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## The Comparative Effects of Planning Time and Task Conditions on the Complexity, Accuracy and Fluency of L2 Writing by EFL Learners

Ali Mohammad Fazilatfar <sup>a,\*</sup>, Forough Kasiri <sup>a</sup>, Mohammad Nowbakht <sup>a</sup>

<sup>a</sup> *Yazd University, Iran*

### ABSTRACT

The present study was an attempt to investigate the differential effect/s of three different planning time scenarios (i.e. 0 min, 10 min, & 20 min), as well as three task conditions of (1) topic given, (2) topic and ideas given, and (3) topic, ideas and macrostructure given on EFL learners L2 writing complexity, accuracy and fluency (CAF). One-hundred-eight male and female participants were randomly assigned to three time-conditions, each with 36 members. Each time-condition group was itself divided into three smaller groups of 12, each with a particular task condition. The results of the comparison of the groups who were engaged in the argumentative writing task revealed that planning time significantly influenced the complexity of the essays, and the writers in the 20-minute planning time group produced more complex texts compared with those in the zero-minute planning time group. However, no significant effect of task conditions, as well as no interaction between planning time and task conditions were found. Moreover, task conditions affected the general accuracy of the writers' performance in all tasks. The pairwise comparisons showed a marginally better accuracy of texts in the condition of topic, ideas, and macrostructure given as opposed to the topic given condition. The findings of this study provide beneficial implications for language teachers and learners in developing their writing quality particularly with regard to the CAF triad, and stress the significance of planning time before conducting a written output task in the complexity of the output.

**Keywords:** accuracy; complexity; fluency; planning time; task conditions

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\* Corresponding author: English Department, Yazd University, Yazd, Iran

Email address: afazilatfar@yazd.ac.ir

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## Introduction

Planning time and the conditions under which language learners engage in the writing process have been the focus of several studies in recent years. The majority of the studies on planning time effects have mainly focused on language production, particularly oral production (Ellis, 2009); hence, they have neglected the written production. As Rostamian, Fazilatfar, and Jabbari (2017) argued, a limited number of studies researched the impact of planning on second language (L2) writing. A number of research studies have been carried out manipulating planning time, and task conditions (e.g. mainly complexity) so far (Ong, 2014). Some of the previous research in L2 writing explored only the planning time (Kellogg, 1988, 1990) or task conditions (Glynn, Britton, Muth & Dogan, 1982), while some others examined their interactions (Ellis & Yuan 2004; Ong, 2014; Ong & Zhang, 2010, 2013).

Exclusively, planning time investigations mainly focused on the effect of allocating time to planning on writing performances (Ellis, 1987; Foster & Skehan, 1996). Whereas some highlighted the importance of free-writing in diminishing the cognitive demand of translation, coherence, and discovery of ideas (Elbow, 1973, 1981; Wason, 1980), others asserted the benefits of planning in minimizing the conceptualization process load, and as a result, higher quality of the written product (Bereiter & Scardamalia, 1987; Ellis & Yuan, 2004; Flower & Hayes, 1980, 1981; Kellogg, 1988, 1990). The bones of the contention lie on Kellogg's (1990) two opposing hypotheses.

Kellogg (1990) put forth two contradictory viewpoints of Interaction and Overload Hypotheses concerning the effect of planning conditions on text quality. The Overload Hypothesis as a superficial descendent of traditional theory as well as cognitive psychology regarded the merits of linear writing processes in preventing the inordinate burden on attentional resources. Generally speaking, the hypothesis asserted that planning conditions might enhance text quality by providing a macrostructure framework which could extricate writers from the constraint of attentional capacity to cope with the issues arisen out of the translation processes, and in turn alleviate the risk of trade-off effect (Skehan, 1998).

On the contrary, the Interaction hypothesis is more concerned with the free-writing strategy, considering the dynamic nature of planning, translating, and reviewing processes which pave the way for the generation of novel ideas. Accordingly, the intrusion of such recursive processes by planning conditions might come at the expense of text quality. The hypothesis was inspired by Hayes-Roth and Hayes-Roth's (1979) opportunistic model of planning and Elbow's (1981) free-writing theory.

The backbone of their contentions is that free-writing would stimulate a process of discovery where the ideas would be created in the interaction between writer's depositions and the generated ideas. In this regard, such an interface might change the global plan as an influence of bottom-up plan. This is a notion, which constitutes the cornerstone of Galbraith's (1999) knowledge constituting model.

