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Investigating the Effects of Planning Time on the Complexity of L2 Argumentative Writing

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Abstract

Much research has investigated the role of planning time in second language writing; however, the results show that there are inconsistent findings about the effects of planning time conditions on the complexity of the EFL learners' textual output. The current study attempted to consider the differential effects of planning time conditions in terms of the pre-task planning condition, the online planning condition, and the no planning condition on the complexity of writings composed by means of an argumentative task from 90 EFL learners. The results reveal that the pre-task planning condition had a marked effect on syntactic complexity and syntactic variety, but the online planning condition only benefited syntactic complexity. Rather unexpectedly, the three planning time conditions showed practically similar performance in lexical variety. The results indicate that pre-task and online planning had remarkable effects on the production of language that was more complex and syntactically varied, however, these two types of planning did not benefit lexical variety. In addition, through a consideration of Yuan and Ellis (2003) and Ellis and Yuan (2004), regarding the effects of planning on oral and written narratives, the researcher compared the results of the study to those previous and, finally, provided pedagogical implications on language practitioners and testers.

Keywords: Planning time conditions; second language writing; complexity

Introduction

This study spotlights two different yet equipotential areas of research: task-based research and second language (L2) writing. Task-based research is predominantly concerned with the influences of task design and the implementation variables on different constructs of language performance in terms of complexity, accuracy, and fluency (i.e., the CAF triad). Writing research, which draws upon psycholinguistic aspects of language, is more oriented to the data collected and interpreted from think-aloud protocols in order to determine what strategies writers employ during the process of

writing. Additionally, writing research uses data to portray the mental systems involved in producing a text. According to Ellis and Yuan (2004), these two areas of research act different; however, Kellogg (1996) points out it is logically acceptable to contend that processes, which are mainly tapping into oral and written production, share many commonalities. Therefore, the researcher notes remarkable results can be obtained through taking into account these two interrelated research areas.

Review of the Literature

Planning Time Conditions and Linguistic Performance

Many studies have examined the differential impact of planning time conditions on linguistic production (Abdi Tabari, 2016; Ahmadian, 2012; Baleghizadeh & Nasrollahi Shahri, 2013; Byrnes, & Manchón, 2014; Ellis, 2009; Ellis & Yuan, 2004; Geng & Ferguson, 2013; Gilabert, 2007; Li, Chen, & Sun, 2015; Markee & Kunitz, 2013; Ong, 2014; Skehan, 2009; Skehan & Foster, 1997, 1999; Tavakoli & Skehan, 2005; Yuan & Ellis, 2003). These studies demonstrate a general support for fluency and complexity, but there are still inconsistent findings regarding accuracy, which may be due to the investigations being different in “whether the task conditions allowed time for or encouraged careful online planning” (Yuan & Ellis, 2003, p. 1). Although Ellis (1987) reported that the pre-task planning condition had a positive effect on the accurate use of English regular past-tense verbs in oral narratives, Wendel (1997) did not discover any remarkable effects on the accuracy of Japanese EFL learners’ narrative production. Additionally, Ortega (1999) reported that the pre-task planning condition led to an increase in the complex use of noun modifiers in Spanish; however, it did not improve the accuracy of article usage. Therefore, the studies indicate that the pre-task planning condition provides an opportunity for learners to collect their thoughts and efficiently employ their attentional resources. The pre-task planning condition results in an improvement on fluency and complexity, but it does not have a significant effect on accuracy.

Although there is a growing body of research on pre-task planning in the area of task-based research, limited research has examined online planning. Ellis (2003, p. 347) defines online planning as “the process by which learners attend to form while planning speech acts in order to monitor their output. Online planning takes place while learners are performing a task.” Butterworth (1980, p. 159) states that online planning tackles both macro-level planning, which addresses “long range semantic organization of a sizable chunk of speech” and micro-level planning, which involves “purely local functions, like marking clause boundaries and selecting words.” When learners are provided with an opportunity to formulate their ideas and notions, and plan their performance within a task, they can produce more accurate language (Ahmadian, 2012; Baleghizadeh & Nasrollahi Shahri, 2013; Foster, 1999). What is more, when learners are provided with the space to direct their attention to the formulating and monitoring of their syntactic structures, they are further able to generate accurate language. However, if attention is directed to content rather than form, no significant effect on accuracy is perceived. Yuan and Ellis (2003) posited that the pre-task planning and online planning conditions had positive effects on the complexity of oral narratives. They also reported that the pre-task planning condition did not result in a heightened accuracy of oral narratives, while the online planning condition significantly enhanced accuracy. Overall, the results suggest

that L2 learners who have limited English proficiency find it difficult to direct their full attention to all constructs of language performance; therefore, they direct more attention to form than meaning in order to produce more accurate language (Ahmadian, Tavakoli, & Vahid Dastjerdi, 2015).

On the one hand, the pre-task planning condition results in greater gains in fluency and complexity than in accuracy (Ellis, 2005; 2009). Pre-task planning affords learners the opportunity to have some forethought and plan their performance in advance. As such, they can develop a conceptual plan of what they want to generate, rather than focus on linguistic plans in detail (Ellis & Yuan, 2004; Geng & Ferguson, 2013; Guar-Tavares, 2016). On the other hand, the online planning condition highlights an increase in accuracy and complexity rather than fluency. Online planners, who feel no pressure to compose a text, have this chance to plan their performance within the task fulfilment. This ample time to complete a written task will enable online planners to edit and monitor their performance and compose a variety of grammatical and lexical items (Ahmadian, 2012). Therefore, the comparison between these two types of planning conditions shows that their effects on language performance are relatively different. Table 1 depicts the effects of the pre-task and online planning conditions on language performance.

