The effect of inference-making, deduction, and self-monitoring on EFL learners' language achievement, reading, and writing ability

Bagheri, Fahimeh
Imam Reza International University, Mashhad, Iran (fbagheri2010@yahoo.com)

Ghanizadeh, Afsaneh ✉
Imam Reza International University, Mashhad, Iran (ghanizadeafsane@yahoo.com;
a.ghanizadeh@imamreza.ac.ir)

Abstract

In line with the studies demonstrating the positive relationship between critical thinking ability, self-regulation and language proficiency, this study aimed to particularly examine the impact of the two subcomponents of critical thinking, i.e., inference-making and deduction, as well as one subcomponent of self-regulation, i.e., self-monitoring, on EFL students' overall language achievement, reading and writing achievements. To the best of researchers' knowledge, there is no documented study investigating the relationship between these constructs among EFL learners. To achieve the purpose of the study, 120 EFL university students were selected according to a convenience sampling from Hakim Sabzevari University, a city in the north-east of Iran. They were asked to complete the "Watson-Glaser's Critical Thinking Appraisal" and the "Self-Regulation Trait Questionnaire". They were also requested to report the grade point average of their previous term together with their reading and writing scores on these courses. The results showed that there is a significant relationship between EFL learners' inference-making, deduction, self-monitoring and their language achievement as well as their reading and writing ability. Subsequent data analyses demonstrated that among the variables, self-monitoring is the most powerful predictor of language achievement. In addition, the results revealed that the three mentioned variables can predict about 27 percent of language achievement. This study has some implications for educators and administrators to take full advantage of these associations by establishing guiding principles for enhancing EFL university students' self-monitoring, inference-making, and deduction.

Keywords: inference-making; deduction; EFL learners; self-monitoring; language achievement; reading comprehension; writing ability

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1. Introduction

American Philosophical Association Project offered the definition of critical thinking as "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation and inference and is founded on the conceptual criteria upon which a judgment is based" (Facione & Facione, 1996). Theoretically and pedagogically, critical thinking is currently a subject of prime interest among many scholars and most researchers have strongly endorsed the integration of critical thinking into other areas of foreign language acquisition (Bailin, Case, Coombs, & Daniels, 1999). Scholars advocating critical thinking skills have convincingly contented that enhancing thinking skills must be urgency for educationalists. There is now a considerable empirical and theoretical base in the literature to confirm the connection of critical thinking with students' academic achievement (e.g. Lee & Loughran, 2000; Keeley, Holland, & Watson, 2005). It is reasonably believed that higher-order thinking skills can improve higher order learning skills contributing to academic success (Renner, 1996).

Another variable studied in this paper is self-regulation. It refers to "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" (Zimmerman, 2000, p. 14). Zimmerman (1990) asserted that self-regulated learners are meta-cognitively, motivationally, and behaviorally active participants in their own learning process. Self-regulatory skills have been confirmed to bear close relations to academic achievement and motivation to accomplish educational goals (Zimmerman & Schunk, 2001). Moreover, as the findings of previous studies (Graham & Harris, 1993; Zimmerman & Risemberg, 1997; Monshi Toussi, Bori, & Ghanizadeh, 2011; Ghanizadeh & Mirzaee, 2012) indicated, self-regulation is considered as an influential strategy in foreign language learning and teaching.

The major purpose of this study is to empirically investigate the theorized association between self-monitoring, a component of self-regulation, and inference-making and deduction, two components of critical thinking, as well as language achievement among EFL learners. The researchers of the present study aimed to explore this connection according to logical reasoning as well as theoretical frameworks in the literature indicating a close association between critical thinking ability and self-regulatory skills (Phan, 2010). To the best of researchers' knowledge, there is hardly any documented study investigating the association between the components of critical thinking and self-regulation. In this study, the researcher investigated the hypothesized associations among university students majoring in EFL.

