

Syntactic Complexity of EFL Learners' Casual Conversation, Monologue, and Writing

Park, Shinjae* and Yoon, Soyeon**

Incheon National University

*First Author / **Corresponding Author

ABSTRACT

The Journal of Studies in Language 37.1, 075-089. This paper aims to investigate how syntactic complexity differs depending on production modes. To this end, we examined a learner corpus obtained from undergraduate students, which comprises casual conversations, monologues, and writings. The syntactic complexity of each mode was measured by an automatic syntactic complexity analyser (TAASSC). The results are as follows: a) both the monologue and writing modes elicited greater syntactic complexity than conversation. However, syntactic complexity was not significantly different between monologues and writings except for Complex Nominals per Clause; b) among the three modes, syntactic complexity (i.e., Mean Length of Sentences and Complex Nominals per T-unit) in conversation was the best indicator of the L2 proficiency. Different cognitive or executive processes underlying the modes may have affected the complexity use. This paper suggests pedagogical implications that a monologue-like manner, such as presenting motivating topics, may enhance the use of complex structures in L2 conversations. (Incheon National University)

Keywords: syntactic complexity, casual conversation, monologue, writing, learner corpus



<https://doi.org/10.18627/jslg.37.1.202105.075>

pISSN : 1225-4770

eISSN : 2671-6151

Received: April 01, 2021

Revised: May 10, 2021

Accepted: May 16, 2021

This is an Open-Access article distributed under the terms of the Creative Commons Attribution NonCommercial License which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Copyright©2021 the Modern Linguistic Society of Korea

본인이 투고한 논문은 다른 학술지에 게재된 적이 없으며 타인의 논문을 표절하지 않았음을 서약합니다. 추후 중복게재 혹은 표절된 것으로 밝혀질 시에는 논문게재 취소와 일정 기간 논문제출의 제한 조치를 받게 됨을 인지하고 있습니다.

1. Introduction

Speaking and writing are seen as two linguistic modes of production: it is common that Second Language Acquisition (SLA) studies focus on one or the other. Also, it is widely known that finding common methods to compare L2 learners' spoken and written language is not easy since the two modes are considered essentially different. However, if they are different, it should be noted how these two skills are measured and evaluated with regard to L2 proficiency, and how proficiency is differently represented in speaking and writing modes. For example, if we assume that a learner has achieved a higher proficiency in writing than speaking, we should also be able to measure the difference objectively.

Syntactic complexity has increasingly been used as an index of competence and development of learners in SLA research: Syntactic complexity is one of the key constructs to measure the development of L2 learners and to examine the relationship between the complexity and proficiency (Jiang, Bi, and Liu, 2019; Hwang, Jung, and Kim, 2020; Khushik and Huhta, 2020; Lan and Sun, 2019; Yang, Lu, and Weigle, 2015). However, much of the academic literature has focused on writing so far, leaving gaps in our understanding on how syntactic complexity in L2 speech is measured and whether there are differences between the two modes. Moreover, fewer studies have examined the use of complex structures in spontaneous conversations.

The current study attempts to address these gaps in the research by comparing syntactic complexity indices measured across different production modes, i.e., casual conversation, monologue, and writing composition produced by Korean learners of English as a foreign language (EFL). Firstly, this study examines syntactic complexity measurements across production modes and identifies specific syntactic complexity features that characterize the difference in EFL learners' production in three modes. Secondly, we investigate which syntactic complexity indices would be the best predictors of learner proficiency. Based on the results, the study further suggests considering cognitive or executive process underlying the modes when investigating the cause of the difference in production modes: how EFL learners react to the given environment (e.g., time limit, cognitive pressure to manage their production, whether or not a familiar topic is provided, etc.). The results from the study will have a pedagogical implication on how more complex structures can be elicited in EFL learners' production.

