivation, but it suffices to suggest that the impact of 'indoctrination' on 'critical-thinking-deprivation' is analogous to, if not worse than, the effects of war, health problems, extreme poverty, family dysfunction, and the like on Feuersteinian 'cultural deprivation'; nevertheless, many Iranian junior high and high school graduates have suffered from one or more of these too.

In his experiments, Feuerstein observed that 'culturally deprived' students have difficulty adapting to a new culture while 'culturally different' students are more adaptable. He further noticed that the difference between the two lay in the degree of Mediated Learning Experience (MLE) they were exposed to (in their mother tongues). The Iranian I-12 education system, as described above, fails to provide sufficient MLE in cognitive domains for Iranian I-12 students; as such, it is enslaving rather than being emancipatory—in Freire's terms (1970) (See also Salmani Nodoushan & Daftarifard, 2011). I would therefore argue that 'critical-thinking-deprived' Iranian I-12 students can be compared to 'culturally-deprived' students in Feuerstein's experiments (1990).

Both Feuerstein (1990) and Vygotsky[2] (1962, 1978, 1981) argued that the main role in helping culturally deprived students through MLE should be given to a human mediator who can help them to restructure their voluntary attention, categorical perception, logical memory, and self-regulation of

behavior. According to Vygotsky (1981) and Feuerstein (1990), human learning is either direct or mediated; however, mediated learning is indispensible for culturally deprived students because it is the human mediator who can help such students to develop the prerequisite skills and cognitive abilities which in turn make direct learning effective. In other words, mediated learning can help direct learning to become internalized—and gradually subsumed into the learners' cognitive make-up (see Ausubel 1968, for a discussion of subsumable learning).

At the heart of Feuerstein's MLE lies the notion of Structural Cognitive Modifiability (SCM) which argues that deficient cognitive functions are modifiable. This claim has a direct bearing on the current study which suggests that Iranian EFL learners' deficient cognitive function of critical thinking can be modified to help them achieve greater performance on written argumentation tasks. According to Feuerstein, genetic make-up is not the sole factor determining learners' capability to learn. Rather, it is 'mediation' which enhances cognition; this has also been discussed at length by Vygotsky (1962, 1978).

Cognitive enhancement, guaranteed through mediation, can result in internal changes in the structure of learners' cognitive make-up, and these structural changes will eventually surface in the form of external changes in behavior (Feuerstein, 1990). What distinguishes between Feuerstein and earlier developmental psychologists is his focus on the development of low-functioning—rather than normal—children. In this sense, his theories defy Piaget's (1956) ideas; Piaget believed that children can use their own 'natural material actions' as well as 'problem-solving experiences' to help their mind and intelligence to evolve which will, in turn, result in the development and enhancement of logic and abstract thinking (Piaget, 1956). By way of contrast, Feuerstein argued that 'mediated relationship' is the key to the development of cognition and abstract thinking in all children and especially the culturally-deprived ones.

I noted earlier that the Iranian I-12 system is a system of indoctrination rather than a system of education in that the transfer of knowledge in this system is procedural (cf., Salmani Nodoushan & Pashapour, 2016). The ideology that lies at the heart of this system keeps the I-12 students blind to critical modes of thinking. The products of this system are quite similar to what Feuerstein called 'culturally deprived' students. If 'mediated' learning worked for Feuerstein's subjects, it can be hypothesized that it will also work for the 'indoctrinated' Iranian high school graduates who enter EFL programs at university level. As such, this paper hypothesizes that it is possible to modify the cognitive structures of Iranian EFL learners' though frames so that they can accommodate critical modes of thinking which will enable them to

produce acceptable written argumentations in English.