2. Review of the Related Literature on Critical Thinking

According to different researchers and theorists in the field of critical thinking, there is a broad range of definitions proposed for it. For instance, Paul (1995) introduced CT as set of intellectual standards that individuals can use while thinking. Pithers and Soden (2000) defined critical thinking as a cognitive ability mingled with numerous skills such as identifying, understanding and analyzing a matter by drawing inferences using top-down and bottom-up strategies to confirm the reliability of claims and rationales. The term can also be defined as the use of analytical skills, attitudes and values to get close to the truth to a great extent (Gabennesch, 2006). Furthermore, Norris and Ennis (1989) believed critical thinking is "reasonable and reflective thinking that is focused upon deciding what to believe and do" (p. 3).

Examining these definitions, one can find considerable overlap between them. In fact, all these definitions convey the same message and are paraphrases of the same concepts. They simply relate critical thinking to reasoning and rational judgments (Davidson, 1998). Although most scholars agree that critical thinking is a

combination of both skills and dispositions, skill-based models and measures of critical thinking are widely-used categorizing it as a higher-order thinking skill and pivoting on conceiving proper learning and instructions processes (Frijters, Dam, & Rijlaarsdam, 2008). For example, Watson and Glaser (2002), the designers of the widely-known measure of critical thinking, related it to the following abilities: differentiating among degrees of truth or falsity of inferences; identifying underlying assumptions in a group of sentences; determining if conclusions are credible or not; recognizing whether conclusions follow from the information given in a sentence, and assessing arguments as being strong or weak, i.e. being relevant or irrelevant.

Moon (2008) believed that critical thinking and its relationship with the educational process has developed into a major issue, so it is appropriate to fully explore it. She also mentioned since critical thinking is a process involved in any research activity; it can be regarded as a predominant concept in education, especially at higher levels. In fact, it is the primary aim of learning. In a similar vein, Davidson (1998) asserts that higher order thinking skills, especially critical thinking, should be an indispensable part of L2 learning to improve language proficiency of students (as cited in Liaw, 2007). Critical thinking is presumed to be significant in the acquisition of language skills, in particular reading and writing (Seung-Ryul Shin, 2002; Stapleton, 2001; Moore, 1995).

Throughout the history, Paul (2004) has attempted to relate critical thinking to reading comprehension. According to him, as the reflective mind enhances its power by thinking about it reflectively, it also enhances its reading by thinking deeply about how it is reading. Facione (1992), moreover, believed there is a high correlation between critical thinking ability and reading comprehension. In fact, enhancement in one is paralleled by enhancement in other. Considering reading comprehension as a crucial factor in second language learning and teaching, Barnett (1989) explained a number of reasons for its importance: It continues to be a principal aim in many programs; it encourages the development of literacy skills; and it continues to be after students finish formal language study. Inference, synthesis, analysis and evaluation are among some of the mental skills used in reading comprehension (Grabe, 1991). According to Facione (1992), these skills lie at the heart of critical thinking.

Researchers underline the importance of writing skill in the progress of learners. As Pecorari (2006) asserted that the ability to write appropriate text is an important part of academic success. A number of methods and approaches to language teaching are aimed at writing skill to show its essence and its intricacies. For example, Whole Language proponents endorse the idea that not only is writing employed as a way of displaying knowledge to a teacher but also as a means of discovering for a person what he thinks (Rigg, 1991). Moreover, Brown (2001) stated that writing skill and thinking are closely related and inseparable from each other; therefore, the more ability one possesses to think, the better that person is going to handle writing.

3. Review of the Related Literature on Self-regulation

Self-regulation refers to the "process of setting goals for oneself and engaging in behaviors and cognitive processes that lead to goal completion" (Ormrod, 2006, p. 347). Considering academic self-regulation, Zimmerman (2000) described it as how much learners are motivationally, metacognitively, and behaviorally active in their learning process and in accomplishing their goals (as cited in Ghanizadeh & Ghonsooly, 2014). Consequently, from this we can reasonably infer that successful students actively participate in their own learning procedure. In fact, as Wolters, Pintrich, and Karabenick (2003) pointed out motivation, management, monitoring, behavior, and the like are among the main components of self-regulation.

