Length Constraint as Task Demand: Exploring L2 Oral Performance Variability

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ABSTRACT

Variation in EFL performance has been assigned to factors which claim learners' attentional resources. They fall under the major labelling of task difficulty/complexity. A number of factors have been argued to bring about task complexity,which lead correspondingly to variations in L2 performance. One crucial condition responsible for variability is planning. The present experimental study investigates length constraint as an instance of planning and answers the following research question: Does length planning as task condition bring about any L2 speech variations in terms of lexical density, lexical diversity and grammatical accuracy. This paper specifically focuses on 34 EFL learners' performance on length-constrained versus non-length-constrained oral reproduction tasks that were recorded and coded for lexical density, lexical diversity and grammatical accuracy. Results indicate statistically significant variations across the two performances with regard to lexical density and lexical diversity, but not grammatical accuracy.

INTRODUCTION

As a giant pedagogical step towards language in its real-life-like use, task appears to have inspired a wealth of literature in SLA. Various lines of research have been developed in accounting for dimensions of task-elicited performance. Cognitive approach as a major theoretical and research approach draws upon cognitive psychology, Krashen's (1985) input hypothesis, functional linguistics (Givon, 1985), and limited short-term memory capacity (Ellis, 2003). The latter approach as a pivotal background of theorizing assumes that for cognitive

processing to occur noticing is essential. Noticing, in turn, necessitates attentional resources which engage the short-term memory. Since the short-term memory is limited, task performance would mean a competitive and therefore differential access to interlanguage. Cognitive complexity of tasks brings about variability in the learner's performance which is realized in terms of the complexity, fluency, and accuracy in the learner's performance.

Cognitive complexity of tasks leading to variability has been characterized by some authors. Skehan (1998) illustrates everything related to task difficulty in a more or less neat triple categorization with some subcategories. Major categories in Skehan's terms that result in task difficulty include *code complexity*, *cognitive complexity* and *communicative stress*. Cognitive complexity divides further into cognitive processing, and cognitive familiarity. He attributes communicative stress to "a group of factors unrelated explicitly to code or meaning, but which have an impact upon the pressure of communication" (Skehan 1998, p. 52) which include a) *time pressure*, b) *modality*, c) *scale* (e.g. the number of tasks, or the number of the relationships), d) *stakes* (i.e. the degree to which both task performance and correct performance are critical, and d) *control* (i.e. how much control can the learner have on task performance). Ellis (2003) presents a slightly more detailed characterization than that of Skehan:

TABLE 1: Criteria for Grading Tasks (Ellis 2003: 75)

Criterion	**Easy** →	**Difficult**
A. Input		
1. Medium	Pictorial → written	→ oral
2. Code complexity	High-frequency vocabulary/short and simple sentences	Low frequency vocabulary/ complex sentences structure
3. Cognitive complexity		
a. Information type	Static → dynamic	→ abstract
b. Amount of information	Few elements/relationships	Many elements/relationships
c. Degree of structure	Well-defined structure	Little structure
d. Context dependency	Here-and-now orientation	There-and-then orientation
4. Familiarity of information	Familiar	Unfamiliar
B. Condition		
1. Interactional relationship	Two-way	One-way
2. Task demands	Single task	Dual task
3. Discourse mode required to	Dialogic	Monologic

perform task		
C. Processes		
1. Cognitive operations	Exchanging → reasoning	→ exchanging opinions
a. Type	opinions	
b. Reasoning needed	Few steps involved	Many steps involved
D. Outcomes		
1. Medium	Pictorial	→ written → oral
2. Scope	Closed?	Open?
3. Discourse mode of task	Lists; description,	→ instructions; arguments
outcome	narrative; classification	

→ indicates a continuum of difficulty

Another framework for characterizing cognitive complexity of tasks that leads to variability in task-elicited language behavior has been presented by Robinson (2001). In his framework, he categorizes all variability into three areas of task complexity, task difficulty and task conditions. The first one, i.e. complexity, which is seen as sets of cognitive factors, divides into *resource-directing*, and *resource-depleting*. Task difficulty in his formulation is associated with participation (e.g. open vs. closed, one-way vs. two-way) and participant variables (like gender, familiarity, power and solidarity). Finally task conditions are divided into affective variables (like motivation, anxiety and confidence) and ability variables (such as aptitude, proficiency, etc).