3. Method

3.1. Participants

The 894 participants (N=894) of this study came from a population of 1181 college students from a number of Iranian universities sampled through a cluster random sampling. Based on their standard deviations from the mean on a standardized proficiency test (described below), they were assigned into four groups: Limited English Proficient (LEP) (*n* = 221), Lower Intermediate (LI) (*n* = 313), Upper Intermediate (UI) (*n* = 306), and Advanced (AD) (*n* = 341). Although sample size formulae (e.g., Yamane, 1967) indicated that a sample of 299 participants would be representative, a sample of 894 randomly selected participants was chosen for this study (See section 3.3 below). The reasons for this decision were manifold. The LEP students had to be discarded from the study since their low proficiency could make them unable to write essays in English. Moreover, the main statistic used for data analysis was the mixed between-within subjects ANOVA (i.e., SPANOVA), a test which works best with sample sizes of 120 or more participants. In addition, the design for this study was true experimental, and there is always the possibility of subject loss in such designs; 12 subjects were actually lost during the study. Finally, the study needed six subject groups with over 120 participants in each. Therefore, all the people in each of the LI, UI, and AD groups were randomly assigned to the EG or CG groups. To balance the number of participants in all groups, 54 subjects were randomly discarded from the different EG and CG groups before data analysis. Table 1 summarizes the sampling process.

Table 1
Summary of Sampling Steps and Total Sample Sizes

	LI		UI		AD		
	EG	CG	EG	CG	EG	CG	Total
At Pre-Test	157	156	153	153	170	171	960
At post-Test	155	156	153	150	170	164	948
Subject Loss	2	-	-	3	-	7	12
Subjects Discarded	6	7	4	1	21	15	54
Total Remaining	149	149	149	149	149	149	894

3.2. Instruments

The first instrument used in this study was a sample version of the standardized multiple-choice proficiency test developed by the University of Tehran (called UTEPT). The test is similar to the TOEFL test and consists of

100 multiple-choice items:

- 20 written expression items
- 30 structure and word study items
- 15 word recognition vocabulary items
- 15 word production vocabulary items
- 10 short-context-passage items
- 10 reading comprehension items

The institution in charge of developing the test has shown that the test has an acceptable construct validity (based on Eigen values obtained from a factor analysis using a varimax rotation model). The reliability of this test for the current study was estimated at .831 (i.e., Cronbach's *alpha* = .831).

The other instrument used in the current study was an Argumentative Essay Task. Here is the task:

> WRITING TASK: You should spend about 90 minutes on this task.
>
> Present a written argument or case to an educated reader with no specialist knowledge of the following topic:
>
> *The position of women in society has changed markedly in the last twenty years. Many of the problems young people now experience, such as juvenile delinquency, arise from the fact that many married women now work and are not at home to care for their children.*
>
> To what extent do you agree or disagree with this opinion? You should write a five-paragraph essay with at least 550 words. You should use your own ideas, knowledge and experience and support your arguments with examples and relevant evidence.

Two raters who were experienced teachers of EFL writing courses scored the participants' essays. The inter-rater reliability for this writing task was estimated at .792 (*rho* = .792) for the pre-test and .803 (*rho* = .803) for the post-test—using the Pearson Product Moment Correlation Coefficient.

The last instrument used in this study was the Cornell Critical Thinking Test, Form Z (CCTT-Form Z) developed by Ennis and Millman (1971). The test uses 52 items of a forced-choice format. According to Verburgh, François, Elen and Janssen (2013), the test is a discipline-general test, intended for strong students in upper secondary education, students in higher education, and adults. CCTT-Form Z measures five aspects of critical thinking: (a) deduction, (b) semantics, (c) observation and credibility of sources, (d) induction, and (e) definition and assumption identification. Each of these is measured in a separate section of the test, but induction itself is split into two sub-sections: (a) in hypothesis testing, and (b) in planning experiments. As for the