According to Heikkilä and Lonka (2006), self-regulated learners are more apt to set task-related, rational goals, assume responsibility for their learning, and preserve motivation. Furthermore, students who are regulated in their learning are competent at employing and changing wide-ranging cognitive (e.g., memorizing, practicing, organizing) and metacognitive (e.g., setting goals, monitoring, planning, self-evaluation) strategies to succeed in performing academic tasks.

Many recent studies have revealed that self-regulation and academic achievement are closely related. Ee,

Moore, and Atputhasamy's (2003) study, for instance, illustrated that learners with higher achievements have better attributes to consider and apply self-regulatory strategies which go hand in hand with their achievement. Likewise, Zimmerman and Martinez-Pons's (1986) research showed self-regulated learning strategies such as environmental structuring; looking for information, reviewing text, and setting goals enhance the students' achievement. It has also been proven that self-regulatory strategies facilitate crucial independent learning areas, e.g., reading and writing (Zimmerman & Kitsantas, 1999).

Research on the field of self-regulation indicated that self-regulation can facilitate reading ability in particular (McMahon & Dunbar, 2003; Nash-Ditzel, 2010; Swalander & Taube, 2007). Harris and Hodges (1995) added that unless students are self-monitoring while reading, they cannot fully understand the text. Self-monitoring is associated with the concept of "metacognitive awareness," known as the ability to know whether what one is reading is truly understood by monitoring and controlling one's own comprehension (Harris & Hodges, 1995, p. 153). To write and read effectively, students need to develop self-regulation skills (Graham & Harris, 2000; Hayes & Flower, 1980; Zimmerman & Kitsantas, 1999). Among the different self-regulation skills, self-monitoring is claimed to be of great significance in learning to write and read (Cresswell, 2000; Xing, 2004). Self-monitoring in writing and reading involves assessing and recognizing some compatibility or incompatibility of what has been written with a mental representation of what the text is expected to be (Hacker, 1994).

3.1 Purpose of the Study

The main purpose of the present study is to empirically investigate the hypothesized associations between CT, in particular inference and deduction, and self-regulation, in particular self-monitoring, with EFL university students' academic achievement in reading and writing and also their overall language achievement. To achieve this purpose, the following research questions were posed and probed in the present study:

➢ Is there any relationship between EFL university students' self-monitoring, language achievement as well as reading and writing achievement?
➢ Is there any relationship between EFL university students' inference-making, language achievement as well as reading and writing achievement?
➢ Is there any relationship between EFL university students' deduction, language achievement as well as reading and writing achievement?
➢ What percentage of variability in EFL university students' language achievement can be accounted for by their self-monitoring, inference-making, and deduction skills?

4. Method

4.1 Participants

The participants of the present study comprised 120 EFL university learners studying English Literature at Hakim Sabzevari University. Out of 120 participants, 97 students were female and 23 were male. After a brief explanation of the purpose of the research, all participants received the Watson-Glaser's Critical Thinking Appraisal and also Self-Regulation Trait (SRT) Questionnaire. To gather reliable data, the purpose of completing the questionnaire was explained and the participants were assured that their views would be confidential.

4.2 Instruments

The Farsi Version of the Watson-Glaser's Critical Thinking Appraisal (CTA) - To evaluate students' inference-making and deduction, two subtests of Watson-Glaser Critical Thinking Appraisal (CTA) were employed. During the history of CT researches, various general tests of CT have been utilized by several researchers. For the purpose of the present study, WGCTA was used because it has widely been employed by CT researchers (e.g. Ghanizadeh, & Moafian, 2011). In the present study, the Persian version of the *Watson-Glaser* test was employed. According to Mohammadyari (2002), this test and its subcomponents are truly reliable and valid according to Iranian culture. To ascertain the reliability of the questionnaire, she employed split-half

reliability estimate. Moreover, with the adapted version in Iran, the reliability was discovered to be 0.98 and the results of the factor analysis provided some support for the inventory hypothesized structure (Mohammadyari, 2002).

Table 1

The Subtests of CTA Used in this Research along with the Corresponding Descriptions

Subtest	Description
Test 1. Inference	Discriminating among degrees of truth or falsity of inference drawn from given data.
Test 2. Deduction	Determining whether certain conclusions necessarily follow from information in given statement or premises.