Despite these long-standing controversies, planning conditions have been the source of inspirations for probing L2 learners' attentional focus on content or form, and the medium of task manipulations in learning contexts for the sake of interlanguage development (Ellis, 2005). Many of the previous research studies carried out in this regard have grappled with the nature of task rather than the socio-cognitive processes involved in task performances (Ellis, 2005). Essentially, contrary to L1 writing studies which found such strategy intrinsically rewarding (Kellogg, 1988, 1990), virtually identical L2 investigations have not necessarily signified the notion, especially, when it comes to fluency and complexity. Fundamentally, the bone of contention stemmed from misconceiving the essence of processes at hand. Building on

theoretical models of L1 oral production (Robinson, 2001a, 2001b, 2005; Skehan & Foster, 2001), a plethora of L2 writing research studies have failed to notice the distinct cognitive processes underlying writing (recursive) and speaking (linear). Therefore, pre-writing planning has not proved to be as truly viable in declining the demand on attentional resources owing to the involvement of monitoring mechanism which was disregarded by L1 models.

Reviewing a large number of studies on oral planning tasks, we realize that they have neglected the task conditions' interfaces (e.g., Crookes, 1989; Mehnert, 1998; Ortega, 1999; Skehan & Foster, 1997; Wigglesworth, 1997). In the same way, research on planning in writing has not attempted to resolve the dispute between the assumptions that influence of pre-task planning might not be present during writing, and the length of planning time would not alleviate the issue of on-line planning (conceptualization and organization of ideas) (Ong, 2014, Ong & Zhang, 2013). Such assumptions are opposed to the supposition that planning would directly turn into transcribing during transcription stage (Ellis & Yuan, 2004; Kellogg, 1988). In fact, discussing the merits of whether learners proceed with planning during the transcription stage, or whether they switch from planning to translation is a flourishing area in task-based research on L2 writing (Ong, 2014; Ong & Zhang, 2013).

Considering all these assertions, writers' attentional resources are assumed to be limited. This means that they need to determine which cognitive processes to focus on during the writing process; and share their limited attentional resources in the cognitive processes that may result in trade-off effects between the metacognitive processes, and in turn different text quality. Based on the contradictory claims made on the effect of planning time and task condition (Kellogg, 1988; Ellis & Yuan, 2004; Ong, 2013, 2014; Ong & Zhang, 2010), it could be assumed that the learners who engaged in planning in the pre-task and extended pre-task conditions might have continued planning during the writing process. Such an on-line planning may have conceivably hindered fluency, lexical complexity, and text quality. The length of time might not also facilitate the dispersion of attentional resources, and also reduction of cognitive complexity by the provision of content, and macrostructures which might attract writer's attention to more strategic aspect of planning and organization of text. Leaning on the premises that writing could be regarded as an efficient medium for restructuring as well as scaffolding the L2 writing development, (Kormos, 2011; Kuiken & Vedder, 2008, Ong & Zhang, 2010) while verifying Ong & Zhang (2010, 2013) assertions, the interplay between L2 writing processes as well as products under planning time and task complexity conditions is to be investigated through the perspective of the existing issues in second language writing theory and research. In fact, it is assumed that the temporal distribution of cognitive processes is supposed to alter at different time intervals, and these variations might affect the quality of writings (Breetvelt, Van den Bergh & Rijlaarsdam, 1994, 1996).

Such being the case, within the present study, the framework of Cognition Hypothesis (Robinson, 2001a, 2005, 2007) and the Trade-off Hypothesis (Skehan, 2003, Skehan & Foster, 1999, 2001) were employed to make predictions about the effect of the interaction of planning time and task condition on the quality of L2 written output (CAF triad).

### *Significance of the Study*

It is indisputable that writing has been marginalized in SLA pedagogy, even on a number of occasions camouflaged in favor of oral skills to date. It is a solo time-consuming communicative activity which, unlike what appears to be accomplished in silence, has remained a cognitively built-in dilemma to be tackled not only by English native speakers, but a multitude of English as a Foreign or Second language learners, making all-out effort to develop their language literacy, and in turn general language proficiency. Writing with its various pertinent aspects have so far been

the focus of a myriad studies both in second language acquisition contexts and in writing classes in general, covering issues from grammatical accuracy and writing quality (Jang & Lee, 2018; McCutchen, 2014; Polio & Shea, 2014), task complexity (Adams, Alwi, & Newton, 2015; Rahimi & Zhang, 2018; Sadeghi & Mosalli, 2013), to feedback effects in writing quality (Akbarzadeh, Saeidi, & Chehreh, 2013; Boggs, 2019; Nguyen, 2018).