Table 1. The Effects of Pre-task Planning and Online Planning Conditions on L2 Performance (Adapted from Ellis, 2003)

Construct of performance	Pre-task planning	On-line planning
Fluency	Positive effect	Negative effect
Accuracy	Effects sometimes evident	Positive effect
Complexity	Positive effect	Positive effect

Although a number of studies have examined the effects of planning time conditions on the three constructs of language performance in L2 oral and written narratives, very few studies explore the effects of planning time conditions on these constructs in L2 argumentative writing (Shin, 2008; Tavakoli & Rezazadeh, 2014). Koda (1993) stated that the impact of planning would be more robust with more complex tasks such as expository and argumentative tasks. She suggested tasks that have a complex structure gain more complexity at the price of fluency and accuracy because L2 learners who possess limited capacity of attentional resources are pressured to direct their attention to a certain construct of language performance. Tavakoli and Rezazadeh (2014) also investigated Iranian EFL learners' argumentative writing under two types of the pre-task planning condition (i.e. individual and collaborative) and assessed their writing performance using the measures of complexity, accuracy, and fluency. They found that collaborative planning resulted in greater accuracy, whereas individual planning improved fluency. However, neither type of the pre-task planning condition promoted complexity. Unlike Ellis and Yuan's (2004) study, this study focused on an argumentative task with a more complex structure than a narrative task. An argumentative task requires L2 writers to produce more ideas and information, making it more challenging than a descriptive or narrative

task (Foster & Skehan, 1996). An argumentative task also raises L2 learners' awareness of rhetorical norms and conventions, which are essential for writing argumentative texts, in addition to requiring an ability to generate abstract concepts (Dellerman, Coirier, & Marchand, 1996). More importantly, an argumentative task is cognitively more difficult than a descriptive or narrative task because it includes unfamiliar and unstructured information and requires more complex linguistic concepts. Révész, Kourтали, and Mazgutova (2016) stated that argumentative tasks place higher cognitive loads on planning processes, and due to the lack of ideas, learners should exert more mental effort to conceptualize the content of the essay. Therefore, task type seems to be an important factor in determining whether L2 writers can automatize particular characteristics of a writing task or process cognitive loads, which are inherent to the task.

A large number of studies have investigated the effects of planning time conditions on different constructs of language performance. However, few studies have explored the differential effects of planning time conditions on a specific construct of language performance, namely complexity. Mehrnert (1998) conducted a ground-breaking study to assess different variables of complexity in L2 context. Further, the present study set out to explore the effects of planning time conditions on the complexity of learners' argumentative writings in an EFL context. In particular, this study aims to shed light on the relationship between a complex task type—an argumentative task and a certain construct of language performance—complexity under different planning time conditions.

Modality and Task Performance

With reference to a series of publications, it is clear that many studies have shown increasing interest in the speaking modality and have examined the effects of task structure and planning time in L2 oral production. However, the role of the writing modality has been left unexamined in the literature. L2 writing research (Chenoweth & Hayes, 2001; Grabe, 2001; Grabe & Kaplan, 1996; Hyland; 2009) has provided evidence to show that, similarly to the speaking modality, the writing modality is of both theoretical and practical importance because each has its own conditions and requirements. Although there are a number of major differences between speaking and writing (Hyland, 2015), the most important ones from a psycholinguistic view are that writing is not normally limited by time and that it follows a cyclical process, through which learners linguistically encode their written plans and edit them recursively (Grabe & Kaplan, 1996, p. 243). Compared to speaking, writing is less constrained by time: writers often feel less pressure to marshal their attentional resources between formulating their message and linguistically encoding it, encouraging ample online planning (Ellis & Yuan, 2004). According to Kormos and Trebits (2012), "In writing, the time spent on planning the message (i.e., pre-task planning) is also integrated in the writing process because writers can devote considerable time to planning the content before starting to write" (p. 446). In addition, the writing modality, as opposed to speaking, enables learners to devote more attentional resources to revising and editing their performance, on top of encoding it.

Few studies have examined how modality affects learners' language performance in particular language learning tasks. In a pioneering study, Ellis (1987) reported that L2 learners produced more accurate past-tense forms in their written than in spoken

narratives. In contrast, Granfeldt (2008) discovered that Swedish learners of French showed more accuracy in speaking than in writing, but that modality had no remarkable effect on syntactic complexity. In addition, he found that learners produced more lexically varied language in writing than in speaking. More recently, in a study conducted with Dutch learners of Italian, Kuiken and Vedder (2011) reported that performance in writing was syntactically more complex than in speaking, but lexical variety was not significantly different in the learners' oral and written output. The general patterns of these findings point to the issue that writing modality, as an under-researched aspect of task-based planning, requires more attention and may lead to different results in task-based research--as an implementation variable--and task design features.

Research Questions

In light of the foregoing summary of theoretical and empirical investigations, two hypotheses follow: (a) given that task performers who work with the task under the pre-task planning condition have sufficient time for planning the task in advance, it is more likely to produce language which is relatively more complex; (b) task performers who complete the task under the online planning condition have ample time to formulate and monitor their textual output; hence, they may improve accuracy at the expense of complexity because they may allocate a longer duration of their time to address grammatical structures rather than encode more complex ideas. By considering these hypotheses, the current study aims to address the following research questions:

1. What effects does the pre-task planning condition have on the complexity of EFL learners' argumentative writing?
2. What effects does the online planning condition have on the complexity of EFL learners' argumentative writing?

Methodology

Participants

Participants for this study were 115 full-time undergraduate students (25 males and 90 females) who studied in an English program at an Iranian university. Their ages range from 19 to 23 years old. Their mother tongue was Persian. At the time of data collection in 2016, the majority of the participants had been learning English as a Foreign Language (EFL) at the university for two and a half years. They had taken two writing courses, namely Paragraph Writing Development and Introduction to EFL/ESL Academic Writing Skills. Based on demographic information of participants, none had lived in an English-speaking country. In an Iranian EFL context, teachers are typically viewed as the major source of authentic input learners have exposure to and they have little to no opportunity to use English for communicative purposes outside the classroom. Hence, participants had very limited opportunities to use English in a real-life situation. The final number of participants who participated in the experiment was 90 individuals, 21 males and 69 females. They were selected for the experiment based on their scores on an English proficiency test, which was later standardized in the study. Standardizing the English proficiency test allowed the researcher to have participants who were fairly homogenous in that regard. Then, the participants were placed at random into three planning time conditions involving 30 individuals apiece. The gender dynamics of the participants in

each condition reports the following: 6 men and 24 women for the no planning condition; 8 men and 22 women for the pre-task planning condition; and 7 men and 23 women for the online planning condition.