Self-Regulation Trait (SRT) Questionnaire - To measure self-monitoring, the *self-regulation trait* (SRT) questionnaire designed by O'Neil and Herl (1998) was applied. This subtest consists of 8 questions ranging from *almost never,* to *sometimes, often,* and *almost always*. The following table depicts the subscale of the SRT used in this research.

Table 2

The Subscale of SRT Used in this Research together with the Corresponding Descriptions

Factor	Definition	Items
Self-monitoring	The extent to which one needs a self-checking mechanism to monitor goal achievement	2-6-10-14-18-22-26-30

The reliability and validity of the scale have been confirmed in many studies (Herl et al., 1999).

4.3 Data Collection

The study was conducted at Hakim Sabzevari university of Sabzevar, a city in the north east of Iran. The participants were required to complete the *self-monitoring* scale of the *Self-Regulation Trait* questionnaire and the *inference* and *deduction* scales of the *Watson-Glaser Critical Thinking Appraisal*. The questionnaires were arranged numerically and they were asked not to write their names. No one took the test home, or left the class while taking the test. They were also asked to report the grade point average (GPA) of their previous term and their reading and writing scores. Since the participants were already briefed on the purpose of the study and given that all participants were guaranteed anonymity and confidentiality, it was hoped that these would add the validity to the students' report of their academic scores.

4.4 Data Analysis

To check the normality of data distribution, the Kolmogorov-Smirnov test was employed. To investigate the relationship between self-monitoring, language achievement, reading and writing achievement, multiple Pearson Product-Moment correlations were applied to the data. To examine the relationship between inference-making, language achievement, reading and writing achievement, multiple Pearson Product-Moment correlations were run. To explore the relationship between deduction, language achievement, reading and writing achievement, multiple Pearson Product-Moment correlations were run. To explore what percent of variability in EFL learners' language achievement can be accounted for by their scores in the variables under study, a multiple regression analysis was conducted.

5. Results

To check the normality of data distribution, the Kolmogorov-Smirnov test was employed. This test is used to check whether the distribution deviates from a comparable normal distribution. If the *p*-value is non-significant

($p>.05$), we can say that the distribution of a sample is not significantly different from a normal distribution, therefore it is normal. It the p-value is significant ($p<.05$) it implies that the distribution is not normal. Table 3 presents the results of the Kolmogorov-Smirnov test. As it can be seen, the obtained sig value for all variables (self-monitoring, inference-making, and deduction) is higher than .05. Therefore, it can safely be concluded that the data is normally distributed across all four variables.

Table 3

The Results of K-S Test for Self-monitoring, Inference-making, and Deduction

	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Self-monitoring	.076	120	.088
Inference-making	.092	120	.061
Deduction	.096	120	.052*

The same analysis was conducted for GPA, reading, and writing scores. Table 4 presents the results. As it can be seen, all these variables are normally distributed across the participants.

Table 4

The Results of K-S Test for GPA, Reading, and Writing Scores

	Kolmogorov-Smirnov		
	Statistic	df	Sig.
GPA	.981	120	.094
Writing	.978	120	.051
Reading	.942	120	.055

Table 5 presents descriptive statistics of EFL learners' self-monitoring, inference-making, and deduction. The results are as follows: self-monitoring (*M*=22.60, *SD*=3.35), inference-making (*M*=6.10, *SD*=2.53), and deduction (*M*=9.53, *SD*=2.12).

Table 5

Descriptive Statistics of Self-monitoring, Inference-making, and Deduction

	N	Minimum	Maximum	Mean	Std. Deviation
Self-monitoring	120	12.00	30.00	22.60	3.53
Inference-making	120	2.00	14.00	6.11	2.53
Deduction	120	4.00	14.00	9.53	2.13
Valid N (listwise)	120				

Table 6 presents descriptive statistics of EFL learners' GPA, writing and reading scores. The results are as follows: self-monitoring (*M*=22.60, *SD*=3.35), inference-making (*M*=6.10, *SD*=2.53), and deduction (*M*=9.53, *SD*=2.12).