The present study and its findings can be significant in terms of different points of view. The studies of task planning and conditions are theoretically related to SLA research, and pedagogical interest to second language practitioners. It could provide an insight for SLA researchers who are interested in examining what learners actually attend to at the time of planning and how this could affect their language use. The importance of planning for language teachers is related to the way it might influence learners' language production and subsequently stimulate their interlanguage developments. In Iran, the most prevalent method of writing instruction is the product-oriented one which focuses merely on developing L2 learner's linguistic skills and discursal knowledge through multiple drafting which might not properly alleviate the underlying difficulties they might experience. As conscious, practice of writing process in an educational context is a prerequisite for gaining the expert's metacognitive knowledge and control mechanism, the approach could directly diminish the demands on the central executive by instructing the writer in planning, sentence generating, and reviewing skills so that each become automatic. To this aim, the manipulation of task could engage learners in using language purposefully .

As the teacher's selection of task should be in accordance with theory and research findings, this study would indicate the effect of different task conditions on the written process and learners' output, and in turn, could assist language practitioners in designing an effective course for teaching. Applying a cognitive-oriented approach, they could attract learners' attention toward such processes to promote complexity, fluency and accuracy in a case that one would not develop at the expense of the other. Thus, examining the cognitive variables of learners' written performances could be instrumental in to relevant fields of applied linguistics.

## Literature Review

The impacts of planning time on second language performance, in general, have been the focus of a multitude of investigations in recent years. A majority of these studies (Ahmadian, 2012; Ellis, 2009; Foster & Skehan, 1996; Markee & Kunitz, 2013; Ong, 2014; Sangarun, 2005; Skehan, 2009; Tavakoli & Skehan, 2005; Yuan & Ellis, 2003) have revealed that planning time can help learners enhance the complexity and fluency of their language performance. It should be noted; however, previous studies produced inconsistent findings with respect to the influence of planning time on language performance, in general, and L2 writing, in particular. For instance, in a study by Ellis (1987) it was shown that pre-task planning led to enhanced accuracy in language production; while in Wendel (1997) no significant effect of pre-task planning on accuracy was reported. Some of the most relevant previous studies are reviewed below.

Skehan and Foster (1997) explored the effect of planning time, task type, and post-task conditions on the writing quality of pre-intermediate EFL learners in terms of the three levels of complexity, accuracy, and fluency. The study opened up the opportunity of strategic-planning (10 minutes) as well as post-task performances (with post-task versus without post-task) for two groups. The findings revealed that the strategic-planning culminated in higher fluency since it assists the conceptualization process, and eventually resulted in better text accuracy and complexity in tasks involving decision making. The results also suggested a trade-off effect between complexity and accuracy of performances in more and less cognitively demanding tasks. As a result, the researchers contended that the restrictions posed by attentional resources were at the heart of the

matter. Such restrictions served as an underlying force for online conceptualization in decision-making and focus on form in oral narrative tasks. It was also revealed that the post-task condition led to higher accuracy in complex tasks. Based on the findings, they concluded that inspecting prioritization of attentional resources in different task conditions is of high significance.

Adopting a novel approach to pre-task planning, Alavi and Ashari Tabar (2012) put the effect of strategic-planning activities and reasoning demand on written accuracy into view. The study comprised intermediate EFL learners who completed personal narration and reasoning tasks while were exclusively placed in one of 10-minute individual, paired, grouped, or no-planning conditions. As demonstrated, all planning groups outperformed the no-planning group in accuracy. Moreover, paired and grouped conditions represented more accurate texts in both types of tasks. In fact, the investigators deeply appreciated the value of complex tasks as a medium for drawing learners' attention to form and hence the interlanguage development.

The effect of planning time of writing accuracy alone was explored by Salimi, Alavinia, and Hosseini (2012). They researched into the effect of fulfilling simple and complex decision-making tasks in planned (10-minute pre-task planning) and unplanned (no pre-task planning time) conditions on the writing accuracy of 50 intermediate EFL learners. In general, the results indicated that both planned tasks were enormously fruitful in improving accuracy. The study corroborated the opinion that planning would ease conceptualization and hence formulation processes accounted for accuracy of writing performance.

Mohammadzadeh Mohammadabadi, Dabaghi, and Tavakoli (2013) also investigated the impact of planning time and task complexity on 30 lower-intermediate L2 learners' written narratives at three levels of fluency, complexity, and accuracy. They approached the task from resource directing dimension together with planning conditions involved dedicating +/- strategic planning time to participants in Here-and-Now and there-and-then conditions. The task elicited writings by means of four comic strips. Either five-minute or no-planning time was allocated to participants prior to transcribing for 15 minutes. Eventually, both planned conditions gave rise to markedly more accurate texts compared with unplanned conditions, meanwhile the mean tendency was toward there-and-then condition. Also, the contrast in text complexity and fluency between four conditions remained statistically insignificant.

