CSCanada
Canadian Social Science
Vol. 7, No. 4, 2011, pp. 8-16
DOI:10.3968/j.css.1923669720110704.108

ISSN 1712-8056[Print]
ISSN 1923-6697[Online]
www.cscanada.net
www.cscanada.org

The Effects of Learners' Contribution to Tasks on Achievement of Pedagogic Objectives of Fluency, Complexity, and Accuracy

LES EFFETS DE LA CONTRIBUTION AUX APPRENANTS DES TACHES SUR L'ATTEIGNEMENT DES OBJECTIFS PEDAGOGIQUES DE LA MAITRISE, DE LA COMPLEXITE ET DE LA PRECISION.

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Received 13 May 2011; accepted 16 July 2011

Abstract
This study investigates the impact of manipulating the cognitive complexity of tasks on language learners' perception of task difficulty in terms of overall task difficulty, perceived ability to perform the task, stress, motivation, and interest. The present study also examines the effect of such affective variables on complexity, accuracy, and fluency of learners' task performance. Some 65 Iranian students studying English as a foreign language at the intermediate level participated in this research. The obtained results revealed that task complexity does affect task performance. Furthermore, task designer's interpretation of task complexity and learners' perception of task difficulty converge. Additionally, task takers' ratings of tasks are related to the complexity and fluency but not accuracy of the performance.

Key words: Task complexity; Task difficulty; Structural complexity; Lexical complexity; Accuracy; Fluency

Résumé
Cette étude examine l'impact de la manipulation de la complexité des tâches cognitives sur la perception des apprenants de langues de difficulté de la tâche en termes de difficulté de la tâche globale, perçue capacité à accomplir la tâche, le stress, la motivation et l'intérêt. La présente étude examine également l'effet de ces variables affectives sur la complexité, la précision et la fluidité de l'exécution de la tâche des apprenants. Quelque 65 étudiants iraniens étudient l'anglais comme langue étrangère au niveau intermédiaire ont participé à cette recherche. Les résultats obtenus ont révélé que la complexité des tâches ne touchent l'exécution des tâches. Par ailleurs, l'interprétation créatrice des tâches de complexité de la tâche et la perception des apprenants de la difficulté de la tâche convergent. En outre, les notes des preneurs de tâche »des tâches liées à la précision de la complexité et la fluidité, mais pas de la performance.

Mots clés: Complexité de la tâche; Difficulté d'une tâche; Complexité structurelle; Complexité lexicale; Précision; Maîtrise

Masoud Saeedi, Saeed Ketabi, & Hossein Vahid Dastjerdi (2011). The Effects of Learners' Contribution to Tasks on Achievement of Pedagogic Objectives of Fluency, Complexity, and Accuracy. *Canadian Social Science, 7*(4), 8-16. Available from: URL: http://www.cscanada.net/index.php/css/article/view/j.css.1923669720110704.108 DOI: http://dx.doi.org/10.3968/j.css.1923669720110704.108

INTRODUCTION
In the last few years, considerable attention has been devoted to task design and task-based syllabus design. Research into task features has basically been motivated by two perspectives. The first agenda of research is the interactionist perspective which has been concerned with establishing in what ways tasks can be modified in order for them to generate specific conversational episodes which, generally, have been regarded as negotiation of meaning. These studies have particularly investigated whether task design can lead to interactive production episodes that have been referred to as clarification requests, confirmation checks, and comprehension checks.

