MEESO
OPEN ACCESS
http://dx.doi.org/10.18095/meeso.2018.19.1.06
Modern English Education, **Vol. 19, No. 1, Spring 2018**

The Effects of Task Complexity on Korean Adult EFL Learners' Summary Writing *

Heesoo Park**
Sungkyunkwan University
Haemoon Lee
Sungkyunkwan University

Park, Heesoo & Lee, Haemoon. (2018). The effects of task complexity on Korean adult EFL learners' summary writing. *Modern English Education, 19*(1), 62-75.

Among the three task dimensions Robinson (2001a) proposed as the standards for task classification in his Cognition Hypothesis, task complexity was proposed to affect language learning most directly; the more complex the content of the task is in terms of its cognitive load, the more complex and accurate language form the task performer or second language learner produces as required by the task. The present study operationalized task complexity into two levels via the two types of text to summarize, argumentative and expository, in the assumption that the former has more complex content such as reasoning than the latter. Fifty Korean adult learners wrote six summaries of the six different texts from each type of texts which have the same readability, with and without the restriction of summary length. Statistical results from analysis of variance were partly in support of the effect of task complexity; syntactic complexity was significantly affected by text type as predicted only in the last summaries. Lexical complexity and accuracy were not.

[TBLT/the cognition hypothesis/task repetition/
과업중심학습법/인지가설/과업반복]

* This paper has been developed from part of the first author's doctoral dissertation and presented at the international conference on TBLT 2013 in Banff, Canada on October 5, 2013.
** First author: Heesoo Park, Corresponding author: Haemoon Lee

Received 24 December 2017
Revised 26 January 2018
Accepted 12 February 2018

Examples in: English
Applicable languages: English
Applicable levels: Tertiary

Heesoo Park
Translation and TESOL Graduate School,
Sungkyunkwan University
(03063) 25-2, Sungkyunkwan-ro, Jongno-gu, Seoul
Email: hedviga@skku.edu

Haemoon Lee
President of ALAK
(Applied Linguistics Association of Korea) 2017-2018
English Language and Literature, Sungkyunkwan University
(03063) 25-2, Sungkyunkwan-ro, Jongno-gu, Seoul
Tel: (02) 760-0249
Email: haemoon@skku.edu

I. INTRODUCTION

A task-based language teaching emerged as a systematic approach to communicative language teaching. Tasks range from everyday real-life activities such as writing a check or painting a fence (Long, 1985) to academic tasks such as summarization of texts. Summarization in particular was proposed as one of the effective strategies for learning and teaching specific content areas (Marzano, Pickering, & Pollock, 2001, as cited in Wormeli, 2005). Based on the definition of a task - task should have its own real-life purpose which is not linguistic, having its own outcome, its success and failure being determined by non-linguistic factors - scholars classified tasks mostly based on their cognitive load and proposed the factors that make tasks easy or difficult (Candlin, 1987; Robinson, 2001a; Skehan, 1998). Among them, Robinson proposed in his Cognition Hypothesis that tasks can be classified by three dimensions; task complexity, task condition, and task difficulty. Each dimension is a group of factors that make task itself more or less challenging. Robinson's Triadic Framework is aimed to be a comprehensive model that includes and sorts out all the factors affecting task classification that had been proposed earlier by other scholars.

Robinson's (2001a, 2001b, 2002) Cognition Hypothesis argues that the cognitive factors that compose the task complexity dimension influence IL development most directly. Content of the task varies in terms of its cognitive demand on one hand, and the performative demands such as real-time processing or availability of planning time may vary from task to task on the other hand. The former type of factors was named resource-directing variables because they directly affect language choice in performing the task, thereby pushing the learners to produce required level of complex language form as accurately as possible (Robinson & Gilabert, 2007). The latter type of factors was named resource-dispersing variables because they may help learners cope with the task-inherent cognitive demands better if they are properly manipulated on the performative/procedural level.

In sum, the dimension of task complexity is the core of task-based language teaching and learning model because it involves the designing of task content material in order to push learners' IL to its cutting edge and enabling them to do so by controlling the performative/procedural demands at the same time. The other two dimensions, task condition and task difficulties, are also the necessary design features of tasks to be considered simultaneously with task complexity. Robinson's Cognition Hypothesis, however, put priority to the task complexity, particularly on the resource-directing variables because they are directly push learners to expand their IL system whereas the resource-dispersing variables enable the learners to do so by reducing other performative/procedural demands. Thus, the IL complexity and accuracy are proposed to be increased by resource-directing variable mostly and all other variables may improve IL fluency and/or accuracy as secondary facilitators.

The present study focused on the dimension of task complexity in order to examine whether complex task leads learners to produce more complex language form during the task, as predicted by Robinson. The other two dimensions, task condition and task difficulties, are not considered for the present study.

II. LITERATURE REVIEW

1. Robinson's Triadic Model

Robinson's Triadic Model of tasks is distinguished from earlier models of tasks in a few ways. First whereas Candlin (1987) and Skehan (1998) clarified that cognitive load affects task difficulty, Robinson (2001b) and Robinson and Gilabert (2007) proposed that task complexity should be distinguished from task difficulty; task complexity can directly affect learners' interlanguage development by gradually increasing the cognitive demands of tasks. This gradual manipulation of complexity from simple to complex can lead learners to greater functional development in language use, more attention to output, deeper processing of input, positive influence on uptake and focus on form, efficient scheduling and automatization of task components (Robinson, 2002, pp. 4-6). Task difficulty, however, was defined as learner factor such that it includes learners' cognitive abilities–aptitude, proficiency, intelligence, etc. –and affective variables–motivation, anxiety, confidence, willingness to communicate, etc. - that affect the differently perceived difficulty level of the same task by the individual learners.

The task complexity is manipulated through the resource-directing variables related to linguistic feature manipulation and the resource-dispersing variables concerned with performance features. Task complexity, as Robinson (2001a, 2001b, 2002) defines, is 'the result of the attentional, memory, reasoning, and other information processing demands imposed by the structure of the task on the language learner' (Robinson, 2001a, p. 29). The resource-directing variables include +/- *few elements*; the number of elements to be pointed out and explained, +/- *here-and-now*; the essential use of present or past tense in performing a task, and +/- *reasoning demands*; no reason or more than one to be processed. Since these features directly demand simple or complex language forms, task complexity gradually increased on resource-directing variables can help learners push their current language system to advancement. In contrast, the resource-dispersing variables concerning non-linguistic factors such as +/- *planning time*, +/- *single task*, +/- *task structure*, +/- *few steps*, +/- *independency of steps*, +/- *prior knowledge* make task less complex and gradually enhance attention and working memory of learners to be used for the *resource-directing variables*. Therefore, the proper manipulation of *resource-directing* and *resource-dispersing* variables ultimately guides the relevant linguistic forms to develop-

ment. Thus, the sequence of the complexity from simple to complex tasks should be involved in syllabus design as presented under task complexity factors in Table 1.