In a recent study, Rostamian, Fazilatfar, and Jabbari (2017), examined the effect of planning time on cognitive processes and the quality of L2 writing, as measured by the CAF triad, taking both writing processes and product into consideration. The participants were asked to narrate a picture story task in four planning conditions. With respect to writing processes, the findings suggested that the most cognitive processes of planning, translating and evaluating was induced by on-line planning; however, pre-task planning condition decreased the number of writing processes. With regards to writing quality, measured by CAF, it was discovered that the provision of pre-task and online planning could not result in simultaneous enhancement of writing complexity, accuracy, and fluency, a finding which is contrary to the ones mentioned in the above reviews. Therefore, it can be stated that the Overload Hypothesis and the Limited Attentional Capacity Model were supported by the study findings.

Reviewing the previous studies in the field of planning time and task conditions on writing quality, readers will encounter mixed and controversial results in terms of the effects of different planning conditions on language performance, in general, and L2 writing quality, in particular. Therefore, conducting more empirical studies on this topic, the findings of which may illuminate the issue at hand is warranted. More importantly the effect of different task conditions on the triad is among the new topics in L2 writing studies.

### *Research Questions*

The present study seeks to provide answers to the following research questions:

1. What are the effects of planning time on the complexity, accuracy, and fluency of L2 written output by EFL learners?
2. What are the effects of task conditions (i.e. topic given; topic and ideas given; topic, ideas, and macrostructure given) on the complexity, accuracy, and fluency of L2 written output by EFL learners?

## **Method**

### *Research Design*

The current study is a quasi-experimental research with a pre-test, post-test, control group design. It comprises two independent variables, i.e. planning time and task conditions. As the first variable, planning time was operationalized by manipulating the amount of time allotted to planning process prior to the writing task. Principally, three planning conditions (0 min, 10 min, 20 min) constituted the experimental environments of the task. The second variable, i.e. task conditions, was also manipulated through the amount of writing cues given to the participants in terms of three conditions: (a) topic given; (b) topic and ideas given; and (c) topic, ideas, and macro-structure given. The impacts of these variables were explored on the dependent variable CAF triad, involving syntactic complexity, accuracy, and fluency.

### *Participants*

One-hundred-eight participants (N=108) were selected from a large population of male and female university students studying English at the B.A. level at different universities in Isfahan, Iran. The criteria for the selection of the participants out of the population were their language proficiency (measured using the Quick Placement Test), and their writing proficiency at the pre-test stage, measured through two L2 argumentative and descriptive writing tasks. The scores obtained from the Placement Test helped the researchers select a group of participants homogenized in terms of their language proficiency. In addition, the output texts (both the argumentative and descriptive texts) were analyzed in terms of accuracy, fluency, and syntactic complexity and were scored separately. The mean score from the two writings were then calculated. The pre-test writing stage was performed to ensure the researchers that the selected participants were not different in terms of their ability to do the writing tasks prior to the treatment session.

The participants were then assigned to three groups of 36 students. The first group was given no planning time; the second group was given 10 minutes planning time; and the third group, 20 minutes planning time. Each group itself was then divided into three smaller groups of 12 participants, each given a particular task condition, namely, topic given, topic and ideas given, and topic, ideas, and macrostructure given. Therefore, each planning time condition had three groups of different task conditions within it.

### *Instruments*

Within the context of the present study, the data were collected from (1) a quick placement test in order to measure the proficiency of the participants; (2) pre-test writings in order to ensure the

comparability of the participants in terms of their prior abilities in the CAF triad; and (3) the argumentative writing tasks through which the participants' writing fluency, accuracy, and complexity were measured.

### *Quick Placement Test*

In order to assess the proficiency level of BA participants, QPT which is a valid and reliable test to measure English proficiency was administered. This test is composed of sixty multiple-choice items, which measure test-takers' English language knowledge regarding usage, prepositions, and vocabulary in the form of cloze passages and fill-in-the-blank items. The small number of items together with the reasonable amount of time (i.e. 30 minutes) allocated to test performances contribute to its efficiency as a practical test.

