THE EFFECTS OF TASK COMPLEXITY ALONG RESOURCE-DIRECTING AND RESOURCE-DISPERSING FACTORS ON EFL LEARNERS' WRITTEN PERFORMANCE

Zahra Talebi

PhD candidate in TEFL, Faculty of Humanities, University of Payame Noor, Iran

Zahra.talebi04@gmail.com

Abstract

The present study investigated the effects of task complexity along resource-directing and resource dispersing factors namely pre-task planning time and number of elements on EFL learners' written task production in terms of accuracy. To this end, 30 participants performed decision-making task. Using T-test as the statistical means of analysis, the results of the study revealed the significant differences of cognitive load of task complexity on EFL learners' performance in terms of accuracy. This study carries some implications for foreign language acquisition (FLA) researchers, language teachers, and syllabus designers. Findings may also add to the present literature in FLA theory, language testing, syllabus design, and material development. Therefore, providing insights on designing and implementation of tasks in EFL classroom settings.

Keywords: task complexity, resource-directing, resource-dispersing, written performance

1. INTRODUCTION

Over the past decade, task-based language teaching and learning and their relationship to L2 acquisition has become a burgeoning area of research within task-based language teaching, learning, and assessment in SLA (e.g., Ellis, 2003; Long, 2000; Skehan, 1998a, Byate, &Norris, 2009; Lee, 2000; Nunan, 2004).Research on SLA concentrated on tasks and investigating task difficulty, task complexity, task design, performance condition, and particularly regarding the effects tasks have on language learning and language performance in SLA research and language pedagogy. (see Bygate, 1999; Ellis, 2003, 2005; Robinson, 2003, 2005; Schmidt, 1993; Skehan & Foster, 1996, 1999, 2001; Tavakoli & Foster, 2008; Rahimpour, 1999, 2008, 2010; Salimi & Dadashpour, 2011).

Task performance depends on various factors, such as the cognitive complexity of the task, the condition

under which the task has to be performed, and learner factors, such as attitude, motivation and anxiety (Ellis, 2003; Skehan, 1998; Robinson, 1995, 2007).two of the best known models which try to explain the relationship between task complexity, task conditions, and learner factors on the one hand and linguistic performance on the other hand are Robinson's Cognition Hypothesis (2001a, 2001b, 2003, 2005, 2007) and Skehan's Limited Attentional Capacity Model (Skehan & Foster, 1999, 2001) In Robinson's (2001b) 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). Robinson (2001b, 2005, 2007; see also Robinson & Gilabert, 2007) identified the features of tasks contributing to task complexity in his Triadic Componential Framework. Task complexity in this Triadic Componential Framework encompasses two key dimensions, resource-directing and resource-dispersing, which are thought to impact task performance and learning differently. The resource-directing dimensions make conceptual demands whilst the resource-dispersing dimensions make procedural demands on learners. In his task complexity framework (Robinson, 2003, 2005), the resource-directing dimensions include whether the task requires learners to make reference to events in the past or events in the present, whether the task requires learners to make reference to few or many elements, and whether the task requires learners to use spatial reasoning. The resource-dispersing dimensions include whether or not planning time is given to learners, whether or not prior knowledge is provided in the task, and whether a single task or multiple tasks are carried out concurrently by learners.

Since the 1990s, many studies have been carried out on the effect of different task characteristics on I2 learners' performance (Skehan & Foster, 1999; Ellis, 2005, 2008; Philp et al, 2006; Rahimpour, 2008; Wan, 2008; Mehrang & Rahimpour, 2010; Salimi et al, 2012). Several studies have investigated the effects 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 written task might influence the performance of the learners (e.g., Kuiken &Vedder, 2005; Kuiken &Vedder, 2007a, b, c). Given these points, the curriculum developers need to be made aware of the proper way of including written task performance and the right types of tasks to be utilized in the material intended to improve the written performance. Also, the studies that have manipulated cognitive task design and measured its impact on L2 performance in terms of CAF have yielded mixed results that neither fully support nor reject the cognition Hypothesis. Moreover, fewer studies have been devoted to the investigation of the joint effects of task complexity along resource-directing and resourcedispersing. Therefore, while there has been increasingly abundant research along these lines, there are significant gaps to be filled. Task complexity has just begun to be teased apart and analyzed. To fill this gap, this study engages in the debate between the Trade-Off Hypothesis and the cognition Hypothesis. It set out to investigate the joint effects of task complexity and resource-directing vs. resource-dispersing on I2 learners' written performance measured in terms of accuracy.

