

# The Effects of Task Complexity on English Language Learners' Listening Comprehension

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## Abstract

This article reports on the findings of a study that investigated the impact of manipulating task performance conditions on listening task performance by learners of English as a foreign language (EFL). The study was designed to explore the effects of changing complexity dimensions on listening task performance and to achieve two aims: to see how listening comprehension task performance was affected and to investigate possible overlaps between EFL learners' perceptions of task difficulty and hypothesized task complexity. A purposive sample of 54 first-year EFL learners randomly assigned to two parallel conversation classes in an English department of a major public university participated in the study and performed listening tasks in a language lab. The instruments used for data collection were seven tasks taken from a TOEFL Test Preparation Kit, each followed by listening comprehension questions and an item on the participants' personal perception of the difficulty of the task. During counter-balanced administrations, the tasks were manipulated for one of the four dimensions of task difficulty (adequacy, immediacy, perspective, and prior knowledge). The resulting data included the participants' perception of difficulty as well as their performance scores under less complex and more complex conditions. One-sample T-test and correlation analyses of the data revealed that for all of the four complexity dimensions, the hypothesized less complex task condition led to better learner performance. The correlation between learner-assigned difficulty score for the task at hand and theoretical task complexity level was significant only for the immediacy dimension ( $r=-0.67$ ,  $p<.05$ ). The results offer support for task complexity frameworks, raise doubts about learners' perceptions of tasks, and imply possibilities for task manipulation in language learning contexts.

**Keywords:** task complexity, task difficulty, task condition, task-based teaching, EFL

## INTRODUCTION

In recent years, L2 teaching and learning have seen a growing interest in the use of tasks. Similarly, interest in tasks as a vehicle for assessing learner ability has grown in language testing due to the weaknesses of multiple-choice and other forms of discrete-point testing. In language teaching and testing situations, practitioners now need to make well-informed decisions on the selection, gradation, presentation, and assessment of tasks designed for second language (L2) learners.

The literature on task-based language teaching offers different definitions of language use tasks and language learning tasks. However, Skehan (1998a) refers to a broad consensus among researchers and educators on what constitutes a task. His four defining criteria clarify the conceptualization of task as it is used in the present work. In his formulation, tasks are activities in which “1) meaning is primary; 2) there is a goal which needs to be worked toward; 3) the activity is outcome-evaluated; and 4) there is a real-world relationship” (Skehan, 1998a, p. 268).

Two schools of thought in the related research literature offer opposing insights into how syllabus designers, testers, and teachers can support their decisions in the selection, gradation, presentation, and assessment of L2 learning tasks (Ellis, 2000). Followers of the first school represented by researchers like Long (1985), Robinson (1998), and Skehan (1998a, 1998b) argue that decisions in syllabus construction should be motivated by findings in second language acquisition (SLA) research. On the other hand, proponents of the second school (e.g. Ellis, 1997; Nunan, 1989; Willis, 1990) believe in criteria not necessarily informed by SLA research. In this school of thought, tasks are “...workplans that are enacted in accordance with the personal dispositions and goals of individual learners in particular settings, making it difficult to predict the nature of the activity that arises out of a task” (Ellis, 2000, p. 194).

Based on the former argument, task complexity is one of the significant variables in the design of L2 materials in task-based language teaching. Gilabert (2007) states, “the need to establish criteria for sequencing tasks in a syllabus from

easy/simple to difficult/complex in a reasoned way that will foster interlanguage development” (p. 45 ) has given rise to the concept of “task complexity”, the core variable of this study. Not very long ago, Skehan wrote, “the conditions under which tasks are done and the way conditions interact with performance are a fertile area for research” (Skehan, 1998b, p. 177). Depending on the theoretical views of language learning and performance, task conditions can be studied from different perspectives (Alvarez, 2007). In the present study, the focus is on task complexity levels and their effects on L2 learners’ actual performance.

In spite of the emphasis on the significance of tasks in L2 teaching and learning and the importance of properly organizing tasks based on task complexity, there is little empirical evidence on how the manipulation of dimensions of complexity might affect learners of English in their EFL listening task performance. Long and Crookes (1992) comment that, little empirical support is available that can be useful in grading and sequencing tasks in a task-based syllabus as far as various proposed parameters of task classification and difficulty are concerned. This gap has been partially filled as a result of recent advances in task-based language teaching. However, the scarcity of research on EFL listening tasks performance by Iranian EFL learners and the potential of such research for the improvement of task-based activities in EFL teaching make this study a legitimate area of research. Moreover, previous research has not yet clearly shown the mutual interaction of different complexity dimensions on learner performance (Tajeddin & Bahador, 2012). In line with this research trend, the present attempt explored the possibility of predicting L2 learning task complexity in the pedagogic context of undergraduate EFL listening comprehension classes.