### *Pre-test Writing*

Prior to the experiment, two writing pre-tasks consisting of argumentative and descriptive writing prompts were devised by the researchers to find out the level of the participants' writing competencies in terms of the CAF triad. The topics were selected from the second writing tasks of the IELTS exam (sample 946) presented in its official website ([www.ielts-exam.net](http://www.ielts-exam.net)) to obtain a valid and reliable test score. That being the case, three scores (i.e. one for each element of the triad) were assigned to each writing, the mean score of which was calculated to obtain a total score for each writing. This process was performed for both the argumentative and the descriptive tasks, which, in turn, helped us to obtain the final scores for the pre-test writing. The final mean scores of the writings were then employed to check the comparability of the groups in terms of the CAF triad prior to running the experiment. It should be noted that the written tasks (argumentative and descriptive genres) were assessed independently by a second rater to ensure the inter-rater reliability of the scores.

### *Argumentative Writing Tasks*

One sample of the IELTS Writing Module (writing task 2) was utilized for the experimental and control conditions. The task prompt required the participants to justify their opinions. To minimize the variability which could have resulted from the topical knowledge, the topic of the 'Internet' was chosen to tap into the participants' perspectives regarding a broadly-discussed social issue. The following prompt was written for the three tasks:

*Some people believe that the Internet causes many problems although it has a lot of advantages. To what extent do you agree or disagree? In your writing, use your own ideas and experience, and support them with examples and relevant evidence.*

The reason behind the selection of argumentative tasks was their great potential for motivating writers to engage in problem solving, and hence planning behaviors (Manchón & Roca de Larios, 2007).

As noted previously, there are three task conditions for argumentative writing, namely, topic given only, topic and ideas given, and finally topic, ideas, and macrostructure given. In the topic given condition, the participants were only given the topic of the essay (as in the prompt given above). In the topic and ideas given condition, the participants were given the pros and cons ideas regarding the prompt of the essay. The ideas were about the advantages and disadvantages of the internet. All ideas were presented in phrases rather than sentences, given that they could facilitate the formulation processes. Finally, in the topic, ideas, and macro-structure given condition, the

text production was scaffolded by reminding the macro-structures for an argumentative genre. The guidelines involved: (a) state your viewpoint, (b) support your arguments with reasons, examples or facts, (c) propose counter-arguments and refute them, and (d) restate or reinforce your stand.

#### *Data Collection Procedure*

The data were collected in three stages. In the first stage, the participants were given a placement test and the writing pre-tests. This allowed the researchers to ensure the comparability of the groups in terms of language proficiency and writing ability.

In the second stage, the writing tasks in accordance with the group conditions were assigned to the three groups. Subsequently, the participants' argumentative texts in terms of CAF measures were rated. Following Wolfe-Quintero et.al (1998) guidelines, the syntactic complexity was measured, adopting the ratio of clauses to T-units (i.e. the number of clauses per T-unit). A T-unit is essentially a main clause along with all subordinate clauses (Hunt, 1965).

To assess the accuracy, the criterion of the number of Error-free T-units, i.e. the percentage of T-units that did not contain errors was employed. All errors in syntax, morphology, and lexical choice, and spelling were considered. The fluency was also measured by the number of words per T-units (Kuiken & Vedder, 2007).

In the final stage, all the collected data were submitted to the statistical software SPSS Version 21 for data analysis in order to examine the effects of planning time and task conditions on the CAF triad.

## **Results**

The quality of L2 written production was assessed in relation to planning time and different task conditions, employing a multidimensional approach with metrics for syntactic complexity, accuracy, and fluency (CAF) that are assumed to be distinct but complementary of one another. The descriptive and inferential statistics of the participants' performance is presented below.

#### *Descriptive Statistics*

Table 1 shows the mean and standard deviations of CAF measures in the writing stage. It displays the prioritization of these quantitative measures in three planning time involving three task conditions. The maximum possible score of accuracy was 1, whereas the highest scores of complexity and fluency were widely varied depending on the number of words and clauses per T-unit. Table 1 presents the summary of mean and standard deviations.

The writers in the 20-minute planning time group demonstrated a superior mean of complexity ( $M = 2.99$ ,  $SD = 4.11$ ), and fluency ( $M = 20.40$ ,  $SD = 6.18$ ), whereas the writers in the zero-minute planning time group attained better written accuracy ( $M = 0.84$ ,  $SD = 0.1$ ) compared with other groups. Moreover, the writers in the 10-minute planning time group represented a higher mean of complexity ( $M = 2$ ,  $SD = 0.53$ ), and fluency ( $M = 19.60$ ,  $SD = 5.75$ ) compared with the writers in the zero-minute condition (complexity = 1.64,  $SD = 0.4$ ; fluency = 17.62,  $SD = 4.1$ ).