These episodes have been claimed to lead to second language acquisition (Long, 1985, 2000). Besides their focus on negotiation of meaning during production, in these kinds of studies researchers have also considered the consequences of task manipulation on the amount of production and the level of participation of learners. Within an information-processing perspective concerned with performance, researchers have sought answers to questions as to the ways task manipulation can result in differentials in terms of areas of fluency, complexity, and accuracy. Fluency pertains to the learner's capacity to communicate in real time, accuracy to the ability of the learner to use the target language according to its norms, and complexity to the learners' ability to use more elaborate and complex target language structures (Skehan, 1998). These studies have been concerned with how a balanced performance in the three areas of production can potentially lead to more effective language use and acquisition, as well as with how such information can be used as a basis for making sequencing decisions in syllabus design. Skehan (Skehan, 1998; Skehan & Foster, 2001) has suggested that intuitions about task difficulty regarding manipulating and sequencing for syllabus design should be supplemented by empirical findings. He has further argued that having evidence of the effects of task demands on production can be used to direct learners' efforts toward different areas of performance separately or simultaneously. Furthermore, if links are established between production and acquisition, research evidence can be used to manipulate tasks to maximize the effectiveness of language learning. Skehan (Skehan, 1998; Skehan & Foster, 2001) proposed a three-way distinction of difficulty, to which learner factors can also be added: code complexity (vocabulary load and variety; linguistic complexity and variety); cognitive complexity (familiarity topic, discourse or task; amount of computation and organization, and sufficiency of information); communicative stress (time pressure; scale; number of participants; length of text; modality; stakes; opportunity for control); and learner factors (intelligence; breadth of imagination; personal experience). This researcher also pointed out that evidence should be collected regarding the effects of task manipulation on the areas of fluency, accuracy, and complexity. Skehan was of the opinion that these three aspects of performance can be influenced by engaging learners in different types of production and communication. So, for example, if promoting fluency in the learner is sought by task designer, he should engage the learner in meaning-oriented tasks; on the other hand, if he wants to promote accuracy or complexity in the learner, he should get him involved in more form-focused tasks. Consequently, what must be done is to discover what task-types, variables and dimensions promote fluency, accuracy or complexity in L2 learners and use these accordingly. He took linguistic complexity to be a "surrogate" of learners' willingness to stretch their inter-language by experimenting with more difficult forms and by trying out more elaborate language. In his view, the information obtained from the manipulation of task features can be used to establish longer-term pedagogic goals in which both meaning and form can be attended to, and in which inter-language development can be integrated into fluent performance.

Though in many conceptualizations of task demands the terms "task complexity" and "task difficulty" have been used interchangeably, in his Cognition Hypothesis, Robinson (2001, 2007, 2009) made a distinction between them. Task complexity, he argued, is a function of cognitive demands of tasks, while task difficulty pertains to learner factors. These, he claimed are two different influences on learners' task performance. Robinson (2001, p. 29) further claimed that, "task complexity is the result of the attentional, memory, reasoning, and other information processing demands imposed by the structure of the task on the language learner. These differences in information-processing demands, resulting from design characteristics, are relatively fixed and invariant". He went on to put forward a three-dimensional model that distinguished between three different types of factors: cognitive complexity factors (resource-directing ones such as +/- few elements, +/- Here-and-Now, and +/- no reasoning demands; resource-dispersing ones such as +/- planning, +/- single task, and +/- prior knowledge); interactive factors (participation variables such as one way/two way, convergent/divergent, open/closed; participant variables such as gender, familiarity, power/solidarity); and learner factors (affective variables such as motivation, anxiety, and confidence; ability variables such as aptitude, proficiency, and intelligence). The significance of Robinson's framework, it can be deducted, lies in the distinction he has made between task complexity and task difficulty, hence allowing for investigating tasks from not only task designer's, but also task taker's perspectives.

As can be seen in the brief account mentioned above, task designers have chosen and implemented tasks with certain pedagogic outcomes in mind. In doing so, they have investigated the potential effects of task design variables on learners' task performance in terms of complexity, accuracy, and fluency. While previous task-based studies have identified a number of variables that impact on performance, the results have not always been consistent (see Ellis, 2005). This has led some researchers (e.g., Coughlan & Duff, 1994) to claim that the activity that results from a task is necessarily co-constructed by the participants on each occasion or, as Hosenfeld (1976) has pointed out, learners may redefine activities to suit their own purposes. Therefore, it seems to be impossible to predict accurately or usefully how a task will be performed by participants. This means that any pre-designed task will be changed by the way the learner interacts with it. As a corollary, the result may diverge from the objectives intended by the task designer. In this regard, Breen (1987)

has distinguished between the original "task-as-work-plan" and the actual "task-in-process", and has argued that "learners are capable of playing havoc with even the most carefully designed task" (p. 23). In order to understand why the two may diverge, Breen suggested that the task designer needs to consider: (a) the objective of the task (e.g., does it focus on accuracy, fluency, or complexity?); (b) the content of the task (e.g., does it draw on familiar or unfamiliar information?); (c) the way the task is to be carried out (e.g., will learners engage in planning before the task?); and (d) the situation in which the task is to be carried out (e.g., will the task be monologic or dialogic?).