2. Literature Review

2.1 Syntactic Complexity as a Developmental Index in L2 production

Syntactic complexity is a measure of variation and sophistication of grammatical structures in language production (Casal and Lee, 2019; Norris and Ortega, 2009). As the importance of syntactic complexity as a research construct is now generally accepted, a variety of measures have been proposed and tested in L2 writing research. Arguably, the most widely used units measuring syntactic complexity are *sentence* and *clause*. In addition, *T-unit*, or minimal terminable unit, is also another widely used unit, and is defined as one main clause and dependent clauses attached to it (Hunt, 1965), and much about these units have been discussed in L2 syntactic complexity research (Lu, 2011; Lu and Ai, 2015; Ortega, 2015). With these units as basis, commonly used syntactic complexity indices measures the frequency and length of phrases, clauses, and sentences, the number of coordinations and subordinations between and within clauses, and phrasal constructions, e.g. noun and verb phrases (Casal and Lee, 2019; Crossley and McNamara, 2014; Hwang et al., 2020; Lu, 2010). Fourteen indices have been widely examined and they are classified into five main categories, as listed in Table 1, based on the type of complexity (Lu, 2011).

Table 1. Description of Syntactic Complexity Indices

Category	Measures
Length of production units	Mean length of clause (MLC) Mean length of sentence (MLS) Mean length of T-unit (MLT)
Overall sentence complexity	Clauses per sentence
Amounts of subordination	Clauses per T-unit (CT) Complex T-units per T-unit (CTT) Dependent clauses per clause (DCC) Dependent clauses per T-unit (DCT)
Amounts of coordination	Coordinate phrases per clause (CPC) Coordinate phrases per T-unit (CPT) T-units per sentence (TS)
Phrasal sophistication	Complex nominals per clause (CNC) Complex nominals per T-unit (CNT) Verb phrases per T-unit (VTP)

Several previous studies have shown that the indices in Table 1 developed by Lu (2010), are useful for predicting proficiency (Lu, 2011; Lu and Ai, 2015; Ortega, 2015; Taguchi, Crawford, and Wetzel, 2013), and according to these studies, it is clear that more proficient learners produce more complex structures. For example, Lu (2011) examined college-level Chinese learners' essays written in English and found that L2 proficiency was predicted by MLC, CNT, CNC, MLT, and MLS among these indices. Taguchi et al. (2013) also found that writing quality was related to the use of complexity structures, and showed that proficient L2 writers tended to create longer texts with more diverse vocabulary and more complex nominalization. More recently, Lan and Sun (2019) compared the argumentative essays of Chinese English learners with academic journal articles focusing on the use of noun modifiers, and discovered that the frequency of noun modifiers in students' writings was much lower than their use in academic journal articles, and the students with higher proficiency tended to use more modifiers in writing. Similarly, Khushik and Huhta (2020) analyzed English argumentative essays by teenagers from Pakistan (N=868) and Finland (N=287), and the length of production units, subordination, and phrasal density differed clearly according to proficiency level.

In addition, there have been attempts to characterize syntactic complexity produced in speaking and writing. Biber, Gray, and Poonpon (2011) conducted an empirical analysis to identify syntactic characteristics of writing by comparing the use of complexity in conversation and revealed that the clausal complexity is the characteristics of speaking rather than writing and the phrasal complexity characterizes writing. This claim has been significant up to recent research. Hwang et al. (2020) conducted a corpus-based analysis of syntactic complexity with written and spoken data provided by 122 beginning-level Korean EFL children. The findings showed that among the seven syntactic complexity indices, four of them (MLS, DCT, CPT, VPT) differed significantly between written and spoken production. The written data included longer structures (MLT), more subordination (DCT), and more verb phrases (VPT) than the spoken data, whereas the spoken data involved a greater amount of coordination (CPT) than the written data. In addition, syntactic complexity scores of written language did a better job of predicting English proficiency than those of spoken language did.

2.2 Task-based L2 Language Performance: Conversation, Narrative Speaking, and Writing

Research in SLA has paid considerable attention to characterizing task performance in either speaking or writing mode, but few studies have aimed to compare language performance in both modes. In addition, the approach to the relationship between them varied greatly from a theoretical standpoint (Hwang et al., 2020). Furthermore, there are few studies that compare performance according to task types in writing and each area of speaking (e.g., spontaneous conversation, listening and retelling a short story in a speaking mode). However, before discussing the differences in language performance according to task types of each mode, a brief overview of influential cognitive process theories that explain the process of L2 speaking and writing will help us understand the similarities and differences inherent in those modes.