Based on Givon's (1985) functional linguistics, requirements on manipulation of language impose constraints on the attentional resources of the speakers (task complexity/difficulty) which in turn lead to variability in speech accuracy, complexity, fluency, diversity, etc. Factors that claim the attentional resources in this way include attention, time planning, focus on form, topic, topic familiarity, displaced reference, discourse mode, medium, scope, etc (e.g. Ellis, 2003; Robinson, 2003). Behtary and Yaghoubi-Notash (2006, 2008) and Behtary et al (2006) have explored some factors, such as time constraint, gender and text access which bring about variation in the L2 oral performance of learners. So far no attempt has been made to explore length constraint as a source of variability.

Very recently, planning has been dissociated from its subordinate status under cognitive factors and has been pursued as a cognitive variable in its own right. Now, planning is such a widely investigated area that "one can now offer the powerful and robust generalization" (Skehan 2003: 6) concerning the influence of

planning on complexity and fluency (see Foster and Skehan 1996, 1999; Menhert 1998; Ortega 1999; Skehan and Foster 1997, 1999). As with accuracy, it is far from clear whether planning leads to more or less accurate performance. Foster and Skehan (1996), Skehan and Foster (1997), and Menhert (1998) endorse accuracy improvement as a factor of planning effect. However, Crookes (1989), Ortega (1999), and Wiggleworth (1997, 2001) argue against accuracy gain. A relatively new characterization has been introduced by Yuan and Ellis (2003) in which on-line planning is contrasted with pre-planning. By the former they mean the planning during speech along with pre-production and post-production of speech acts by the learners. Findings in their study indicates that pre-task planning affects grammatical complexity while on-line planning enhances both grammatical accuracy and complexity (Yuan and Ellis 2003).

With the preceding background, the present paper seeks to explore the effect of length constraint on the learners' oral performance variability. It is an attempt to establish an empirically-supported cause-effect relationship between constraint on length of speech and lexical density, lexical diversity and grammatical accuracy of L2 learners' task-prompted oral discourse. Accordingly, the research question posed is: Does length planning as task condition bring about any L2 speech variations in terms of lexical density, lexical diversity and grammatical accuracy?

METHOD

Participants

The participants of this study were initially 35 undergraduate English majors doing their oral reproduction course at the Islamic Azad University, Ardabil Branch. One participant was removed from the research in order to yield two equal-sized groups regarding gender. This was done to exclude gender as a moderator variable; therefore, the participants came to be 34, i.e., 17 male and 17 female learners.

Materials

A single-page unseen narrative text, No. 57 from the book '*Advanced Stories for Reproduction*' (see Appendix), was used for the purpose of the study. The

selection of the text involved the following stages. First, five intermediate-level university books commonly taught for oral reproduction courses in Iran were randomly selected. Second, out of those books, 10 passages were randomly chosen as the reference pool. At the next stage, the mean difficulty level of the pool was calculated employing the Flesch reading ease formula. Finally, an unseen passage out of the pool was chosen for the purpose of learner performances, having the closest Flesch reading ease index to the afore-set mean.

Procedures

The students were supposed to read the text in ten minutes. Then the papers were collected. The students had four minutes of planning time. After that they were to reproduce the text as much in detail as possible in five minutes. Here, there was no length constraint. Then they had the second four minutes of planning time. This time the same participants were asked to reproduce the same passage as much in brief as possible within five minutes. The brevity demand to be met was actually the imposed length constraint.

All the times for reading the text, first and second plannings, and first and second reproductions were calculated by a pilot study on five similar students and measuring the mean times for each of the above-mentioned five steps.

The subjects were not allowed to take notes or consult dictionaries during these steps because this was the end-of-term examination in the oral reproduction of stories course which was administered in the language laboratory. The reproductions of the students were simultaneously recorded on the tapes.

All the recorded tapes were transcribed and lexical density, lexical diversity and grammatical accuracy were calculated twice by different raters for each reproduction in order to maintain inter-rater reliability (Kappa co-efficient values for lexical density, lexical diversity, and grammatical accuracy turned out to be 0.82, 0.79, and 0.88). Following Li (2000) and Laufer and Nation (1995), lexical density, lexical diversity and grammatical accuracy indices were obtained*.