TABLE 1
The Triadic Componential Framework for Task Classification – Categories, Criteria, Analytic Procedures, and Design Characteristics (Robinson & Gilabert, 2007, p. 164)

Task Complexity (Cognitive Factors)	Task Conditions (Interactive Factors)	Task Difficulty (Learner Factors)
(Classification criteria: cognitive demands) (Classification procedure: information-theoretic analyses) a) resource-directing variables making cognitive/conceptual demands	(Classification criteria: interactional demands) (Classification procedure: behavior-descriptive analyses) a) participation variables making interactional demands	(Classification criteria: ability requirements) (Classification procedure: ability assessment analyses) a) ability variables and task-relevant resource differentials
+/- here-and-now +/- few elements +/- spatial reasoning +/- causal reasoning +/- intentional reasoning +/- perspective-taking	+/- open solution +/- one-way flow +/- convergent solution +/- few participants +/- few contributions needed +/- negotiation not needed	h/l working memory h/l reasoning h/l task-switching h/l aptitude h/l field independence h/l mind/intention -reading
b) resource-dispersing variables making performative/procedural demand	b) participant variables making interactant demands	b) affective variables and task-relevant state-trait differentials
+/- planning time +/- single task +/- task structure +/- few steps +/- independency of steps +/- prior knowledge	+/- same proficiency +/- same gender +/- familiar +/- shared content knowledge +/- equal status and role +/- shared cultural knowledge	h/l openness to experience h/l control of emotion h/l task motivation h/l processing anxiety h/l willingness to communicate h/l self-efficacy

Second, Robinson's Triadic Model isolated task conditions as one of the three dimensions, interactive factors, for task classification. They include participation and participant variables, the necessary design feature of tasks. Participation format such as the information flow and the solution number affect the required degree of interactional engagement. Features of the participants also affect task performance, i.e., participants' gender, closeness, and the power relation of participants.

Third, regarding human memory and attention capacity which provides a theoretical base for his Triadic Model, Robinson has a different view from earlier limited capacity model. In processing language input and output information, two contrasting perspectives emerged: a limited attentional capacity model (Skehan, 1998), and a multiple resources model (Robinson, 2001a, 2001b, 2003b, 2005a, 2005b, 2007a, 2007b). The former model is supported by VanPatten's (1990, 1996, 2002, 2005) input processing model in which learners process meaningful input first, and if any attentional capacity remains, then they focus on language structure. Further than the competition between form and meaning, Skehan proposed the competition for attentional resource between language complexity and accuracy as well, such that if one aspect of language form is attended to, the other is less so, because attentional resource is limited. On the other hand, Wickens (2007) claims that language input data do not need to compete with one another because they are located in separate resource pools if tasks are appropriately manipulated in terms of the types of data. For example, if the input belongs to different stages (perception, cognition, and responding stages), has different codes (spatial and verbal codes), or needs to have different responses (manual, spatial, vocal, and verbal responses), they are not in competition. Wickens' (2007) model as well as Givon's (1985, 1989) view of parallel associations between structural and functional complexity, provides support for Robinson's Cognition Hypothesis (2001a, 2001b, 2007a, 2007b), leading to the proposal that the more complex task in its content accompany more complex and accurate language form maybe using the attentional resources from multiple pools.

2. Studies on Task Complexity

With regard to the variables of task complexity (Robinson, 2001a; Robinson & Gilabert, 2007), much research has recently been conducted (Gilabert, Baron, & Llanes, 2009; Ishikawa, 2008; Kuiken & Vedder, 2007a, 2007b, 2008, 2011; Michel, Kuiken, & Vedder, 2007; Révész, 2009; Robinson, 2003a). However, the research on task complexity has mainly adopted oral tasks often with mixed findings, and Robinson's Cognition Hypothesis is also based on oral production. Several written production studies have been conducted (Kuiken & Vedder, 2007a, 2007b, 2008; Michel et al., 2007), but the results on syntactic complexity have been mainly non-significant except for Ishikawa's study (2007) which reported the significant effect of +/- *here-and-now*, one of the *resource-directing* variables for syntactic complexity. Ishikawa's study of oral task (2008) also reported that +/- reasoning demands variable produced significantly higher syntactic complexity in the more complex tasks. The effect of reasoning demands on written production is yet to be examined, because syntactic complexity is particularly important to advance IL development and it may be better promoted by reasoning demands in the written production task than in the more time-pressed oral mode.

Among the *resource-dispersing* variables, task repetition received attention by Bygate (1996) who investigated the effects of task repetition based on a belief that content

familiarity of the task through retelling the same contents could help learners focus on language structure. He interpreted the improved complexity and accuracy in verbal repetition due to the effect that task familiarity and repetition enabled learners to be aware of their communication problems and influence the learner's general language development. Concerning the complexity enhancement, the number of subordinate clauses increased and, about the accuracy, fewer errors were shown after the repetition. In addition, Bygate and Samuda (2005) introduced task repetition as 'integrative planning' while making a distinction between two types of planning; strategic planning that is pre-planning for an upcoming task and on-line planning during a task performance. The integrative planning produced a term, 'framing' that included the views of the speaker, the listener, and the characters, and previews, abstracts, summaries, cohesive links, explanatory background, and foregrounding or highlighting. Based on the analysis of the fourteen participants' linguistic data and case studies concerning framing, information elements, and lexico-grammar from a narrative and its ten-week apart repeated tasks from watching a cartoon clip, 'Tom and Jerry,' they concluded that task repetition was a main factor in changes for framing, and can complement strategic and on-line planning. It also pushed learners to maintain both receptive and active knowledge of language, and offered better understanding of the content and the way of creating linguistic output elaboration. Findings and interpretations of the role of task repetition, therefore, strongly suggest that task repetition be a member of *resource-dispersing* dimension.

However, the immediate repetition of oral tasks may not permit enough room for learners to consider and/or revise their output due to too short time between repetitions and the instant nature of an oral production. This is supported by H. Lee, H. Park, and Y. Yoon. (2007) since task repetition in the immediate oral summarization task did not show any significant difference in terms of complexity and accuracy, and they claimed that the learners' attentional resources to linguistic features could not be stretched due to insufficient time between repetition. This finding suggests that written summary tasks would give more room for summarizers to focus on linguistic features than oral tasks.

The effect of task repetition may be more beneficial to the more complex written production task which often involves cognitively more complex content and requires matching complex and accurate language form. Repetition in the form of communicatively meaningful task in the written production mode, therefore, needs to be examined.

3. Research Questions

The specific aims of this study are three-fold. First, as a written production task that involves relatively higher level cognitive demand, text summarization was selected as a target task. On the *resource-directing* dimension the level of task complexity was operated via the two types of texts, argumentative and expository, the former having more and the latter having less reasoning demands. Logical argumentation in the argumentative texts often involve causal relations among the sentences, which was proposed by Robinson to promote complex linguistic structure. In contrast to it, expository texts are focused on description. Since summary should be short, its length was designed as another factor affecting the cognitive demand of summary writing, though it is not listed in the Triadic Framework of Cognition Hypothesis. Presence or absence of length restriction into one-fourth of the original text (Barton & Sardinas, 2004) was another variable for the present study. Second, the effects of task repetition in writing tasks were examined. Task repetition has been reported as functioning similarly to planning time for speaking. For the cognitive complex task such as summary writing, repetition was hypothesized to think better for the processes of summarizing, i.e., evaluating, choosing, and judging the ideas in the texts and finding the linguistic structures for the summarization. In the present study summarizing was repeated but the target texts were different within the same genre to make the task communicatively meaningful. Third, though the Cognition Hypothesis claims that tasks by increasing complexity on the *resource-directing* variables (i.e., *+/-reasoning demands*) and decreasing it on the *resource-dispersing* variables (i.e., *+/-planning time*) help learners change their interlanguage, it is possible only through empirical research to find the ideal combination of the specific level of each variable that maximally expands learners' IL. Through the three variables, text type, length restriction, and repetition, the present study aimed at identifying the best fitting combination of task features for Korean adult learners. Effective syllabus design can be suggested from it as well (Robinson, 2001a, 2007a).