Context

At the time of data collection, the participants were studying Advanced Academic EFL/ESL Writing in the English program at Islamic Azad University (IAU), North Tehran Branch. Prior to this unit, they had taken Paragraph Writing Development unit in the third semester of their sophomore year. The Advanced Academic EFL/ESL Writing offers expository composition with a focus on organization, style, and technique where students are expected to master writing descriptive and argumentative summaries of academic texts. As assessments of the unit, students are required to produce an academic article using the APA referencing style as well as a mini research paper as their final product.

Instruments

Pre-test Material

The pre-test material was an English proficiency test. The participants in three planning time conditions were asked to take the test in order to ensure that they were homogenous at the outset of the study. The test consisted of three sections: Structure and written expressions (40 items), Vocabulary (40 items), and Reading comprehension (30 items).

Task

The type of task utilized in the present study was a written argumentative task. The participants were asked to compose a text based on an argumentative topic: Elimination of the National Entrance Exam to Universities in Iran (Konkoor). This topic was chosen to serve as the basis for the argumentative task because the national entrance exam is one of the main challenges that Iranian candidates grapple with to be admitted to university. The participants had already experienced this controversial issue; therefore, it was reasonable to assume that they would have much to say and present their arguments and counter-arguments about the topic. Additionally, the researcher strived to ensure that the argumentative task was reasonably difficult for the participants so that they would extract their lexical and grammatical resources. The researcher provided some instructions in Persian before participants began to write their texts. This allowed the researcher to ensure that they understood the writing prompt. The participants in the pre-task planning and no planning conditions were requested to write at least 15 sentences for the topic, while those working under the online planning condition felt no pressure to write down a minimum of 15 sentences. The participants working under the pre-task and no planning conditions received the same prompt in order to produce the argumentative writing task, "In my opinion..."

Procedure

Two weeks prior to the experiment, a pilot study was used to determine how much time was needed to perform the written argumentative task. Thirty students who were part of the intended sample participated in the pilot study. The students composed the argumentative texts and the exact amount of time they devoted to the task was recorded by the researcher. Before they started writing, some instructions were given in Persian to

help them understand the writing prompts. During the pilot study, the participants performed the task over the course of 15 to 20 minutes. Therefore, the researcher considered the mean time to be the time limit, and chose to set the task completion for 17 minutes. The time limit was assigned to the participants in the pre-task planning and no planning conditions.

As the pre-task material, a language proficiency test was used to determine the learners' knowledge of English. The learners were assigned 70 minutes to complete the test. Their performance on the test was coded and scored and then entered into SPSS version 16.0 for statistical analysis. Given that the language proficiency test was neither officially approved nor administered to the participants by the approved language testing organizers, such as the British council or ETS, the researcher decided to standardize the English proficiency test. An item analysis procedure was carried out and the characteristics of individual items, including item facility (IF) and item discrimination (ID) indexes, were determined for the three components of the test. Items with facility indexes beyond .30 and below .70 ($30 < if < 40$) were considered acceptable. Then, the poor items were discarded; as a result, the number of items was reduced from 130 to 110 items for data analysis. Later, on the basis of remaining items, all the papers were rescored and re-entered into SPSS version 16.0. Using the newly obtained scores, the means and standard deviations of the test—in three different classes—were estimated, and in each class the students whose scores fell between one standard deviation above and below the mean were included in the study. The final number of participants who took part in the experiment was 90 (21 male and 69 female) students. To see whether there were any significant differences across different classes, a one-way ANOVA (with the alpha set at .05) was performed. The results of ANOVA revealed no significant differences across the three classes in their proficiency scores ($F = .017(112, 2) p > .05$). Therefore, the three groups were equivalent in terms of their English proficiency (see Table 2).

Table 2. Descriptive Statistics for Three Different Classes Followed by ANOVA Results

	N	Mean	SD	ANOVA				
Class 1	39	39.5897	16.3477		Df	Mean Square	F	Sig.
Class 2	38	39.6053	14.7273	Between Groups	2	2.343	.017	.990
Class 3	38	40.0263	15.3455	Within Groups	112	240.120		
Total	115	39.7391	15.3606	Total	114			

In order to estimate the numerical value of the reliability of the test subparts, the Kudar-Richardson (KR-21) formula was used.

Table 3. The Mean, Standard Deviation, and Reliability of the Test Sub-parts

	Items	Mean	Std. Deviation	KR
Structure and written expressions	40	25	10.159	0.93
Vocabulary	40	24	9.750	0.92
Reading	30	19	8.013	0.90

Since the evaluation of content validity of the test was subjective, and the collected data from the content validity of the test was not numerical, the construct validity of the proficiency test was measured by factorial analysis. The researcher examined the language proficiency test in order to see whether the different sections measured the language proficiency ability of the participants. As Table 4 indicates, there was a strong factor loading for different sections of the test on factor 1. Therefore, factor 1 (language proficiency ability) was considered as an important underlying factor for each section of the test, and the researcher concluded that the different sections of the test were related to the language proficiency ability identified by factor 1.

Table 4. Factor Analysis of the Language Proficiency Test

	Factor 1
Structure and written expressions	0.79580
Vocabulary	0.79166
Reading	0.77245

In order to see whether there was a significant difference between the students' writing, 50 participants were selected at random out of a pool of 90 English language students who participated in the experiment. They were requested to perform an argumentative task. The written data produced by the participants were graded by two native English-speaking evaluators who had professional experience teaching writing in L2 classrooms. The papers were subsequently scored based on the rating scale introduced in Heaton (1990) for intermediate-level learners. The results revealed that the inter-rater reliability was above .85 (see Table 5).