## **LITERATURE REVIEW**

### **The Concept of Task Complexity**

As stated in the introduction, concern for the effective sequencing of tasks in L2 teaching and learning situations has led to the development of the concept of “task complexity” (Skehan, 1996,

1998a, 1998b). Skehan (1998b, p. 99) and Skehan and Foster (2001, p. 194), defined task complexity in terms of code complexity, cognitive complexity, and communicative stress. Code complexity refers to language factors, such as linguistic complexity and variety, vocabulary load and variety, or redundancy and density. Cognitive complexity, relates to cognitive familiarity with a task (e.g. familiarity of topic or familiarity of task) or cognitive processing, i.e. the amount of cognitive computation. Finally, communicative stress refers to performance conditions like time limits, length of the texts, and the number of participants in an interaction (Skehan, 1998b; Skehan & Foster, 2001).

Irrespective of how task complexity issues are settled, researchers introduce different approaches for the use of task-based activities in L2 teaching and learning. In a critical review of theoretical accounts of task-based language use and learning, Ellis (2000), distinguished the following two approaches: The psycholinguistic approach that “provides information that is of importance for *planning* task-based teaching and learning” (p. 193); and “the socio-cultural approach that illuminates the kinds of *improvisation* that teachers and learners need to engage in during task-based activity...” (Ellis, 2000, p. 193, emphasis is original). The present work falls within the framework of the former theoretical perspective because it is concerned with how task complexity variations may affect task sequencing and task performance. Skehan (1998b) believes that the information obtained from the manipulation of task features can be used to establish pedagogic goals directed at both meaning and form. Similarly, Robinson (2001) makes the rather strong claim that task complexity features should be the sole basis for making sequencing decisions. The reason he offers is that task conditions such as participation/participant variables and task difficulty features such as affective and ability variables are not predictable before a course starts.

The concept of task complexity should not be mistaken with that of task difficulty. Based on the related literature, task complexity and task difficulty are two different constructs. Task complexity is about the cognitive demands of a task that can be

increased or lessened through manipulation. That is, a task can be either more complex or simpler depending on how much its completion draws on the cognitive abilities of a learner. In Robinson's (2001) definition, "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" (p. 29). On the other hand, "task difficulty refers to the learners' perceptions of the demands made by certain tasks and is determined by the abilities (intelligence, working memory, language aptitude) and affective responses (e.g. anxiety, motivation, confidence) the learners bring to the task" (Kuiken & Vedder, 2007, p. 120). This is another way of saying that a task may not actually be complex, but the learner may perceive it as difficult. Task complexity is, therefore, a feature of the task; whereas, task difficulty is the perception of the task performer.

Task complexity refers to the cognitive features of a task which can lead either to an increase or a decrease in cognitive demands placed on learners (Robinson, 2001, 2005) which can affect their performance. This, in turn, may lead to risk-avoiding or risk-taking behavior on the part of the learner (Rahimpour, 1997). In this view, task complexity can have different dimensions and each dimension can be manipulated in the selection and design of materials for language learners. Researchers like Nunan (1989) argue that task factors such as the level of linguistic input or learner factors such as confidence and motivation can affect task difficulty. Task complexity can, in turn, affect the complexity dimensions of the linguistic output produced by the language learner. In their study of freshman EFL learners at Allameh Tabataba'i University, Tajeddin and Bahador (2012) found that as task complexity increased, output complexity also increased in learners' production. Abdollahzadeh and Fard Kashani (2011) manipulated some task conditions to examine the effects of task complexity on written narrative production by EFL learners. They found significant effects on written production for both task complexity and language proficiency.

Differential levels of task complexity need to be studied in relation to measures such as learner production and comprehension of the task. The degree of precision in language

use required in the performance of a task, the propositional load of the task, and the amount of information storage and retrieval imposed by the task on the interlocutors will be some factors to consider based on previous research (Givon, 1989; Sridhar, 1988). For example, Long (1985) argued that tasks requiring precise use of language for the expression of multiple propositions are more likely to “stretch” the interlanguage resources of second language users than are tasks not requiring this

Three different approaches to the characterization of the concept of task complexity offer insight into how task level might affect language learners. The first is the interactional approach that stems from the work of interactionists such as Pica (1994), Pica, Kanagy, and Falodun (1993). In this approach, the interactional characteristics of tasks and their impact on negotiation in communication are important. The second approach, the information processing approach represented in the work of Skehan (1996, 1998a, 1998b), emphasizes the impact of the cognitive characteristics of tasks on learners’ performance. In this approach, researchers claim that task complexity can be predicted based on proposed cognitive dimensions. In the third approach, the test-method approach, task characteristics are defined as test methods (Bachman & Palmer, 1996). In this approach, the impacts of task differences are seen as test-method effects.