It follows from what was mentioned above that task designer and learners may have different interpretations of aspects of language learning tasks, and the result is a function of the extent to which the teacher's intention and the learner's interpretation of a given task converge. Regarding this potential discrepancy, Ellis (2003) pointed out that one of the aims of task-based research is to establish whether the predictions made by designers are actually borne out. If we are to allow for individual differences (e.g., self-esteem, anxiety, risk taking), a task should allow for alternative procedural routes to the same goal. However, an individual's preferred way of working may not prove to be the most effective. Tasks should therefore involve learners in reflecting on the way in which they carried them out, as well as on the language they used, thereby helping to develop learner autonomy. The critical evaluation by learners of previously undertaken tasks would provide valuable input for devising future tasks, and thus support the argument that the task designer and the teacher should be one and the same.

1. CURRENT STUDY

As was mentioned above, one shortcoming with most previous studies within the information- processing approach to investigating tasks is that they have considered the effects of manipulating different task dimensions from task designer's perspective. This problem is also echoed by Ellis (2000). In his evaluation of the research motivated by this approach to task performance (i.e., the information-processing perspective), Ellis (2000) pointed out that such studies have examined tasks without any consideration of other general factors that are bound to influence task performance. In response to the need for further research investigating learners' perspective to tasks and its potential impacts on their performance, this study examined the effects of increasing cognitive demands of tasks (i.e., task complexity) on task takers' perception of "task difficulty". In doing so, building on Robinson's (2001, 2003, 2007, 2009) task complexity framework, the researchers operationalized four levels of task complexity. These conditions are set out in Table 1. It was hypothesized that the first and the fourth task conditions would be the least and the most cognitively demanding ones, respectively.

Table 1
Task Complexity Across Dimensions

Complexity dimensions	Task conditions			
	Simple		Complex	
	A	B	C	D
Planning	+	-	+	-
Single task	+	-	+	-
Here/Now	+	+	-	-

Drawing on this conceptualization of "task complexity", this research aimed at answering the following research questions:

a) Do task designer's interpretation of task complexity and learners' perception of task difficulty converge?

b) How does increasing task complexity impact on such affective variables as learner's perceived stress, ability to do the task, interest, and motivation to do the task?

c) How are task performance and learners' affective variables related?

2. METHODOLOGY

This study followed a "comparison group design" (see Mackey & Gass, 2005). There was a between-subjects factor with four levels (i.e., task complexity). The researchers investigated the effects of manipulating task complexity as the independent variable on five related dependent variables: perceived stress, overall difficulty, ability to perform the task, interest, and motivation. Sixty-five general English Iranian students studying English as a foreign language in an English language institute in Isfahan participated in this study on a volunteer basis. Participants were adult learners at different ages and attended the classes twice a week during a three-month term. They were assigned to intermediate-level classes based on a placement test and a short oral interview. In a study conducted by Saeedi, Rahimi Kazerooni, and Parvaresh (2010), the criterion-related validity of this placement test was investigated using two integrative tests of general English proficiency: a C-test and a cloze test (see Saeedi, 2007). The obtained results showed statistically significant correlation coefficients among participants' scores on the placement test and the criteria. Consequently, participants can be described as having a broadly similar level of English proficiency.

Four video episodes were chosen as ideal narrative tasks because the episodes were (a) not too long; (b) easy to follow, without any cultural bias that might disadvantage the comprehension of participants who had a different cultural background; and (c) amusing and engaging, so that telling the story would be something the

participants would be likely to enjoy. The design used for data collection assumed that stories were similar to one another and that what made a difference in performance was the condition under which each story was performed. In other words, if a specific condition were to have an effect on performance, it should have happened regardless of the story type. Thus, in order to control for the effects of inherent task structure on learners' performance, the chosen episodes had a clearly identifiable degree of sequential structure in the story.