Table 5. Inter-rater Reliability for Writing Composition

		g1 writing composition rater 2
g1 writing composition rater1	Pearson Correlation	.87**
	Sig. (2-tailed)	.000
	N	50

** Correlation is significant at the 0.01 level (2-tailed).

The main experiment was conducted two weeks after the standardized English proficiency test had been administered. In the present study, planning time was operationalized under three different conditions: the pre-task planning condition (PTP), the online planning condition (OLP), and the no planning condition (NP) (see Appendix). Planning time conditions utilized in the study were summarized as follows:

1. No planning (NP)

Participants in the no planning condition were required to perform the task immediately after reading the argumentative prompt for a brief span of time (0.5 minute). They had extremely limited time for task preparation and/or task planning in advance and had to complete the task within the designated time limit (17 minutes). Also, to enhance the amount of cognitive effort on the part of learners, they were asked to compose at least fifteen sentences to complete the argumentative task within the time limit.

2. Pre-task planning (PTP)

In this planning condition, participants were assigned 10 minutes to think about the task and plan their argumentative writing. This provision of time for organizing and planning the task was based on other previous studies such as Baleghizadeh and Nasrollahi Shahri (2013), Ellis and Yuan (2004), Li, Chen, and Sun (2015), and Wendel (1997). The participants were not offered any detailed guidance; however, they were asked to formulate their argumentative texts regarding form, content, and organization. Again, this part of the study followed Ellis and Yuan (2004), Foster and Skehan (1996), and Tavakoli and Rezazadeh (2014). The participants were provided with paper to record their notes and then these notes were taken away before beginning the writing task. Similar to the no planning condition, the participants should produce at least fifteen sentences in 17 minutes. In this condition, they were allotted sufficient time for pre-task planning, albeit they had to write their arguments within the time limit.

3. Online planning (OLP)

For the online planning condition, participants inspected the argumentative prompt for a short duration of time (0.5 minute) and immediately performed the task. However, they were given enough time to plan and monitor their textual performance, while they were completing the task. The researcher recorded the time the participants invested in their argumentative texts. This was to ensure that this duration was longer than the elapsed time by the pre-task planners and the no planners. Unlike the other two planning conditions, the participants in the online planning condition were not pressured to produce at least fifteen sentences within the time limit. They had ample time to finish the written argumentative task. The task conditions were summarized in Table 6.

Table 6. Task Conditions

Task Conditions		Pre-task Planning	On-line Planning
No Planning (NP)	n=30	0.5 minute	Limited
Pre-task Planning (PTP)	n=30	10 minutes	Limited
N=90	n=30	0.5 minute	Unlimited

Design

The study applied a one-factor between subjects design. One-way analysis of variance (one-way ANOVA) was used to analyse participants' argumentative texts under the three planning conditions. The texts were segmented, coded and analysed in terms of a certain construct of language performance, namely complexity.

Results

Planning Variables

There were three variables for assessing planning time conditions: a) length of time, b) the number of words, and c) the number of syllables. Table 7 depicts the means for the three variables. Further, it shows that the online planners spent an average of 21 minutes to complete the task and took longer to perform it compared to the pre-task planners and the no planners, who fulfilled the task in 17 minutes. The amount of time allocated to the task was identical to the pre-task planners as well as the no planners. The results reveal that there was a significant difference in the time given to perform the task for the online planners as compared to the pre-task and no planners who used less time. With regard to the number of words and syllables, there was a significant difference across the three planning groups. The Scheffe' results illustrate that the pre-task planners composed more words and syllables than the no planners, and that this difference reached statistical significance. The online planners also produced more words and syllables than the no planners; however, the difference was not statistically significant. In summary, the results show that the online planners were different from the pre-task planners and no planners in terms of the mean time devoted to the task, as we expected. Additionally, the pre-task planners and online planners showed a different performance in the amount of writing produced as compared to the no planners, although the differences were only statistically significant to the pre-task planners.

Table 7. Descriptive Statistics and Results of ANOVA and Scheffe' Procedures for Independent Variables

Means of planning conditions				ANOVA		Location of significance: Scheffe' p		
Independent variables	NP	PTP	OLP	F	P	NP-PTP	NP-OLP	PTP-OLP
Length of time (min.)	17.00	17.00	21.00	47.98*	.000	.020	.000	.000
Words	181.4	231.1	206.9	7.65*	.002	.002	.146	.177
Syllables	213.14	277.21	242.64	6.74*	.003	.003	.253	.155

* p<.05.

Reliability of Complexity Measures

Polio (1997) asserted that at least a portion of the data must be rated to establish the inter-rater reliability. Therefore, the texts produced by the no planning group were corrected by two English-speaking evaluators in order to establish an acceptable level of inter-rater reliability. Thirty argumentative texts were corrected three times, each for a single measure of complexity. The present study used three measures to assess complexity: 1) syntactic complexity, 2) syntactic variety, and 3) lexical variety. The evaluators were asked to assess the argumentative texts according to the complexity measures. Then, the two sets of data were entered into SPSS software and Pearson correlations were then used in order to test the inter-rater reliability for the complexity measures. The results indicate that there was a high correlation between syntactic complexity scores in the argumentative task. The inter-rater reliability was calculated to be .92 for the argumentative task (p<.01).