1.1. Statement of the problem and purpose of the study

The present study investigates the effect of task complexity along two different dimensions of task complexity (resource directing and resource dispersing), and more specifically, their effects on Iranian EFL learners' written performance which has been measured in terms of accuracy. In that respect, unlike previous studies which investigate a narrow scale of the design focusing on one aspect of task complexity, the present study aims at investigating the effect of task complexity along resource directing and resource dispersing on L2 learners' written task performance to see how the linguistic domains are affected by manipulating task complexity along recourse directing and resource dispersing. For present purposes are the effects of the number of elements to be considered by the learner in performing the task and the presence vs. absence of pre-task planning time. Previous studies have shown that resource-directing and dispersing dimensions of cognitive complexity do not affect L2 production equally (Gilabert, 2005), but few studies so far have empirically investigated the joint effect of resource-directing and dispersing variables on L2 production.

1.2. Significance of the study

This study engages in the debate between the Trade-Off Hypothesis and the cognition Hypothesis. In other words this Study explores the effects of task complexity on the accuracy lexical of EFL students' writing task across proficiency levels. Whereas Skehan (1998) proposes that increasing task complexity with respect to resource-directing factors results in reduced fluency, complexity, and accuracy of oral Language production, Robinson (2001a, 2001b, 2003, 2005) argues that increasing task complexity with respect to these factors enhances complexity and accuracy but reduces fluency. This study attempts to determine whether accuracy of language production can be improved simultaneously through the use of task design. The dependent

variables in this study are accuracy. The independent variables are task complexity (resource-directing, number of elements and resource-dispersing, planning time), as the study investigates the effect of task complexity on the written performance of L2 learners.

2. LITERATURE REVIEW

2.1 Planning Time studies

Historically a planning time has for long commanded the attention of task researchers. It is a task feature whose findings have been largely stable across studies (Ellis, 2005). Planning studies have demonstrated that pre-task planning time fosters fluency and complexity of production. On the other hand, within-task planning has been shown to foster different aspects of performance than those of pre-task planning time. Thus, as Pica (1997) puts it, the study of planning time should be deemed a suitable forum for making a nexus between theory, research and pedagogy in SLA, as provision or absence thereof may aid language production and development.

There has been plenty of research with respect to giving the learners pre-task planning (Crookes, 1989; Ellis 2005; Foster and Skehan, 1996, 1999; Mortazanejad, 2008; Philip et al. 2006; Skehan 2001; Yuan and Ellis, 2003). Taken together, these studies suggested that planners showed gains in increased fluency and linguistic complexity but not conclusive results reported with respect to grammatical accuracy. Ellis (1987) analyzed the effects of pre-task planning on learners' written and oral performance on the CAF dimension of accuracy. Ellis found that performance on the past form declined when learners had less time to plan their narratives. The accuracy was not affected by the different levels of planning. His conclusion was that increased planning time leads to higher accuracy of rule-based language, while unplanned discourse is more lexical in nature. Plilip et al., (2006) stated that there are a number of different types of planning time. In pre-task or strategic planning, learners have the opportunity to plan before they produce language and carry out the task. In guided planning learners receive detailed instructions about how to plan, for example, by being advised to focus on syntax, lexis, content, or organization. Learners can plan individually or in small groups, pairs, or with a teacher .Likewise, Ellis (2003) makes distinction between online planning and strategic planning. The former examines how the planning that takes place during performance of a task affects production, whereas, strategic planning examines how planning prior to performance influences production.