As for writing process, Kellogg (1996) claimed that first language (L1) writing includes three processes: Formulation, execution, and monitoring which work with working memory functions and central executive and phonological loop. Formulation involves planning and translating propositional and conceptual ideas into text. Execution is the actual creation of the text by writing. The final process, monitoring includes reading, editing, assessing, and modifying the text. According to the Kellogg, these processes work simultaneously and can affect the capacity of working memory depending on the work involved.

Some linguists claim there is a high degree of similarity in the core stages associated with writing and speaking. For example, both involve stages for planning of contents, linguistic encoding, execution, and articulation (Levelt, 1989). On the same line, Cleland and Pickering (2006) assume that these stages in spoken language production (Levelt, 1989) also apply to written language production. That is, some aspects of conceptualization at least must be common to both modalities (e.g., Ellis, 1987).

However despite such correspondences, performance in L2 written and oral production are thought to be very different because of different cognitive processes. For example, writing is a cycle process that usually affords writers ample time for planning, encoding, monitoring, and revising (Andringa, de Glopper, and Hacquebord, 2011). The recursive nature of writing may help writers free up cognitive resources, allowing L2 writers to produce longer and more complex structures than they would while speaking. By contrast, according to Levelt's (1989) influential speech production model, language production is the result of a highly automated system that conceptualizes the information the speakers intend to convey, formulates the linguistic structure needed to produce it, and articulates the message itself. In L1, this process operates with a high level of automaticity and operates largely in parallel (Levelt, 1989). However, speaking is often characterized as a linear process that is tightly constrained by time, especially for those with lower proficiency, who need to constantly monitor their productions (Kormos, 2014). Thus, in L2 speech production, there are various break-down points in the automatic function, which may be perceived as nonnative-like production.

Research on differences across speaking task types has been rarely conducted as well. Nippold et al. (2014) interviewed forty adolescents individually. Each of them participated in a conversational task, where an examiner verbally presents the topic of everyday life and the participant spoke about the topic, followed by a narrative task of listening to and retelling a fable. As a results, as the unit becomes longer, and the use of subordinate clause increases in both tasks. They also concluded that the narrative task of listening to and retelling fables could elicit a high level of syntactic complexity in adolescents and emphasized the need to use an appropriate task to elicit more complex syntax.

Nippold et al. (2017) further examined syntactic complexity in the spoken production of forty young English-speaking adults through an interview consisting of three speaking tasks: a conversation task (in the same form as Nippold et al., 2014); a narrative retelling task involving fables; and a critical-thinking task answering to a set of critical questions on the fables. All three tasks used in the study were found to be effective in prompting the use of complex syntax, but the narrative retelling task was especially helpful in eliciting the use of complex structures in terms of mean length of C-unit and clausal density. They inferred the reasons as follows: Conversations are the form of a dialogue in which two or more people interact, consisting of questions and answers as well as statements, whereas narratives are a monologue that requires one speaker to bear most of the communicative burden because he or she should lead the story alone. They added, however, that providing a topic, especially if mentally stimulating, seems to play a role in eliciting complex syntax even in conversational tasks.

Tavakoli (2014) investigated two types of writing task for 40 intermediate level EFL learners and conducted meta-analysis to compare the results of narrative speaking tasks of Tavakoli and Foster (2011) and Foster and Tavakoli (2009). These three studies have a common feature in that pictures were provided to help develop narratives. In task A, a picture of the main theme of a story was presented, and in task B, a picture of the background events as well as a picture of the theme were presented. Tavakoli and Foster (2011) showed that higher syntactic complexity was produced by 100 L2 learners in task B. Foster and Tavakoli (2009) asked 40 native speakers to do the same task, and found that providing more information in Task B had the effect of creating more complex syntactic complexity in narrative tasks. These results suggest that storyline complexity is a powerful feature that promotes high syntactic complexity in both L1 and L2 performance in terms of ratio of subordination and length of T-units. On the contrary, in writing task (Tavakoli, 2014), the differences elicited by the two tasks were not significant. Moreover, based on Levelt's theory (1989), Tavakoli (2014) speculated that a cognitively relaxed and comfortable external conditions had a great impact on eliciting greater syntax complexity in speaking. Likewise, Yoon (2017) supported this speculation (Tavakoli, 2014) in an empirical way and found significant effects of topic on syntactic complexity. The researcher examined 1198 argumentative essays of two topics written by college-level EFL learners: "It is important for college students to have a part-time job." and "Smoking should be completely banned at all the restaurants in the country." (p. 133). The former topic elicited greater complexity than the latter topic. The researcher assumed that the subject of part-time was probably more related to college students than to the smoking topic, so the familiarity of the topic contributed to the production of complexity.

