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The Effect of Task Complexity on Iranian EFL Learners’ Listening Comprehension across Aptitude

Somayye Attarzadea, Elham Farahani b, *

aUniversity of Yazd, Yazd, 89158-86873, Iran
bUniversity of Arak, Arak, 38196-67479, Iran

Abstract

Over the years, there has been a great deal of research conducted on the role of tasks in second language acquisition, but less is known about how tasks affect listening comprehension. The present study is an investigation of the impact of task complexity on Iranian EFL learners’ listening comprehension across aptitude. For this purpose, data was collected from two EFL classes including 70 Iranian EFL learners (F=45, M=25). Test-takers’ aptitude was assessed by Oxford language aptitude test. Two task dimensions, i.e., planning time and prior knowledge, each under two +/- complex & -/simple conditions (i.e., task manipulated for complexity and simple task) were used in test-takers’ listening performance. Descriptive statistics, ANOVA test were utilized to analyze the listening performance of the participants. The results of the study indicated that the subjects’ performance was better under simple conditions than complex ones for all task dimensions. Moreover, the results didn’t show any significant difference among performance of the different aptitude levels under both simple and complex conditions. In short, this study didn’t show any considerable effect of aptitude on task complexity.

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Keywords: Task complexity; Listening Comprehension; Aptitude

1. Introduction

The listening skill plays a key role in communication and language learning (Anderson & Lynch, 1988; Rubin, 1994) and is perhaps "the most fundamental language skill" (Oxford, 1993, p. 205). Although there is no agreed definition of this skill, its development has always been of great importance to language teachers.

* Corresponding author.
E-mail address: Attarzadeh.s@gmail.com

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Listening comprehension has been neglected in research and practice until recent years. It has received little attention compared to the other three skills (i.e., reading, writing, and speaking). That is why some researchers call it Cinderella skill in second language learning. (Nunan, 1997, p. 47). Thus, it is needed that instructional programs focus more on pragmatic skills to include listening as well as other skills. Since in recent years there has been a considerable growth of interest in task based language learning we decided to explore this issue in such a context.

A central issue in task-based language learning concerns the influence of task complexity on linguistic performance. Several studies have investigated the effect of task complexity on different aspects of linguistic performance at different levels of L2 proficiency (e.g., Gilabert 2005; Rahimpour 1997; Robinson 1995; Skehan & Foster 1999;; Yuan & Ellis 2003). Most of these studies have focused, however, on oral proficiency. There have only been few studies that have considered the question of how the complexity of a listening task might influence the performance of the learners.

Given the above points, the curriculum developers need to be made aware of the proper way of including listening skill and the right type of tasks to be utilized in the materials intended to improve the listening comprehension skill.

2. Literature Review

According to Nunan (2004), the concept of ‘task’ has become an integral part of syllabus design, teaching and learner assessment and has a considerable influence on educational policy-making in ESL and EFL settings.

As Revesz (2010) argues, in recent decade years, there has been an increasing interest in the construct of task as a tool for promoting L2 learning in the field of L2 acquisition. The empirical researches done in this field have been inspired by two cognitive-interactionist models for task-based language teaching (TBLT) and learning: Robinson's (2001a, 2011) Cognition and Skehan's (1998, 2009) Trade-Off Hypotheses. The primary concern of both of these frameworks is to explain how task characteristics affect L2 processes and outcomes, but the principal aim is to throw some light on task-based syllabus design, for example, how to sequence tasks to optimize second language learning. This is when task complexity comes into the picture.

2.1 Task complexity

As Sercu et al. (2006) argue, task-based teaching was developed in the hope that this strong focus on meaning without much focus on form could boost communicative language development, but now there is a general consensus that task-based instruction is most beneficial to language development when it focuses on both meaning and form (Long & Robinson, 1998; Spada, 1997).

What is somehow controversial when the focus shifts to form is that what characteristics of tasks can be used to determine which tasks should be offered to learners first and which should be presented later? That is the cognitive and linguistic demands of a task should be assessed, so that we could match them with the learners’ level of development (Sercu et al., 2006). Thus, being able to assess a task’s complexity is essential to understanding how the task might be performed and whether the learners have enough cognitive capacity to perform well. Such an assessment will lead to more appropriate task selection in the classroom.