Based on the discussions so far, four research questions have been established as follows:

1) Does text type affect language complexity and accuracy?
2) Does a limit on summary length affect language complexity and accuracy?
3) Does repeated written summarization affect language complexity and accuracy?
4) Which combination of task features maximizes IL complexity and accuracy

III. METHOD

1. Subjects

Out of 98 paid volunteers from various departments at universities in Seoul and its suburbs, 50 college students were the participants after the following screening pro-

cesses: The essays of all volunteer students were graded into five levels[1] from the lowest as level 1 to the highest as level 5, using a sample TOEIC essay writing. The essays of level 2 were considered proper for the present study as low-intermediate level of writing. They were further screened by their experiences of living or/and studying in the English-speaking countries less than six months. As a result, writings from 24 female and 26 male students ranged from age 20 to 29 were analyzed for the study.

2. Materials

Text genre, length, and complexity of the written text were carefully decided (Hidi & Anderson, 1986). Six argumentative and another six expository texts were selected and adapted from three ESL reading course books (Adelson-Goldstein & Howard, 2004; Barton & Sardinas, 2004; Beatty, 2004) in order to make their readability levels equal (see Appendix). As a result, readability score of all six texts was 70 by the Flesch reading ease formula. It is the level easily understood by 8th and 9th graders in the U.S. education system.[2]

3. Procedures

Participants were randomly placed into one of the four groups in order of arrival on the first day. All the participants read and summarized six texts in one of the two genres for three consecutive days, two texts per day. Expository text groups and argumentative text groups were further divided into the conditions of the 70-word summary production and no such limit, resulting in the four groups as shown in Figure 1.

Group-1 Argumentative text + 70-word length limit for the same 13 subjects for 3 days	Group-2 Argumentative text + No length limit for the same 12 subjects for 3 days
Group-3 Expository text + 70-word length limit for the same 13 subjects for 3 days	Group-4 Expository text + No length limit for the same 12 subjects for 3 days

FIGURE 1 Four Groups of Different Task Complexity

Twelve or thirteen participants were deployed in each group. The cognitive demand was assumed in the order of Group-1 who summarized an argumentative text with a 70-word summary length limit, Group-2 who summarized an argumentative text with no length limit, Group-3 summarized an expository text with a 70-word length limit, followed by Group-4 who summarized an expository text with no length limit. Each day when the participants visited the researcher for the task, they wrote two summaries in a row without any break in between, spending 21 minutes on average for reading and summarizing each text. For analysis, the first summary writing was used for a pretest, the next four writings of genre repetition were treated as repetition treatment, and the last summary writing was used as a posttest. The last summaries were compared among the groups.

4. Coding

Complexity and accuracy of the learner language in their first and last summaries were coded and analyzed by SPSS 17.0 package. Fluency was not examined because the restriction of summary length was part of research design and time was not limited. Two types of complexity measures were applied to this study: syntactic complexity and lexical complexity. The syntactic complexity was recorded by the number of subordinate clauses per T-unit (Wolfe-Quintero, Inagaki, & H. Y. Kim, 1998), and the lexical complexity was measured by the number of words per T-unit (Bygate, 2001; Norris & Ortega, 2009). The accuracy was assessed by the number of error-free T-unit per T-unit (Skehan, 1998; Wolfe-Quintero et al., 1998).

IV. RESULTS

In order to describe the overall task scale, the time spent for tasks and the number of words in the summaries are presented before the analysis of learner language in terms of syntactic and lexical complexity and accuracy as a function of task complexity, length restriction and repetition.

1. Time Spent and the Number of Words for Summaries

The time spent for reading and summarizing decreased from the first to the last trial from 21.88 minutes in the first trial to 20.22 minutes in the last trial as shown in Table 2.

1 When the essay was totally unintelligible with more than two grammatical errors, the level was 1. The essay with two errors per sentence on average with an inappropriate use of vocabulary was 2. The writing with one or no grammatical error per sentence with an appropriate use of vocabulary was 3. The essay with only one or two incorrect use of articles was level 4. Level 5 was for the summary with nearly perfect grammar.

2 According to the Flesch reading ease readability formula which has been used as a standard formula used in the United States, the scores of 90-100 is very easy, 80-89 is easy, 70-79 is fairly easy, 60-69 is standard, 50-59 is fairly difficult, 30-49 is difficult, and scores of 0-29 indicate that reading materials are very confusing. This study chose fairly easy texts for reading since summarization itself has heavy cognitive complexity.

TABLE 2
Time Spent and the Number of Words

	Argumentative			Expository			Grand Mean
	70-word limit	No limit	Mean	70-word limit	No limit	Mean	
Time1	23.12	20.83	21.98	20.42	23.13	21.78	21.88
Time6	21.69	20.42	21.06	18.38	20.38	19.38	20.22
Mean	22.40	20.62	21.52	19.40	21.75	20.58	21.05
Word1	84.31	98.75	91.53	89.38	112.08	100.73	96.13
Word6	91.92	103.75	97.84	99.08	114.25	106.67	102.25
Mean	88.11	101.22	94.68	94.23	113.16	103.70	99.19

Note. Minutes (Time) and the number of words (Word) for a summary

The difference was significant (F = 8.921, p = .005). However, the length of summary measured by the number of words increased from 96.13 to 102.25 but the difference was not significant (F = 2.703, p = .107).

Significant decrease in time spent and no difference in number of words were found consistently in all conditions, without interaction effect with text type of length restriction as shown in Table 3. Summarization speed was improved through repetition in all four conditions, whereas repetition did not change the length of summary in any of the conditions.

Length limit, however, affected the significant difference in the participants' summary length in each text type (F = 4.357, p = .042). When its length was not restricted, the summary was longer than when restricted as 88.11 vs. 101.22 words for the argumentative texts.

TABLE 3
Repetition Effects on Time and the Number of Words

Source	Measure	Repetition	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*	Partial Eta Squared
Repetition	Time	Linear	68.536	1	68.536	8.921*	.005	.162
	Word	Linear	934.431	1	934.431	2.703	.107	.055
Repetition* Text Type	Time	Linear	13.564	1	13.564	1.766	.190	.037
	Word	Linear	.893	1	.893	.003	.960	.000
Repetition* Length Limit	Time	Linear	.136	1	.136	.018	.895	.000
	Word	Linear	160.431	1	160.431	.464	.499	.010
Repetition * Text Type * Length Limit	Time	Linear	4.604	1	4.604	.599	.443	.013
	Word	Linear	37.613	1	37.613	.109	.743	.002
Error (repetition)	Time	Linear	353.410	46	7.683			
	Word	Linear	15904.756	46	345.756			

*p < .05

The same pattern was found for the expository texts as 94.23 vs. 113.16 words as shown in Table 2 and analyzed in Table 4.