Table 1  
*Descriptive Statistics of Complexity, Accuracy, and Fluency of the Written Performance*

CAF	Planning time	Task condition	Mean	Std. Deviation	N
Fluency	0 min	Topic	18.54	4.68	12
		Topic + ideas	16.87	3.02	12
		Topic + ideas + macrostructure	17.44	4.57	12
		Total	17.62	4.10	36
	10 min	Topic	16.79	5.40	12
		Topic + ideas	21.13	6.05	12
		Topic + ideas + macrostructure	20.87	5.15	12
		Total	19.60	5.75	36
	20 min	Topic	20.22	4.99	12
		Topic + ideas	20.19	7.46	12
		Topic + ideas + macrostructure	20.79	6.38	12
		Total	20.40	6.18	36
Accuracy	0 min	Topic	.81	.10	12
		Topic + ideas	.87	.08	12
		Topic + ideas + macrostructure	.83	.12	12
		Total	.84	.10	36
	10 min	Topic	.76	.14	12
		Topic + ideas	.83	.06	12
		Topic + ideas + macrostructure	.85	.15	12
		Total	.81	.12	36
	20 min	Topic	.72	.18	12
		Topic + ideas	.86	.13	12
		Topic + ideas + macrostructure	.85	.13	12
		Total	.81	.16	36
Complexity	0 min	Topic	1.73	.60	12
		Topic + ideas	1.63	.21	12
		Topic + ideas + macrostructure	1.56	.29	12
		Total	1.64	.40	36
	10 min	Topic	1.81	.40	12
		Topic + ideas	1.89	.50	12
		Topic + ideas + macrostructure	2.29	.58	12
		Total	2.00	.53	36
	20 min	Topic	1.92	.44	12
		Topic + ideas	3.43	4.95	12
		Topic + ideas + macrostructure	3.63	5.20	12
		Total	2.99	4.11	36

### *Inferential Statistics*

A two-way MANOVA was run to examine the effects of planning time and task conditions on the mean of complexity, accuracy, and fluency of the written performance. It should be noted that all the assumptions of the two-way MANOVA, such as independence of observations, multivariate normality, homogeneity of variance-covariance matrices, and no multicollinearity were initially met. Table 2 displays the results in detail.

Table 2  
Two-way MANOVA Results of the Effects of Planning Time and Task Conditions on the Complexity, Fluency, and Accuracy

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Planning time	Pillai's Trace	.162	2.514	9.00	396.000	.008	.054
	Wilks' Lambda	.842	2.575	9.00	316.536	.007	.056
Task condition	Pillai's Trace	.070	1.576	6.00	262.000	.154	.035
	Wilks' Lambda	.931	1.582 <sub>a</sub>	6.00	260.000	.152	.035
Planning time * Task condition	Pillai's Trace	.144	1.110	18.00	396.000	.340	.048
	Wilks' Lambda	.861	1.110	18.00	368.181	.340	.049

The results indicated the main effect of planning time [Wilks' Lambda = 2.57,  $F(9, 396) = 2.75$ ,  $p = 0.007$ ; partial Eta Squared = .05, indicating a small effect size]. No significant effect of task conditions [Wilks' Lambda = .931,  $F(6, 262) = 1.58$ ,  $p = 0.152$ ; partial Eta Squared = .03, indicating a small effect size], and also no interaction effect of planning time and task conditions [Wilks' Lambda = .861,  $F(18, 396) = 1.11$ ,  $p = 0.34$ ; partial Eta Squared = .04, indicating a small effect size] were found.

To further examine which of the planning time affected the CAF measures, Bonferroni post hoc pairwise comparisons were conducted. The Univariate ANOVA revealed that the planning time only significantly influenced the mean scores of complexity [ $F(3, 132) = 2.9$ ,  $p = 0.03$ ; partial Eta Squared = .06, indicating a small effect size] of the written performances. To indicate where these effects lied, pairwise comparisons at the level of 0.05 was run.

Table 3  
Results of Pairwise Comparisons for Planning Time during the Writing Stage

Dependent Variable	(I) Planning time	(J) Planning time	Mean (I-J)	Difference	Std. Error	Sig. <sup>a</sup>
Complexity	0 min	10 min	-.35		.50	1.000
		20 min	-1.35*		.50	.047
	10 min	0 min	.35		.50	1.000
		20 min	-.99		.50	.296
	20 min	0 min	1.35*		.50	.047
		10 min	.99		.50	.296

As Table 3 shows, for the complexity of outputs, the post-hoc analyses showed that the writers in the 20-minute planning time group achieved a significantly higher mean ( $M = 2.99$ ,  $SD = 4.11$ ,  $p = 0.04$ ) than the writers in the zero-minute planning time group ( $M = 1.64$ ,  $SD = .40$ ). Furthermore, no significant differences were found between the 10-minute planning time

condition ( $M = 19.60$ ,  $SD = 5.75$ ) and the 20-minute planning time condition ( $M = 20.40$ ,  $SD = 6.18$ ,  $p = 0.29$ ) in the accuracy of written performances.

