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The Role of Sequencing Tasks in Iranian High-Proficiency Undergraduate Students' Listening Comprehension

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ABSTRACT

The number of studies that have explored the various levels of task complexity and the function of sequencing tasks in learners' listening comprehension is limited. Hence, this study explored the strength of sequencing listening tasks in comprehending them as per Robinson's (2022) SSARC (stabilize, simplify, automatize, reconstruct, and complexify) model, along with simpler tasks' strength in comprehending the very complex task. Two groups of female students in a non-profit university in Tehran were chosen based on their Oxford Placement Test results. One group of high-proficiency participants (eighteen students) carried out simple non-intentional reasoning and few-step tasks, complex non-intentional reasoning and many-step tasks, and very complex intentional reasoning and many-step tasks in sequence. In contrast, another group (fifteen students) carried out those tasks in the reverse sequence (very complex, complex, simple sequence). The listening comprehension performance of participants in two groups was compared. The second comparison was between performance on the very complex task carried out after simpler tasks and performance on the very complex task that was not preceded by simpler tasks. As indicated by the Mann-Whitney U test results, a statistically significant difference neither existed between tasks carried out by the two groups nor between the very complex task preceded by simpler tasks and the very complex task that was not preceded by simpler tasks. The outcomes of this research can be beneficial for sequencing tasks with various levels of cognitive complexity for L2 learners.

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1. Introduction

The movement of employing a task-based syllabus in contrast to a form-focused one represents a departure from stressing linguistic form toward stressing meaning (Ellis, 2003, 2019; Robinson, 2005). A task aims at using language pragmatically by learners in contrast to displaying it. Tasks benefit from focusing on communication to raise learners' proficiency in L2. Focusing on tasks as the main tool of teaching language is a step toward more communicative teaching (Ellis, 2003). Within a task-based syllabus, a decision should be made on sequencing tasks while considering a number of criteria. Robinson's (2005) criterion for developing and sequencing tasks is progressively reducing the degree of difference between demands put on learners by real-world tasks and pedagogical ones. To meet the need for sequencing and grading instructional tasks, scholars (Robinson, 2003; Skehan, 1998, 2015) introduced the term task complexity. Controversy has arisen over criteria utilized at the cost of other ones to sequence tasks. What features are determinant while a task is selected to be dealt with before another? What is of importance to a task-based syllabus is task sequencing which focuses on the degree of congruence between the linguistic and cognitive demands of tasks and learners' proficiency levels. To be specific, the linguistic and cognitive demands of tasks should not be incongruent with learners' proficiency levels.

A large number of studies in the task-based language teaching (TBLT) field are allocated to exploring the function of either resource-directing dimensions or resource-dispersing dimensions of cognitive task complexity in learners' interlanguage development as per Robinson's Triadic Componential Framework (2001a). The number of studies that have explored various levels of task complexity and the function of sequencing tasks as per Robinson's SSARC model, which suggests focusing on both resource-directing and dispersing dimensions in learners' language comprehension, is limited. Hence this study explored the strength of sequencing tasks in comprehending language as per Robinson's (2010, 2022) SSARC model, along with the strength of carrying out simpler tasks before the very complex task in comprehending the very complex task. Exploring sequencing tasks as per the SSARC model required manipulating various levels of task complexity which occurred by focusing on those listening tasks that have never been explored simultaneously. Carrying out intentional reasoning and many-step tasks is extremely significant for foreign language learners given the fact that learners encounter these tasks in the real world. It is impossible to communicate with the interlocutors without being able to comprehend their thoughts and ideas. Developing the ability to draw logical conclusions and inferences is needed by high-proficiency learners to comprehend and produce scientific texts. The existence of a close relationship between comprehending a foreign language and producing it indicates the importance of focusing on improving the learners' listening comprehension skill. The questions below have been formed to fulfill the aforementioned objectives:

Research Question 1: How do high-proficiency students' performances on listening comprehension tasks manipulated along the dimensions of intentional reasoning(±IR) and few steps (±few steps) and have been presented in the sequence, simple, complex, and very complex differ from those presented in the reverse sequence, very complex, complex, and simple?