Immediately following performance of tasks, participants were also asked to complete a brief questionnaire adopted from Robinson (2001). Each item on the questionnaire was rated on a 9-point Likert scale (see Appendix A). The questionnaire included five items assessing learners' overall perception of task difficulty, ratings of stress, perceived ability to complete the task, interest in task content, and motivation to complete similar tasks.

Data were collected over a period of some weeks. Students were randomly chosen by the researcher to take part in the research. Each participant was randomly assigned to one of the four tasks (i.e., Task A, B, C, or D) to be done under one of the four conditions outlined in section above, and was audio-taped while completing one task under one condition. Following procedures developed in Foster and Skehan (1996), the audio-taped data were transcribed and coded to measure participants' performance in terms of complexity, accuracy, and fluency. In this study, syntactic complexity was measured by counting the number of S-Nodes (a term which is interchangeable with "clause") and dividing it by the total number of T-units. It should be noted that the T-unit was preferred to C-unit, because this research dealt with one-way, monologic narratives which were expected to trigger no elliptical answers (see Gilabert, 2007). With regard to regard to accuracy, this aspect of performance was measured by calculating the number of error-free clauses as a percentage of the total number of clauses. This operationalization of accuracy was motivated by findings of previous research indicating the sensitivity of such a global measure of accuracy to detecting differences between experimental conditions (Skehan & Foster, 1999).

Among the wide variety of approaches to measuring fluency including calculating the number of replacements, repetitions and hesitations (Foster & Skehan, 1996); the number of pauses and total silence (Foster & Skehan, 1996; Mehnert, 1998); un-pruned and pruned speech rates (Mehnert, 1998; Ortega, 1999; Yuan & Ellis, 2003);the total number of two-second pauses (Robinson, 1995); and the number of words per pausal unit (Robinson, 1995; Rahimpour, 1997), in this study, the rate of pruned speech was chosen to code and measure each narrative. The main advantage of this kind of measure is that it in fact includes both the amount of speech and the length of pauses, since it allows for the number of syllables and the total number of seconds in the narrative. In pruned speech rate, as opposed to un-pruned speech rate, repetitions, reformulations, false starts, and asides in the L1 are eliminated from the calculation. Pruned speech rate was calculated by dividing the number of syllables by the total number of seconds and multiplied by 60 (see Gilabert, 2007).

Although complexity, accuracy, and fluency are very important dimensions of second language performance, these general measures need to be supplemented by measures of lexical use (Skehan, 2009).This area, however, has been strikingly absent in task research. This, according to Skehan (2009, p. 514) is a "serious omission". One of the most frequently used lexical measures is some sort of type /token ratio (TTR). The type/token ratio, however, has been shown to be extremely sensitive to differences in text length, since the higher the number of tokens, the lower the ratio (Vermeer, 2000). Hence, several alternatives to the TTR have been put forward by a number of researchers in order to correct the negative correlation existing between type/token results and the number of tokens. After considering Vermeer's (2000) analyses of the different variations of the TTR, it was decided to use the Guiraud's index of lexical richness. According to Gilabert (2007, p. 54), the advantage of this measure is that "by including the square root of the tokens it compensates for differences in text length." The Guiraud's Index of lexical richness was calculated by dividing the number of types by the square root of the number of tokens.

Following performance of tasks, participants were given the questionnaire mentioned above. Under the first condition, participants were given some planning time before performing Task A (see Appendix B). Following several studies (Foster & Skehan, 1996; Skehan & Foster, 1997; Mehnert, 1998; Ortega, 1999; Gilabert, 2007; Ellis, 2009), operationalization of planning time was 10 minutes during which subjects were asked to do some activities (+planning). The purpose of these activities was to highlight the relevant lexical items and also familiarize participants with the topic. They were also allowed to take notes on what to say and how to say it as they planned, but were not allowed to keep their notes during task performance. Following Robinson's (1995) and Gilabert's (2007) operationalization of Here-and-Now/There-and-then distinction, after watching the video, each participant was asked to perform the single task of narrating the story in the present (+Here/Now; +single task).