TABLE 4
Effects on Text Type and Length Limit on Time and the Number of Words

Source	Measure	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*	Partial Eta Squared
Intercept	Time	44221.168	1	44221.168	553.796	.000	.923
	Word	982305.391	1	982305.391	666.789	.000	.935
Text Type	Time	21.938	1	21.938	.275	.603	.006
	Word	2028.966	1	2028.966	1.377	.247	.029
Length Limit	Time	2.008	1	2.008	.025	.875	.001
	Word	6417.951	1	6417.951	4.357*	.042	.087
Text Type * Length Limit	Time	106.178	1	106.178	1.330	.255	.028
	Word	210.006	1	210.006	.143	.707	.003
Error	Time	3673.144	46	79.851			
	Word	67766.603	46	1473.187			

*p < .05

If fluency is defined simply by speed, it may be interpreted that the fluency improved because the speed of summarization increased through repetition. However, fluency is often operationalized by the number of words in production (more so in the written production) along with a few other measures such as pause lengths (in the oral production). Since length restriction was designed as one of the research variables, fluency was not meant to be included in the main discussion. In sum, over repetition, the speed of summary writing improved and the summaries were longer when there was not length restriction, whereas text type did not cause any difference in the time spent or in the length of summary.

2. Complexity and Accuracy of Learner Language

Learners' IL complexity and accuracy in the first and the last summarization are presented in Table 5 in descriptive statistics. The first two research questions were the effects of text type and summary length restriction for language complexity and accuracy. Regarding text type, the argumentative text showed more complex syntactic structures as 0.40 than 0.29 of the expository text on average. However, lexical complexity and accuracy produced slightly better results in expository text. Mean lexical complexity of argumentative texts was 9.61 and that of expository texts was 9.88. Mean accuracy of argumentative texts was 3.08 and that of expository texts was 3.33. Summary length restriction showed even smaller differences in the means of all three measures, structural complexity as 0.35 vs. 0.33, lexical complexity as 9.61 vs. 9.89, and accuracy as 0.37 vs. 0.35.

TABLE 5
Language Quality Results

Variable	Argumentative			Expository		
	70-word limit	No limit	Mean (SD)	70-word limit	No limit	Mean (SD)
Syntactic complexity-1	0.33 (0.28)	0.19 (0.15)	0.26 (0.23)	0.32 (0.19)	0.32 (0.18)	0.32 (0.18)
Syntactic complexity-6	0.47 (0.24)	0.59 (0.34)	0.53 (0.29)	0.27 (0.14)	0.22 (0.12)	0.25 (0.13)
Lexical c omplexity-1	9.17 (1.51)	9.40 (1.22)	9.28 (1.35)	9.53 (1.34)	9.54 (1.91)	9.54 (1.60)
Lexical complexity-6	9.35 (2.08)	10.58 (3.00)	9.94 (2.58)	10.38 (1.23)	10.02 (1.32)	10.21 (1.26)
Accuracy-1	0.40 (0.21)	0.34 (0.10)	0.37 (0.17)	0.33 (0.20)	0.31 (0.25)	0.32 (0.22)
Accuracy-6	0.38 (0.20)	0.38 (0.19)	0.38 (0.19)	0.34 (0.21)	0.35 (0.27)	0.34 (0.23)

For inferential statistics, ANCOVA was run to find the effect of text type and length restriction for the complexity and accuracy of the last summarization trial with the first summarization trial set as a covariate.

Results showed that structural complexity was affected significantly by the text type (F = 20.05, p = .00) but not by length restriction (F = .414, p = .523). There was no interaction with length restriction, either (F = 2.258, p = .140). However, lexical complexity and accuracy were both significantly affected by the same language feature in the first summary only. Lexical complexity in the last summary was significantly affected by that in the first summary (F = 5.156, p = .028). Accuracy in the last summary was also significantly affected by that in the first summary (F = 4.891, p = .032). Neither text type nor length restriction affected lexical complexity and accuracy as shown in Table 6.

Put in other words, text type affected only structural complexity as predicted by the Cognition Hypothesis, whereas length restriction did not affect any of the three measures of IL performance. Lexical complexity and accuracy were both affected by learners' initial level, which may be interpreted as more closely related to learners' constant competence rather than the manipulation of the task on resource-directing or dispersing variables such as text type or summary length restriction.

TABLE 6
Effects of Text Type and Length Limit on Language Quality

	Source	*df*	Mean Square	*F*	*Sig.*	Partial Eta Squared
SC6	SC1	*1*	.029	.572	.453	.013
	Text type	*1*	1.033	20.051*	.000	.308
	Limit	*1*	.021	.414	.523	.009
	Text type * Limit	*1*	.116	2.258	.140	.048
	Error	*45*	.052			
	Total	*50*				
LC6	LC1	*1*	19.329	5.156*	.028	.103
	Text type	*1*	.211	.056	.813	.001
	Limit	*1*	1.885	.503	.482	.011
	Text type * Limit	*1*	6.895	1.839	.182	.039
	Error	*45*	3.749			
	Total	*50*				
A6	A1	*1*	.213	4.891*	.032	.098
	Text type	*1*	.002	.056	.813	.001
	Limit	*1*	.006	.133	.717	.003
	Text type * Limit	*1*	.000	.001	.978	.000
	Error	*45*	.044			
	Total	*50*				

*p < .05

The third research question was the effect of repetition of summarization. Repeated measure ANOA showed that repetition improved syntactic complexity (SC) (F = 5.809, p = .020) from 0.26 to 0.53 in argumentative text (see Table 5) and lexical complexity (LC) (F = 5.089, p = .029) as shown in Table 7. But the effect of repetition for structural complexity has a significant interaction effect with text type such that only in the argumentative text, structural complexity increased significantly through repetition as shown in Figure 2.

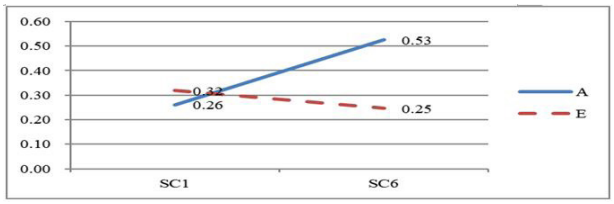
Also, the three way interaction effect approached the significant level (F = 3.837, p = .056). It suggests that when length restriction is set, the structural complexity was lower within the argumentative text summarization as .47 vs. .59. It may be interpreted that summary length restriction behaves as a resource-dispersing variable increasing the complexity of task.