Research Question 2: Is there any difference between students' performance on the very complex task that was completed after simple and complex tasks, and their

performance on the very complex task that was completed before simple and complex tasks?

2. Review of Literature

Comparing the effect of completing tasks in a simple-complex sequence based on Robinson's (2010) SSARC model with that of completing tasks in any order that learners wanted on learning outcomes was the focus of Lambert and Robinson's (2014) study. The results of this study clarified the absence of any statistically significant difference between syntactic complexity, intentional reasoning, and grammatical accuracy of L2 learners' written summaries, even though sequencing tasks from simple to complex had a positive effect on the degree of learners' gain.

Three different task sequences were operationalized by Levkina and Gilabert (2014) to investigate the effect of each sequence in comparison with other sequences on learning L2 spatial expressions. The conclusion of their study included the effectiveness of sequencing tasks from complex to simple in short-term spatial expression learning compared to two other sequences and the effectiveness of the simple-to-complex sequence in long-term gains.

Baralt's investigation of task complexity and task sequencing included comparing the effects of different task sequences and cognitive complexity on producing language-related episodes by Spanish language learners in both traditional and online classes. The findings of this study were different regarding the effect of cognitive complexity on language production in online and traditional classes, but the effect of task sequencing on language production was the same in both classes. In the traditional class, learners' production was only under the influence of cognitive complexity without being influenced by task sequences, but in the online class, learners' language production was affected neither by task sequencing nor by cognitive complexity (Baralt, 2014, as cited in Baralt et al, 2014).

Malicka (2014) manipulated three different degrees of task complexity as per Robinson's TCF, and she manipulated sequencing tasks as per his SSARC model to find their function in accuracy, complexity, and fluency of learners' oral performance. She found that the degree of cognitive complexity of tasks is a significant factor in learners' oral production, and it is efficient in producing very complex language. The results of researching the efficacy of task sequence and being preceded by simpler tasks were not consistent; in some linguistic performances, learners benefited from simple-complex sequence and completing antecedent simpler tasks, while in some other cases, the randomized sequences and the absence of antecedent simpler tasks were beneficial for learners' performance.

The aim of Fakhraee Faruji and Ghaemi's (2017) study of task complexity was to make a comparison between the efficacy of different sequences of tasks to the accuracy of learners' written performance, and Robinson's cognition hypothesis provided the basis of their study. Researchers' conclusions clarified the efficacy of the simple-to-complex sequence on learners' writing accuracy.

Allaw and McDonough's (2019) study was an attempt to indicate the relationship between task sequencing and the lexical complexity, accuracy, and fluency of L2 learners' written performance. They used Robinson's SSARC model to manipulate task sequencing and attempted to compare the simple-to-complex sequence with the complex-to-simple sequence. Researchers found that learners' written lexical diversity,

grammatical accuracy of relative clauses, and fluency remained unchanged as the sequence of tasks changed; the simple-to-complex sequence was only advantageous to learners' longer-term gains.

Tabari and Miller (2021) conducted a study with the purpose of comparing the influence of receiving writing tasks in simple-complex order with that of receiving writing tasks individually. Contrary to completing each task individually, the benefit of completing tasks in simple-complex order to lexical and syntactic complexity, accuracy, and fluency of learners' writing, was indicated by the results of their study.

The relationship between sequencing repeated familiar tasks and learners' listening comprehension performance was studied by Amini et al. (2022). Sequencing tasks and increased cognitive complexity had a positive relationship with learners' performance on listening comprehension, as indicated by the findings of this study. Another finding of this study was the usefulness of repeating tasks for performing other cognitively complex related listening tasks.

Ziaei et al. (2025) conducted a study to indicate the effect of the sequencing task on writing performance. Researchers' conclusions clarified the efficacy of the simple-to-complex sequence on learners' writing performance.

As it is clear, the limited number of studies have explored the function of sequencing tasks as per Robinson's SSARC model, which suggests focusing on both resource-directing and dispersing dimensions in learners' language comprehension. Hence this study explored the strength of sequencing tasks in comprehending language as per Robinson's (2010, 2022) SSARC model, along with the strength of carrying out simpler tasks before the very complex task in comprehending the very complex task.