Table 6

Descriptive Statistics of GPA, Reading, and Writing Scores

	N	Minimum	Maximum	Mean	Std. Deviation
GPA	120	12.50	19.00	16.00	1.45
Writing	120	10.00	20.00	15.44	2.16
Reading	120	11.00	20.00	16.80	1.84
Valid N (listwise)	120				

5.1 The relationship between self-monitoring, language achievement, reading and writing achievement

To investigate the relationship between self-monitoring, language achievement, reading and writing achievement, multiple Pearson Product-Moment correlations were applied to the data. Table 7 indicates the results.

Table 7

The Correlation Coefficients between Self-monitoring, GPA, Reading and Writing Achievement

	Self-monitoring
GPA	.520**
Writing	.449**
Reading	.329**

Note. **Correlation is significant at the level of 0.05

According to Table 7, there is a significant correlation between self-monitoring and GPA ($r = 0.520$, $p < 0.05$), self-monitoring and writing ($r = 0.449$, $p < 0.05$), and self-monitoring and reading ($r = 0.329$, $p < 0.05$).

5.2 The relationship between inference-making, language achievement, reading and writing achievement

To examine the relationship between inference-making, language achievement, reading and writing achievement, multiple Pearson Product-Moment correlations' were run. Table 8 indicates the results.

Table 8

The Correlation Coefficients between Inference-making, GPA, Reading and Writing Achievement

	Inference-making
GPA	.310**
Writing	.440**
Reading	.410**

Note. **Correlation is significant at the level of 0.05

According to Table 8, there is a significant correlation between inference-making and GPA ($r = 0.310$, $p < 0.05$), inference-making and writing ($r = 0.440$, $p < 0.05$), and inference-making and reading ($r = 0.410$, $p < 0.05$).

5.3 The relationship between deduction, language achievement, reading and writing achievement

Identical analysis was performed for deduction. To explore the relationship between deduction, language achievement, reading and writing achievement, multiple Pearson Product-Moment correlations were run. Table 9 indicates the results.

Table 9

The Correlation Coefficients between Deduction, GPA, Reading and Writing Achievement

	Deduction
GPA	.252**
Writing	.449**
Reading	.419**

Note. **Correlation is significant at the level of 0.05

According to Table 9, there is a significant correlation between deduction and GPA ($r = 0.252$, $p < 0.05$), deduction and writing ($r = 0.449$, $p < 0.05$), and deduction and reading ($r = 0.419$, $p < 0.05$).

5.4 The role of self-monitoring, inference-making, and deduction in predicting language achievement

To explore what percent of variability in EFL learners' language achievement can be accounted for by their

scores in variables under study, a multiple regression analysis was conducted**.** The following Table is the ANOVA table of regression for self-monitoring, inference-making, and deduction in predicting language achievement. In this analysis, GPA is dependent variable and self-monitoring, inference-making, and deduction are considered as independent variables. The magnitude of F-value (F= 15.796) and the amount of the respective p-value ($p < 0.05$) indicate the considered model is significant.

Table 10

The ANOVA Table of Regression for the Variables under Study

	Model	Sum of Squares	df	Mean Square	F	Sig.
	Regression	72.083	3	24.028	15.796	.000[b]
1	Residual	176.449	116	1.521		
	Total	248.532	119			

Note. a. Dependent Variable: GPA, b. Predictors: (Constant), Deduction, Self-monitoring, Inference-making

As Table 11 shows, all the three variables are positive predictors of the dependent variable, i.e., language achievement. This can be figured out by examining the magnitude of the t-value (which should be higher than the critical level) and the p-value (which should be less than the significance level, i.e., 0.05). It was also found that among the variables, self-monitoring is the most powerful predictor of language achievement.