Table 8. Inter-rater Reliability for Syntactic Complexity

		g1 syntactic complexity rater 2
g1 syntactic complexity rater 1	Pearson Correlation	.920**
	Sig. (2-tailed)	.000
	N	30

** Correlation is significant at the 0.01 level (2-tailed).

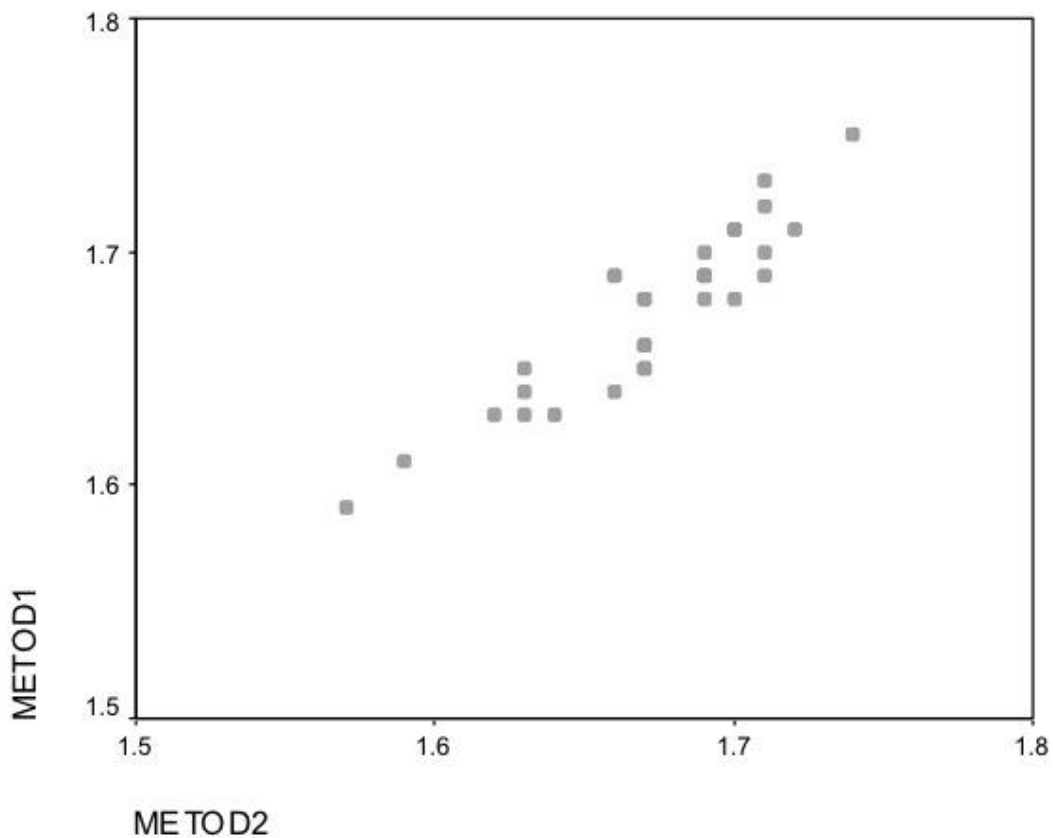


Figure 1. Scatter Diagram for Syntactic Complexity

The Pearson correlation coefficient for syntactic variety scores also reveals a high inter-rater reliability between the first and second ratings. For the syntactic variety of argumentative writings, the inter-rater reliability pointed to .94 with a significance level of 0.05 (see Table 9).

Table 9. Inter-rater Reliability for Syntactic Variety

		g1 syntactic variety rater 2
g1 syntactic variety rater1	Pearson Correlation	.942**
	Sig. (2-tailed)	.000
	N	30

** Correlation is significant at the 0.01 level (2-tailed).

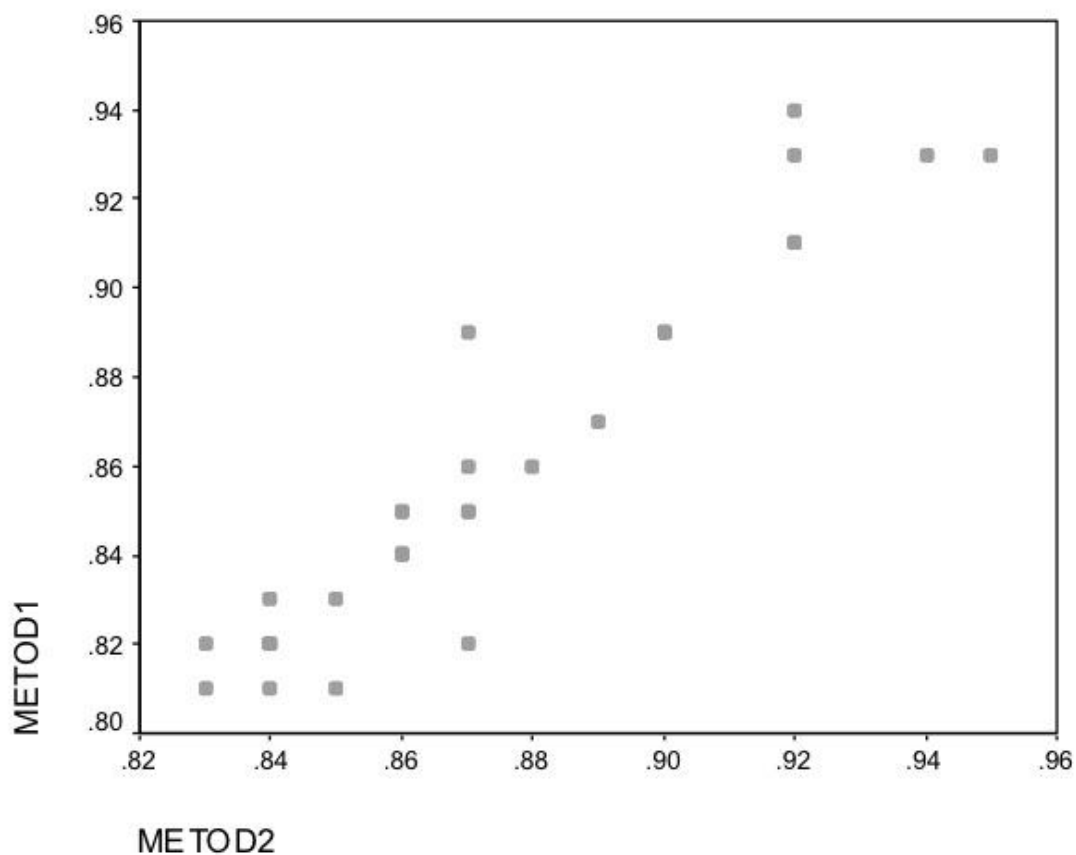


Figure 2. Scatter Diagram for Syntactic Variety

Finally, the results show that there was a high reliability for lexical variety. The inter-rater reliability for lexical variety scores tabulated .94 at 0.01 significance level ($p < .01$).