TABLE 7
Repetition Effects on Language Quality

Source	Measure	repetition	Type III Sum of Squares	*df*	Mean Square	*F*	*Sig.*	Partial Eta Squared
Repetition	SC	Linear	.244	1	.244	5.809*	.020	.112
	LC	Linear	11.229	1	11.229	5.089*	.029	.100
	A	Linear	.006	1	.006	.206	.652	.004
Repetition* Text type	SC	Linear	.735	1	.735	17.515*	.000	.276
	LC	Linear	.001	1	.001	.000	.983	.000
	A	Linear	.003	1	.003	.101	.752	.002
Repetition* Length limit	SC	Linear	.064	1	.064	1.518	.224	.032
	LC	Linear	.642	1	.642	.291	.592	.006
	A	Linear	.016	1	.016	.530	.470	.011
Repetition* Text type* Length limit	SC	Linear	.161	1	.161	3.837	.056	.077
	LC	Linear	2.876	1	2.876	1.303	.260	.028
	A	Linear	.001	1	.001	.019	.891	.000
Error (repetition)	SC	Linear	1.929	46	.042			
	LC	Linear	101.496	46	2.206			
	A	Linear	1.367	46	.030			

*$p < .05$

However, lexical complexity increased through repetition regardless of other variables, text type or length restriction. Accuracy did not show any significant improvement by repetition or by interaction with other variables.



Note. SC: Syntactic complexity, A: Argumentative text, E: Expository text

FIGURE 2 Interaction Effects Between Repetition and Text Type

In sum, structural and lexical complexity improved over time through repeated summarization, suggesting the effect of repetition for language complexity. However, structural complexity improved only in argumentative text whereas lexical complexity improved in both text types. On the other hand, accuracy did not improve over time through repetition.

Combined with the ANCOVA results, the statistical results are concluded that structural complexity became sensitive to text type only after repetition of summarizing tasks whereas learners were not sensitive to the text type initially. It is interpreted that the proposed relationship between language complexity and task content complexity is only evident through the help of *resource-dispersing* variable rather than without it. In contrast, lexical complexity was improved through repetition but was also affected by learners' initial level of performance rather than by text type or length restriction. Lexical complexity is interpreted as different from structural complexity in its sensitivity to the *resource-directing* variable, i.e., reasoning demands. It suggests the possibility that lexical complexity as measured in this study is more dependent on r*esource-dispersing* variable, implying that it is a procedural feature of IL rather than IL system.

Accuracy was not improved through repetition or sensitive to text type and length restriction. Accuracy, which was proposed to behave together with language complexity did not turn out as predicted but it was affected only by the initial level, suggesting that it hardly changes by tasks. Therefore, the prediction for the role of *resource-directing* variable operationalized by text type in this study was supported clearly and only by structural complexity, importantly with the help of repetition, one of the *resource-dispersing* variables.

3. Cognitive Load

The fourth research question was about the most effective set of task features for the participants of the present study that maximizes learners IL performance in terms of complexity and accuracy. The tasks given to the four groups can be ordered from the heaviest as follows: summarization of an argumentative text with a length limit (Group 1), an argumentative text with no length limit (Group 2), an expository text with a length limit (Group 3), an expository text with no length limit (Group 4). The syntactic complexity, lexical complexity and accuracy in the final summarization are compared among the four task groups in Figures 3, 4, and 5. It is evident that the second most complex task, summarization of argumentative text without length restriction in its last trial resulted in the better performance than other tasks in all three measures, though statistical significance was found only in

structural complexity. It suggests the probability that in a larger-scale study it may turn out statistically as the best combination set of features of three variables, text type on the resource-directing variable, length restriction and repetition on the *resource-dispersing* variable.

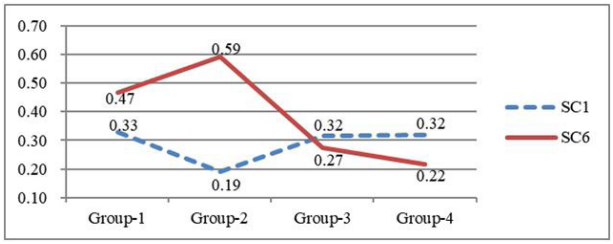


FIGURE 3 Syntactic Complexity (SC) by Cognitive Load and Repetition (SC-1, SC-6)

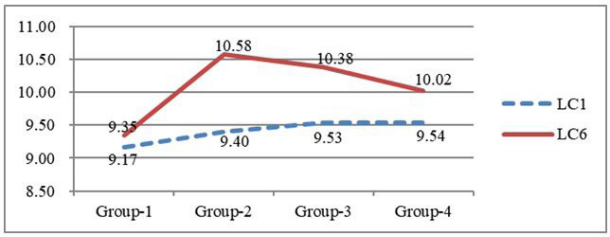


FIGURE 4 Lexical Complexity (LC) by Cognitive Load and Repetition (LC-1, LC-6)

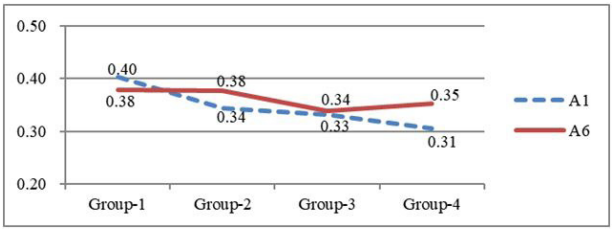


FIGURE 5 Accuracy (A) by Cognitive Load and Repetition (A-1, A-6)

V. DISCUSSIONS

Among the findings from the present study, the relationship between language complexity and the task complexity on the *resource-directing* variable is considered important for several reasons: First, structural complexity is one of the most challenging subsystems of IL for learners. Especially in the written production task of high cognitive load such as text summarization, the research has been rare, putting aside the findings of positive relationship.

Second, the positive relationship between structural complexity and task complexity was found only after five summarization tasks repeated through the same type of texts. It suggests that to the learners, the *resource-directing* variables of the tasks are just demands of the tasks which are fulfilled only when the learners reach the required level of proficiency. Just one time comparison between the two levels of *resource-directing* variable cannot prove anything about the prediction of the positive relationship between the complexity on the *resource-directing* variable and language complexity. Robinson (2005a) also claimed that the effects of task complexity along complex *resource-directing* dimensions could be stronger on language complexity when the task becomes simpler along *resource-dispersing* dimensions, which has hardly been proved in the previous studies.

Third, the relationship between structural and lexical complexity once again was shown to be questionable. Lexical complexity did not behave together with the structural complexity, i.e., sensitive to the cognitive complexity on the *resource-directing* variable in the present study. Though Robinson did not distinguish between the two types of language complexity, the measure of lexical complexity the present study adopted, number of words per T-unit, needs to be re-evaluated as a proper measure of language complexity that goes hand-in-hand with the task complexity on the *resource-directing* dimension. On the other hand, several studies (Ishikawa, 2007, 2008; Kuiken & Vedder, 2007a, 2007b, 2008; Michel et al., 2007; Robinson, 2001a) on task complexity manipulation showed significant differences in lexical complexity or/and accuracy, but this study showed significant difference neither in lexical complexity nor in accuracy. This might be because of combined effects between modality and task complexity since this study applied a written task with or without reasoning demands of text, different from other combinations of an oral task with or without reasoning demands (Ishikawa, 2008), or a written task with present or past tense verbs (Ishikawa, 2007). In comparison with two studies of Ishikawa's (2007, 2008), the combination of a written task and reasoning demands might enhance syntactic complexity than any other combination. Another interpretation is that high reasoning demands would block lexical retrieval according to Skehan (2009) who argued a negative correlation between syntactic complexity and lexical sophistication by non-native speakers in more demanding task. To sum, the relationship between structural and lexical complexity needs be studied further under various task feature combinations along with a more rigorous measurement of lexical complexity.