In summary, previous studies comparing the production of syntactic complexity in L2 speaking and writing have suggested that there is an important difference between modes, but there are still gaps remaining in this area: Few studies have analyzed the differences between conversation and monologue in speaking. Although Nippold et al. (2014) and Nippold et al. (2017) compared conversational speech and narrative speech, writing was excluded. Furthermore, the conversational speech in their research was not a conversation in the generally accepted sense. In this task, one examiner and one student participated, and the role of the examiner was limited to presenting a topic, and the student who heard the question spoke his or her thought alone. In other words, it was closer to monologue than conversation. On the other hand, Tavakoli (2014) attempted to find out the difference in the degree of complex syntax usage in written and spoken data by meta-analysis method, but the study did not include any research on conversation. In addition, all three studies mentioned above have limitations on the scale of syntactic complexity in that they used a limited number

of indices associated only with production length and clausal density. These limitations made it difficult to capture the linguistic characteristics produced in each type.

This study attempts to fill these gaps in three ways: a) The conversation data were collected in more natural setting where two or more people dynamically interact without the examiner's interruption; b) the corpus was analyzed with various complexity indices to capture the syntactic characteristics of each mode; c) writing, monologue, and casual conversation were all compared.

2.3 Current Study: Research Questions and Predictions

Based on the previous discussion, we ask the following research questions in the current study:

RQ1. Are there differences in syntactic complexity between L2 learners' production modes, i.e., conversation, monologue, and writing composition in terms of syntactic complexity?

RQ2. Which of the three modes correlates more with learner proficiency? Which syntactic complexity indices predict learner proficiency reliably?

We predict that L2 learners' production of conversation, monologue, and writing will all differ in terms of syntactic complexity because of the different cognitive routines underlying the three types. Spoken productions will elicit less complex structures than written production since EFL learners are expected to experience greater processing burdens in spoken than in written production due to their limited cognitive resources while speaking. In addition, considering the speaking tasks alone, we predict that monologue will elicit more complex structure because one speaker in monologue should lead the narrative alone. On the other hand, in casual conversation, speakers will produce less complex structure because the speakers tend to rely on and work with other speakers, which leave them under time constraint and cognitive pressure. Furthermore, we predict that, among conversation, monologue, and written production, syntactic complexity in one type will be observed to best linearly match their L2 proficiency than others, and there will be reliable predictors of syntactic complexity for L2 proficiency in the selected mode. Since the L2 proficiency level used in this study was evaluated based on spoken data, it is expected that the proficiency level will correlate more to the syntactic complexity of conversations or monologues.

3. Method

3.1 Participants

This study used written, monologue, and conversational production of 40 college-level students selected from INU-MULC (Incheon National University Multi-language Learner Corpus). The corpus is a data set that has been publicly recruited and compiled since 2018, consisting of 20-25 minutes of casual conversation with two or more people, two minutes of monologues, and writing composition written in 30 minutes (see Park, 2020; 2021). The participants were all college students, and they chose and participated in the three tasks at their own discretion. Topics

were not provided for the conversation while the participants chose one from the suggested daily topics for the monologues and writing compositions. The topics suggested are presented in Table 2. The spoken data (i.e., conversation and monologue) were systematically transcribed and confirmed twice. Three native speakers of English participated in proficiency rating based on Common European Framework of Reference for Languages (CEFR: A1, A2, B1, B2, C1, and C2, from the lowest level to the highest), and each participant's speech was rated by two of them.

Table 2. Topics Provided in Each Task

Monologue	Writing
1. What do you usually do in your free time? Hobby, etc.	1. Should everyone get married?
2. What is your favorite genre of movie?	2. Is it essential to wear school uniforms in middle and high schools?
3. Do you think there can be a same-sex friendship between the opposite gender?	3. Should elementary, middle and high school students be allowed to carry phones in class?
4. Is it better to have a dog than cat?	4. Should any college student join a club?