Furthermore, the univariate ANOVA results depicted the significant effect of task conditions on writers' overall accuracy across all tasks [ $F(2, 132) = 3.2$ ,  $p = 0.04$ ; partial Eta Squared = .04, indicating a small effect size]. Pairwise comparisons suggested a minimally better accuracy of the written texts in the topic, ideas, and macrostructure given condition ( $M = .84$ ,  $SD = .019$ ) compared with the topic given condition ( $M = .78$ ,  $SD = .019$ ).

Statistical analyses of written performances indicated the main effect of planning time, but no significant effect of task conditions, and also no interaction effect of planning time and task conditions. Generally speaking, planning time influenced the complexity of the written performance. The writers in the 20-minute planning time group produced more complex texts compared with the writers in the zero-minute planning time group.

Moreover, task conditions affected the general accuracy of the writers' performance across all tasks. The pairwise comparisons showed a marginally better accuracy of texts in the topic, ideas, and macrostructure given condition as opposed to the topic given one.

## Discussion and Conclusion

The main purpose of this study was to examine the impacts of planning time (0 min, 10 min, and 20 min) and task conditions (topic; topic and ideas; and topic, ideas, and macro-structure given) on the quality of argumentative essays produced by L2 writers in terms of complexity accuracy, and fluency.

The results of the study revealed the main effect of planning time on complexity of written output, and no significant influence of task conditions, and also no interaction effect of planning time and task conditions on the quality of L2 writing of argumentative texts.

Moreover, the task condition had a significant effect on the general accuracy of the writers' performance across all tasks, and more specifically in the zero-minute planning time condition. There was a slightly higher accuracy of texts in the topic, ideas, and macrostructure given condition than the topic given condition.

Substantially, the findings are in line with Kellogg's (1988, 1990) assertions concerning the asset of writing in a planned condition for promoting written fluency compared to the controlled no planning condition. Although this study found no significant difference for the effects of planning time on the fluency and complexity of written performance between the 10-minute condition and 20-minute condition, the latter condition was more opted for the higher manifestation of these criteria in the written outputs. Therefore, the results of this study are in line with Ong's (2013), and Ong and Zhang' (2010) studies in relation to the profits of providing learners with sufficient planning time as in a free writing strategy. The rationale behind the progressive improvement of fluency with an increase of writing time could be looked for in the sufficient opportunities provided for the coordination of recursive processes of writing in 30-minute planning time condition. Therefore, this study puts Kellogg's (1990) Interaction Hypothesis, Elbow's (1981) Dual Strategy Model, and Hayes-Roth and Hayes-Roth's (1979) Opportunistic Model of Planning in high regard.

Interestingly, though the mean scores of complexity and fluency were higher in the 20-minute planning time condition, they were not statistically significant. This might be due to the fact that the involvement in deliberate and conscious attention to the developed plan might have demanded more attentional resources during the formulation process in the 10-minute planning time condition, whereas the no planning time condition engaged the writers in continuous composing, in which they wrote whatever came to their minds without any online planning behavior which would have resulted in the enhancement of written fluency of this group.

Furthermore, as far as the syntactic complexity was concerned, the 20-minute condition and 10-minute condition provided better results, though the former group demonstrated a higher written complexity compared to the latter group. In fact, the involvement in the formulation process without any planning time might have simultaneously prompted lexical retrieval as well as sentence constructions which resulted in both complexity and fluency of the performance in the 20-minute group.

On the contrary, the zero-minute planning groups roughly stuck to their plans, and also probably engaged in a slight online planning, which posed serious challenges for their concomitant attainments to the CAF measures. Therefore, Khomeijani Farahani and Meraji's (2011) assertions that the length of planning time is a necessary but not sufficient condition for promoting writing quality is confirmed.