Data Analysis

Using SPSS software three matched-pairs t-tests were employed to compare the two reproductions of the subjects with regard to the calculated indices for lexical density, lexical diversity and grammatical accuracy.

RESULTS

The descriptive statistics for both performances are presented in Table 3.

TABLE 3: *Descriptive Statistics for Both Performances*

	N	M	SD
Lexical Density of Performance 1	34	19.793	2.797
Lexical Density of Performance 2	34	25.98	14.014
Lexical Diversity of Performance 1	34	33.171	4.896
Lexical Diversity of Performance 2	34	46.509	31.949
Grammatical Accuracy of Performance 1	34	34.366	21.583
Grammatical Accuracy of Performance 2	34	32.275	20.036

Figure 1 below presents mean lexical density, lexical diversity, and grammatical accuracy of length-constrained and non-length-constrained performances.

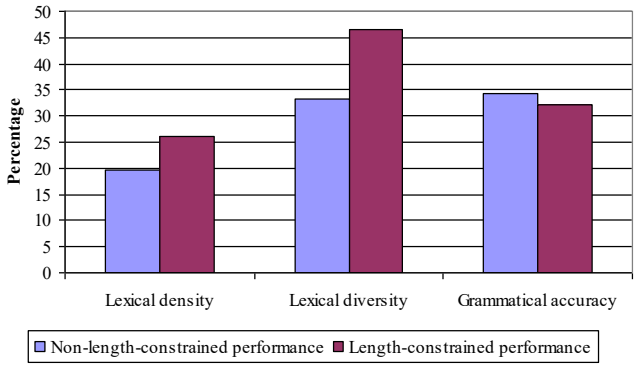

FIGURE 1: Lexical density, lexical diversity, and grammatical accuracy across the performances

In order to compare the performances of participants on the two reproductions, three matched-pairs t-tests were applied. Table 4 below presents the results of the three matched-pairs t-tests.

TABLE 4: *Matched-Pairs* t-*tests on Both Performances*

	t	df
(Pair 1) Lexical Density of Performance 1 - Lexical Density of Performance 2	-2.759*	33
(Pair 2) Lexical Diversity of Performance 1 - Lexical Diversity of Performance 2	-2.576*	33
(Pair 3) Accuracy of Performance 1 - Accuracy of Performance 2	.621ns	33

*p< 0.05
ns= not significant

Table 4 indicates that the two performances are significantly different at 0.05 probability level with regard to both lexical density and lexical diversity, but not grammatical accuracy.

DISCUSSION

Findings obtained by the application of matched-pairs t-test provide statistically-supported answers to the research question posed, that is, "Does length planning as task condition bring about any L2 speech variations in terms of lexical density, lexical diversity and grammatical accuracy.?"

As with grammatical accuracy, no significant difference could be established between the performances with as opposed to the performance without length constraint (t-value = 0.621). Mean accuracy values for the two performances were 32.275 and 34.366, respectively. Therefore, it can be concluded that awareness of length constraint on the part of L2 learners does not influence grammatical accuracy of the task-prompted oral performance.

Lexical diversity varied across the performance with as opposed to the performance without length constraint. The t-value equalled -2.576 rejecting null hypothesis at $p<0.05$. Mean lexical diversity value of non-length-constrained performance equalled 33.171 and for length-constrained the value amounted to 46.509. It follows that participants (L2 learners) produced a more lexically-diverse L2 speech as a result of awareness of length constraint.

Lexical density as a criterion for linguistic complexity of the participants' L2 speech significantly varied across non-length-constrained and length-constrained

performances (t-value = -2.759 at $p<0.05$). Mean lexical density of the participants in the former was 19.791 while the mean lexical density of the latter equalled 25.98. In other words, it can be argued that L2-learner's task-prompted oral performance became more linguistically complex due to their awareness of length constraint.