Philip et al. (2006) investigated the relationship between pre-task planning and linguistic production in children's ESL classrooms. Philip et el. reported that in terms of interaction, the children's provision of feedback to each other was greater when they did not have anything to plan or when they had a short amount of planning time. In terms of fluency and accuracy, Philip et al. (2006) hypothesized that, there were no significant differences according to planning time. Children's speech was significantly more complex after 5 min of planning, compared to no planning or 2 min planning. Kawauchi (2005) investigated three proficiency level groups' performance on narrative tasks. Planning was operationalized using three pre-task activities of rehearsal, reading a related L2 model, and writing a draft, for all of which 10-minute planning time was allowed. It was found that strategic planning had promoted fluency, especially for the high proficiency group. However, the advanced proficiency groups' fluency deteriorated by the provision of planning. In terms of complexity, the advanced group did not benefit much from planning. Significant accuracy gains were absent for the advanced group, too. The irregular past forms were the highest scoring accuracy measure for all three groups in the no-planning condition which was significantly promoted for all groups in the planned condition

Yuan and Ellis (2003) compared the effects of pre-task and online planning on learner performance of a narrative task in a more systematic way. In pre-task planning condition learners were given 10 min to prepare the task and then performed it under time pressure. In the online planning condition, the learners were given no chance to prepare rather were allowed to perform the task in their own time. The results showed that pre-task planning enhanced fluency and lexical complexity, but it had no effect on accuracy, whereas on-line planning promoted syntactic complexity, and most importantly accuracy, but at the expense of lexical complexity. Foster and Skehan (1996, 1997) examined the effects of planning along different task types on linguistic performance. The results showed that planning time promoted higher fluency for all task types. Planning also had an effect for accuracy, but only for the personal and narrative task. They suggested that different dimensions would be attended to depending on how pre-determined the structure of the task is. Foster and Skehan (2005) examined the sustainability of the effects of strategic planning time during on-line execution of the task. Operationalizing planning at three levels (no planning, 10-minute unguided planning time, and 10-minute guided planning time), they crossed this variable with another task feature, namely introduction of extra information. The researchers found that strategic planning promoted performance in

general across all aspects of production. No significant effects were detected for the influence of surprise information on production. In addition, results revealed that enhanced levels of performance could not be maintained for long periods, as learners' performance significantly deteriorated after five minutes of task execution.

Ortega (1999) explored the impact of pre-task planning time on CAF of L2 oral production, aimed at analyzing the strategies the learners used during 10 minutes preparation. The results indicated that pre-task planning produced significantly more fluent and complex speech, while there were no effects for lexical complexity and also, as in previous studies, mixed results were observed for accuracy. Crookes (1989) explored the consequences of giving learners ten minutes planning time prior to their completion of two information-gap tasks. He reported that planners produced language that was more complex and fluent than non-planners, but no more accurate. He suggested that planners use planning time to complexify the task, hence leading, to greater amount of subordination but with no greater accuracy with more challenging language used. Skehan (2003: 396) concludes that "research has shown that giving learners the opportunity to plan before a task is done consistently produces greater complexity of language and greater fluency. These effects are dependable and strong, and imply that if one wants learners to draw upon more advanced language, and if one wants them to use this language with less hesitation and pausing, giving planning time is essential." (P. 396). The contribution of the studies with respect to planning time for the task complexity is the fact that having no planning time prior to the task performance imposes attentional demands for the learners making their utterances more complex and less fluent (See Ellis, 2005).

Ultimately, Gilabert (2007a) sought to investigate the effects that competing for attention may produce on L2 performance. It was found that performing a task in the past made learners reduce their fluency, but at the same time their speech became lexically more complex and also more accurate .increasing task complexity by reducing planning time did not seem to direct learners' attention to any grammatical features of the language. However, with pre-task planning time learners displayed improvements in lexical complexity, as well as in fluency.

In sum, studies looking into the effects of planning time into the effect of planning time on L2 performance have shown that L2 speakers are more fluent when given sufficient planning prior to task performance; also, with pre-task planning time their speech seems to be more elaborate in terms of structures and vocabulary; and finally, when provided with pre-task planning time L2 speakers may not pay more attention to the accuracy of their production.

2.2 Studies on the Number of elements

The Cognition Hypothesis (Robinson 2003, 2005, 2007) predicts that increasing the cognitive complexity of a task along resource-directing variable, such as the number of elements, results in more accurate speech, but it may cause disfluency. It can be claimed that relatively few researches have investigated the +/- few elements of The Cognition Hypothesis (see Robinson 1996). Results from experimental studies confirm the prediction made by the Cognition Hypothesis for fluency but the results for complexity and accuracy show a mixed picture (Gilabert, 2007). Robinson (2001b) manipulated the factor +/- few elements on an interactive task. Robinson found that increasing cognitive task complexity along the number of elements in combination with familiarity prompted significantly more lexically varied speech than the simple task but neither syntactic complexity nor accuracy revealed any significant effects.