3. Theoretical Framework

3-1. Robinson's Cognition Hypothesis

The task-based language teaching method is a step toward helping learners to be successful in completing out-of-class tasks or real-world ones and to develop their L2 (Ellis, 2003; Long, 2015; Nunan, 2004; Skehan, 1996). Robinson (2001a, 2001b, 2005, 2007) manifested task-based instruction as a stimulant to cognitive processes which are requirements for second language learners' linguistic performance and development, formulating the cognition hypothesis.

The cognitive complexity of tasks is the solitary choice of Robinson's cognition hypothesis as a foundation to implement grading pedagogical tasks. To work on the assumptions of the cognition hypothesis and be able to develop and sequence tasks, Robinson established the taxonomic Triadic Componential Framework (TCF). This framework, which is an attempt to increase the degree of resemblance between real-world tasks that are multi-componential and pedagogical ones, embodies 3 components.

3-2. Robinson's Triadic Componential Framework

A set of criteria was identified for the systematic sequence of tasks, namely presenting easy or simple tasks prior to complex or difficult ones within a task-based syllabus (Skehan, 1998; Skehan & Foster, 2001; Robinson, 2001a). Robinson (2005) introduced a framework with three different major components- task complexity, task condition, and task difficulty and several subcomponents or variables that are manipulated to make a task complex or simple.

Task complexity- the first major category of this framework- is used to present those features that are among the inherent task features. According to this definition, the structure and design of tasks determine how much a task demands processing; therefore, tasks with more processing demands are very complex. Resource-directing and dispersing dimensions as two discrete components of cognitive task complexity embody several variables. The variables ± few elements, ± here-and-now, ± causal reasoning, ± spatial reasoning, ± intentional reasoning, and ± perspective taking, along with the variables ± planning time, ± single task, ± prior knowledge, ± few steps, ± task structure, and ± independency of steps, form the components of resource-directing and dispersing dimensions respectively. What led to the invention of the "task complexity" term was the idea of meeting the need for setting the criteria for the systematic sequence of tasks that present easy or simple tasks prior to complex or difficult ones within a task-based syllabus which is beneficial for learners' interlanguage system (Gilabert, 2007).

3-3. Intentional Reasoning as a Resource-Directing Variable

Intentional reasoning denotes being capable of providing a rationale for and making sense of motives, beliefs, and thoughts that drive what human beings do. It is similar to what occurs during mind reading and it is explained under the name of the theory of mind by psychology scholars. Theory of mind is formed to explain the way other people's act is expounded, taking into account their intentions, beliefs, desires, and feelings - contributors to their actions. The definition of intentional reasoning indicates that it is of a social and psychological nature that constitutes part of people's normal life (Ishikawa, 2008).

3-4. SSARC Model

Robinson's (2010, 2022) SSARC model came into existence with a new idea about implementing sequencing pedagogical tasks, advocating sequencing in three steps and proceeding with two sequencing principles. The first principle demonstrates that the solitary foundation for implementing task sequencing is the cognitive demands of tasks. The second principle demonstrates the sequence in which resource-directing and dispersing variables should be made complex; in this sequence, resource-dispersing variables are the first, and resource-directing variables are the second.

This model uses SS to indicate the "simple and stable state" of learners' existing interlanguage required to perform tasks that are simple along both resource-directing and dispersing dimensions (first step). Performing tasks that are simple along resource-directing dimensions but complex along resource-dispersing dimensions triggers increased "automatization" (A) of learners' existing interlanguage (second step). The last step is making tasks complex along both resource-directing and resource-dispersing dimensions which triggers increased "restructuring" (R) of learners' existing interlanguage, other features of the last step include triggering the occurrences of new form-function mappings, along with the greatest "complexity" (C) which makes learners destabilize their L2 system (Robinson, 2010). In the present study in line with the second principle of this model, a simple resource-directing task and a simple resource-dispersing task constituted the simple tasks, a simple resource-directing task and a complex resource-dispersing task constituted the complex tasks, and a complex resource-directing task, along with a complex resource-dispersing task, constituted the very complex tasks.