An important question relates to the necessity of a theory of task complexity in task-based research, as advocated by Robinson (2007). Research findings have shown that there are multiple task effects on L2 learning and performance, but what is lacking to date, is a generally accepted framework of task characteristics to classify and sequence tasks.
As Campbell (1988) argues, task complexity can be approached from two perspectives. In the first approach it can be treated as an interaction between the task and the person attending to it, i.e., the perceived task complexity. According to this view, both the characteristics of task performer (e.g., education and experience) and task (e.g., analyzability) determine task complexity. The task performer’s knowledge and skills play a major role in determining task complexity. In the second approach, task complexity is considered as a function of objective task characteristics. Unlike the first perspective, task complexity is independent of task performer’s characteristics. But rather, it is determined by the number of alternative actions, multiple or conflicting goals, uncertainty of actions and goals, and so forth. (Campbell, 1988).

Some frameworks for task classification have been proposed by different researchers of SLA (Robinson, 1995, 2005; Skehan & Foster, 2001), which will be discussed in the following paragraphs.

One of the most important classifications, called Triadic Componential Framework (which was utilized in the present study) was proposed by Robinson (1995, 2001a, 2005) in which he distinguished the cognitive demands of the task, contributing to differences in tasks’ intrinsic complexity, from task conditions and perceived task difficulty. The factors which constitute this framework are elaborated in the following table.

Table 1. Triadic Componential Framework for L2 Task Design (adapted from Bejar et al., 2000, p.3, as cited in Sercu et al., 2006)

<table>
<thead>
<tr>
<th>Difficulty factors</th>
<th>Interactive factors</th>
<th>Cognitive factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task difficulty</td>
<td>Task conditions</td>
<td>Task complexity</td>
</tr>
<tr>
<td>a) affective variables</td>
<td>e.g., one way/two way</td>
<td>e.g., +/- few elements</td>
</tr>
<tr>
<td>e.g., motivation</td>
<td>convergent/divergent</td>
<td>+/- Here-and-Now</td>
</tr>
<tr>
<td>anxiety</td>
<td>Open/closed</td>
<td>+/- No reasoning demand</td>
</tr>
<tr>
<td>confidence</td>
<td>b) participant variables</td>
<td>b) Resource dispersing</td>
</tr>
<tr>
<td>b) ability variables</td>
<td>e.g., gender</td>
<td>e.g., +/- planning</td>
</tr>
<tr>
<td>e.g., aptitude</td>
<td>Familiarity</td>
<td>+/- Single task</td>
</tr>
<tr>
<td>proficiency</td>
<td>Power/solidarity</td>
<td>+/- Prior knowledge</td>
</tr>
<tr>
<td>intelligence</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Another useful theory of task complexity was proposed by Skehan (1998) in which he suggested a three-way distinction of difficulty that includes learner factors as well.

Table 2. Skehan’s (1998) Model of Task Difficulty

<table>
<thead>
<tr>
<th>Code complexity</th>
<th>Cognitive complexity</th>
<th>Communicative stress</th>
<th>Learner factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linguistic complexity</td>
<td>Cognitive familiarity</td>
<td>Time pressure</td>
<td>Learner’s intelligence</td>
</tr>
<tr>
<td>And variety</td>
<td>Familiarity of topic</td>
<td>Scale</td>
<td>Breadth of imagination</td>
</tr>
<tr>
<td>Vocabulary load and Variety</td>
<td>Familiarity of discourse</td>
<td>Number of participants</td>
<td>Personal experience</td>
</tr>
<tr>
<td>Familiarity of task</td>
<td>Familiarity of task</td>
<td>Length of text used</td>
<td></td>
</tr>
<tr>
<td>Cognitive processing</td>
<td>Information organization</td>
<td>Modality</td>
<td></td>
</tr>
<tr>
<td>Amount of computation</td>
<td>Sufficiency of information</td>
<td>Stake</td>
<td></td>
</tr>
<tr>
<td>Opportunity for control</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What should be born in mind is that task complexity should not be confused with task difficulty. Task complexity accounts for intralearners variability in L2 performance whereas task difficulty accounts for interlearner variability.
i.e., differences in the learners performing the same task.

In this study attempt is made to manipulate task complexity (by taking into account two of the task dimensions suggested by Robinson’s model of task complexity, based on Robinson (2001b; 2001c; 2003), namely planning time and prior knowledge) in order to study the effect of different levels of task complexity on the listening comprehension of learner’s with different aptitude levels.

2.2. Aptitude

Defining aptitude has always been somehow difficult and the usual method to define it was in terms of the tests which measure it (Ellis, 1985). The concept of foreign language aptitude is related to the questions like: Why some language learners learn better, faster, and easier while others struggle for a longer time? Do some learners have a special talent to learn a foreign language? However, it is totally different from having a ‘knack’ for learning a language since the former is related to classroom context and the latter is related to real life situation. Carroll is the most prominent character in the area of aptitude research. He and Sapon created the first aptitude battery called Modern Languages Aptitude Test (MLAT) in 1957. In this aptitude test, they included four major components, as it is shown in the table below.