Kuiken and Vedder (2007) carried out a study on the effects of increasing the demands of tasks on L2 written production. The results provided partial evidence for the predictions of the Cognition Hypothesis for accuracy in the more complex task, where the learners' performance contained significantly fewer errors. No support was found for the predictions about syntactic and lexical complexity.

Michel et al., (2007) have operationalized +/- few elements factor of task complexity on learners' oral L2 production. The authors found that increased cognitive task complexity along the resource-directing factor +/- few elements promoted more accurate but less fluent speech on the performance of L2 learners. However, syntactic and lexical complexities were again not significantly affected.

Gilabert (2007) showed that L2 speakers significantly increased the complexity of their lexis and were more accurate at the expense of fluency, with no differences being observed in terms of syntactic complexity.

All of these studies are in direction of the Cognition Hypothesis (Robinson, 2001a) in that L2 learners' fluency tends to decrease when dealing with more elements; more elements draw more attention to form with positive consequences for accuracy; lexical complexity may also increase but syntactic complexity is largely unaffected.

Having reviewed the findings of the previous studies conducted on task complexity along resource directing and dispersing factors, it was revealed that task complexity and its effects on EFL learners' oral/written performance has rarely been explored in the literature and there is a gap in the literature on this topic. Therefore, the present study set out to investigate the effects of task complexity along resource directing (number of elements) and resource dispersing (planning time) on EFL learners' written performance in terms of accuracy.

2.3. Research questions

The following tentative research questions have been formed for which the current study seeks to find answer.

RQ1- what are the effects of resource-dispersing factor (planning time on EFL learners' written performance in terms of accuracy?

RQ2- what are the effects of resource-directing factor (number of element) on EFL learners' written performance in terms of accuracy?

3. METHODOLOGY

3.1. Participants

The participants of this study were 30 EFL learners affiliated to language institute. The participants are from Azeri L1 language background attending a conversation course. For the homogeneity of the subjects in terms of their level of proficiency, prior to research an Oxford proficiency test (OPT) as a standardized test is administered to 60 participants .from these pool 30 students participate in the study and scores on an oxford proficiency test (OPT) are used as a measure of the level of EFL proficiency of the learners. Then, they were randomly assigned into two groups namely resource directing (number of elements) and resource dispersing (planning time) groups.

3.2. Data collection instrument

The tasks consist of two versions of the same decision making task (one simple and the other complex task) taken from Gilbert (2007). The task was an adaptation from 'fire chief' task used in cognitive psychology. In this task learners are presented a drawing of a building where a fire has broken out and a number of people need to be helped by rescuers.

The problem in the complex version required from learners not just one decision, but a long series, in which early decisions condition later ones. In both versions of the task learners were instructed to specify the actions they would take, determine the sequence of their actions, and justify their choice for actions and specific sequences. In the simple task, there are similar types of people (i.e., people with no particular roles) who are faced with similar degrees of danger; the fire being relatively static, the smoke blowing away from the building. in the complex one, learners have to deal with specific types of people (e.g.; a pregnant woman, a hero).Task complexity is manipulated in terms of the Robinson's resource-directing elements, i.e., the number of elements and pre-task planning involved in the task. Linguistic complexity is analyzed in terms of fluency, accuracy, grammatical and lexical complexity.

In this study accuracy appears as dependent variables. The independent variables are resource-directing, resource-dispersing, as the study investigates the effect of task complexity on the written performance of EFL learners.

3.3 Procedure

The data for this study was collected in two phases. First, the participants were asked to perform on the simple version of the decision-making task. In this phase, the resource dispersing (planned) group were asked to perform on the task with 10 minutes for planning on the complex version of the task, the participants were also asked to perform the simple version of the decision-making task .the participants of resource directing(number of elements) group also were asked to perform on the same tasks. After two weeks the same task is done for both groups. The reason for this two week time interval is to alleviate the memory effect and task repetition effects of the learners on the produced written data. In this phase, the participants individually are given 10minutes to think and analyze the task. The collected data will be quantified using the following accuracy measure.