The contribution of the present study to the existing body of literature is the finding that length pressure or the brevity demand on learner speech contributes to task difficulty. In this way, length constraint appears to be congruent with the notion of stakes as a subcategory of communicative stress presented by Skehan (1998). Also, in some ways it can be associated with 'attention' in Hulstijn and Hulstijn (1984) and Menhert (1998). In both cases, length constraint imposes processing demands on the learners' cognition leading to variability. If length constraint is assumed to induce planning on the learner's part, variability of the learners' performance in terms of complexity obtained in the study is justified in the light of well-supporting literature (Foster and Skehan, 1996, 1999; Menhert, 1998; Ortega, 1999; Skehan and Foster, 1997, 1999). The fact that this study could not come up with statistically significant gain in terms of accuracy is supported by (Crookes, 1989), Ortega (1999) and Wiggleworth (1997, 2001). On the other hand it is contradicted by Foster and Skehan (1996), Skehan and Foster (1997), and Menhert (1998) who argue for improvement of accuracy in speech as a result of planning.

The fact that awareness of length constraint does not lead to accuracy is endorsed by Van Patten (1990, 1996) who has shown that meaning is primary when attentional resources are limited. He argues that “under such conditions there is attention to form only if it is necessary for the recovery of meaning" (Skehan, 1998: 45). The present study shows the relationship between complexity and accuracy proposed by Crookes (1989), Ortega (1999), and Wiggleworth (1997; 2001). On the other hand, the results are rejected by Foster and Skehan (1996), Skehan and Foster (1997), Menhert (1998). If length constraint is assumed to prompt on-line planning by the learners, the findings are found to be contradicted by (Yuan and Ellis, 2003) in that no accuracy gain can be established as a result of length constraint.

Implications of the study

The present study contains important implications for SLA. The first and foremost message is for general ELT teaching practitioners, and testers. A common illusion for language teachers that may seem misleadingly commonsensical is that being brief is equated with being simple. Quite often teachers, interviewers, and testers in various ESL learning contexts encourage brief productions on the learner's part mistakenly believing that a requirement on the learners to produce less in quantitative terms would ease the burden of the task. This study clearly shows that, at least as far as oral reproduction tasks are concerned, a length constraint functions as a double processing burden on the learners' cognitive in addition to the original task fulfilment. In other words, shorter does not at all mean simpler, rather it means demanding and more complex because of being a surplus requirement.

Following the literature on cognitive approach to task, a methodological use can be made of length constraint in the language learning process. This can be achieved through manipulating length as a cognitive demand in order to;

1. push learners to more varied use of language in speaking and writing,
2. raise awareness of the learners to attend to native-like use (procedural knowledge) by means of promoted attention to learning from input,
3. maximize the likelihood of learner intake from L2 exposure due to longer input retention,
4. promote learning how to learn because of 'attention' to input,
5. enhance vocabulary learning as a means of longer retention of input,
6. make the learners activate their passive vocabulary, or other language forms as a result of 'stretched interlanguage', and
7. have the L2 learners analyze their input and output

NOTE: *Lexical density, lexical diversity, and grammatical accuracy were calculated using the following formulas: Lexical density = number of different lexical words × 100 / total number of tokens.; Lexical diversity = number of different lexical and functional words (types) × 100 / total number of tokens.; Grammatical accuracy = number of error-free T-Units × 100 / total number of T-Units

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APPENDIX

It was a very wide river, with many great curves in it, and in one of these there lived a large number of wild pigs. Nobody could remember how they had got there, but they managed to live through floods, fires, ice and attacks by hunters.

Then one day a stranger came to the nearest village and asked where he could find the wild pigs. Somebody told him, and he went off. He had no weapons with him, and the village people wondered what he was going to do with the pigs.

When he came back a few months later and said that he had caught all the pigs, the villagers were still more surprised, but some of the men agreed to go with him when he asked for help in bringing the pigs out. They wanted to see whether he was telling the truth.

They soon discovered that he was. All the pigs were inside an enclosure which had a fence round it and a gate in one of its sides.

'How did you do it?' they asked the stranger.

'Well, it was quite easy really,' he answered. 'I began by putting out some Indian corn. At first, they would not touch it, but after a few weeks, some of the younger pigs began to run out of the bushes, take some of the corn quickly, and then run back. Soon all the pigs were eating the corn I put out. Then I began to build a fence round the corn. At first it was very low, but gradually I built it higher and higher without frightening the pigs away. When I saw that they were waiting for me to bring the corn each day instead of going and searching for their own food as they had done in the past, I built a gate in my fence and shut it one day while they were all eating inside the enclosure. I can catch any animal in the world in the same way if I can get it into the habit of depending on me for its food.'