<table>
<thead>
<tr>
<th>Component name</th>
<th>Nature and function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phonemic coding ability</strong></td>
<td>Capacity to code unfamiliar sound so that it can be retained over more than a few</td>
</tr>
<tr>
<td></td>
<td>seconds and subsequently retrieved or organized</td>
</tr>
<tr>
<td><strong>Grammatical sensitivity</strong></td>
<td>Capacity To identify the grammatical functions that words fulfill in sentences</td>
</tr>
<tr>
<td><strong>Inductive language learning ability</strong></td>
<td>Capacity to extract syntactic and morphological patterns from a given corpus of</td>
</tr>
<tr>
<td></td>
<td>language material and to extrapolate from such patterns to create new sentences</td>
</tr>
<tr>
<td><strong>Associate memory</strong></td>
<td>Capacity to form associative bonds in memory between L1 and L2 vocabulary items</td>
</tr>
</tbody>
</table>

The predominant view toward aptitude is that it is not a unitary concept, but rather a set of abilities which improve language learning in individuals (Kocic, 2010). Carroll and Sapon define aptitude as a complex of “basic abilities that are essential to facilitate foreign language learning” (Dornyei, 2005, p. 23), which includes discriminating sounds and associating them with written symbols and identifying grammatical regularities of a language (Ellis, 1985). More recent researches argue that both aptitude and intelligence consist of more aspects. Some researchers suggest that aptitude is only an ‘umbrella-term’ for a set of specific cognitive skills and capacities, such as working memory or phonological coding/decoding, which go beyond the skills usually measured to determine linguistic aptitude (Dornyei, 2005). What seems to be undisputable is that aptitude has to do with learners’ efficiency and the rate at which they learn a foreign language. It is generally agreed that best language learners possess a certain ‘knack’ for languages which enables them to learn languages more quickly than the others (Lightbown & Spada, 2006).

According to Brown (2007), in the last few years, there has been a revival of interest in language aptitude and many researchers (e.g., Dornyei and Skehan, 2003; Robinson, 2005; Skehan, 2002) have investigated different dimensions of aptitude tests. Some of them were interested in the development of new aptitude tests (e.g., Sternberg & Ehrman’s CANAL-F, 2000). One of the reasons for this shift lies in the development of cognitive psychology which is motivated by new theories of intelligence. These theories provide a more comprehensive definition of
various mental abilities constituting the overall language learning ability (Dornyei, 2005).

From among the studies which addressed issues related to aptitude and SLA two studies are reviewed in the following section.

Safar and Kormos (2008) investigated the relationship of aptitude and working memory capacity, the role of aptitude in predicting success in the communicative language teaching contexts and the stability of language aptitude in the process of learning a language. They found that the aptitude test they used could not predict the learners’ success on complex skills such as reading, listening, speaking and writing, and that the role of aptitude was “confined to influencing the acquisition of grammar and vocabulary” (p. 25). They also found that working memory capacity has a significant role in both language aptitude and language learning success. Moreover, their results showed that FLA is not stable and is affected by experience.

Wen and Skehan also (2011) suggested incorporating working memory which identified as “the cognitive capacity to simultaneously store and process information in real time” (Harrington & Sawyer, as cited in Wen & Skehan, p. 21) as a component in aptitude tests. They argued and proved that working memory is the best choice for the type of memory to be included in aptitude tests. They concluded that “different components of working memory (the phonological loop and the central executive in particular) have been found to be highly correlated with different aspects of L2 performance and developments (vocabulary, grammar acquisition) and specific L2 skills development (listening, reading, speaking, writing and interpreting)” (p. 35).

It seems that there is a void of research to investigate the prediction of aptitude in the realm of listening comprehension. Thus, the present study attempts to throw some light on this somewhat neglected issue.

2.3. Previous Studies

So far, no study has explored the effect of task complexity on listening comprehension of subjects’ with different aptitude levels. One study which has done a similar investigation is by Sadeghi (2012) in which he explored the impact of task complexity on Iranian EFL learners’ listening comprehension across anxiety and proficiency levels. In his study, Sadeghi took into account three task dimensions, namely planning time, perspective, and prior knowledge, each under two +/-complex & -/simple conditions (i.e., task manipulated for complexity and simple task). He found that test-takers’ listening performance was a little better under simple conditions than complex ones for all task dimensions. He also found that except for planning time ($p = .012$), between low and average proficiency levels under simple condition, no significant differences were found in the listening task performances among the three proficiency levels. The results of his study didn’t show any significant difference among performance of three different anxiety levels under both simple and complex conditions. In short, his study didn’t show any considerable effect of proficiency and anxiety on task complexity.