The criteria for data selection in this study are as follows. First, the learners who participated in all three tasks of monologue, conversational speaking, and writing should be selected. Second, the number of speakers in each proficiency level must be similar. Under these conditions, 14 conversations, 40 monologues, and 40 written files were selected, and the selected files included the data of 8 participants in A1, 8 in A2, 9 in B1, 9 in B2, and 6 in C1. The raters did not give C2 to anyone, so C2 grade was not included here (Table 3). The total number of words used in each mode was 27,620, 4,531, and 9,681, respectively.

Table 3. Summary of the Dataset

Mode	Number of participants (file)	Mean number of words / participant	Total number of words
Conversation	40 (14)	668.00	26,720
Monologue	40 (40)	113.28	4,531
Writing	40 (40)	242.03	9,681
Participant number in each proficiency level	A1(8), A2(8), B1(9), B2(9), C1(6)		

3.2 Data Analyses

This study analyzes both modes of speaking and writing, so reliable measurement of syntactic complexity is an important issue. As was seen in 2.1, widely used units are T-unit, sentence, and clause. The T-unit and clause have been well defined in many studies, and this study adopts the definitions as in (1) and (2).

- (1) T-unit: a unit that consists of one main clause and (optional) subordinate clauses and non-clausal units or sentence fragments attached to it (Hunt, 1965).
- (2) Clause: a unit with a subject and a finite verb (Lu, 2010)

However, the definition of sentence is hard to apply to speaking because many utterances in speaking, especially in conversation data, are fragmentary, elliptical, and repetitive (Foster et al., 2000). Therefore, for the sentence unit, we eliminated false starts, repetitions, and fillers, and response tokens such as *oh*, and *hmm* were considered as a word, following the suggestion of Foster et. al (2000). Also, if a speaker's utterance was interrupted by the utterance of another speaker but continued without a long pause or intonation change, the utterance was considered as one sentence unit (Foster et al., 2000; Lintunen and Mäkilä, 2014). Based on this criteria, we manually unitized all transcriptions of conversation and monologue.

Table 4 exemplifies how utterances in this study were unitized as a sentence. A repetition of *test* and a broken expression were found in July's two utterances. After the process of unitization, July's two utterances were considered as one sentence, one T-unit, and two clauses, and Wen's response token was analysed in one sentence, 0 T-unit, 0 clause.

Table 4. Unitization of Sentences in Conversation

Description	Example from conversation	
	Before	After
repeated words	JULY; People said the test test way	JULY; People said the test way is good.
response token	WEN; Mm-hm.	WEN; Mm-hm.
broken expression	JULY; is good.	

We analysed the corpus using 14 syntactic complexity indices following Lu's (2010) study, which are presented in Table 1. All complexity indices were computed with the Tool for the Automatic Analysis of Syntactic Sophistication and Complexity (TAASSC) version 1.3.8 (Kyle, 2016). To explore whether there are any statistically significant differences between the complexity index scores of conversation, monologue, and written production in terms of syntactic complexity values (RQ1), a one-way ANOVA was conducted for each index. When there was a significant difference, a *post-hoc* test (Scheffé) was used to determine which groups differed from each other.

To discover which of the three modes is the most correlated to the learner's proficiency level, multiple regression analyses were performed on each mode using the syntax complexity indices as predictors and proficiency level as a dependent variable (RQ2). The regression models were then compared in terms of *R*-squared, since *R*-squared assesses the scatter of the data points around the fitted regression line, which means higher *R*-squared values represent smaller differences between the observed data and the fitted values. When the best correlating mode was determined, stepwise multiple regression was performed for the mode to find the indices that predict proficiency level (RQ2).

4. Results

4.1 Comparison of Syntactic Complexity between Three Modes

The results from one-way ANOVA showed that at least one mode was significantly different in all 14 syntactic complexity indices. The *post-hoc* test revealed that the scores of the conversation were significantly lower in all indices

than monologue and writing (Table 5). In addition, there were no statistically significant differences between monologue and writing except for the CNC (Complex nominals per clause) scores (Figure 1).