Table 10. Inter-rater Reliability for Lexical Variety

		g1 lexical variety rater 2
g1 lexical variety rater1	Pearson Correlation	.948**
	Sig. (2-tailed)	.000
	N	30

** Correlation is significant at the 0.01 level (2-tailed).

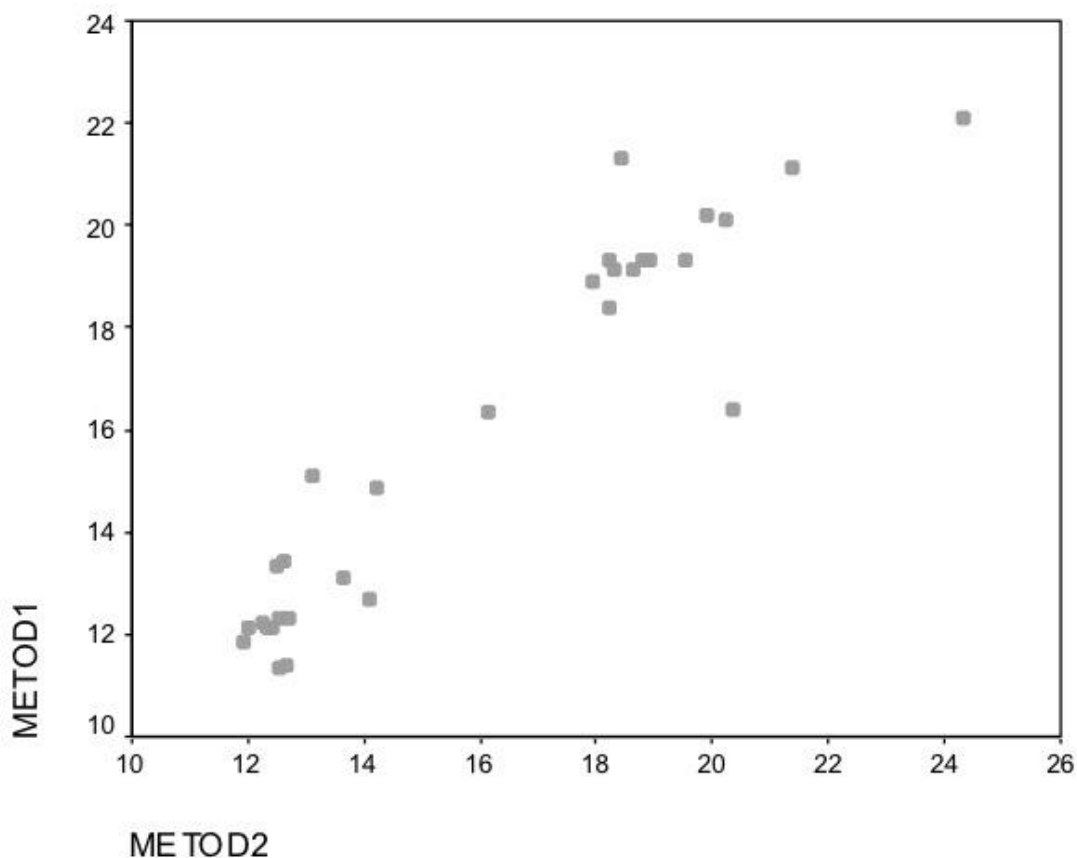


Figure 3. Scatter Diagram for Lexical Variety

In sum, the inter-rater reliability was relatively high for the three variables of complexity. After establishing indexes of the inter-rater reliability, the rest of the participants' argumentative texts, which were related to the pre-task planning and online planning groups, were rated.

Measurement of Complexity

There are different measures available to examine complexity (Ellis, 2003, 2005, 2009). Given that a specific construct of language performance is intricate and multifaceted, multiple measures have been utilized to assess it. However, using multiple measures will not guarantee a more evident and valid picture of this dimension of language performance. As Ahmadian, et al. (2015) argued, these measures should assess different facets of the dimension in question. Thus, to assess each specific facet or sub-dimension of complexity, three different measures were utilized: a) syntactic complexity, b) syntactic variety, and c) lexical variety (i.e. Mean Segmental Type-Token Ratio).

- Syntactic complexity: the proportion of clauses to T-units in the participants' written performance. Since the task was monologic in nature and included fewer omitted structures, T-units were used rather than C-units in the study (Ellis & Yuan, 2004).

- Syntactic variety: “the total number of different grammatical verb forms used in the task. Grammatical verb forms included tense, modality, and voice” (Ellis & Yuan, 2004, p. 72).
- Mean Segmental Type-Token Ratio (MSTTR): The participants’ argumentative texts were divided into 40-word segments and the type-token ratio of each segment was measured by dividing the sum of different words by the sum of all words in the segment (Ellis and Yuan 2004). The MSTTR was calculated for every participant by adding the mean scores for their segments and dividing the whole by the sum of segments in the argument. This procedure was used to account for the impact of text length on the type-token ratio.