In line with this research tradition and to make up for the lack felt on the researches done on the effect of aptitude in systematic research in Iran, the present study was designed to focus on the effect of task complexity and aptitude on listening performance of EFL learners and to determine to what extent they might affect it.

3. Methodology

The present study aimed to compare the listening performance of Iranian EFL learners on tasks of various levels of complexity and to examine the effect of aptitude on their performance. Thus, the study used a quantitative framework.

3.1. Subjects

The subjects of the study were 70 (F = 45, M = 25) EFL learners of English (aged 23 -37) studying English in the
English department of Tehran Institute of Technology. The subjects were at upper-intermediate level of proficiency. The reason we took upper-intermediate learners as our subject was that EFL learners do not often perform well on listening tests and since we needed to assess them on two types of tasks i.e., simple and complex, we needed subjects who had a relatively good command of English and could do these types of tasks fairly well. Moreover, the material wouldn’t be appropriate for learners of low proficiency.

3.2. Measure Instruments

In this study, data was collected through two tests. The first test was Oxford language aptitude test (Specimen of written test at interview) and as the name suggests, it was used to assess the language aptitude of the subjects. The second instrument was a listening comprehension test extracted from Barron’s TOEFL IBT book. It was presented in two different circumstances to manipulate complexity. In the first part of the test, the input was given without providing any planning time and the topic was related to biology of which just about all subjects hardly had any information. The second part was comprised of a text for answering which the subjects were given planning time and the topic was quite familiar, i.e., a topic which is commonly talked about between the student in the campus. The rationale for varying the condition was that it would make the tasks easier or more complex and task complexity, which served the purpose of this study, could be manipulated.

3.3. Procedure

The test was administered in the language laboratory of the English department of Tehran Institute of Technology. Data was collected through one administration. Participants were to answer three types of questions. In the first place, they were given the language aptitude test whose score would determine their assignment to each of the aptitude groups, i.e., high or low. Then, the listening comprehension test which was comprised of two parts was administered. The first part was the simple task, i.e., the subjects were given planning time and the topic was familiar to them, while the second task was complex in the sense that it lacked the features of planning time and familiarity.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Simple/-</th>
<th>Complex/+</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planning time</strong></td>
<td>Not having time to look at the listening items before listening to the tasks</td>
<td>Having time to look at the listening items before listening to the tasks</td>
</tr>
<tr>
<td><strong>Prior knowledge</strong></td>
<td>Listening to the task and answering the task items without prior knowledge</td>
<td>Reading related written prior knowledge before listening and answering the task</td>
</tr>
</tbody>
</table>

4. Results

A mixed between-within ANOVA was conducted to explore the effect of task complexity on listening comprehension of learners with different aptitude levels. In the following sections each of the tests utilized in the study will be analyzed both descriptively and inferentially.
Table 5. Descriptive Statistics (Effect of Task Complexity)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>The score of the subject on the simple test</td>
<td>70</td>
<td>8.01</td>
<td>0.154</td>
<td>1.291</td>
</tr>
<tr>
<td>The score of subjects on the complex test</td>
<td>70</td>
<td>4.94</td>
<td>0.175</td>
<td>1.463</td>
</tr>
</tbody>
</table>

Valid N (list wise) 70

As Table 5 shows, the mean scores of the subjects on the two tests are not very close (8.01 and 4.94) to each other. The standard deviation of their scores was 1.29, and 1.46 which shows there was not much variation in the scores.

In order to assess the effect of task complexity on L2 listening comprehension of learners with different levels of aptitude, a mixed between-within ANOVA was conducted the results of which are shown in the following tables.

Table 6. Descriptive Statistics for the Effect of Task Complexity across Aptitude Levels

<table>
<thead>
<tr>
<th>Aptitude level</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>low</td>
<td>7.98</td>
<td>1.291</td>
<td>58</td>
</tr>
<tr>
<td>high</td>
<td>8.17</td>
<td>1.337</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>8.01</td>
<td>1.291</td>
<td>70</td>
</tr>
<tr>
<td>low</td>
<td>4.86</td>
<td>1.538</td>
<td>58</td>
</tr>
<tr>
<td>high</td>
<td>5.33</td>
<td>0.985</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>4.94</td>
<td>1.463</td>
<td>70</td>
</tr>
</tbody>
</table>

As it is shown in Table 6, the means of the learners’ performance on simple and complex test are not close to each other, but the performance of the learners of different aptitude levels was nearly the same.