As already clarified, this study falls within the second tradition, the information processing approach, because it explores the effects of manipulating some cognitive task characteristics on task performance in EFL listening comprehension. It tries to empirically validate the conceptual assumption that altering specific features of tasks can lead to changes in their cognitive complexity. For example, the assumption that changing the perspective of a task from first-person to third-person can make it more difficult (Skehan, 1998a) is a general one that needs to be tested for both spoken and written tasks.

## Sequencing Tasks Based on Complexity

To organize tasks based on their complexity, L2 researchers have offered different guidelines and frameworks. This section reviews four major frameworks. The first one emphasizes the number of elements and relationships in a task (Brown, Anderson, Shillcock, & Yule, 1984). The second stresses selected cognitive dimensions such as abstractness and familiarity (Prabhu, 1987). The third highlights information-processing demands of tasks (Robinson, 2001, 2005). The last one focuses on code complexity, cognitive complexity, and communicative stress (Skehan, 1998b). To familiarize readers with conceptual frameworks commonly used in the study of task complexity, these are briefly mentioned below. This study is framed in the context of the last framework described in more details.

Brown et al. (1984) were among the earliest researchers who attempted to sequence L2 learning tasks from simple to complex. They classified tasks into static, dynamic, and abstract ones. They also organized L2 learning tasks based on the elements, relationships, and characters used in them. Table 1 below shows example tasks arranged in increasing order of complexity as suggested by Brown et al. (1984, p. 64). Based on this table, if a task involves working with a simple diagram, it will be static and simpler, but if it involves opinion-expression, it will be more complex, especially when it involves many relationships and elements.

**Table 1:** Tasks of ascending difficulty (Based on Brown, Anderson, Shillcock, & Yule, 1984, p. 64)

Degree of difficulty 					Degree of difficulty
Static task		Dynamic task		Abstract task	
Task A	Task B	Task G	Task H	Task L	
e.g.	e.g.	e.g.	e.g.	e.g.	
Diagram	Pegboard	Story	Info gap	Opinion	
Many elements, relationships, characters, etc. (more difficult)					
Few elements, relationships, etc. (less difficult)					

Early attempts for sequencing task complexity were also undertaken by Prabhu (1987) for a project known as the

“Bangalore Communicative Teaching Project”. In this project, Prabhu referred to five rough measures of task complexity as shown in Table 2. Based on this framework, use of abstract concepts in tasks, use of unfamiliar topics or settings, expectation of precise terms, multiple steps of reasoning, and use of different elements could make task more complex for the learners who used them.

**Table 2:** Prabhu’s criteria for task complexity (Based on Prabhu, 1987, p. 47)

Less difficult	<i>Degree of difficulty</i>	More difficult
Few elements	<i>Amount of information</i>	Many elements
Few steps	<i>Amount of reasoning</i>	Many steps
Precise terms not needed	<i>Amount of precision</i>	Precise terms needed
Familiar	<i>Amount of familiarity</i>	Unfamiliar
Objects and actions	<i>Amount of abstractness</i>	Concepts

Based on the criteria summarized in Table 2, Prabhu (1987) suggested, for example, that if the terms needed to express an idea were less precise, the task would be easier. Similarly, if the learner was familiar with the purposes and constraints in a task, it would be simpler. In Prabhu’s words, “working with concepts is more difficult than working with the names of objects or actions” (Prabhu, 1987, p. 48).

The third framework for the exploration of task complexity is the one discussed in Robinson (2001). This framework is different from the previous frameworks in that it directs attention away from the task itself and emphasizes cognitive processes involved in its production. In other words, while the previous frameworks are task-oriented in explanation, this one is more learner-oriented. In this approach, task complexity results from demands imposed on the L2 learner by the structure of the task (Robinson, 2001, p. 28). Such demands can be cognitive, interactive, or attitudinal. Learners’ prior knowledge of the task (cognitive), learners’ one-way or two-way involvement in the task (interactive), and learners’ motivation and aptitude (attitudinal) are examples of what L2 learners bring to the task that determines its complexity in this framework (Robinson, 2001).