Moreover, the complexity of text was marginally promoted from the topic, to topic plus ideas, and macrostructure given conditions. This may be due to directing writers' attention incrementally from meaning to simultaneous attention to both form and meaning through scaffolding processes which in turn reduced the demand on the central executive. Thus, this study contradicts Robinson's (2001a, 2001b, 2005) Cognition Hypothesis which predicted that a complex task would significantly reduce fluency at the expense of complexity, and lead to a poor task quality, especially in the resource-dispersing dimension. The rationale behind such phenomenon could be the allocation of learners limited attentional resources to the critical aspects of the task which might differ in response to the proficiency, writing expertise, and educational backgrounds of the writers .

Fundamentally, the upshots of the current study are in the same line with Kellogg's (1988), Ghavamnia, Tavakoli and Esteki's (2013), Ellis and Yuan's (2004), Marzban and Norouzi's (2010), Rahimpour and Safarie's (2011), Haghverdi, Biri, and Khalaji's (2013), Seyyedi, Ismail, Orang, and Sharafi Nejad's (2013) studies which argued the merits of planned conditions compared to no-planned conditions due to drawing the writers' attention to both form and meaning, and facilitating monitoring processes.

Concerning the task conditions, the findings corroborated Mohammadnia and Ayaz's (2015) assumptions that scaffolding writing through the provision of task assistance would substantially result in a better writing performance compared to the compatible non-assisted one. Moreover, this study is in congruence with Ong and Zhang's (2013) exploration which indicated that the topic given condition produced a lower text quality than the topic, ideas, and macro-structure given condition.

Theoretically, this study contributes to a better understanding of the different factors involved in L2 writing including planning time and task conditions in the L2 writing process. From a pedagogical point of view, the findings produced in this study will have significant beneficial implications for L2 writing instruction. These findings suggest the significance of pedagogy by which teachers design and instruct writing lessons with a consideration of the different aspects pertinent to the writing processes and products. In fact, knowing the demands of a task will

provide the possibility of employing task design to manipulate the learner's attention between form and meaning in such a way that it might facilitate interlanguage development.

Furthermore, letting students write by asking them to adopt a free-writing strategy and giving them the content or the organizational scheme of the essay could be crucial for leading to better writing texts among EFL students due to the scaffolding which is provided by such approaches. Although giving students the content and organization scheme of an essay might not be a sustainable pedagogical solution, the longitudinal utilization of tasks might consolidate language already introduced to promote the fluent use of language already focused on. Besides, paving the ground for enhancing the speed of the writer's lexical retrieval might ease the burden on attentional resources, and result in writers' better manifestation of their stored knowledge.

### **Limitations of the Study**

Despite the potential contribution of this study to task-based writing researches, some inherent limitations of the study are to be mentioned. First, measuring the quality of the written performances solely on the basis of quantitative analyses rather than qualitative measures is one of the limitations of the study, which needs to be considered. Second, the sample size used for each group of the study was rather small (N=12). Third, although this study controlled the confounding variables such as educational backgrounds, writing expertise level, language proficiency, and composing language, the roles of the writer's L1 writing ability, working memory capacity, processing ability, and procedural knowledge have not been regarded. Fourth, the affective factors including writing apprehension, interest level, and motivation as the moderator factors were not adequately addressed in our study. Finally, the comparison between the possible strategies employed by different groups of writers in the planning condition was not drawn.

### **Suggestions for Further Research**

The limitations mentioned in the previous section (small sample size, quantitative nature of analysis, etc.) could be regarded as influential factors to be taken into account for the improvement of future studies. Future studies could consider the effect of expertise in both L1 and L2 writing coordinated with the effect of planning time on L2 writers' planning, translating, and revising processes. Moreover, the mediating roles of working memory and language aptitude could be considered to provide a clear picture of the processes at hand. Furthermore, conducting more longitudinal studies with other variables of task complexity could be helpful for enhancing the body of literature in this regard. In addition, assessing the relationship between the speed of a writer's lexical retrieval and lexical complexity of written performance could be worthwhile.

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**Ali Mohammad Fazilatfar**, an associate professor in TEFL, received his PhD from the University of Manchester in 1998. He has written four books for young and adult language learners. He has also published some articles in refereed journals such as *Language Teaching Research*, *Second Language Research* and presented some papers in national and international conferences. His main interests are teaching methodology, Language skills.

**Forough Kasiri** has got her M.A. in TEFL from Yazd University in 2015. She has been involved with teaching in different language institutes during the last couple of years. Her main interests are language skills particularly L2 writing skill. She is now a PhD candidate of TEFL at Islamic Azad University in Tehran.

**Mohammad Nowbakht** is a PhD candidate of TEFL at Yazd University. He has got his M.A. From English Department of Isfahan University. He has also been teaching English at ILI as senior lecturer during the last several years. His main interests include teaching language skills with respect to the role of working memory and corrective feedback.