4. Methods

4-1. Research Design

This quantitative research utilized the relative comparison group experimental design that allowed comparing the function of sequencing tasks from simple to complex and to very complex with that of sequencing tasks from very complex to complex and to simple in learners' listening comprehension. Another comparison was made between the quality of learners' performance on the very complex task which was preceded by simple and complex tasks and that of learners' performance on the very complex task which was not preceded by simpler tasks. Hence, sequencing tasks and carrying out simpler tasks prior to the very complex task constituted independent variables of this study and the dependent variable was listening comprehension. Utilizing the Mann-Whitney U test owing to the non-normal distribution of some data allowed accomplishing the objective of making the aforementioned comparisons.

4-2. Participants

One-hundred twenty undergraduate university students of four separate classes in a non-profit university in Tehran were asked to take the Oxford Placement Test to select high-proficiency participants. They were female first-year, second-year, third-year, and fourth-year university students in the 19-25 age range (the mean age was 21 years) who attended the general English course as one of their main credits when this study was conducted. It was their fall semester cla**ss** with 16 sessions of 135-minute duration each and the days of attendance to this course were Saturday, Monday, and Thursday. Based on the quality of their performance on the Oxford Placement Test, 33 high-proficiency students were chosen. It was clarified that their proficiency test score and their final course score are unrelated.

This study required two groups of participants in order to compare performance on listening comprehension tasks performed in sequence simple, complex, and very complex with performance on listening comprehension tasks performed in sequence very complex, complex, and simple, thus participants were randomly put into two groups- the first group (18 participants) performed tasks in sequence simple, complex, and very complex and the second group(15 participants) performed tasks in sequence very complex, complex, and simple.

4-3. Data Collection Instruments

4-3-1. Proficiency Test

To measure participants' language proficiency, they were asked to take one of the most used standardized proficiency tests (Ahmadian, 2011, 2012; Murphy & Roca de Larios, 2010), namely, the Oxford Placement Test. This placement test functions as an instrument that is able to measure test takers' grammar knowledge and listening ability. It achieves this aim by incorporating two different sections of grammar and listening. The number of items in both the grammar and listening sections is equal; both with one hundred items, hence it is a two-hundred-item test. Multiple-choice items and items with two choices belong to the grammar and listening section respectively. What test takers did regarding listening items included ticking the heard words. 120 university students from four classes took the test, but just 33 students who received a score higher

than 122 were selected to form the final participants of this study based on Allan's (2004) scoring criteria.

4-3-2. Tasks Which Have Been Manipulated to Explore the Function of Dissimilar Sequences

The source of all six tasks was the "Improve Your Listening and Speaking Skills" book. The simple tasks were manipulated on ±intentional reasoning and ±few step dimensions (a simple resource-directing variable and a simple resource-dispersing variable); in fact, it included the - intentional reasoning and +few step tasks. Robinson's (2008) description of ± intentional reasoning dimension prompted selecting an intentional reasoning task. To be specific, intentional reasoning tasks can be performed by providing or comprehending facts and details, not through providing a rationale for motives, beliefs, and thoughts that drive what human beings do. Conversely, what occurs during performing + intentional reasoning tasks is similar to what occurs during mind reading. Intentional reasoning is possible by using cognitive state terms such as "believe", "sure", "think", and "wonder". In accordance with this interpretation, the present study deployed a task that just gives a number of facts and details and responding to its questions is not accompanied by making sense of others' thoughts and beliefs in order to operationalize intentional reasoning. Another dimension that was focused on was ±few steps. In contrast to its complex version which represents a task that requires following many steps (more than two steps), its simple version represents a task that requires following a few steps (one step or two steps) to be performed. In keeping with such an interpretation, performing the listening task deployed for operationalizing +few steps dimension was possible by following just two steps. The listening task was followed by two steps, step one was represented through incorporating a general question on the gist of the listening task. Step two was represented through asking participants to respond to questions about specific information of the listening task. In fact, step 1 had to do with skimming and step 2 had to do with scanning.