The last framework for the description and empirical study of task complexity is the one proposed by Skehan (1998b). He believed that L2 learning tasks should be organized in terms of complexity in a way that could finally lead to developments in the interlanguage of L2 learners. Influenced by the communicative approach to L2 teaching, Skehan (1998a) enumerated code complexity, cognitive complexity and communicative stress as the main classes of factors determining task complexity. He also added learner factors to these variables as shown in Table 3. In this model, Skehan (1998a) proposed the factors summarized in Table 3 to argue that there could be a continuum of task complexity. He stated that, "...students with greater levels of underlying ability will then be able to successfully complete tasks which come higher on such a scale of difficulty" (Skehan, 1998a, p. 184).

The fact that human beings have limited capacity for attention to tasks is important in Skehan's (1998a) view of task complexity. As Larsen-Freeman (2009) elaborates, "because attentional capacity is limited, attending to one area may drain attention from other areas." She explains that at any one point in time, there is a competition for resources, which leads to performance which is either more complex or more accurate, but not both. The interaction between these determinants of complexity is not clarified in the framework and their possibly variable effects on task performance needs to be shown with empirical evidence.

**Table 3:** Skehan's model of task difficulty (based on Skehan, 1998a)

Code complexity	Linguistic complexity and variety Vocabulary load and variety
Cognitive complexity	Cognitive familiarity (Familiarity of topic, discourse genre, and task) Cognitive processing (Amount, clarity, and sufficiency of information)
Communicative stress	Time pressure, Scale, Number of participants, Length of text used Modality, Opportunity for control, etc.
Learner factors	Learner's intelligence Breadth of imagination Personal experience

## **L2 Learners' Perceptions of Task Complexity**

As mentioned earlier, task difficulty is about learners' perceptions of task complexity or about the demands made by certain tasks (Kuiken & Vedder, 2007). A number of researchers have attempted to explore learner perceptions of tasks in relation to actual task performance and the majority of these studies have pointed to some relationships between them. However, most previous studies have dealt with learners' general attitudes to the tasks and their difficulty. For example, Hill (1998) found that preparation time was strongly associated with L2 learners' perceptions of task difficulty in listening comprehension and argued that providing more time for pre-task planning could minimize stress and result in lower levels of perceived task difficulty. Factors such as inadequate response time, unfamiliar vocabulary, speed, lack of clarity in instructions, unclear prompts, too much input material to process, and lack of familiarity have also been shown to affect learners' perception of task complexity (Brown, 1993).

In a study of task complexity experienced by Korean EFL learners, Kim (2012) found that complex tasks promoted a greater number of language-related episodes and particularly led to advanced question development. Kormos and Trebits (2012) reported that narrative performance varied in speaking and writing tasks of different cognitive complexity. They reported a complex interaction between aptitude and task performance conditions. Pieschl, Stahl, Murray, and Bromme (2012) asked 119 university students to solve three tasks that greatly differed in complexity and captured their learning processes. They found out that students adapted their learning processes to task complexity and became more active for complex tasks than for simple tasks.

Researchers (e.g. Bradshaw, 1990; Brown, 1993 & Shohamy, 1982) have reported significant relationship between L2 learners' performance on L2 learning tasks on the one hand and their attitudes to specific dimensions of task complexity, on the other hand. However, these studies have mainly been posteriori correlation studies rather than experimental tests of task complexity variation. In a study on expert feedback, Iwashita and

Elder (1997) found that language proficiency was a more powerful factor than any other background variable in determining participants' reactions to the listening component of a Japanese proficiency test for teachers. In another brilliant study of task complexity manipulation, Iwashita, McNamara, and Elder (2001) used cognitive task complexity framework proposed by Skehan (1998a, 1998b). In their study, candidates performed a series of narrative tasks whose characteristics and performance conditions were manipulated. For these production tasks, Iwashita, McNamara, and Elder (2001) concluded that learners' perceptions of task difficulty may not generally correspond to the hypothesized difficulty of different task conditions. In teaching and learning EFL listening comprehension, whether tasks defined as simple or complex are also perceived by learners with parallel levels of difficulty has not been shown and the current work attempts to explore any possible correspondence between defined and perceived task complexity.