Accuracy measure: The number error-free T-units per T-units (Arent, 2003; Rahimpour, 2008). T-unit is

defined as the main clauses plus subordinate clauses attached to or embedded in them and error-free Tunits are those T-units that contain no grammatical, lexical, or spelling errors.

4. DATA ANALYSIS AND RESULTS

 Table 1. Comparison of the means of accuracy of written performance in resource-dispersing (planning time) groups in simple and complex tasks.

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Planning complex	.530	30	.1512	.0276
	Planning simple	.493	30	.1552	.0283

Paired Samples Statistics

According to this table, the learners produced more accurate (0.53) language with planning in complex task than the simple task (0.49). The descriptive statistics of comparisons of the means of accuracy in both tasks shows significant differences.

Table2. Independent samples T-Test for the means of accuracy of written performance in planned simple and complex task.

Paired Samples Test

		Paired Differences						
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2- tailed)
Pair 1Planning complex - Planning simple	.0367	.1066	.0195	0031	.0765	1.884	29	.070

Table 2 shows the results of statistical analysis of applying independent samples T-test to test the first hypothesis. The results of SPSS at df 29, and @= .05 suggested that there was not a significant differences between planning group and EFL learners' accuracy in simple and complex task.

Table 3. Comparison of the means of accuracy of written performance in resource-directing (few & more elements).

Paired Samples Statistics

		Mean	Ν	Std. Deviation	Std. Error Mean
Pair 1	Few Elements	.567	30	.1826	.0333
	More Elements	.487	30	.1332	.0243

According to table 3, the learners produced more accurate (0.56) language with few elements than more element group (0.48).

Table 4 shows the results of independent samples T-test for the means of accuracy of written performance with few and more elements.

Paired Samples Test

-		Paired Differences							
				95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2- tailed)
Pair 1	Few Elements - More Elements	.0800	.1864	.0340	.0104	.1496	2.350	29	.026

Table 4 shows the results of statistical analysis of applying independent samples T-test to test the second hypothesis. The results of SPSS at df 29, and @=.05 revealed that there was a significant differences between the performance of the learners in few and more elements in terms of accuracy.

5. DISCUSSION AND CONCLUSIONS

Since the present study is a part of an ongoing research, by considering accuracy, fluency, and complexity linguistic domains it was revealed that cognitive task complexity led to the production of more accurate written language production.

The findings of this study in terms of the effect of task complexity on accuracy ran against the predictions of cognition hypothesis (Robinson, 2007).

The findings are in line with the results of the studies done by Skehan and Foster (1999), Robinson (2007), Mehrang (2007), Tavakoli and Skehan (2005), Ishikawa (2006). Unlike Robinson, Skehan (1998b) argues that human being has a limited attention capacity thus; increasing task complexity creates a kind of trade-off between form and meaning. Tavakoli and Skehan (2005) and Tavakoli and Foster (2008) also argued that simple task will relieve processing load and free up attention space to be devoted to accuracy. However, the results are in contrast with the findings of researchers like Rahimpour (2007), Mikchel, et.al (2007), Salimi and Dadashpour (2012), Ishikawa (2006), and Kuiken and Vedder (2007, 2008).

These findings can be interpreted in Levelt's (1989) terms, the lighter processing load for the conceptualizer, and the more "space" for the formulator to work within. Therefore, the formulator can give more attention to grammatical accuracy and performance is subsequently more accurate.

6. PEDAGOGICAL IMPLICATIONS

This study carries some implications for second language acquisition (SLA) researchers, language teachers, and syllabus designers. Findings may also add to the present literature in SLA theory, language testing, syllabus design, and material development. Therefore, providing insights on designing and implementation of tasks in L2 classroom settings.

One of the aims for both the Cognition Hypothesis and the Trade-Off Hypothesis was to provide teachers with a framework for grading and sequencing pedagogic tasks to aid second language acquisition. It was thought that by presenting increasingly complex tasks, language learners would be able to first learn how to accomplish the tasks using the L2 in simpler tasks and then automatize retrieval in more complex tasks (Skehan, 1996, 1998a).