The complex tasks of the present study included intentional reasoning and many steps dimensions. They were simple on resource-directing dimensions but complex on resource-dispersing dimensions as proposed by the SSARC model. Robinson's interpretation of many-step tasks was dealt with above; operationalizing many steps dimension in the present study was founded on his interpretation. A listening task was selected whose completion depended on the following 4 steps. The first step was responding to specific information questions on the listening task. The second step was responding to the inference questions. The third step was responding to further thought questions, and the fourth step was responding to listening task-based logical conclusion questions.

The very complex tasks of this study included + intentional reasoning and many step dimensions that signified tasks that have been made complex on both resource-directing and dispersing dimensions. A listening task deploying cognitive state terms such as "believe", "think", and "sure" was used in order to operationalize the + intentional reasoning dimension. To be able to complete this task, task performers needed to make sense of others' beliefs, thoughts, and uncertainties. The content, language, and length of these tasks were checked by three TEFL experts by completing a checklist that was developed for checking the appropriacy of tasks for the study participants to investigate their validity. The reliability of instruments was identified by

employing Cronbach's alpha test. The values of the reliability of non-intentional reasoning, few-step, intentional reasoning, and many-step tasks were .81, .75, .70, and .70, respectively. Instruments employed to accomplish the objective of the current study are depicted in the following table of specifications (Table 1).

Table 1
Tasks, Items, Dimensions, and Different Degrees of Complexity

Dimensions	Different degrees of task complexity	Tasks	Items
-Intentional reasoning/ +Few steps	Simple tasks After listening to the non-intentional reasoning task, participants answered its following questions/ after listening to the few-step task, participants answered its following questions.	Task 1	13
-Intentional reasoning/ +Many steps	Complex tasks After listening to the non-intentional reasoning task, participants answered its following questions/ after listening to the many-step task, participants answered its following questions.	Task 2	16
+Intentional reasoning/ +Many steps	Very complex tasks After listening to the intentional reasoning task, participants answered its following question/ after listening to the many-step task, participants answered its following questions.	Task 3	16

4-4. Data Collection Procedure

Previous to collecting data, participants were asked to take the Oxford Placement Test to measure their proficiency level. Participants who received a score higher than 122 were chosen to compare high-proficiency university students' performance on listening comprehension tasks performed in two sequences.

The data of the present study were collected during the fall semester in the course of four university classes during regular time. When a participant was not present at regular class time to take part in data collection, another time was allocated to collect data from her. Although the whole class was asked to perform listening tasks, the results of tasks of those university students who were not at a high proficiency level were not included in the final analysis. Three sessions were spent collecting the required data.

Both groups performed an equal number of tasks – two each session, so that at the end of the third session, each performed 6 listening tasks, and they performed 12 listening tasks generally.

The primary tasks performed by ascending-order group (the first group) included the simple tasks, the secondary tasks were complex ones, and the tertiary tasks were very complex ones while descending order group (the second group) performed tasks in a reverse sequence, their primary tasks included very complex ones, their secondary tasks included complex ones, and their tertiary tasks included simple ones.

4-5. Data Analysis

Prior to data analysis, all assembled data were saved meticulously in the researcher's Gmail. Successful analysis of assembled data depended on grading twelve task-based listening comprehension performances of participants and identifying the scores that they received. 1 was assigned to correct answers to multiple-choice and short-answer questions and 0 to incorrect ones. The holistic grading method was employed for grading open-ended questions. Each participant received six grades (two grades for simple tasks, two for complex, and two for very complex tasks). Finally, three grades were identified for each participant's performance in simple, complex, and very complex listening tasks, the mean of two grades in simple tasks was assigned to a participant's performance on the simple task in the first group and the same was done for a participant in the second group and the means of the complex and very complex tasks were identified the same way. Carrying out descriptive analysis, identifying the means and standard deviations of participants' performances in both groups, was required to be able to carry out inferential analysis – the Mann-Whitney U-test – in order to succeed in responding to research questions that this study focused on. Descriptive and inferential analyses were carried out by utilizing SPSS software, version 27.