Table 7. The Result of Mixed Between-Within ANOVA for the Effect of Task Complexity and Aptitude

<table>
<thead>
<tr>
<th>Measure:MEASURE_1</th>
<th>Source</th>
<th>Task</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Task</td>
<td>Linear</td>
<td>176.239</td>
<td>1</td>
<td>176.239</td>
<td>117.59</td>
<td>.000</td>
<td>.634</td>
</tr>
<tr>
<td></td>
<td>Task * Aptitude</td>
<td>Linear</td>
<td>.411</td>
<td>1</td>
<td>.411</td>
<td>.274</td>
<td>.602</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>Error(Task)</td>
<td>Linear</td>
<td>101.911</td>
<td>68</td>
<td>1.499</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As it is shown in Table 7, the results of the mixed between-within ANOVA showed that there was a significant effect for the type of tasks, Wilks’ Lambda = .36, F (1, 68) = 117.59, p < .0005, multivariate eta squared = .63 indicating a large effect size. As for the effect of the aptitude, no significant difference was found, Wilks’ Lambda = .99, F (1, 68) = 0.27, p = 0.6. The results are shown in the following bar graph.
As it is manifested in Figure 1, mean scores of the two aptitude groups on each of the easy and complex tasks are nearly the same. However, when the performance within each group is considered, their performances are quite different.

5. Discussion

A mixed between-within groups ANOVA was conducted to determine if different levels of task complexity affected the performance of the subjects who had different aptitude levels. The result of the ANOVA test showed that there was a significant difference for task complexity at the $p < 0.05$ level, but regarding aptitude no significant difference was found.

However, the difference between the performances of the high aptitude group and low aptitude group on both the simple and the complex tasks were not statistically significant.

Two null hypotheses were presented each of which will be discussed in the following part.
1) There is no significant difference between the learners’ performance under simple and complex conditions. Based on the ANOVA results, it was found that the difference between the subjects’ scores on simple tasks and complex tasks within each group (7.98 vs. 4.86 in low aptitude group, 8.17 vs. 5.33) was statistically significant. This finding is in line with Skehan and Forster’s Limited Attentional Capacity Model.
2) There is no significant difference between the listening performances of the learners with different levels of aptitude.

The difference between the performances of the high aptitude group and low aptitude group on both the simple and the complex tasks were not statistically significant.
6. Conclusion

The present study aimed to assess the effect of task complexity on the listening comprehension of EFL learners with different aptitude levels. The first null hypothesis, stating that task complexity does not affect learners’ listening comprehension, was rejected. For, it was found that the learners perform better on simple task than on complex tasks.

As for the second null hypothesis, it was found that aptitude did not have a significant effect on the listening comprehension of the subjects. The study has confirmed the generally beneficial effects of different performance conditions on student’s listening comprehension across task dimensions, here, prior knowledge and planning time.

The results of the study are in line with Skehan and Foster’s Limited Attentional Capacity Model (Skehan, 1998; Skehan & Foster, 1999, 2001). According to Skehan & Foster (2001), increasing task complexity reduces learners’ attention capacity; consequently, they will prioritize concern for one aspect of performance (accuracy, fluency, complexity) and this prioritization will hamper improvement in other areas, thus they’ll have a poorer performance.

7. Limitations

One limitation of the current study is, of course, that of sample size. The 75 test takers who participated in the study may not be representative of the whole cohort of foreign English language learners.

The second limitation of this study is that listening skill is assessed only through multiple choice questions which might not thoroughly measure their comprehension and that there is no role for open ended tasks.

Another limitation of this study is despite the efforts done by many scholars to devise tests to assess language aptitude, such a concept is hard to measure and so is problematic as a basis for a priori prospective decisions about learners’ performance.

8. Implications

There are three implications that can be of help to researchers who are to continue this line of research:

- The finding of this study that EFL learners did better on simple listening comprehension tasks can help curriculum designers to exclude complex tasks in order to avoid frustration among the learners.
- EFL teachers can use the results of this study to improve their teaching results and more importantly the learners’ listening comprehension by considering the complexity factor of the tasks they use in classroom.
- This study can also be helpful in reconsidering the construct of aptitude and its influence on doing language learning tasks.

References