Participants who took Task B under the second complexity condition, on the other hand, were not given any planning time (-planning). Furthermore, they were asked to perform the secondary task of answering some questions pertaining to the story content as they were watching the video (see Appendix C). Following watching the episode, they were also asked to narrate the story in

the present as the main task (-single task; +Here/Now). As for the third task complexity condition, each participant who took Task C was given ten minutes to do a couple of activities (see Appendix D). Like pre-task planning activities for Task A, these activities familiarized them to the relevant lexical items which they were likely to hear in the story (+planning). Having watched the video, each participant was only asked to retell the story in the past tense (+single task; -Here/Now). Regarding the fourth task complexity condition (see Appendix E), participants were not given any planning time (-planning) before retelling Task D. In addition, they were required to carry out the *secondary* task of answering some comprehension questions pertaining to the content of the episode while they were watching it (see Appendix E). Following watching the video, they were also asked to narrate it in the past (-single task; -Here/Now). In order to investigate the statistical significance of mean differences across the different conditions operationalized above, the one-way Multivariate Analyses of Variance (MANOVA) was carried out. In the analysis process, an independent variable (i.e., task complexity) with four levels and five related dependent variables (i.e., perceived stress, overall difficulty, ability to perform the task, interest, and motivation) were analyzed.

3. RESULTS

Results of participants' task performance under different complexity conditions are presented in Table 2 below. The table shows the descriptive statistics for all the measures. As reported in the table, participants who did Task A had the highest lexical complexity mean (M= 5.57, SD= 0.50), while those who performed Task D had the least lexically complex performance. Regarding structural complexity means, participants who did Task C had a mean of 1.78 (SD= 0.12) which was higher than the estimated mean of structural complexity for other groups. Task B, on the contrary, elicited the least structurally complex performance (M= 1.50, SD= 0.18). As for the accuracy of task performance, participants who did Task C displayed the most accurate performance (M= 56%, SD= 8%). Those who took Task B, however, displayed the least accurate task performance. Finally, Task C seems to have elicited the most fluent oral production (M=108.62, SD= 14.92). Participants who performed under the fourth condition (i.e., Task D) had the lowest fluency mean (M= 90.94, SD= 15.86).

In order to investigate the statistical significance of mean differences, a one-way between groups multivariate analysis of variance (MANOVA) was performed. Four dependent variables were used: lexical complexity, structural complexity, accuracy, and fluency. The independent variable was task complexity with four levels. Before running this test, the suitability of data and the assumption testing was conducted. The results of one-way MANOVA are reported in Table 3.

Table 2
Descriptive Statistics for Task Complexity Conditions: Means and Standard Deviations

Tasks	Lexical complexity		Structural complexity		Accuracy		Fluency		N
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Task A	5.57	0.50	1.58	0.13	40%	7%	113.75	18.77	16
Task B	5.10	0.42	1.46	0.19	32%	10%	94.31	19.92	16
Task C	5.45	0.33	1.78	0.12	56%	8%	108.62	14.92	16
Task D	4.92	0.41	1.62	0.16	45%	6%	90.94	15.86	17

As shown in Table 3, there was a significant main effect for lexical complexity, F (61, 3) = 8.235, $p < .01$, which suggests that lexical complexity was affected by the different degrees of complexity. Regarding structural complexity, there was a significant main effect, F (61, 3)=11.43, $p < .01$. With regard to the measure of accuracy, there was a statistically significant main effect, F (61, 3)= 22.019, $p < .01$. As for the fluency measure, There was a significant main effect, F (61, 3) = 6.482, $p < .01$, which suggests that fluency was affected by the different degrees of complexity.

Table 3
One-way MANOVA by Condition: Main Effects Obtained for All Measures Across Different Task Complexity Conditions

Source	Dependent variable	Df	Mean square	F-value	P-value
Task complexity	Lexical complexity	61,3	1.478	8.235	.000**
	Structural complexity	61,3	.290	11.432	.000**
	Accuracy	61,3	.154	22.019	.000**
	Fluency	61,3	1977.142	6.482	.001**