Table 11

The Results of Regression Analysis for the Variables under Study

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.039	.783		14.105	.000
	Self-monitoring	.188	.035	.460	5.328	.000
	Inference-making	.075	.050	.182	2.005	.045
	Deduction	.057	.059	.099	1.950	.050

Note. a. Dependent Variable: GPA

Table 12 illustrates the model summary statistics. The results revealed that the model containing the three variables (self-monitoring, inference-making, and deduction) can predict about 27 percent of language achievement. The R value is 0.539 which indicates the correlation coefficient between the variables. Its square value is 0.290 and its adjusted square is 0.272. It indicates that about 27 of the variation in language achievement can be explained by taking the above-mentioned variables into account.

Table 12

R Square Table for Self-Monitoring, Inference-Making, and Deduction in GPA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.539[a]	.290	.272	1.23333

Note. a. Predictors: (Constant), Deduction, Self-monitoring, Inference-making

6. Discussion

The primary concern of this study was to examine whether there is a relationship between Iranian EFL students' CT ability, in particular inference-making and deduction, and their self-regulation, in particular self-monitoring, as well as reading and writing achievement. Furthermore, this study tried to uncover to what extent the above-mentioned variables could predict students' language achievement. Considering our first research question which asked whether there is a relationship between EFL university students' self-monitoring, language achievement, reading and writing achievement, the result of the present study revealed that there was a significant relationship between these variables. This finding suggests that students exhibiting a higher level of

self-monitoring can logically have better achievements in reading, writing and language achievement. In other words, it can be concluded that teaching self-monitoring techniques can significantly promote reading and writing performance in college students, and it develops students' independent skills. This is hardly surprising since, as demonstrated earlier in this study, multiple studies revealed that self-regulated individuals were, on the whole, higher achievers and more motivated to accomplish academic goals compared with other learners with less self-regulatory skills (e.g., Zimmerman & Schunk, 2001; Ee et al., 2003; Schunk & Pajares, 2001; Monshi Toussi, Boori, & Ghanizadeh, 2011; Ghanizadeh & Mirzaee, 2012). Since self-monitoring is a subscale of self-regulation, this contention can reasonably be generalized to this sub-factor as well.

In the same line with this study, Pratontep and Chinvonno (2008) aimed to investigate learners' self-regulated learning strategies in an Extensive Reading program. Results suggested that there were major differences between learners' reading mean scores after 10 weeks of instruction in self-regulated strategies. Nash-Ditzel (2010) also reported that teaching techniques based on self-regulation and reading strategies can significantly enhance reading abilities in college students. Moreover, this study empirically showed that students with strong gains in self-monitoring also showed strong gains in writing quality which is consistent with self-regulated learning theories (Hayes & Flower, 1980; Winne & Hadwin, 1998). This result is also in line with Graham and Harris's self-regulated strategy development (SRSD) model, asserting that self-regulated writing positively affects writing performance (Graham & Harris, 1993).

The researchers' second question aimed at investigating the relationship between EFL university students' inference-making, language achievement, reading and writing achievement. The results demonstrated a significant relationship between the variables in question, which is also in line with the previous theoretical and empirical contentions related to critical thinking. For instance, studies indicating the relation between critical thinking skills, as measured by the California Critical Thinking Skills Test (CCTST; Facione et al., 1990), and GPA have shown correlations ranging between .235 and .596 (Facione & Facione, 1997). Ghanizadeh and Mirzaee (2012) confirmed that EFL learners' critical thinking can predict about 28% of their language achievement. Throughout history, a range of other studies have demonstrated the association of critical thinking with students' academic success as well (e.g., Lee & Loughran, 2000; Kealey, Holland, & Watson, 2005).

The correlation of critical thinking to reading comprehension indicates that individuals who benefit from a higher level of critical thinking should logically perform better on reading section of exams. This was not far behind the expectation of the researchers of the present study. Accepting the definition of reading comprehension by Dorothy Durkin (1993), "intentional thinking during which meaning is constructed through interactions between text and reader", and also the clarification of this construction of meaning as "a complex merger of skills, prior knowledge and text mediated by the language skills, motivation and interest of the reader" (Block, Gambrell, & Pressley, 2002), one can reasonably infer that it covers Bloom's taxonomy in critical thinking including "knowledge, comprehension, application, analysis, synthesis, and evaluation" (Bloom et al., 1956). Since critical thinking and comprehension both are cognitive abilities having some common cognitive skills, improvement in one can contribute to the improvement of the latter– reading comprehension.