Table 5. Scores of Syntactic Complexity in Three Different Modes

Index	Mean			Standard Deviation		
	Conversation	Monologue	Writing	Conversation	Monologue	Writing
Length of Production units						
MLS	4.28*	14.07	14.18	1.58	5.31	3.70
MLT	6.12*	12.76	12.81	1.63	4.56	3.15
MLC	5.63*	7.74	8.48	0.85	1.94	1.72
Sentence Complexity						
CS	0.75*	1.85	1.69	0.21	0.71	0.40
Subordination						
CT	1.07*	1.65	1.52	0.16	0.43	0.29
CTT	0.12*	0.42	0.41	0.09	0.21	0.18
DCC	0.14*	0.36	0.32	0.09	0.13	0.10
DCT	0.16*	0.62	0.52	0.12	0.32	0.25
Coordination						
CPC	0.08*	0.24	0.21	0.04	0.26	0.11
CPT	0.09*	0.38	0.32	0.04	0.32	0.16
TS	0.69*	1.11	1.11	0.12	0.23	0.17
Phrasal Sophistication						
CNC	0.43*	0.66*	0.90*	0.11	0.28	0.31
CNT	0.47*	1.13	1.36	0.16	0.64	0.49
VPT	0.96*	2.13	2.16	0.29	0.64	0.50

* indicates that the mean score was significantly different from the other mode(s).

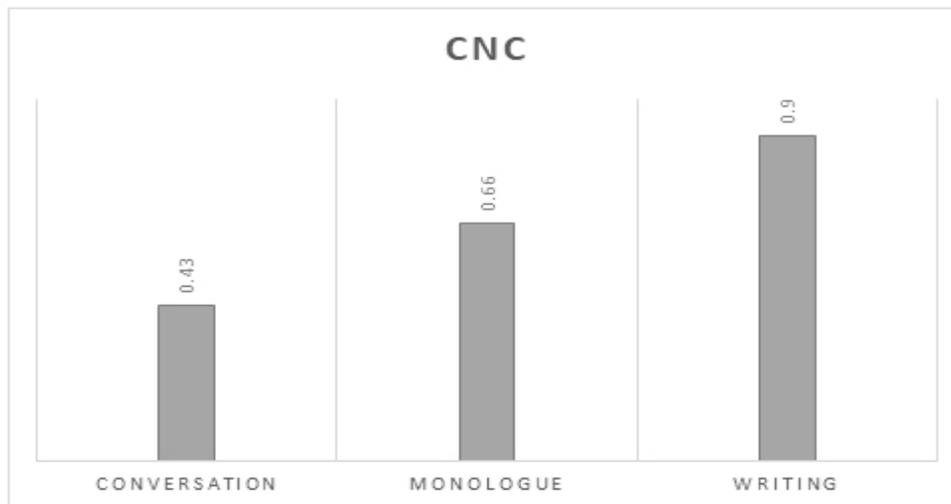


Fig. 1. CNC Values Among Different Modes

In sum, all indices had higher complexity scores in the written and monologue data than in the conversation data. However, most indices did not differ significantly between the written and monologue data, which deviates from the predictions. We expected written production would show higher syntactic complexity scores than spoken production regardless of task types because of the cognitive burden. Although the prediction was confirmed that there would be difference between writing and conversation, the difference between written and monologue data did not reach statistical significance for most of the complexity indices except for CNC. This point will be addressed in the discussion.

4.2 Comparison of Prediction Model between Three Modes

To discover which of the three modes is the most correlated to the learner's proficiency level, multiple regression analyses were performed on each mode using the syntax complexity indices as predictors and proficiency level as a dependent variable. As a result, complexity scores in conversational data were the most relevant to the proficiency levels and appeared as the mode that best predicted proficiency level. In conversation, the model was close to the regression line at 75.4%, which means that the model explains this amount of the variation in the proficiency variable ($R^2=.754$, $F(14,25)=5.460$, $p=.00$), followed by monologue with 55.3% ($R^2=.553$, $F(14,25)=2.210$, $p=.041$). On the contrary, a regression model in writing was not sufficiently explanatory ($R^2 = .429$, $F(14,25)=1.341$, $p=.253$).

For the syntactic complexity indices of conversation, stepwise multiple regression was performed to find the best indices for predicting proficiency levels. As is presented in Table 6, the significant predictors of proficiency were MLS (mean length of sentence) and CNT (complex nominals per T-unit). Furthermore, it showed that 59.8% of the proficiency variance was accounted for by MLS, and the additional input of CNT increased the explanatory power by 5.3%, making the total of 65.1%.