5. Results

Owing to the non-normal distribution of some data, reported by Tables 2&3, the Mann-Whitney U-test was run to compare the listening comprehension mean of the first group with that of the second group and to determine if the difference between these two means is statistically significant. Table 4 illustrates descriptive statistics for the first question.

Table 2

Tests of Normality for the First Group

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
simple tasks	.128	18	.200*	.966	18	.717
complex tasks	.210	18	.035	.941	18	.298
more complex tasks	.128	18	.200*	.952	18	.453

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 3

Tests of Normality for the Second Group

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
more complex tasks	.261	15	.007	.878	15	.044
complex tasks	.268	15	.005	.882	15	.052
simple tasks	.169	15	.200*	.939	15	.372

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 4

Descriptive Statistics for Two Sequences

presenting sequence		simple tasks	complex tasks	very complex tasks
from simple to complex and very complex	Mean	4.3333	3.2194	2.8850
	N	18	18	18
	Std. Deviation	1.39326	.87761	.69584
from very complex to complex and simple	Mean	4.6333	2.9080	2.1740
	N	15	15	15
	Std. Deviation	1.06010	1.19835	1.16754
Total	Mean	4.4697	3.0779	2.5618
	N	33	33	33
	Std. Deviation	1.24335	1.03065	.99139

According to this table, the means of participants' listening comprehension performance on all tasks in both sequences are different; the smallest mean in both groups belongs to the very complex task (M =2.88 in simple-complex sequence and M = 2.17 in the reverse sequence), and the largest mean in both groups belongs to the simple task (M = 4.33 in the simple-complex sequence and M = 4.63 in the reverse sequence). All tasks in both groups had a reverse relationship with an increased degree of cognitive complexity and increased cognitive complexity resulted in the worse performance (for the simple, complex and very complex tasks in simple-complex sequence M = 4.33, 3.21, and 2.88, respectively, and for the simple, complex and very complex tasks in the reverse sequence M = 4.63, 2.90 and 2.17, respectively). Therefore, the result of comparing the listening comprehension means of participants in both groups illustrated the quality of their performance varies with changing the sequence of completing tasks. Participants' listening comprehension performance on all tasks except the simple task completed in a simple-complex sequence was slightly better compared to the listening comprehension performance of participants who completed those tasks in the reverse sequence. Although Mann-Whitney U-test results, reported by Table 5, confirmed that sequencing tasks is not a statistically significant factor in listening comprehension performance on the simple task (Z= -. 67, p >.05), complex task (Z= - .49, p > .05), and very complex task (Z= *-1.66, p > .05).*

Table 5
Mann-Whitney U-Test for Two Sequences

	simple task	complex task	very complex task very complex task
Mann-Whitney U	116.500	121.500	89.500
Wilcoxon W	287.500	241.500	209.500
Z	-.674	-.492	-1.660
Asymp. Sig. (2-tailed)	.500	.622	.097
Exact Sig. [2*(1-tailed Sig.)]	.509[b]	.630[b]	.100[b]

a. Grouping Variable: presenting sequence

b. Not corrected for ties

What is presented by Tables 6 & 7, descriptive statistics of both the very complex task preceded by simple and complex tasks and the very complex task which was not preceded by them illustrates that the results of performance on the very complex task are under the influence of performing simple and complex tasks anterior to the very complex task to a small extent since the mean of listening comprehension performance on the very complex task preceded by simpler tasks is slightly higher than that of listening comprehension performance on the very complex task which was not preceded by simpler ones (*M* for the first group's very complex task = 2.88, *M* for the second group's very complex task = 2.17).

Table 6
Mean and Standard Deviation for A Very Complex Task Performed after Simpler Tasks

	N	Minimum	Maximum	Mean	Std. Deviation
Very complex task	18	1.66	4.00	2.88	.16401
Valid N(listwise)	15				

Table 7
Mean and Standard Deviation for A Very Complex Task Performed before Simple and Complex Tasks

	N	Minimum	Maximum	Mean	Std. Deviation
Very complex task	15	.33	3.66	2.1740	1.16754
Valid N (listwise)					

The results of the Mann-Whitney U-test employed to explore the nature of the influence of performing simpler tasks before the very complex task illustrated that the function of performing simple and complex tasks in results of performance on the very complex task performed after simpler tasks is not statistically significant (Z= -1.66, *P*

>.05) (Table 8). Perhaps, the function of cognitive complexity is more important than that of performing simple and complex tasks before more complex ones.