## **PURPOSE OF THE STUDY**

To offer empirical research findings on handling task complexity for EFL listening classes, this study aimed to show whether and how the manipulation of task complexity dimensions articulated in the related literature could affect undergraduate EFL learners' listening task performance. The selected task complexity framework does not clarify possible interaction between dimensions of complexity. Nor does it point to possible variations between the effects of factors that determine complexity. Therefore, this study was designed to examine the hypothesized complexity dimensions more closely. Moreover, EFL learners' feedback was sought to examine the relationship between learners' perceptions of task difficulty and task complexity levels defined through the complexity dimensions enumerated by Skehan (1998a). The purpose was to test possible effects of task complexity manipulation on two variables. The first aim was to see how listening comprehension task performance was affected and the second purpose was to investigate possible overlaps between EFL learners' perceptions of task difficulty and the

hypothesized task complexity dimensions. More specifically, the following two research questions guided the study:

1. Do variations in task complexity dimensions of adequacy, immediacy, perspective, and prior knowledge affect undergraduate EFL learners' listening performance scores under less and more complex conditions?
2. Are undergraduate EFL learners' perceptions of task difficulty related to hypothesized task complexity based on the dimensions of adequacy, immediacy, perspective, and prior knowledge?

## **METHOD**

### **Participants**

A sample of 54 first-year EFL learners enrolled in two parallel conversation classes in an English department of a major public university participated in the study. There were 15 male and 39 female learners and their age ranged from 18 to 24. These EFL learners were a heterogeneous group of undergraduate learners majoring in English Language and Literature. They had passed an introductory conversation course and, at the time of data collection, they were practicing listening and speaking strategies on their second conversation course. Both classes met for 90 minutes every Monday for the duration of the semester (16 weeks) and the same teacher taught the two classes. Based on an interdepartmental policy that limits the number of learners in conversation classes held in language labs to a maximum of 30, the participants had been randomly assigned to the two parallel classes. This purposive sample was selected because the experiment had to be done in a language lab and because the researchers intended to present listening tasks as meaningful parts of usual classroom activities with the assistance of the teacher rather than irrelevant data collection intrusions. A comparison of the mean differences for final exam scores they received on their first conversation course one month before the data collection revealed no significant differences in their mean achievement on listening and speaking skills.

## Instrumentation

The first instrument used for data collection in the study included listening comprehension tasks made up of seven mini-tasks taken from a TOEFL Test Preparation Kit, each followed by a few listening comprehension questions. A total of 28 multiple-choice comprehension questions followed these tasks and participants received one point for each correct response. Each mini-task was also manipulated for one of the four dimensions of task difficulty (adequacy, immediacy, perspective, and prior knowledge). This manipulation provided a second set of the same seven mini-tasks (followed by the same questions) made more or less complex through complexity dimension manipulations stipulated in the literature. This meant a re-recording of the tasks with new instructions read by a near-native colleague. The philosophy of changing each task complexity dimension was that this would make the task either less or more difficult for the learners as proposed by Skehan (1998a). In other words, this quasi-experimental research was carried out with a two-treatment post-test-only design in which the same sample group completed listening comprehension tasks under two conditions of complexity. Table 4 below summarizes the specifications of this research instrument. The prepared research instrument, therefore, required the participants to complete 14 listening mini-tasks under different conditions of complexity.

The next instrument used in this study provided data on learner-perceived task difficulty. Immediately after the completion of each mini-task under each complexity condition, the participants expressed their personal view of the difficulty of the task by answering the following question: Please express your perception of the difficulty level of the listening task you just completed. How did you find this task? Participants answered this question on a five-point Likert scale (Very difficult, Difficult, Average, Pretty easy, Easy). In the analysis of their responses, answers were coded from 1 to 5, with 5 representing what they reported as the easiest and 1 representing what they reported as the most difficult.

**Table 4:** Tasks, items, and administration conditions in the research instrument

Dimensions	Tasks	Items	Less complex condition	More complex condition
Immediacy	Task 1	1-4	Participants were given three minutes time to explore the listening items before listening to the task	Participants were given no time to explore the listening items before listening to the task
	Task 2	6-8	Participants completed the task items after listening to it from a first-person point of view	Participants completed the task items after listening to it from a third-person point of view
Perspective	Task 3	9-12	Participants completed the task items after listening to the complete task	Participants completed the task items after listening to task with some parts removed
	Task 4	13-16	Participants completed the task items after exposure to written prior knowledge	Participants completed the task items without prior knowledge
Adequacy	Task 5	17-20		
	Task 6	21-24		
Prior knowledge	Task 7	25-28		

For validity considerations, a panel of three experts (colleagues in the English Department including the one invited for the re-recording of the tasks for his near-native pronunciation) helped the researcher in the selection and preparation of the tasks. They reviewed the mini-tasks for content, length, appropriateness for the participants, comprehension items, and accuracy and their comments were considered in task selection and in the preparation of the final version of the instrument. Test-retest reliability (for counterbalanced re-administrations) was 0.84 for the 28 items on the original tasks and 0.71 for the same 28 items following manipulated tasks ( $p \leq 0.05$ ).