Fourth, accuracy which also was proposed as the companion to language complexity did not behave as predicted in the present study. The Cognition Hypothesis was not fully supported in terms of the relationship between complexity and accuracy measures since a significant difference was found only in syntactic complexity on the effects of text type. However, Skehan's trade-off between complexity and accuracy was not supported either, because accuracy did not change by any of the variables in the present study but was affected only by the initial accuracy level. According to Wolfe-Quintero et al. (1998), accuracy is connected to short-term change, which may mean that accuracy could be improved through short-term or immediate error corrections or any instructions for possible errors. Lynch and Maclean (2000) mentioned that sup-

porting roles of post-task activities for language work by teachers could be required for short-term accuracy gains. Therefore, accuracy improvement is hardly evident in the present study in which there was no immediate short term correction during summarization. From a more theoretical view, accuracy may be understood not as affected by the *resource-directing* variable or by *resource-dispersing* variable of tasks. It does not seem to be affected if there is no negative feedback to the performance as in the one-way summarization task.

The length limit variable did not show any significant results, except that in both text conditions, when length was restricted learners wrote shorter summaries, though they still wrote more than 70 words. It suggests that length restriction was in learners' mind, probably paying some cost of their cognitive resources. This interpretation is supported by the finding that in the final argumentative text summary, structural complexity was near significantly higher in no-restriction group. It was not clear whether summary length restriction belongs to the *resource-directing* or dispersing variable because it was not listed in the variables of task in the Triadic Model, and more importantly because it may affect differently according to the level of learners; advanced learners may write more compact and clear summaries in highly complex structure whereas lower level learners may not fulfill such requirements, making prediction difficult. The higher structural complexity of the final summary of the argumentative text when the length was not restricted is interpreted that it behaved as a *resource-dispersing* variable to the intermediate level learners in the present study.

The present study confirmed the effects of task repetition reported by earlier studies of oral production tasks, i.e., significant syntactic and lexical improvement and weak or no improvement in accuracy (Bygate, 1996, 2001; Bygate & Samuda, 2005). More importantly, the present study proved the function of task complexity on the *resource-directing* variable through repetition as discussed above. Initially insensitive linguistically to the cognitive load level of two different tasks, argumentative and expository text summarization, learners became significantly sensitive to the two levels of task complexity as predicted by Robinson. Through repetition as a *resource-dispersing* variable, the present study supported the role of task complexity proposed by the Cognition Hypothesis. Moreover, task repetition could play a crucial role in locating the task on the optimum complexity level for learners. Only after five repetitions of summarization in different level of cognitive load on two variables, the best cognitive level for IL performance was identified.

Finally, the present study suggests that task sequencing needs not be necessarily from simple to complex task in terms of total amount of cognitive load both from *resource-directing* and *resource-dispersing* variables. The learner group with the heaviest load in the present study achieved the required level of language complexity through repetition. It suggests that the manipulation of the two variables need not be in a fixed way (Jackson & Suethanapornkul, 2013; Y. J. Kim & Payant, 2014). The SSARC model (Baralt, Gilabert, & Robinson, 2014; Robinson, 2015) specified the pedagogical task sequence in three steps from the simplest to the most complex task by including the concepts of learners' current interlanguage state, mental effort, and practice opportunities. The first critical consideration is about how learners' proficiency levels are matched to the best task complexity. Starting with a little too high level complex task on the *resource-directing* variable and then repeating it might be one solution to reach the best match as in the present study.

In relation to matching the levels of task complexity and learner proficiency, Long (2015) argued that complexity is important but hard to operationalize so that teachers and students often modify inherent features of complexity intentionally or unintentionally, resulting in a different task. He proposed that the readily available sequencing criteria in language teaching need to be identified, and strongly warned that learnability has been ignored by most teachers and researchers. In consideration of the Triadic Model that all the variables are relative concepts, Long's fixed linguistic standards in the form of learnability are urgently useful for this model to be tested objectively. Otherwise task difficulty factors (e.g. learners' ability and affective variables) can be used for instant and intuitive sequencing decisions during language class (Ishikawa, 2011), though Robinson (2001b) and Gilabert (2005) revealed that learners perceived more difficulty in more complex tasks and Tavakoli and Skehan (2005) supported their reports.

VI. CONCLUSION AND LIMITATIONS

The present study investigated Robinson's Cognition Hypothesis by examining the effects of repeated written summarization of English texts of high and low cognitive loads. The four research questions were formulated to find the effects of text type as an index of task complexity on the *resource-directing* variable, length restriction and repetition as indices of task complexity on the *resource-dispersing* variable, and the best combination of levels of these variables was searched, i.e., degree of cognitive complexity, that maximizes the intermediate level Korean adult learners' English in the written summaries.

Results partly supported Robinson's Cognition Hypothesis. Positive relation between language complexity and task complexity was found as predicted by the hypothesis, though not initially but only after repetitions and only in one type of complexity, structural, not in lexical complexity, was significantly higher in the more complex task (i.e., summarization of argument text, than in the less complex task, i.e., summarization of expository text. Lexical complexity improved equally in both text types and regardless of length restriction). Accuracy which was proposed to behave in the same way as language complexity was not improved in any condition. Lexical complexity and accuracy were both affected by their initial performance

level. The long-standing controversy on the relation between complexity and accuracy remained unanswered in the present study. Also, the relation between the two types of complexity, structural and lexical, was not clearly explained in terms of why they do not behave together. Though the positive relation between task complexity on the *resource-directing* variables and language complexity was supported as a core part of the Cognition Hypothesis, other variables demand more systematic explanation on the theory level.

Robinson's Triadic Model of tasks provided comprehensive framework for task design. However, as Long (2015) pointed out, linguistic items as the target of learning through task need to be put into system in terms of learnability order so that it provides a firm standard for resource-directing variable. The present study was successful in finding the positive relation between one type of language complexity, structural, and task complexity on the resource-directing variable, which is core of the Cognition Hypothesis as a driving engine of IL language development through tasks. However, it was possible only through repetition and undeniably intuitive matching learners' level and task features. Moreover, though the Cognition Hypothesis is conceptually well-balanced and comprehensive SLA model, it is without rigorous standards in allocating and classifying sub variables under each category. Ultimately, it may be because complexity of human cognition must be hard to classify and systematize. Starting from linguistic learnability standard and the more rigorous experimental research, the Cognition Hypothesis could be more specified linguistically.