reliability of the CCTT, the manual accompanying the test reports a split-half reliability of 0.80 and a KR reliability of 0.76 (Ennis, Millman, & Tomko, 2005; Erwin, 2000). The content validity of the CCTT was assessed by the members of the Illinois Critical Thinking Project, and they agreed that the items of the CCTT measure critical thinking as defined by Ennis, Millman and Tomko (2005). Moreover, its correlation with the Reflective Judgement Interview (RJI) of King and Kitchener was 0.46 which indicates its criterion validity (King, Wood, & Mines, 1990). The CCTT-Form Z was translated into Persian following the guidelines recommended by the International Test Commission (2010) for translating and adapting tests. Following Wang, Lee and Fetzer (2006), I took several steps for the translation of the test. In the first step, the first translation of the test was done followed by a pilot study in which a pilot group of respondents attempted the items and were then asked during cognitive interviews to comment on the items of the tests. Based on these comments, adaptations were made to the translation. In the next step, the test was back-translated into English by a third party, and the translated version was compared with the original English version for purposes of validating the translation—as recommended by Maneesriwongul and Dixon (2004). The differences in both versions were identified, and adaptations were made to the Persian translation. Finally, both of the Persian versions of the test (i.e., the original translation and the adapted translation) were taken by two different try-out groups so that fine-tuning and cultural adaptation of the translation could be performed. The final version of the test was then compiled and used for data collection.

3.3. Procedures

This study used a true experimental pre- and post-test design; the participants from each language proficiency level (i.e., LI, UI, and AD) were randomly assigned to either the experimental group (EG) or the control group (CG). For each proficiency level, there was an EG and a CG, each with 149 participants (as described in section 3.1 above). All subject groups took the essay task and the CCTT-Form Z as the pre-test in one administration session. The two raters (with between 17 and 19 years of teaching experience) used the Multiple Trait Scoring Inventory, adapted from Hyland (2003), to score the essays (see the Appendix). Their scores were totaled and averaged; the results were used as the pretest data. The experimental groups then participated in a 3-week workshop (i.e., three 2-hour sessions each week, held on odd week days) in which they received strategy-training instruction (in their mother tongue) the aim of which was to develop their awareness of critical thinking strategies. The purpose of the workshop was to raise participants' awareness of the techniques of critical thinking (and especially their knowledge of fallacious argumentation). It was decided that English should not be used as

the medium of communication in the workshop because there were control groups which did not receive any treatment whatsoever. In other words, the control groups only took the pre-test and the post-test and there was no placebo, so I feared that using English as the medium for teaching the workshop content would result in an overestimation of the written performance of the experimental groups in the post-test. To rule this out, it was decided that Persian should be the medium of communication and instruction in the workshop. Therefore, all the texts, materials, and exercises used in the workshop were in Persian, and the instructor who taught them did not use English at all. Nevertheless, it is true that the goal of the workshop was the development of L2 rhetoric, and that it would make sense to have students work with the L2, but L1 was used to this end only because the control groups would not receive any workshop treatment whatsoever.

The materials were designed in such a way as to help the participants in the workshop to develop their main critical thinking abilities which have been described by Ennis and Millman (1971) in the Cornell Critical Thinking Test, Form Z (CCTT-Form Z). The topics covered in the workshop were aimed at raising the participants' abilities in the following areas:

1. *Deduction*: Ability to determine whether a statement follows from premises in material that is emotionally-loaded;
2. *Fallacies*: Ability to detect fallaciously ambiguous arguments (e.g. circularity, nonsupporting emotive language, oversimplification of alternatives, red herring, hasty generalizations, stereotypes, post hoc ergo propter hoc, false authority, wrong use of statistics, argumentation through the use of vice and virtue words, and so on;
3. *Credibility*: Ability to judge the reliability of information and authenticity of sources;
4. *Induction*: Ability to judge whether or not an hypothesis or generalization is warranted;
5. *Planning*: Ability to choose useful hypothesis-testing predictions when planning experiments;
6. *Definition*: Ability to identify a stipulated definition that best expresses another person's usage of a term, and to suggest alternative stipulated definitions; and
7. *Assumption*: Ability to find the assumptions that underlie a deductive argument, and to identify the statements that fill a gap in the argument.