## Data Collection

Guided by previous research on tasks complexity mainly based on Skehan's (1996, 1998a, 1998b) work and following the seminal work of Iwashita, McNamara, and Elder (2001), four dimensions were used to operationalize task complexity. In the dimension of

*adequacy*, if the listening task was given in its entirety, it was seen as less difficult and when parts of the information were deleted and withheld from the learners, it was seen as more complex. In the dimension of *immediacy*, the task was less difficult if students had three minutes to look at the listening questions before listening to the task and it was more complex when they had no planning time. In the dimension of *perspective*, the task was less difficult if it was delivered from a first-person perspective, but it was more complex if it was in third-person perspective (see Iwashita, McNamara, & Elder, 2001 for more on the logic behind these decisions). In the dimension of *prior knowledge*, the task was less complex when learners read a text related to the listening task before completing it and it was more complex when they were given no prior knowledge. The researcher deliberately manipulated these four task complexity dimensions to decrease or to increase complexity and to provide the participants with both less complex and more complex versions of listening tasks.

Before starting data collection, a few arrangements had to be made. First, the classroom teacher was briefed on the purpose of the study and procedures for data collection and he kindly agreed to help with data collection for two sessions in each class (Class A with 28 of the participants and Class B with 26 of the participants who completed all the tasks). Second, the listening materials (voice files) were pre-tested for quality in the language lab and checked with the corresponding answer sheets containing multiple choices for each item and the learner perception of difficulty for each task. Since the seven less complex and more complex tasks were the same except for the manipulation of one of the four complexity dimensions, a four-week interval between the first and the second data collection session in each class was allowed to reduce test effect. The seven mini-tasks were also counterbalanced for less complex and more complex administration conditions to provide results that were more dependable. Table 5 shows the plan for the counterbalanced administration of listening tasks:

**Table 5:** Counterbalancing in data collection

Timing	Classes	Immediacy dimension (task 1)	Perspective dimension (tasks 2-3)	Adequacy dimension (tasks4-5)	Familiarity dimension (tasks 6-7)
First Session	Class A	- <sup>a</sup>	+ <sup>b</sup>	-	+
	Class B	+	-	+	-
Second Session	Class A	+	-	+	-
	Class B	-	+	-	+

<sup>a</sup> -The task was in its less complex version (With three minutes planning time, first-person presentation, complete information, and prior knowledge respectively).

<sup>b</sup> + The task was in its more complex version (With no planning time, third-person presentation, parts of the information removed, and no prior knowledge respectively).

In the first data collection session during regular class hours, the teacher instructed the learners how to complete the listening tasks in the order in which they appeared based on counterbalancing (Table 5). He also showed them how to express their perception of the difficulty of each task on a five-point Likert scale coded from one to five, with five meaning easy and one meaning very difficult. During data collection, the researcher played the role of a teacher assistant in the background and the classroom teacher managed task presentations. The same procedures were repeated for the second class held on the same morning. In the second data collection session four weeks later, participants completed the second set of seven mini-tasks that were different only in a dimension manipulated for complexity as shown in Table 5. All the coded answer sheets were collected and were arranged after learners in both classes had completed all the tasks.

## Data Analysis

To analyze the data collected, the participant's scores were computed for each of the seven mini-tasks based on the collected records. Each participant received two scores on each mini-task: one score for the completion of the task under the less complex



condition and another for its performance under the more complex condition. Each participant also received two codes (from 1 to 5) for his or her perception of the difficulty of the task under the less and the more complex conditions. The raw data for each task dimension under simple and complex task conditions were carefully recorded for later descriptive and inferential analyses. To answer the research questions, means, standard deviations, standard errors of means, kurtosis, and skewness of the scores were examined and follow-up t-tests were conducted to verify if there were statistically significant main effects for variations in paired comparisons of each task dimension. A value of  $p < .05$  was used as the criterion for statistical significance of the effects.

## **RESULTS**

### **Research Question 1: The Effect of Task Complexity Manipulations on Listening Task Performance**

Four dimensions of task complexity including adequacy, immediacy, perspective, and prior knowledge were changed one at a time to manipulate task complexity levels and to check the effects as reflected in the participants' mean listening comprehension scores. Since participants performed the listening comprehension tasks under both more complex and less complex conditions, each was assigned two scores. To test the statistical significance of differences between the means obtained under each condition one-sample t-tests were used for the task complexity dimensions. Results of these analyses, summarized in Table 6, indicated that for all of the dimensions, the hypothesized less complex task condition led to better learner performance since all means listening comprehension scores were higher under the less complex condition. In other words, the participants in the study performed their listening tasks better under the following four conditions:

- a. When they had three minutes time to explore the listening comprehension test items before actually embarking on the task of listening (Immediacy),
- b. When they completed the task items after listening to it narrated from a first-person point of view (Perspective),
- c. When they completed the task after listening to the complete task without any parts deleted (Adequacy), and
- d. When they completed the task after being exposed to written prior knowledge on the task.