**$P < .01$

Immediately after taking the task, each participant was given a questionnaire. The questionnaire included five items assessing learners' overall perception of task difficulty, ratings of stress, perceived ability to complete the task, interest in task content, and motivation to complete similar tasks. The results of learners' ratings of these five variables are reported in Table 3 and Figure 1. As displayed in the table, Task D was perceived to be the most difficult one (M= 7.29, SD= 1.35), while Task A caused the lowest ratings of task difficulty. Regarding perceived ability to perform the task, Task A elicited the highest ratings of perceived ability to perform it (M= 6.81, SD= 1.68). Task D, on the other hand, generated the lowest ability ratings (M= 2.70, SD= 1.35). As for ratings of stress, participants who took Task D found it to be the most stressful (M= 7.11, SD= 1.49). Task A, on the contrary, generated the lowest ratings of stress (M= 3.06, SD= 1.80). Participants who took Task D did not find it very interesting (M= 4.35, SD= 1.86). On the contrary, those who performed Task A found it to be the most interesting (M=5.68, SD= 1.35). Regarding the last variable, Task D generated the lowest level of motivation (M=3.70, SD= 1.89). Task B, however, was perceived to be the most motivating (M= 4.56, SD= 1.67).

As the next step, a one-way between-groups multivariate analysis of variance (MANOVA) was performed to investigate the statistical significance of mean differences. Five dependent variables were used in analysis: task difficulty, ability, perceived stress, interest, and motivation. Also the independent variable was task complexity with four levels. Before carrying out this test, the suitability of data and the assumption testing were conducted. The results of one-way MANOVA are reported in Table 5. As shown in the table, there was a significant main effect for task difficulty, $F(61, 3) = 58.293$, $p < .01$, which suggests that learners' perception of task difficulty was affected by the different degrees of complexity. The *Post hoc* Scheffe test was also run to find the exact place of mean differences. It should be noted that the focus of analysis was mainly on mean differences between the simplest and the most complex task, i.e., Task A and Task D, respectively (see Table 6).

Table 4
Learners' Perception of Tasks: Descriptive Statistics

Condition	Task difficulty		Ability		Stress		Interest		Motivation	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Task A	2.75	1.98	6.81	1.68	3.06	1.80	5.68	1.35	5.25	1.61
Task B	5.75	1.69	4.68	1.62	5.31	1.35	4.43	1.78	4.56	1.67
Task C	5.31	1.95	5.62	1.74	5.18	2.00	5.37	1.66	5.43	1.63
Task D	7.29	1.35	2.70	1.35	7.11	1.49	4.35	1.86	3.70	1.89

The results of analyses revealed that the mean difference between participants' ratings of task difficulty on Tasks A and D was statistically significant ($p < .05$). This finding suggested that the complex Task D was perceived to be significantly more difficult than the simple Task A. This piece of evidence gives a positive answer to the first research question. To put it differently, task designer's interpretation of task complexity and learners' perception of task difficulty converge. Table 4 also shows a significant main effect for ability, $F(61, 3) = 19.338$, $p < .01$. This indicated that learners' perceived ability to do the task was significantly influenced by different cognitive complexity levels of tasks. A means comparison of difference of ratings of stress on Task A and Task D showed the difference to be statistically significant. In other words, the simple

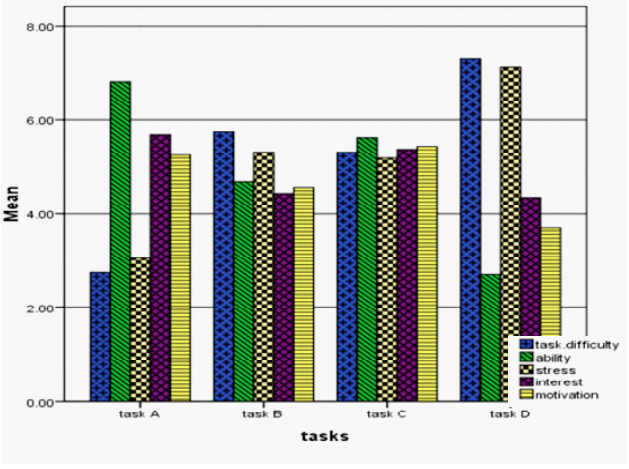

Figure 1
Learners' Perception of Tasks: Ratings of Task Difficulty, Perceived Ability to Perform the Task, Stress, Interest, and Motivation to Do the Task

Task A caused significantly lower ratings of ability than the cognitively demanding Task D (see Table 5). Regarding the ratings of stress, there was a significant main effect for this variable, $F(61, 3) = 16.003$, $p < .001$, which indicated a significant effect of task complexity on learners' perceptions of stress. As shown in Table 5, Task A generated significantly lower ratings of stress than did Task D ($p< .05$).