When the three-week workshop came to an end, the participants were given a two-week interval. After this interval, all the participants in all the EG and CG groups took the post-test (consisting of the essay task and the CCTT-Form Z). The same writing task which had been administered to the participants in the

pre-test was administered to them in the post-test, and the same raters scored the participants' essays using the same scoring rubric. Their scores were totaled and averaged, and the results were used as the data for the post-test. The pre-test and post-test scores thus obtained were then input into SPSS, and were analyzed using the Mixed Between-Within Subjects ANOVA (i.e., SPANOVA). The idea was that comparing pre- and post-test results for CCTT-Form Z which had been obtained from the EG groups would show achievement in critical thinking skills, and that comparing pre- and post-test results for the writing task which had been obtained from the EG groups would also show gains in written argumentation skills. This would show if the workshop had been successful in modifying EG participants' cognitive skills; any gain in written argumentation skills in the experimental groups would then be attributable to cognitive restructuring.

4. Results

The first thing to do was to see if the workshop had any statistically significant effect on the development of critical thinking skills of the participants in the experimental groups. If I could show that the pre-test and post test results of CCTT-Form Z differed in a meaningful way for the experimental groups but not for the control groups, it would mean that the workshop had succeeded in achieving its goal. To determine if participation in the critical thinking awareness workshop (i.e., the mediation) had affected the experimental and control groups' performance on the CCTT-Form Z across time, a mixed between-within subjects ANOVA (i.e., SPANOVA) was conducted on the pre- and post-test scores obtained from both groups' performance on the CCTT-Form Z. Before any attempts at interpreting the findings, it was important to test the assumption that the observed covariance matrices of the dependent variables were equal across groups. By default, SPSS does this and reports the results in an output table captioned Box's test of equality of covariance matrices. In order for the assumption to be true, the *Sig* value in the table should not be significant (i.e., it must be larger than the *e* level of 0.05). An inspection of the SPSS output showed that this assumption had not been violated (Box's *M*=4.710, *F*=1.566, and *Sig*. =.195), and that the observed covariance matrices of the dependent variables were equal across groups. A look at the multivariate tests table indicated that there was a significant interaction between treatment and time [Wilks Lambda = .006; *F* (1, 892) = 136804.05, *p* = .0005, Partial Eta^2 = .994]. There was a substantial main effect for time [Wilks Lambda = .006; *F* (1, 892) = 136491.85, *p* = .0005, Partial Eta Squared = .994]. Comparing the means and the standard deviations revealed that, as expected, only the experimental groups showed gains in critical thinking skills [Pretest *M* = 8.85 and *SD* = .58; Post Test *M* = 28.43 and *SD* = .56] whereas the control groups did not show such gains [Pretest *M* = 8.83 ;

SD = .60; Post Test *M* = 8.81; *SD* = .54]. Moreover, the main effect comparing the type of treatment for the two groups was significant [*F* (1, 892) = 121746.25, *p* = .0005, Partial Eta^2 = .993]. The observed partial Eta^2, when interpreted in light of Cohen's (1988) indices (i.e. .01 = small effect, .06 = moderate effect, .14 = large effect), suggests a very large effect size. It shows that the experimental group benefited a lot from the workshop.