The findings of the present study are also consistent with empirical studies. Nasirahmadi (2014) concluded in his study that critical thinking can predict 38% of the learners' success in IELTS reading section. Fahim and Kamali's (2011) research also demonstrated that there is a positive correlation between learners' critical thinking ability and their reading comprehension. Moreover, Miller (1981) showed students' achievement in critical thinking was closely associated with their reading proficiency achievement.

In a similar vein, some practitioners of reading, among them Harvey and Goudvis (2000), Tovani (2000) and Beers (2003), have stressed the paramount importance of teaching reading strategies to improve reading comprehension, but one of the essential reading strategies is inferencing. Being competent in drawing inferences is crucial in the comprehension of text (Caine & Oakhill 1999). Similarly, less skilled readers make fewer inferences than their skilled counterparts (e.g. Long, Oppy, & Seely 1997; Oakhill 1982, 1984).

With regard to the relationship between critical thinking and students' writing achievement, we can argue that the results of our study support previous research. For instance, Jodeiri (2005) demonstrated the association between critical thinking and writing proficiency of Iranian EFL students. Eventually, he discovered that there is a close relationship between the critical ability and English writing skill of Iranian intermediate EFL learners. The better performers in critical thinking ability they are, the more sophisticated their English writing skill would be. As students begin to write, they encounter a plethora of opportunities to struggle with their thoughts, hence promoting their cognitive and intellectual growth(Bean & Weimer, 2011). More specifically, Quitadamo and Kurtz (2007) in their study demonstrated that writing helps students enhance their inference skills. Writing is effective because students must not only organize their thoughts conceptually but also monitor their awareness of thinking processes (Langer & Applebee, 1987; Ackerman, 1993; Holliday, 1994; Rivard, 1994).

Leafing through the existing literature on critical thinking, one can reasonably infer that there is a close association between critical thinking and students' reading and writing achievement. Since inference-making and deduction are two subcomponents of critical thinking, we can reasonably infer that each of them play a part in influencing critical thinking ability. On the other hand, this study is unique in its own in that it exclusively investigated the correlation of the two subcomponents of critical thinking with reading and writing skills, while to the researchers' best knowledge there is hardly any documented study with the same purpose. Thus, the researchers of the present study approached the third question in the same way as the second one, and everything mentioned regarding the relationship between critical thinking and reading and writing skills can also be applied to the third question. The findings of this study indicated a moderate correlation between deduction and reading and writing skill.

The researchers' fourth question aimed at finding the role of self-monitoring, inference-making, and deduction in predicting language achievement. The results revealed that 27 percent of the variation in language achievement can be explained by taking the mentioned variables into account. This is consistent with the previous studies suggesting that gains in critical thinking as well as the ability to self-regulate one's learning are correlated with higher levels of achievement (Harter, 1996; Markman, 1979; Schunk, 2005; Zimmerman, 2000). It was also found that among the variables, self-monitoring is the most powerful predictor of language achievement. Regarding the central importance of self-monitoring, many studies have argued that it is one of the characteristics of good learners and promotes learning (Blanche & Merino, 1989; O'Malley & Chamot, 1990; Wenden, 1991). Moreover, Van Hest (2000) asserted that the ability to monitor one's L2 errors is a strong predictor of acquisition. Kormos (1999) also shows that the self-monitoring of L2 learning not only enhances acquisition, but also is a positive correlate of proficiency.

In essence, the findings of this study have some implications for EFL teachers, educators and administrators to establish successful paths for developing programs and activities that foster inference-making and deduction skills as well as self-monitoring among EFL students. Teachers, in particular EFL teachers, are suggested to develop and employ critical thinking abilities in the context of their classroom by assigning highly controversial topics for witting, encouraging thinking, reinforcing inference-making, using problem-based learning, providing feedback, etc. Additionally, self-regulation can be organized by active participation in environments requiring taking control of students' own learning process by themselves (Zimmerman, 2000).

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