Table 5
One-way MANOVA by Condition: Main Effects Obtained for Learners' Perception of Tasks Across Different Task Complexity Conditions

Source	Dependent Variable	Df	Mean square	F-value	P-value
Task Complexity	Task-difficulty	61,3	58.293	18.817	.000**
	Ability	61,3	49.820	19.338	.000**
	Stress	61,3	45.274	16.003	.000**
	Interest	61,3	7.285	2.568	.063
	Motivation	61,3	10.204	3.489	.021*

***p < .05; **p < .01**

Contrary to the first three variables, the results of the one-way MANOVA indicated that the main effect for interest was not statistically significant (p> .05). Thus, ratings of interest were not affected by different levels of task complexity. Therefore, the mean difference between Tasks A and D was not statistically significant (p> .05). The main effect for motivation, however, was statistically significant, F (61, 3) = 3.489, p< .05, which confirmed the statistical significance of mean differences of ratings of motivation caused by different levels of task complexity (see Table 4). As displayed in Table 5, though the main effect was significant for motivation, *Post hoc* Scheffe results did not confirm the significance of mean difference between Task A and Task B for motivation (p> .05). On the whole, the findings reported in this section answered the second research question, indicating that increasing cognitive complexity of tasks is matched by higher ratings of overall task difficulty, perceived stress, and lower ratings of ability to perform the task.

Table 6
Mean Differences Between Students' Perception of the Least and the Most Cognitively Demanding Tasks

Comparison	Task-difficulty	Ability	Stress	Interest	Motivation
Task (A) vs. Task (D)	-4.54*	4.10*	-4.05*	1.33	1.54

***p < .05**

The above-mentioned analyses revealed a substantial effect of task complexity on task performance in terms of lexical complexity, structural complexity, accuracy and fluency of speech. An interesting further question which arises here is whether such factors as overall difficulty, anxiety, motivation, interest and stress are also related to the quality of production. In order to investigate this relation, correlations of learners' perceptions of tasks and their production were examined. The results are tabulated in Table 6. As displayed in the table, there was a significant negative relationship between ratings of task difficulty and lexical and structural complexity, as well as fluency of task performance (p< .01). In other words, as the perceived difficulty of a task increases, the lexical complexity, structural complexity, and fluency of participants' speech decreases. The relation between task difficulty and accuracy of task-based performance, however, was not statistically significant, r (65) = -.19, p> .05. Regarding perceived ability, there was a significant positive correlation between this variable and performance measures of lexical complexity, structural complexity, accuracy, and fluency (p< .01). This suggested that participants who had a lexically and structurally more complex, accurate and fluent task performance rated their ability to complete the task higher than those who produced less lexically and structurally complex, accurate and fluent language (see Table 6). The perceived stress variable also negatively correlated with lexical complexity, r (65) = .58, p < .01, structural complexity, r (65) = -.21, p < .05, as well as fluency of production, r (65)= .60, p< .01, but not with accuracy r (65) =.14, p > .05. This piece of evidence suggested that the more stressed participants were while performing tasks, the poorer their performances were in terms of lexical complexity, structural complexity, and fluency. Regarding interest, this affective variable was positively related with all measures of task performance. There was a significant correlation between ratings of interest and lexical complexity, r (65)=.53, p< .01, structural complexity, r (65)= .35, p<.01, accuracy, r (65) = .28, p < .05, and fluency, r (65) = .50, p< .01. In other words, participants who showed more interest in completing a task outperformed those who were less interested. The case was the same for motivation. The ratings of motivation positively correlated with lexical complexity, r (65) = .46, p < .01, structural complexity, r (65) = .39, p < .01, accuracy, r (65)=.28, p< .05, and fluency, r (65) = .53, p < .01. It can be deduced from the reported findings that higher ratings of motivation to perform tasks were accompanied by higher levels of lexical and structural complexity, accuracy, and fluency of production.