To see if the workshop had any effects on experimental groups' written argumentation, it was necessary to compare pre-test and post-test results for the writing tasks. It was hypothesized that any gains in the experimental groups would be due to both the impact of the workshop and random or systematic measurement error (e.g., carry over effect) and that any gains in the control groups would be the result of random or systematic measurement error. I therefore conducted a separate SPANOVA analysis to compare experimental and control groups in any of the proficiency levels. An SPANOVA was performed on the pretest and post test scores obtained from the lower intermediate EG and CG groups' performance on the pre-test and post-test writing tasks to determine if participation in or exemption from the critical thinking awareness workshop (i.e., the mediation) had any effect on the LI experimental and control groups' performance on the argumentative writing task. An inspection of Box's test of equality of covariance matrices showed that the observed covariance matrices of the dependent variables were equal across groups (Box's *M*=7.240, *F*=2.396, and *Sig*. = .066). A look at the multivariate tests table indicates that there was no significant interaction between type of treatment and time [Wilks Lambda = .987; *F* (1, 296) = 3.783, *p* = .0535, Partial Eta Squared = .013]. There was a substantial main effect for time [Wilks Lambda = .919; *F* (1, 296) = 26.065, *p* = .0005, Partial Eta Squared = .081]. Both groups showed very small gains in argumentative writing task scores as indicated by their mean scores on the pre-test and the post-test [EG Pretest *M* = 34.68 and *SD* = 2.00; Post Test *M* = 34.77 and *SD* = 2.20; CG Pretest *M* = 34.53 ; *SD* = 2.09; Post Test *M* = 34.73; *SD* = 2.18]. Moreover, the main effect comparing the type of treatment for the two groups was not significant [*F* (1, 296) = .147, *p* = .7015, Partial Eta^2 = .000]. This suggests that the experimental group did not benefit from the workshop. Nevertheless, the lower intermediate experimental group had gained a lot from the L1-medium workshop on critical thinking skills, but was not able to transfer the gained ability to its performance of the L2 writing task. This implies that such a transfer will be possible only when L2 learners have achieved a threshold level of L2 proficiency.

Another SPANOVA was conducted on the data obtained from the upper intermediate experimental and control groups' pretest and post-test performances on the argumentative writing task. This was done to determine if upper intermediate L2 learners could transfer their critical thinking skills to

their performance on the argumentative writing task. The inspection of Box's statistic showed that the observed covariance matrices of the dependent variables were equal across groups (Box's *M*=5.338, *F*=1.766, and *Sig*.=.151). The multivariate tests table indicated that there was a statistically significant interaction between type of treatment and time [Wilks Lambda = .009; *F* (1, 296) = 33588.115, *p* = .0005, Partial Eta Squared = .991]. There was a substantial main effect for time [Wilks Lambda = .012; *F* (1, 296) = 24859.707, *p* = .0005, Partial Eta Squared = .988]. An interesting finding was that, while the experimental group showed a huge gain in scores on the argumentative writing task (Pretest *M* = 57.67 and *SD* = 2.62; Post Test *M* = 68.93 and *SD* = 2.42), the control group in fact performed a bit worse on the post-test than it had done on the pre-test (Pretest *M* = 58.08 and *SD* = 2.42; Post Test *M* = 57.23 and *SD* = 2.31)—but its pre- and post-test results did not show any statistically significant difference. This explains why the interaction effect between time and treatment was significant; we normally expect this to be insignificant so that all the observed change in mean scores can be attributed to the main effect of time. The main effect comparing the type of treatment for the two groups was significant [*F* (1, 296) = .405.102, *p* = .0005, Partial Eta Squared = .578]. The observed partial Eta^2, when interpreted in light of Cohen's (1988) indices (i.e. .01 = small effect, .06 = moderate effect, .14 = large effect), suggests a very large effect size. This suggests that the upper intermediate experimental group, unlike its lower intermediate counterpart, was able to transfer its critical thinking skills to its L2 written performance, and that it benefited a lot from the treatment; this may be taken as a sign to indicate that critical thinking instruction should not be incorporated into EFL composition writing classes until EFL students have reached a threshold of language proficiency.

Likewise, another SPANOVA was conducted on the data obtained from the advanced experimental and control groups' pre-test and post-test performance on the writing task. Here again, this was done to determine if participation in the critical thinking awareness workshop would affect the AD experimental and control groups' performance on the argumentative writing task across time. Box's statistic showed that the covariance matrices of the dependent variables were equal across groups (Box's *M*=.242, *F*=080, and *Sig*. = .971), and that the use of the SPANOVA results was justified. The results of the multivariate tests indicated that there was no significant interaction between type of treatment and time [Wilks Lambda = .995; *F* (1, 296) = 1.353, *p* = .2465, Partial Eta Squared = .005]. There was a substantial main effect for time [Wilks Lambda = .449; *F* (1, 296) = 363.925, *p* = .0005, Partial Eta^2 = .551]. Like the lower intermediate groups, the advanced control and experimental groups, too, showed gains in argumentative writing task scores. Both the experimental and the control groups showed some gain in scores on