The present study aimed at examining the effect of real life task, summarizing. However, since summarizing involves reading and writing in an integrative way as many real-life tasks are also sets of sub-tasks, the complexity of the summarizing task could not be systematically defined enough from the previous research in the field so far. Two component skills in summarizing, reading and writing, could be assessed separately, and the relation between them would be the important issue to be researched for better analysis of summarizing as a complex task in the future. A more in-depth analysis of texts and the learners' summaries would be required in the future as well. For example, the complexity of texts could be assessed through the number of main ideas that might affect learners' processing load in addition to readability scale. Also, another in-depth analysis of learners' summaries would add an extra dimension in examining the effect of task complexity and task repetition, which was beyond the scope of the present study and was dealt with separately in H. Park (2015). Additionally, the further research on the roles of source text to variety of vocabulary could provide more pedagogical results than the present study. According to Y. Ryoo (2016), the effects of source text were considered more influential than those of learners' English proficiency levels concerning the vocabulary use in producing summary writing.

For clear pedagogical implication to be drawn, the research needs to control variables other than the target variable that research is aimed at. However, both controlling and operationalizing cognitive complexity of task are extremely difficult when a variety of variables are involved in a particular study. For example, from their synthesis and meta-analysis based on nine oral production studies on second language task complexity, Jackson and Suethanapornkul (2013) pointed out that writing performances inherently had more online planning than oral ones, and without the full control of the planning time variable, valid results of research could be blocked. Tuning to the particular group of learners in designing a task seems still relying on the researchers' or instructors' intuition or trial and error.

Apart from the operationalized variables and conditions, learner factors heavily influence study results as well. Concerning the present study, questions still remain as researchers attempt to figure out the optimum complexity of tasks that lead learners to their interlanguage development. Promising combinations of task variables that help learners stretch their interlanguage should be continuously tested in order to build a system to decide appropriate tasks for learners.

REFERENCES

Adelson-Goldstein, J., & Howard, L. (2004). *Read and reflect 1*. Hong Kong: Oxford University Press.

Baralt, M., Gilabert, R., & Robinson, P. (2014). An introduction to theory and research in task sequencing and instructed second language learning. In M. Baralt, R. Gilabert, & P. Robinson. (Eds.), *Task sequencing and instructed second language learning* (pp.1-34). Suffolk: Bloomsbury.

Barton, L., & Sardinas, C. D. (2004). *Northstar: Reading and writing, intermediate* (2nd ed.). New York, NY: Pearson Education.

Beatty, K. (2004). *Read and think! A reading strategies course*. Hong Kong: Longman.

Bygate, M. (1996). Effects of task repetition: Appraising the developing language of learners. In J. Willis & M. Willis (Eds.), *Challenge and change in language teaching* (pp. 136-146). Oxford: Heinemann.

Bygate, M. (2001). Effects of task repetition on the structure and control of oral language. In M. Bygate, P. Skehan, & M. Swain (Eds.), *Researching pedagogical tasks: Second language learning, teaching and testing* (pp. 23-48). Harlow: Pearson Education.

Bygate, M., & Samuda, V. (2005). Integrative planning through the use of task-repetition. In R. Ellis (Ed.), *Planning and task performance in a second language* (pp. 37-74). Amsterdam/Philadelphia: John Benjamins.

Candlin, C. (1987). Toward task-based language learning. In C. Candlin & D. Murphy (Eds.), *Language learning tasks* (pp. 5-22). Englewood Cliffs, NJ: Prentice Hall.

The Flesch Reading Ease formula. (2010). In Free Text Readability Consensus Calculator. Retrieved from http://www.readabilityformulas.com/free-readability-formula-tests.php

Gilabert, R. (2005). *Task complexity and L2 narrative oral production.* Unpublished doctoral dissertation, Universitat de Barcelona, Spain.

Gilabert, R., Baron, J., & Llanes, A. (2009). Manipulating cognitive complexity across task types and its impact on learners' interaction during oral performance. *IRAL, 47*(3-4), 367-395.

Givon, T. (1985). Function, structure, and language acquisition. In D. Slobin (Ed.), *The crosslinguistic study of language acquisition* (Vol. 2., pp. 1005-1027). Hillsdale, NJ: Lawrence Erlbaum.

Givon, T. (1989). *Mind, code, and context: Essays in pragmatics.* Hillsdale, NJ: Lawrence Eflbaum.

Hidi, S., & Anderson, V. (1986). Producing written summaries: Task demands, cognitive operations, and implications for instruction. *Review of Educational Research, 56*(4), 473-493.

Ishikawa, T. (2007). The effect of manipulating task complexity along the (±here-and-now) dimension on L2 written narrative discourse. In G. Mayo & M. del Pilar (Eds.), *Investigating tasks in formal language learning* (pp. 136-156). Clevedon, Multilingual Matters.

Ishikawa, T. (2008). The effect of task demands of intentional reasoning on L2 speech performance. *The Journal of Asia TEFL, 5*(1), 29-63.

Ishikawa, T. (2011). Examining the influence of intentional reasoning demands on learner perceptions of task difficulty and L2 monologic speech. In Robinson, P. (Ed.), *Second language task complexity: Researching the Cognition Hypothesis of language learning and performance* (pp. 307-329). London: Routledge.

Jackson, O. D., & Suethanapornkul, S. (2013). The Cognition Hypothesis: A synthesis and meta-analysis of research on second language task complexity. *Language Learning, 63*(2), 330-367.

Kim, You Jin, & Payant, C. (2014). A pedagogical proposal for task sequencing: An exploration of task repetition and task complexity on learning opportunities. In M. Baralt, R. Gilabert, & P. Robinson. (Eds.), *Task sequencing and instructed second language learning* (pp. 151-177). Suffolk: Bloomsbury.

Kuiken, F., & Vedder, I. (2007a). Cognitive task complexity and linguistic performance in French L2 writing. In G. Mayo & M. del Pilar (Eds.), *Investigating tasks in formal language learning* (pp. 117-135). Clevedon, Multilingual Matters.

Kuiken, F., & Vedder, I. (2007b). Task complexity and measures of linguistic performance in L2 writing. *IRAL, 45*(3), 261-284.

Kuiken, F., & Vedder, I. (2008). Cognitive task complexity and written output in Italian and French as a foreign language. *Journal of Second Language Writing, 17*(1), 48-60.

Kuiken, F., & Vedder, I. (2011). Task complexity and linguistic performance in L2 writing and speaking. In Robinson, P. (Ed.), *Second language task complexity: Researching the Cognition Hypothesis of language learning and performance* (pp. 307-329). London: Routledge.

Lee, Haemoon., Park, Heesoo., & Yoon, Yousook. (2007). The effects of repeated oral summarization on the learners' IL performance and summary quality. *Korean Journal of Applied Linguistics, 23*(2), 125-146.

Long, M. (1985). A role for instruction in second language acquisition: Task-based language teaching. In K. Hyltenstam & M. Pienemann (Eds.), *Modelling and assessing second language acquisition* (pp. 77-99). Clevedon, Multilingual Matters.

Long, M. (2015). *Second language acquisition and task-based language teaching*. Malden, MA: Wiley Blackwell.

Lynch, T., & Maclean, J. (2000). Exploring the benefits of task repetition and recycling for classroom language learning. *Language Teaching Research, 4*(3), 221-250.

Michel, M. C., Kuiken, F., & Vedder, I. (2007). The influence of complexity in monologic versus dialogic tasks in Dutch L2. *IRAL, 45*(3), 241-259.