The findings for the effects of learners' perception of tasks on their task production displayed in this section answered the third research question: there is a significant relationship between affective variables and the lexical complexity, structural complexity, and fluency of their performance. The relations between these variables and learners' accuracy of task performance, however, were

either non-significant or lower than other relations (see Table 6).

Table 7
Correlations Among Dependent Variables

	Lexical complexity	Structural complexity	Accuracy	Fluency	Task difficulty	Ability	Stress	Interest	Motivation
Lexical Complexity	-	.50**	.41**	.81**	-.67**	.70**	-.58**	.53**	.46**
Structural complexity	.50**	-	.73**	.66**	-.34**	.38**	-.21*	.35**	.39**
Accuracy	.41**	.73**	-	.49**	-.19	.28*	-.14	.28*	.28*
Fluency	.81**	.66**	.49**	-	-.74**	.75**	-.60**	.50**	.53**
Task difficulty	-.67**	-.34**	-.19	-.74**	-	-.86**	.85**	-.44**	-.41**
Ability	.70**	.38**	.28*	.75**	-.86**	-	-.74**	.44**	.42**
Stress	-.58**	-.21*	-.14	-.60**	.85**	-.74**	-	-.52**	-.44**
Interest	.53**	.35**	.28*	.50**	-.44**	.44**	-.52**	-	.77**
Motivation	.46**	.39**	.28*	.53**	-.41**	.42**	-.44**	.77**	-

**$p < .01$;*$p < .05$

4. DISCUSSION

The findings of this study revealed that increasing cognitive demands of tasks does impact learners' complexity, accuracy, and fluency of production. This was also reflected in learners' perceptions of tasks, in terms of their ratings of overall task difficulty, perceived ability to perform the task, and stress. More specifically, the means comparisons between the simplest and the most cognitively demanding tasks showed that the most complex version of task (i.e., Task D) was significantly rated more difficult and also more stressful than the simplest version (i.e., Task A), with a trend to less confidence in ability on the more complex task. By contrast, results of analyses did not reveal any significant differences in terms of participants' ratings of interest and motivation. This suggests that differences in task complexity are unrelated to ratings of interest, and motivation. The implication of this finding is that as the cognitive demand of tasks increases, approaching the authenticity of target task demands, there is no loss of interest or motivation to complete the task. The outcomes reported here, are coherent with the findings of a study reported by Robinson (2001). In his investigation of the relation between increasing the cognitive demands of task (i.e., task complexity) and its effects on learners' perception of cognitive demands of tasks (i.e., task difficulty), Robinson (2001), found a significant relation between increasing task complexity and learners' ratings of overall task difficulty, perceived ability to complete the task, and stress but not interest in and motivation to perform the task. As for the relation between ratings of task difficulty and dimensions of task performance, Robinson only found significant positive relations among affective responses to tasks (i.e., perceived ability to perform the task and motivation) and fluency and lexical variety of production. These results are weaker than the ones reported in this study which displayed significant correlations among learners' ratings of tasks and the fluency, lexical complexity, and structural complexity of their task performance. It was also reported that adjusting the cognitive demands of tasks affected some aspects of learners' ratings of difficulty including stress, but not others, such as interest in the task or motivation to complete it. This finding has an implication for syllabus design. As pointed out by Robinson (2001, p. 52), it is "of clear relevance to theoretical proposals for, and practical implementations of task-based approaches to syllabus design." Furthermore, the fact that differences in the cognitively defined task complexity of tasks were also reflected in learners' ratings of overall task difficulty is also promising for implementing task-based syllabuses. As the comparison between learners' perceptions of Task A and Task D showed, the most complex task (Task D) was rated significantly more stressful and difficult overall, this was also accompanied by less confidence in ability to do this task. This justifies making sequencing decisions based on complexity in terms of its affective demands. More encouragingly, differences in task complexity were not related to ratings of interest and motivation. The implication of this finding is that as tasks increase in cognitive complexity, approaching the authenticity of target task demands, they exert no negative effects on learners' interest or motivation to complete the task. These, the researcher contends, add further to the promising findings of previous research testifying to the centrality of task complexity as a robust and testable construct whose different operationalizations can inform task design, sequencing, as well as syllabus design and implementation (see Robinson, 2001, 2007; Gilabert, 2007; Tavakoli, 2009).

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