Table 6. Summary of Stepwise Multiple Regression Model in Conversation

Model	Variables entered	R	R ²	SE	<i>p</i>
1	MLS	.773	.598	.877	.00
2	CNT	.807	.651	.828	.00

In summary, the examination of the explanatory power for English speaking proficiency revealed that conversation and monologue were significant, and the explanation power of conversation was the greatest among them. Furthermore, among the 14 indices in conversation, MLS and CNT were found to be the best predictors of proficiency levels. To demonstrate how much MLS and CNT in conversation match the regression model, we compared scatter plots of conversation and monologue. Figure 2 shows the degree of linearity of MLS and CNT indices in accordance of proficiency levels: The linearity of the two variables in conversation are noticeably greater than in monologue.

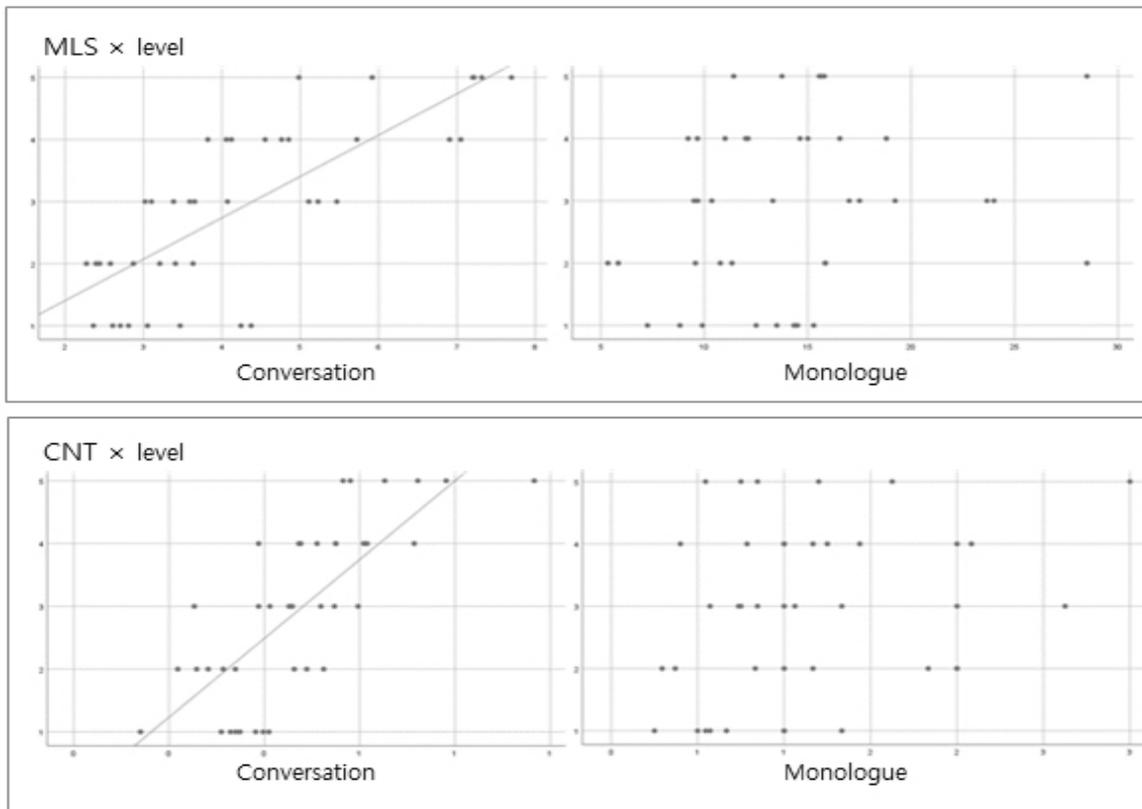


Fig. 2. Linearity of MLS and CNT Depending on Proficiency

5. Discussion

Adopting a corpus-based cross-mode research design, this study has provided a comprehensive comparison of syntactic complexity in conversations, monologues, and writing compositions of L2 college-level students on the basis of 14 indices (Lu, 2011), which are divided into five categories; length of production units, overall sentence complexity, amount of subordination, amount of coordination, and phrasal sophistication. The results revealed that there was a big difference in the complexity according to the production modes.