One-sample t-tests for these dimension revealed that all the mean differences reported in Table 6 were significant. When the learners were given no planning time for the immediacy dimension, they performed significantly worse ( $t=2.6$ ,  $p<.05$ ). The learners' comprehension scores were also significantly lower when they listened to the same tasks in the third-person perspective ( $t=4.7$ ,  $p<.05$ ). Similarly, the participants scored significantly lower when they did not receive prior knowledge ( $t=5.4$ ,  $p<.05$ ) and when they listened to tasks parts of which had been curtailed ( $t=2.1$ ,  $p<.05$ ).

**Table 6:** Comparing performance under less and more complex conditions

<i>Task dimension</i>	<i>Condition</i>	<i>M</i>	<i>SD</i>	<i>Kurtosis</i>	<i>Skewness</i>	<i>t</i>	<i>Sig</i>
Adequacy	Less complex	4.04	1.26	-.57	.10	2.1	.042
	More complex	3.63	1.14	-.053	.22		
Immediacy	Less complex	3.19	.91	-.39	.31	-2.6	.013
	More complex	2.80	1.02	-.39	.31		
Perspective	Less complex	3.94	1.02	-.35	.45	4.7	.000
	More complex	3.04	1.03	-.81	.35		
Prior knowledge	Less complex	4.93	1.50	-.33	-.07	-5.4	.000
	More complex	3.94	1.22	.06	.43		

## Research Question 2: The Relationship between Hypothesized Task Complexity and Learner-perceived Task Difficulty

In this part of the analyses, the research question was whether theoretically more complex tasks created through the manipulation of complexity dimensions (adequacy, immediacy, perspective, and prior knowledge) were also perceived by EFL learners as more difficult. Immediately after performance, the participants reported the perceived difficulty of each task on a scale of one to five with one representing the very difficult and five representing easy. Table 7 presents the means of difficulty scores that the participants assigned to the tasks. One-sample *t*-tests were used to see if the participants' perceptions of difficulty varied as the tasks became more or less complex. Because of the nominal and ranked nature of the data, Spearman Rho correlations were also used to test the relationships between learner-perceived difficulty and hypothesized complexity of the tasks.

**Table 7:** Learners' perceptions of difficulty under less and more complex conditions

<i>Task dimension</i>	<i>Condition</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>Sig</i>	<i>Rho</i>	<i>Sig</i>
Adequacy	Less complex	2.30	0.76	0.30	.766	0.28	.633
	More complex	2.26	0.89				
Immediacy	Less complex	3.19	1.09	<b>2.45</b>	<b>.018*</b>	<b>-0.67*</b>	<b>.000</b>
	More complex	2.78	1.11				
Perspective	Less complex	2.35	0.96	1.83	.072	-0.38	.087
	More complex	2.06	0.86				
Prior knowledge	Less complex	2.89	0.97	0.36	.725	-0.23	.0423
	More complex	2.83	1.06				

The results of these analyses, summarized in Table 7, indicated that for all task dimensions, the mean perceived

difficulty scores tended to be closer to one for more complex conditions and closer to five for less complex conditions. This means that participants tended to perceive more complex tasks as more difficult and less complex tasks as easier. However, statistical tests of the significance of these differences revealed that only in the dimension of immediacy were the mean differences significant (means=3.19 & 2.78,  $t=2.45$ ,  $p<.05$ ). Similarly, the correlation between learner-assigned difficulty score and task complexity level was significant only for the immediacy dimension ( $r=-0.67$ ,  $p<.05$ ). This relatively strong negative correlation coefficient indicates that as complexity increased in the immediacy dimension, learners perceived the task as more difficult and assigned lower scores when they had no time to explore the listening comprehension test items before doing the task.

## DISCUSSION

The main purpose of the study reported in this article was to draw on Skehan's (1998a) model of L2 learning task complexity to test the effects of complexity manipulations on undergraduate EFL learners' listening comprehension. The study also aimed to check the congruence between learners' perceptions of task difficulty on the one hand and task complexity levels hypothesized in the model on the other. These goals were achieved through altering the complexity level of selected tasks along four dimensions of adequacy, immediacy, perspective, and prior knowledge and then through measuring the effects on listening comprehension and learner perception.