Data Analysis

Table 11 illustrates the results for the complexity measures. In the case of syntactic complexity, the pre-task planners and online planners outperformed the no planners with differences reaching statistical significance. However, the pre-task planners and online planners produced almost identical results in terms of syntactic complexity. The three planning groups had the same hierarchy for syntactic variety and the differences were statistically significant. The difference in scores between the pre-task planners and the no planners reached a statistical significance level ($p < .01$). The online planners composed argumentative texts including more syntactically varied language than the no planners; however, the difference did not approach significance ($p = .130$). The difference between the pre-task planning and online planning was not statistically significant ($p = .180$). As regards lexical variety, a similar range of lexical variety was observed in the three planning time conditions. Lastly, the results show that the participants in the pre-task and online planning conditions produced language that was more complex and varied syntactically; however, they did not show any significant improvement on lexical variety.

Table 11. Descriptive Statistics, Results of ANOVA and Scheffe’ Procedures for Complexity

Complexity variables	Mean(SD) of planning conditions			ANOVA		Location of significance: Scheffe’ p		
	NP	PTP	OLP	F	P	NP-PTP	NP-OLP	PTP-OLP
Syntactic complexity	1.67 (.02)	2.04 (0.28)	1.98 (0.47)	11.74	.000**	.000**	.002	.713
Syntactic variety	16.20 (3.89)	22.05 (3.59)	18.89 (3.37)	19.58	.001**	.001**	.130	.180
Lexical variety	0.86 (.03)	.88 (.03)	.88 (.03)	.180	.837	-	-	-

Note. Dashes indicate the Scheffe’ procedure was not performed.

* $p < .05$.

** $p < .01$.

Discussion

In order to verify whether the participants in the three planning conditions acted as initially assumed, the length of time designated to the task and the number of words and syllables produced in different conditions were calculated. The online planners took a longer span of time to complete the task than the pre-task planners and the no planners who had the same time to produce argumentative texts. With regard to words and syllables, the pre-task planners produced more words and syllables than other planners because they took advantage of the time to gather their thoughts, arrange lexical items, and plan the content of their language. The online planners could compose more words and syllables in their argumentative texts than the no planners; however, the difference did not approach statistical significance.

The first research question directly addressed the effects of pre-task planning condition on the complexity of EFL learners' argumentative writings. The results reveal that the participants in the pre-task planning condition showed an increased progress on syntactic complexity. This finding corresponds with other findings within similar studies (Foster & Skehan, 1996; Wendel, 1997; Yuan & Ellis, 2003). In the case of syntactic variety, the pre-task planners used more subordinate clauses and a larger number of verbs in their argumentative texts than the no planners. However, the pre-task planners did not approach statistical significance with regard to lexical variety, despite producing language that was lexically varied. While many studies have reported positive effects of pre-task planning on syntactic variety, there continues to be inconsistent results regarding the effects of pre-task planning on lexical variety.

The results of this study for pre-task planning were comparable to those of Yuan and Ellis's (2003) study and Ellis and Yuan's (2004) study in a number of ways. Yuan and Ellis (2003) reported that pre-task planning had stronger effects on syntactic complexity than no planning. However, this type of planning time condition could not show significant effects on syntactic variety and lexical variety, in spite of larger mean scores in both of these two measures. The major difference between the present study and Yuan and Ellis's (2003) study arises from syntactic variety. While this study reported larger mean scores for syntactic variety in the pre-task planning condition, Yuan and Ellis (2003) reported no significant difference between the pre-task planning and no planning conditions.

Ellis and Yuan (2004) found that the pre-task planners outperformed the no planners in terms of syntactic complexity, but the difference did not reach statistical significance. They also reported that the pre-task planners showed an improvement on syntactic variety and the difference was statistically significant ($p < .01$). In the case of lexical variety, Ellis and Yuan (2004) posited that the pre-task planners did not approach significance, as reported in this study. The main distinction between the present study and Ellis and Yuans (2003) study is that pre-task planning had a positive effect on syntactic complexity, while the effect on syntactic variety was little. Overall, pre-task planning appears to result in an improvement in some variables of complexity in L2 argumentative and narrative texts.

The second research question set out to explore the effects of online planning on the complexity of EFL learners argumentative texts. The results reveal that the online

planners produced language, which included more complex sentences than the no planners. Thus, online planning had a remarkable effect on syntactic complexity. Yuan and Ellis (2003) reported similar results regarding syntactic complexity and further suggested that the provision of an opportunity to plan within the task can advantage syntactic complexity. However, the online planning did not aid syntactic variety and lexical variety; hence, the differences did not reach a statistical significance level. Results show that syntactic variety appeared to increase as learners were afforded the opportunity to formulate their ideas and plan their performance in advance. L2 learners especially those with limited English proficiency who have to perform the task within the designated time limit often direct their attention to edit and revise their textual performance. In other words, they utilize the available time for the online planning in order to process and monitor their internal input before composing their texts.

Yuan and Ellis (2003) claimed that online planners showed remarkable progress on syntactic complexity; however, they did not improve in terms of lexical variety. Surprisingly, the online planners experienced a decrease in the mean segmental type-token ratio (MSTTR) compared to the no planners. The major differences between the present study and Yuan and Ellis (2003) study stems from syntactic variety and lexical variety. The present study reveals that the mean of syntactic variety in the online planning group (M=18.89) was higher than that found in the no planning group (M=16.20), but lower than that contained in the pre-task group. However, Yuan and Ellis's (2003) study shows that the mean of syntactic variety in the online planning group (M=11.00) was higher than that in the no planning group (M=8.71); yet the means of syntactic variety in the online and pre-task planning groups were identical (M=11.00, M=11.00). Regarding lexical variety, the present study indicates that the MSTTR of the online planning group was higher than that of the no planning group (M=.86), while Yuan and Ellis's study illustrates the MSTTR of the online planning group was lower than that of the no planning group (M=.63).

Ellis and Yuan (2004) outlined that online planning had a positive effect on syntactic complexity and syntactic variety compared to no planning; however, it did not approach significance in either case. Concerning lexical variety, the online planning group displayed equal performance compared to the pre-task planning and no planning groups. All three groups acted in a similar manner and showed no significant effect on lexical variety. The major distinction between the present study and Ellis and Yuan's (2004) study arises from syntactic complexity. This study indicates that online planners improved syntactic complexity and, in turn, produced language that was more syntactically complex. Therefore, the present study supports the findings reported for oral narratives by Yuan and Ellis (2003). In contrast, Ellis and Yuan (2004) posited that online planning did not result in greater syntactic complexity and the difference in scores between the online planning and no planning groups was not statistically significant.