The results of the present study also have important implications for foreign language teachers follow along the lines provided by Skehan and Robinson. However, because both hypotheses govern in different contexts, teachers should be aware of what thresholds and degrees of task complexity they are employing in their pedagogic tasks. Because the effects for task complexity are specific to operationalization of task complexity and language use.

REFERENCE LIST

- Bialystok, E. (1991). Metalinguistic dimensions of bilingual language proficiency. In E. Bialystok (Ed.), Language processing in bilingual children.
- New York: Cambridge University Press. pp. 113–140.
- Bialystok, E. (1994). Analysis and control in the development of second language proficiency. Studies in Second Language Acquisition, 16, 157–168.
- Bygate, M. (1999). Quality of language and purpose of task: Patterns of learners' language on two oral communication tasks. Language Teaching Research, 3, 185–214.
- Crookes, G. (1989). Planning and interlanguage variation. *Studies in Second Language Acquisition*, 11, 367-383.
- Ellis, R. (2003). Task-based language learning and teaching. Oxford: Oxford University Press.
- Ellis, R (Ed.) (2005). Planning and task performance in a second language. Amsterdam: John Benjamins .
- Ellis, R. (2008). The study of second language acquisition. Oxford: Oxford University Press.
- Ellis, R. (2009). Task-based language teaching: Sorting out the misunderstandings. *International Journal of Applied Linguistics* 19 (3), 229-246.
- Gilabert, R. (2005). Task complexity and L2 narrative oral production. Unpublished Ph.D. dissertation. University of Barcelona, Spain.
- Gilabert, R. (2007). Effects of manipulating task complexity on self-repairs during L2 oral production. International Review of Applied Linguistics, 45, 215-240.
- Ishikawa, T. (2006). The effects of task complexity and language proficiency on task-based language performance. *The Journal of Asia TEFL*, 3(4), 193-225.
- Kuiken, F., and Vedder, I. (2007). Task complexity and measures of linguistic performance in L2 writing. International Review of Applied Linguistics, 45(3), 261-284.
- Kuiken, F., and Vedder, I. (2008). Cognitive task complexity and written output in Italian and French as a foreign language. *Journal of Second Language Writing*, 17, 48-60.
- Long, M. (1985). A role for instruction in second language acquisition: task-based language teaching. In K. Hyltenstam and M. Pienemann (Eds.), *Modelling and assessing second language acquisition* (pp.77-99). Clevedon: Multilingual Matters.
- Long, M. (Ed.) (2007) . Problems in SLA, Mahwah, NJ: Erlbaum.
- Long, M., and Crookes, G. (1992). Three approaches to task-based syllabus design. *TESOL Quarterly*, 26(1), 27-56.
- Mehrang, F., and Rahimpour, M. (2010). The impact of task structure and planning conditions on oral performance of EFL learners. *Procedia Social and Behavioral Sciences: World Conference on Educational Sciences 2010,* Istanbul, Turkey.
- Newell, A. and H. Simon. (1972). Human problem solving. Englewood Cliffs, NJ: Prentice Hall.
- Newell, A. and H. Simon. (1972). Human problem solving. Englewood Cliffs, NJ: Prentice Hall.
- Ochs, E. (1979). Planned and unplanned discourse. In Givon, T.(Ed.). *Syntax and Semantics*. New York: Academic Press, 51-80.
- Ojima, M. (2006). Concept mapping as pre-task planning: A case study of three Japanese ESL writers. System, 34, 566–585.
- Ortega, L. (1995). The effect of planning in L2 Spanish oral narratives. *Studies in Second Language Acquisition,* 21, 108 148.
- Ortega, L. (1999). Planning and focus on form in L2 oral performance. *Studies in Second Language Acquisition*, 21, 109-148.
- Ortega, L. (2005). What do learners plan? Learner-driven attention to form during pretask planning. In Ellis,