The first main finding of this work was that performance on listening comprehension tasks systematically varied with alteration in hypothesized complexity levels. In other words, the simplification of tasks by changing adequacy, immediacy, perspective, and prior knowledge conditions significantly increased comprehension levels. This finding confirms task complexity conditions proposed by Skehan (1996), Skehan (1998a), and Skehan and Foster (2001). It also verifies the facilitating effects of providing prior knowledge on listening and

reading comprehension reported by Urwin (1999) and on speech production reported by Good and Butterworth (1980). The positive effect reported for simplifying L2 listening tasks along dimensions of adequacy, perspective, and immediacy shows that it is the comprehended not the comprehensible input that matters for nonnative learners of English. This is in line with the observation by Ellis, Tanaka and Yamazaki (2006) that interactionally-modified input yields better comprehension rates and has a positive effect on L2 acquisition. Performing EFL listening tasks is, after all, a daunting task for undergraduate EFL learners that requires complex, time-requiring mental processing activities that finally lead to assigning meanings to aural stimuli. When EFL listening tasks are more complex, the force students to adapt their learning processes to task complexity as pointed out by Pieschl, Stahl, Murray, and Bromme (2012). Answers given to the first question of this study invite EFL listening teachers to provide beginning learners with enough opportunities to negotiate meanings while doing listening tasks through presenting prior knowledge, through providing adequate details, through giving time to learners to explore tasks, and through choosing appropriate presentational perspectives. As the materials in this article show, they can certainly modify listening task complexity levels as their students make progress during an EFL listening course.

The second main finding of the present exploration of listening task complexity was that only for the dimension of immediacy did the learners' perception of difficulty reflect the hypothesized complexity of the task. This is another way of saying that when parts of a listening task are removed, when the perspective of narration changes, or when some written background information is provided, EFL learners do not necessarily perceive the task as more or less difficult. However, time is a significant issue for them. When learners were given time to explore listening tasks before embarking on task performance, they perceived the task as easier and this was the prediction of Skehan's (1998a, 1998b) model. This finding is in line with similar results reported by Iwashita, McNamara and Elder (2001). Their test-takers' performance under simple and

complex task conditions was significant only for the immediacy dimension as well. This finding also shows that, as McNamara and Kintsch (1996) believe, an increase in task difficulty increases the required level of processing to produce a memory of the input, which, in turn, puts the linguistically disadvantaged EFL learner under time pressure. The possible implication of this finding for EFL listening teachers is that they had better allocate some pre-listening time so that learners can explore the written materials accompanying a listening task, to preview questions, to explore related graphic materials, to concentrate on the task, and to lower the processing time pressure that the task may impose on them. More complex task in speaking and writing are associated with greater levels of aptitude as Kormos and Trebits (2012) observed.

## CONCLUSIONS AND IMPLICATIONS

Based on the findings reported and discussed in this study, one can draw the conclusion that a cognitive model of task complexity can be a useful guideline for second language teachers in their attempts to control the comprehension levels of the tasks that they use for listening comprehension classes. The significance of EFL learners' perception of the immediacy dimension of task complexity also points to the importance of controlling task-delivery speed in task-based EFL listening instruction. Listening teachers can purposefully vary the amount of time-on-task in listening activities, bearing in mind that this can alter their learners' perception of the difficulty of the task and hence their stress and performance levels.

The findings of the study have both theoretical and practical implication. Theoretically, the results found in the study contribute to the better understanding of the concepts of task complexity and task difficulty in EFL contexts. Moreover, the findings can be helpful to practitioners not only for EFL listening materials development but also for manipulating and adopting already existing EFL listening tasks.

Undoubtedly, any research project like the present one generates more questions than it answers. In this attempt,

variations in task complexity dimensions were tried one at a time. Accepting that EFL listening task complexity cannot be reduced to any one factor or dimension, the author suggests the exploration of the effects of possible combination of complexity changes in tasks by field researchers in the context of task-based EFL teaching. Skehan's (1996, 1998a, 1998b) ideas on task complexity are not to be reduced to the listening domain alone. The ideas can be explored in the domain of other L2 skills such as reading, speaking, and writing. Teachers can also explore the effects of the variations in task dimensions described in this study to gear their task presentations to the needs of their students. For the variable of task difficulty, which is, by definition, a construct revolving around learner perceptions, investigation of the possible intervening effects of individual differences seems a fertile research area. Just as an example, EFL learners suffering from high anxiety levels or low self-esteem might perceive theoretically less complex L2 learning task as very difficult. These issues are limitations imposed by the design of the present work and remain to be tackled in further research.

## Bio-data

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