In summary, the pre-task planners showed remarkable improvement on syntactic complexity and syntactic variety. Considering the learners notes in the pre-task planning time, it was reasoned that the 10-minute planning time prior to performing the task helped pre-task planners improve their confidence, while they were completing a task. They noted key words for arguments and counter-arguments, formulated their ideas,

drew concept maps to figure out how the ideas act for or against one another, and sequenced and organized them. However, pre-task planning did not seem to improve the editing and revising processes, especially when learners were pressured to perform the task immediately. Therefore, as Hayes and Gradwohl Nash (1996) pointed out, it is difficult to strongly contend that the opportunity for pre-task planning results in more effective textual output than that for online planning because the provision of time to plan within the task may benefit linguistic output of L2 writers, but in a different manner. Online planning, on the other hand, had some effects on syntactic variety and lexical variety, but the differences did not approach statistical significance. This can be justified by explaining that no planners used their time to attend to the linguistic and propositional content of the task, although they had to compose their texts within the designated time limit. Further, the similarity in lexical variety scores in the three groups might result from the fact that the participants under the planning time conditions used their time for lexical searching, and also focused more on this aspect of verbal processing. Table 12, below, summarizes the results of the present study and compares them with other relevant studies.

Table 12. Summary of the Effects of Pre-task Planning and Online Planning on L2 Writing Performance

Task type	Task medium	Planning type	Complexity	Source
Narrative	Oral	Pre-task	Increased syntactic complexity	Yuan and Ellis (2003)
		On-line	Increased syntactic complexity	
Narrative	Written	Pre-task	Marked increase in syntactic complexity and variety	Ellis and Yuan (2004)
		On-line	Some increase in syntactic complexity and variety but not statistically significant	
Argumentative	Written	Pre-task	Increased syntactic complexity and variety	The present study
		On-line	Increased syntactic complexity and some increase in syntactic variety but not statistically significant	

Conclusion

This study attempted to explore the effects of planning time conditions on the complexity of argumentative writings produced by EFL learners. It did not discuss the strategies and techniques, which are frequently used in the pre-task planning and online planning

conditions; however, this study shed light on L2 writing processes under the three planning time conditions. Additionally, the present study compared the results for argumentative writings to those for oral and written narratives in two significant studies (Yuan & Ellis, 2003; Ellis & Yuan, 2004). It also provided pedagogical implications for practitioners and language testers. Language practitioners can direct learners' attention to the three variables of complexity in L2 writing through manipulating planning time conditions such that L2 writers are sometimes provided with the opportunity for pre-task planning, sometimes for online planning, and in some cases for both. Given that L2 learners, specifically those with limited language proficiency, usually cannot fully attend to all constructs of language performance and prioritize accuracy or sometimes fluency over complexity, manipulating planning time conditions helps them improve the complexity of their textual performance. In particular, L2 learners can develop the syntactic complexity of their texts if they are given the opportunity to formulate their ideas and plan their textual output prior to performing the task. They can improve the syntactic complexity as well as syntactic variety of their argumentative writing if they are provided with sufficient time to complete the argumentative task. More importantly, there is the issue of L2 learners' confidence. The notes of the pre-task planners before performing the task showed that they attempted to produce more accurate texts than complex ones. Even when they had the opportunity to look at the writing prompt, L2 learners spent less time working on the lexical variety of their textual output. They used limited lexical items to consider arguments and counter-arguments in their texts, while the scope of their lexical knowledge was wider than what was represented. Therefore, teachers can encourage L2 students to venture beyond the production of less complex texts and show their real performance. L2 learners actually value scaffolding techniques from teachers because they will gain more control over skills of composition.

Overall, teachers and language practitioners can help L2 learners enhance the complexity of their texts by manipulating planning time conditions and giving enough time to learners to plan their textual output in advance. In addition, they can create a non-threatening situation in which L2 learners can present their actual performance with confidence and comfort. Yuan and Ellis (2004) stressed that testers should give L2 learners equal access to the pre-task planning and online planning conditions in order to present their best performance. In particular, given that the overall effects of planning time conditions on the complexity of L2 learners' writing are significant, testers can have a better evaluation of learners' writing progress, particularly the complexity of their written production by providing equal opportunity for pre-task and online planning.

About the Author

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Appendix

Section 1: Personal information

First name: _____ Family name: _____
Age: _____ Grade: _____
Gender: ____ Male ____ Female
Overseas learning experience: _____

Section 2: General Instructions (all instructions were given in Persian).

You will be presented with a topic and will be asked to write an argumentative text. The topic centers on a controversial issue that you already experienced before being admitted to university, 'Elimination of the Iranian University Exam.' To what extent do you agree or disagree with it? Discuss the topic and give your own opinions.

Instructions for each planning group

Group 1: No planning

Look at the topic, identify possible solutions, and support what you write with reasons, arguments, and relevant examples from your own knowledge or experience. You should write at least 15 sentences about the topic within 17 minutes. You can begin like this; "In my opinion,"

Group 2: Pre-task planning

Look at the topic, identify possible solutions, and support what you write with reasons, arguments, and relevant examples from your own knowledge or experience. You will be given a sheet of paper to write your notes; however, the sheet will be removed before performing the argumentative task. You will be assigned 17 minutes to write at least 15 sentences. You can begin like this; "In my opinion,"

Group 3: On-line planning

Look at the topic, identify possible solutions, and support what you write with reasons, arguments, and relevant examples from your own knowledge or experience. You can take as long as you need when writing the argumentative text. If you write something wrong or something you do not like, you can change and correct it as many times as you wish. You can begin like this; "In my opinion,"

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