Norris, J. M., & Ortega, L. (2009). Towards an organic approach to investigating CAF in instructed SLA: The case of complexity. *Applied Linguistics, 30*(4), 555-578.

Park, Heesoo. (2015). The effects of cognitive complexity on summary quality by Korean college students. *Korean Journal of English Language and Linguistics, 15*(3), 463-491.

Révész, A. (2009). Task complexity, focus on form, and second language development. *Studies in Second Language Acquisition, 31*(3), 437-470.

Robinson, P. (2001a). Task complexity, task difficulty, and task production: Exploring interactions in a componential framework. *Applied Linguistics, 22*(1), 27-57.

Robinson, P. (2001b). Task complexity, cognitive resources, and syllabus design: A triadic framework for examining task influences on SLA. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 287-318). Cambridge: Cambridge University Press.

Robinson, P. (2002). The Cognition Hypothesis of adult task-based second language learning: Theory and research. *Journal of the Korea English Education Society, 1*(2), 1-25.

Robinson, P. (2003a). The Cognition Hypothesis, task design, and adult task-based language learning. *Second Language Studies, 21*(2), 45-105.

Robinson, P. (2003b). Attention and memory during SLA. In C. J. Doughty & M. H. Long (Eds.), *Handbook*

of second language acquisition (pp. 630-678). Oxford: Blackwell.

Robinson, P. (2005a). Cognitive complexity and task sequencing: Studies in a componential framework for second language task design. *IRAL, 43*(1), 1-32.

Robinson, P. (2005b). Cognitive abilities, chunk-strength, and frequency effects in implicit artificial grammar and incidental L2 learning: Replications of Reber, Walkenfeld, & Hernstadt (1991) and Knowlton, & Squire (1996) and their relevance for SLA. *Studies in Second Language Acquisition, 27*(2), 235-268.

Robinson, P. (2007a). Task complexity, theory of mind, and intentional reasoning: Effects on L2 speech production, interaction, uptake and perceptions of task difficulty. *IRAL, 45*(3), 193-213.

Robinson, P. (2007b). Criteria for classifying and sequencing pedagogic tasks. In G. Mayo & M. del Pilar (Eds.), *Investigating tasks in formal language learning* (pp. 7-27). Clevedon, Multilingual Matters.

Robinson, P. (2015). The Cognition Hypothesis, second language task demands and the SSARC model of pedagogic task sequencing. In M. Bygate. (Ed.), *Domains and directions in TBLT: Plenaries from a decade of the international conference* (pp. 87-122). Amsterdam: John Benjamins.

Robinson, P., & Gilabert, R. (2007). Task complexity, the Cognition Hypothesis and second language learning and performance. *IRAL, 45*(3), 161-176.

Ryoo, Young-sook. (2016). Lexical profiles of Korean EFL summary writing from online spoken texts. *Modern English Education, 17*(3), 79-97.

Skehan, P. (1998). *A cognitive approach to language learning.* Oxford: Oxford University Press.

Skehan, P. (2009). Modeling second language performance: Integrating complexity, accuracy, fluency, and lexis. *Applied Linguistics, 30*(4), 510-532.

Tavakoli, p., & 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.

VanPatten, B. (1990). Attending to content and form in the input: An experiment in consciousness. *Studies in Second Language Acquisition, 12*(3), 287-301.

VanPatten, B. (1996). *Input processing and grammar instruction*. New York, NY: Ablex.

VanPatten, B. (2002). Processing instruction, prior awareness and the nature of second language acquisition: A (partial) response to Batstone. *Language Awareness, 11*(4), 240-258.

VanPatten, B. (2005). Processing instruction. In C. Sanz (Ed.), *Mind and context in adult second language acquisition* (pp. 267-281). Washington, DC: Georgetown University Press.

Wickens, C. D. (2007). Attention to the second language. *IRAL, 45*(3), 177-191.

Wolfe-Quintero, K., Inagaki, S., & Kim, H. Y. (1998). *Second language development in writing: Measures of fluency, accuracy, and complexity* (Tech. Rep. #17). Honolulu, HI: University of Hawai'i, Second Language Teaching and Curriculum Center.

Wormeli, R. (2005). *Summarization in any subject*. Alexandria, VA: Association for Supervision and Curriculum Development.

APPENDIX
First Reading Samples From Two Genres

Tourists in Antarctica (The South Pole)
(A 296-word argumentative text adapted from Barton & Sardinas, 2004)

Several scientists argue that Antarctica should be closed to tourists. They say Antarctica is the center of important scientific research, and it must be preserved for this purpose. Meteorologists are now looking at the effects of the ozone hole that was discovered above Antarctica in 1984. They are also trying to understand global warming. Astronomers have a unique view of space and are able to see it very clearly from Antarctica. Biologists have a chance to earn more about the animals that inhabit the frozen land. Botanists study the plant life to understand how it can live in such a harsh environment, and geologists study the Earth to learn more about how it was formed. Tourists may damage their scientific research even with a simple mistake.

In addition, tourists can hurt the environment by leaving trash on beaches and disturbing the plants and animals. In a place as frozen as Antarctica, it can take 100 years for a plant to grow back, and tourists taking picture of baby penguins may not pay attention to what their feet are stepping on. Oil spills are another problem caused by tourism. In 1989, one cruise ship caused an oil spill that killed many penguins and destroyed a five-year scientific project.

If we don't protect Antarctica from tourism, there may be serious consequences for us all. The ice of Antarctica holds 70 percent of the world's fresh water. If this ice melts, ocean levels could rise 200 feet and flood the coastal cities of the Earth. Clearly, Antarctica should remain a place for careful and controlled scientific research. We cannot allow tourism to bring possible danger to the planet. The only way to protect this fragile and important part of the planet is to stop tourists from travelling to Antarctica.

Finding a Spouse
(A 304-word expository text adapted from Barton & Sardinas, 2004)

All human beings are born into families, and families begin with the joining together of a man and a woman in marriage. All societies have their own form of marriage. In traditional Chinese culture, marriage decisions were made by parents who wanted to find a spouse for their son or daughter. They asked a matchmaker to find someone with the right characteristics.

The Hopi, a native people of North America, had a very different idea about freedom. Living in a kiva, a special home for young males, after leaving their parents' home at age thirteen, the Hopi boys enjoyed the freedom to go out alone at night and secretly visit young girls. The girl's parents were not angry about it. When the girl became pregnant she chose a boy who was one of the visitors for her husband.

Bavarian people in Germany had a similar custom called, 'windowing.' Young women left their windows open at night so that young men could enter their bedrooms. When a woman became pregnant, the man usually asked her to marry him. But women who did not get pregnant after windowing were often unable to find a husband.

A more famous example of a different style of marriage is found among the early Mormons. The group's first leader, Joseph Smith, believed that a man should be allowed to have several wives. The Mormons believed that it was a woman's duty to marry at a young age and raise as many children as possible. Today the Mormon Church teaches that marriage should be a partnership of one man and one woman who will be together not only during this life, but forever.

Despite all the different ways of finding a marriage partner, one idea is the same throughout the world: Marriage is a basic and important part of human life.