6. Discussion

Robinson's (2010) SSARC model provided the basis of the current study and thanks to this model the first leading objective of this study was accomplished. Examining the efficacy of completing simpler tasks before the very complex task to performance on the very complex task formed the second objective of this study. Contrary to Robinson's cognition hypothesis that differentiates the efficacy of complexifying tasks along resource-directing and resource-dispersing dimensions to learners' linguistic performance, his SSARC model does not deal with the results of complexifying tasks. The function of completing tasks complexified along resource-directing and dispersing dimensions simultaneously in learners' linguistic performance has not been clarified either.

Completing listening tasks in ascending order of cognitive complexity increases the extent of comprehension of listening tasks in contrast with completing listening tasks in descending order of cognitive complexity. However, the profitability of the ascending order of task complexity fails to be statistically significant. Incomplete Concordant results with this result pertain to Lambert and Robinson's (2014), Allaw and McDonough's (2019), Baralt's (2014), and Malicka's (2014) study since all these studies approved the relative inefficiency of ordering tasks in L2 learners' performance. While Tabari & Miller's (2021), Levkina and Gilabert's (2014), Amini et al,'s (2022), Fakhraee Faruji and Ghaemi's (2017), and Ziaei et al.'s (2025) study results, which approved the efficacy of sequencing to learners' linguistic performance, are at variance with this result. The reasons behind this variance can be the intervention of factors other than sequencing in learners' linguistic performance: task difficulty variables such as learners' motivation, language aptitude, confidence, and emotional states such as anxiety, the way studies measured learners' linguistic performance, the nature of the

Table 8

Mann-Whitney U-Test for Two Very Complex Tasks Carried out in Two Conditions

	very complex task
Mann-Whitney U	89.500
Wilcoxon W	209.500
Z	-1.660
Asymp. Sig. (2-tailed)	.097
Exact Sig. [2*(1-tailed Sig.)]	.100[b]

b. Grouping Variable:
being preceded by simpler tasks
b. Not corrected for ties.

interaction between resource-directing and dispersing variables of this study and the difference between the cognitive load of tasks.

The first result of this study that is the sameness of the influence of two sequencing on listening comprehension can be owing to intervening elements such as the

ineffectiveness of simpler tasks in improving performance on the very complex task in the ascending order or the ability of the very complex task in increasing the degree of paying attention to following tasks that hinders the appearance of significantly worse performance in the descending order. Listeners' attentional capacity and information processing ability can also contribute to this finding; the fact that listeners in the descending order did not perform significantly worse than the ascending group may be owing to having attentional capacity and information processing ability higher than listeners in the ascending group.

The results of performance on the very complex task in two different conditions were analyzed to explore the function of each condition. Although statistically insignificant, the degree of participants' listening comprehension in the first condition, which provided the advantage of primarily completing simpler tasks, was higher in comparison to that of participants' listening comprehension in the second condition. Such a conclusion is dissimilar to Tabari and Miller's (2021) and Malicka's (2014) conclusions. Against this result, Tabari and Miller (2021) came to the conclusion that it is the ascending order that furthers linguistic performance, not individualized task performance, and Malicka (2014) found that for some aspects of oral production, sequencing is beneficial, while for some other production aspects, individualized task performance. The variance between these studies, which indicated simpler tasks succeeded in being a significant factor in linguistic performance, and the present study may be owing to different interactions between resource-directing and dispersing variables. To put it simply, perhaps the interaction between ±few elements and ±planning time or ±few elements and ±reasoning demands is at variance with the interaction between variables explored in the present study, ±intentional reasoning and ±few steps, and consequently, these various interactions are the reasons for the appearance of different results. Another reason for this variety might be the difference between the effect of cognitive complexity on participants' language comprehension ability, this study's dependent variable, and the effect of cognitive complexity on participants' production ability, those studies' dependent variable.