their post-test argumentative writing task (EG *M* = 84.89 and *SD* = 1.81; CG *M* = 84.82 and *SD* = 1.77) compared to their performance on the pre-test (EG *M* = 84.31 and *SD* = 1.89; CG *M* = 84.30 and *SD* = 1.83). The main effect comparing the type of treatment for the two groups was not significant [*F* (1, 296) = .037, *p* = .8485, Partial Eta^2 = .000]. This suggests that the advanced experimental group did not benefit from the intervention.

5. Discussion

The results of the tests of between-subjects effects indicated no statistically significant difference between the lower intermediate EG and CG groups although the relevant multivariate tests showed a main effect for time. This shows that the 'mediation' (i.e., the workshop) did not have a sizeable impact on the learners' post-test performance. The observed changes in the pre-test and post-test mean scores for these learners can be attributed to other factors (one of which may be the slight inconsistency observed in the raters scoring behavior—as captured by the slight change in pre-test and post-test inter-rater reliability indices). This finding resounds my earlier claims about Iranian EFL learners which indicated that lower intermediate (and most probably LEP) students are so excessively preoccupied with correct linguistic structures that it overwhelms their reasoning capacity (Salmani Nodoushan, 2007c). In other words, they fail to remember the primacy of thought over linguistic expression. This lends support to claims that 'attention can . . . be too selective, resulting in cognitive tunnel vision' (Strayer & Frank, 2007, p. 34). It also supports the arguments claiming that stress-prone situations and heavy workloads can push people to ignore information that is critical to the optimal performance of the task at hand (Baddeley, 1972).

In such situations, the task performer is apt to select the most task-relevant information, and to exclude irrelevant sources of information (Neisser & Becklen, 1975). It seems that the Lower intermediate group in the current study has paid selective attention to the argumentative writing task. The participants have directed all of their attention to the linguistic aspect of the task—which, in their view, seems to be the most prominent one for the raters—and ignored to pay attention to the principles of correct argumentation. This is not surprising at all. Needless to say, writing is a 'power' activity rather than being a 'speed' activity; setting a short time limit (i.e., 90 minutes in this experiment) and expecting the lower-intermediate students to write a 550-plus-word argumentative text is beyond what they can indeed achieve. They therefore tend to focus on linguistic form because they find it to be the most prominent aspect of the task. In other words, the workload and the requirements of the task push them through a cognitive tunnel vision. It exhausts their memory resources, and they are left with no extra memory resources to be attentive to the process of argumentation.

For the upper-intermediate group, however, the story is different. They have achieved a certain threshold of language proficiency which helps them purge some of their memory buffers from attention to linguistic form; the purged memory buffers are then allocated to attention to the principles of correct argumentation which are critical to the optimal performance of the task at hand. Therefore, the upper-intermediate group benefitted most from the 'mediation' experience in which its awareness to critical thinking was raised. This finding has implications for curriculum development and EFL course planning. It delineates the importance of correct sequencing of EFL courses, and suggests that essay writing courses should be procrastinated until after EFL learners have achieved a certain level of English language proficiency. Currently, all Iranian EFL learners are expected to take this course in the fourth semester of their university indoctrination, a time at which they are not ready for it yet.

The reason why the advanced proficiency EG group did not outperform its CG counterpart may be due to its level of language proficiency. Advanced proficiency does not come about unless the learners have already spent a lot of time on acquiring the language which entails a lot of attentive reading—with attention to the discoursal features of the language as well as rhetoric and genres (cf., Kazemi, 2016; Bhatia & Salmani Nodoushan, 2015; Brown & Salmani Nodoushan, 2015; Johns & Salmani Nodoushan, 2015; Salmani Nodoushan, 2011; Salmani Nodoushan & Khakbaz, 2011; Salmani Nodoushan & Montazeran, 2012). The advanced EFL learners' pre-test performance on the CCTT-Form Z lent support to this explanation, but I will not report those results here because that is within the scope of another paper which will follow this one.