R. (Ed.) Planning.

- Rahimpour, M. (1997). Task complexity, task condition, and variation in L2 oral discourse. Unpublished Ph.D. thesis, University of Queensland, Australia.
- Rahimpour, M. (1999). Task complexity and variation in interlanguage. In N. O. Jungheim&P. Robinson (Eds.), *Pragmatic and pedagogy: proceeding of the3rd pacific Second Language Research Forum* (pp.115-134). Tokyo, Japan: Pac LRF.
- Rahimpour, M. (2002). Factors affecting task difficulty. *Journal of the Faculty of Literature and Humanities*, Tarbiat Moallem University, 9(33), 1-16.
- Rahimpour, M. (2007). Task complexity and variation in L2 learners' oral discourse. *Working Papers in Language and Linguistics*, University of Queensland, 1-9.
- Rahimpour, M. (2008). Implementation of task-based approaches to language teaching. *Pazhuhesh-e-Zabanha-ye Khareji Journal*, University of Tehran, 41, 45-61.
- Rahimpour, M. (2010). Current trends on syllabus design in FL instruction. *Procedia Social and Behavioral Sciences*, *2*, 1660- 64.
- Robinson, P. (1995). Task complexity and second language narrative discourse. *Language Learning*, 45(1), 99-140.
- Robinson, P. (2001). Task complexity, task difficulty, and task production: exploring interactions in a componential framework, *Applied Linguistics*, 22(1), 27-57.
- Robinson, P. (2003). The cognition hypothesis, task design, and adult task-based language learning. *Second Language Studies*, 21(2), 45-105.
- Robinson, P. (2005). Cognitive complexity and task sequencing: studies in a componential framework for second language task design. *International Review of Applied Linguistics*, 43, 1-32.
- Robinson, P. (2006). Criteria for classifying and sequencing pedagogic tasks. In M. P. G. Mayo (Ed.), Investigating tasks in formal language learning, (pp. 7 – 26).Clevdon: Multilingual Matters.
- Robinson, P. (2007). Triadic framework for TBLT: Task complexity, task difficulty, and task condition. *The Journal of Asia TEFL*, 195-225.
- Salimi, A. and Dadashpour, S. (2010). Task complexity and L2 learners' written performance. A paper presented at WCCES 14. Bogazici University, Istanbul, Turkey, 14-18 June.
- Salimi, A. and Dadashpour, S. (2012a). Task Complexity and Language Production Dilemmas (Robinson's Cognition Hypothesis vs. Skehan's Trade-off Model). *Procedia-Social and Behavioral Sciences, 46,* 643-652.
- Sangarun. J. (2001). The effects of pre-task planning on foreign language performance. Doctoral thesis, University of Toronto, Canada.
- Sangarun, J. (2005). The effects of focusing on meaning and form in strategic planning. In Ellis, R. (Ed.) *Planning and task performance in a second language*. Amsterdam: John Benjamins.
- Schmidt, R. (2001). Attention. In Robinso n, P. (Ed.), *Cognition and second language instruction*. Cambridge: Cambridge University Press.
- Skehan, P. (1996). A framework for the implementation of task-based instruction. *Applied Linguistics*, 17(1), 38-62.
- Skehan, P. and P. Foster (1997). Task type and task processing conditions as influences on foreign language performance. *Language Teaching Research* 1: 185-211.
- Skehan, P. and Foster, P. (1999). The influence of task structure and processing conditions on narrative retellings. *Language Learning*, 49(1), 93-120.
- Tavakoli, P., and Foster, P. (2008). Task design and second language performance: the effect of narrative type on learner output. *Language Learning*, 58(2), 439-473.
- Tavakoli, p., and Skehan, P. (2005). Strategic planning, task structure, and performance testing. In R. Ellis (Ed.), *Planning and task performance in a second language* (pp. 239 277). Amsterdam: Benjamins.

- Wigglesworth, G. (1997). An investigation of planning time and proficiency level on oral test discourse. *Language Testing*, 14, 85-106.
- Willis, D., and Willis, J. (2001). Task-based language learning. In R. Carter and D. Nunan (Eds.), The Cambridge guide to teaching English to speakers of other languages (pp.173 179). Cambridge: Cambridge University Press.
- Yuan, F. (2001). The effects of planning on language production in task-based language teaching. Doctoral thesis, Temple University.
- Yuan, F., and Ellis, R. (2003). The effects of pre-task planning and on-line planning on fluency, complexity and accuracy in L2 monolgic oral production. *Applied Linguistics*, 24 (1), 1-27.