The limited effectiveness of the simple-complex condition for completing the very complex task demonstrates learners' deficiency in comprehending intentional reasoning, and many-step tasks simultaneously cannot be compensated for by performing simpler tasks before them. Sequencing lacks the strength to have a positive effect on a very complex task. It seems that raising cognitive complexity along resource-dispersing and directing dimensions concurrently nullifies the significant effect of completing simpler tasks before the very complex task. The phenomenon that participants in the second condition did not perform significantly worse than participants in the first condition might be owing to the importance of listeners' proficiency levels. High-proficiency learners' performance was not significantly different on both very complex tasks, the very complex task that was completed after simpler tasks and the very complex task that was completed without being preceded by simpler ones. To put it simply, the sameness of participants' proficiency levels brought about this result and the proficiency levels are more important factors in comparison with completing simpler tasks before the very complex task.

7. Conclusion

This study aimed to explore the function of presenting order of cognitively complex tasks and the facilitative function of completing simpler tasks prior to the very complex

task in Iranian undergraduate high-proficiency students' listening comprehension. The outcomes of such exploration were the lack of the ability of task sequencing and complete simpler tasks before the very complex task to fulfill a significant facilitative function in raising students' comprehension degree. Hence, students' ability to comprehend very complex intentional reasoning and many-step tasks cannot be raised just by completing simple non-intentional reasoning and few-step tasks and complex non-intentional reasoning and many-step tasks prior to them. The degree of cognitive complexity of tasks, students' ability to carry out many-step tasks, and their inferencing ability are more important factors in performing very complex tasks in comparison with sequencing tasks from simpler to very complex. Perhaps students need to do other relevant and useful activities, such as watching animations which include intentional reasoning, drawing inferences, and so on, at the pre-task stage, or doing relevant activities after simpler tasks as post-task activities in order to become more prepared for completing very complex tasks.

8. Pedagogical Implications

This study has some implications. To enable second language learners to complete tasks in the real world, second language teachers and task designers can design multi-componential pedagogical tasks, many-step and intentional reasoning tasks concurrently. The results of the first research question are beneficial for the sequence in which teachers should present tasks to learners. The absence of a significant variance between the effect of two sequences on linguistic comprehension leads to the idea that high-proficiency participants' comprehension ability cannot be improved significantly by changing the sequence of completing tasks, thus cognitively complex tasks can be presented in simple to very complex sequence or in the reverse sequence. Perhaps it is required to use techniques other than changing the sequence of tasks to improve learners' comprehension performance on complex tasks. Increasing learners' attentional capacity, inferencing, information processing, and logical concluding ability can be among the useful techniques for carrying out cognitively complex tasks.

Employing similar tasks that involve many steps or intentional reasoning before carrying out complex or very complex tasks or task repetition, may be useful for succeeding in better performance on very complex tasks. Manipulating various levels of task complexity by increasing the complexity of tasks gradually along just resource-directing dimensions, not along both resource-directing and dispersing dimensions simultaneously, may be another useful way of improving learners' listening comprehension performance on very complex tasks. Employing simpler tasks prior to the very complex task is not a good tool to mediate the degree of learners' listening comprehension on the very complex task, thus other tools such as changing the degree of variance between simpler and the very complex task should be used to raise the ability of simpler tasks in assisting learners to improve their performance on the very complex task.

9. Assessment-Related Implication

Second language tests can be administered to learners in a simple-to-complex sequence or in the reverse sequence as the reverse sequence is not more challenging to learners compared to the simple-to-complex sequence, and it is not able to have a negative effect on test results.

10. Limitations

The limitations of this study: This study explored the function of two sequences in high-proficiency participants' listening comprehension performance. Hence, its results do not apply to low proficiency learners. It did not explore the interaction effects of task sequencing and proficiency by comparing the function of two sequencing methods in high and low-proficiency participants' aural comprehension. Another limitation of this study is related to the fact that this study just explored the function of completing simpler tasks prior to the very complex task, and it did not explore the function of completing the simple task before the complex one.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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