All in all, the findings of the current study show that 'mediation' (in this case the L1 workshop on critical thinking skills) can be helpful, but that it is most effective when the 'previously-indoctrinated' EFL learners have attained a threshold of language proficiency. My findings also suggest that the role of mother tongue in the 'mediation' process is of paramount significance. It supports the notion that the L1, if used in L2/FL classes, will have a facilitating role (cf., Atkinson, 1987; Auerbach, 1993; Doyle, 1997; Hopkins, 1988; Schweers, 1999).

6. Conclusion

EFL learners' problems in writing argumentative essays cannot be solved by simply focusing on the development of their repertoire of linguistic knowledge. If we hope to train EFL learners who are capable of writing fine-tuned argumentative essays, we need to find ways of helping them to understand the principles of logical reasoning, objective argumentation, and

critical thinking. Their long-established traditions of L1 composition writing need to be deconstructed and the correct norms of composition writing in L2/FL need to be suggested into their cognitive systems. Their cognitive structures need to be modified so that they will be able to host critical thinking and correct reasoning abilities. This cannot come about unless Iranian EFL learners are set free from the yoke of the currently-practiced curriculum of indoctrination that has stranded them in the territory of linguistic forms. They need to be emancipated from their L1 argumentation and thinking habits, and 'mediation' through mother tongue can help them, but it must be provided at the right time and the correct level of English language proficiency.

Notes

1. See Anderson et al. (2000) for a revised version of the cognitive domain in Bloom's taxonomy.
2. See Rogoff and Wertsch (1984) and Cole (1985) for a fuller description of Vygotsky's ideas.

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Appendix: Multiple Trait Scoring Rubric for scoring students' writing (Based on Hyland, 2003, p. 231)

Trait	Trait Components	Score	Symptoms
Content	Explicitness of events	1	Events not stated
		2	Events only sketchy
		3	Events fairly clearly stated
		4	Event explicitly stated
	Documentation of events	1	No recognizable events
		2	Clearly documents events
		3	Includes most events
		4	Clearly documents events
	Evaluation of the significance of events	1	None or confused evaluation
		2	Little or weak evaluation
		3	Some evaluation of events
		4	Full evaluation of events
	Providing personal comment	1	No or weak personal comment
		2	Inadequate personal comment
		3	Some personal comment
		4	Personal comment on events
Structure	Orientation of the writing assignment	1	Missing or weak orientation
		2	Orientation gives some information
		3	Fairly well-developed orientation
		4	Orientation gives all essential information
	Providing background	1	No background provided
		2	Some necessary background omitted
		3	Most actors and events mentioned
		4	All necessary background provided
	Sequencing	1	Haphazard and incoherent sequencing
		2	Account partly coherent
		3	Largely chronological and coherent
		4	Account in chronological/other order
	Provision of reorientation	1	No reorientation or includes new matter
		2	Some attempt to provide reorientation
		3	Reorientation largely "rounds off" sequence
		4	Reorientation "rounds off" sequence
Language	Control of language	1	Little language control
		2	Inconsistent language control
		3	Good control of language
		4	Excellent control of language
	Use of vocabulary	1	Reader seriously distracted
		2	Lacks variety and is verbose
		3	Adequate vocabulary choice
		4	Excellent use of vocabulary
	Choice of grammar	1	Reader seriously distracted
		2	Lacks variety and richness
		3	Adequate grammar choice
		4	Excellent use of grammar
	Appropriateness of tone and style	1	Poor tone and style
		2	Inconsistent tone and style
		3	Mainly appropriate tone and style
		4	Appropriate tone and style