5.1 Effects of Production Modes on Syntactic Complexity

Both monologue and writing modes elicited significantly greater syntactic complexity than the conversational task in all indices. This result is partly consistent with the prediction that index scores would be different in writing and speaking. However, unlike the prediction, the production of syntactic complexity was not significantly different between monologue and writing except for CNC. Important findings from these results and the implications can be summarized as follows.

First, to explain the difference between conversation and writing, we need to think of the difference between writing and speaking in a wide perspective. It is well known that speaking is a linear process in which formulating

a linguistic unit and articulating speech sounds at the same time high demands on L2 learners' cognitive resources. By contrast, writing is a recursive process that is typically associated with less time pressure and a smaller communicative burden (Hwang et al., 2020). Thus, learners can manage their attentional resources, processing efforts, and control over linguistic forms more effectively while writing than while speaking (Hwang et al., 2020). This interpretation is consistent with the present results of the comparison between conversation and writing in terms of syntactic complexity.

But why is there no significant difference in the degree of the use of complex structures in monologue and writing? It is possible that the similar characteristics in the execution process where the two modes were carried out may have affected the similar degree of complexity in use. In the corpus collection, the participants were given several everyday topics, and they chose the topics of their own interest. Even if they were supposed to respond to the topics as immediately as possible, they still spent a few seconds to a few minutes to plan their production while choosing the topic. In this regard, it should not be overlooked that execution conditions of a task can affect the performance of language production (Tavakoli, 2014; Yoon, 2017). In the monologue task, where the topic of the speakers' interest is provided, the speakers may have the advantage of being able to plan ahead the content of the narrative (e.g., supplementary explanations or examples of the story) and key words, as they would do in the writing task. This may have mitigated cognitive burden when constructing a complex syntactic structure. The results of this study support Nippold's (2014) and Nippold's (2017) arguments that it is important to use appropriate tools (e.g., providing motivating topics or pictures) to elicit greater degree of syntactic complexity in a speaking task.

Second, the study demonstrated that learners produced a much more complex structure in monologue than in conversation. There are evidences that narrative tasks can elicit greater syntactic complexity than conversational tasks. Nippold et al. (2014) and Nippold et al. (2017) speculated that conversation is a dialogue where each participant contributes to the discourse, and thus, they cannot fully control their speech: they may have to answer questions instead of stating what they want to convey, and they may not take their turn whenever they want because others may interrupt. This dynamic interaction may have resulted in limited time of planning and, eventually relatively short and simple expressions. On the other hand, monologue is a narrative where one speaker alone bears most of the communicative burden of speaking an engaging story (Nippold et al., 2017). Therefore, learners tend to speak more and longer in monologues, so they end up speaking with higher complexity. In sum, it can be concluded that the longer and more complex structures were elicited from monologues because one speaker had to lead alone a story as well as a familiar topic was provided in advance.

Third, the difference in CNC (complex nominals per clause) production was different in all modes. The score of CNC was the lowest in conversation, followed by monologue, and was the highest in writing. This result is partly in line with several studies that have emphasized that academic writing heavily depends on phrasal complexity such as complex noun phrase (Biber et al., 2011; Biber, Gray, and Staples, 2016). However, we not only compared writing and speaking but compared casual conversation, monologue, and writing all together. The result that most syntactic complexity indices of monologue were similar with those of writing implies that the cognitive process of monologue and writing might be similar. But the difference in CNC implies that monologue still retains the characteristics of speaking, and thus it is distinguished from writing.

5.2 Predicting Proficiency by Syntactic Complexity in Three Modes

The examination of the explanatory power for English speaking proficiency levels revealed that conversation and monologue were statistically significant. This result is consistent with our prediction that the degree of complexity in the speaking modes would best predict the level of L2 proficiency. Since the proficiency level in the corpus was rated using spoken production, it was expected that either of the regression models in two speaking modes would best explain the variation of the proficiency levels. The regression result showed that the explanatory power in conversation was the greatest among all three modes. Furthermore, among the 14 measures in conversation, MLS and CNT were found to be the best predictors of L2 proficiency levels.

First, how can we explain the result that conversations best predict L2 proficiency among two speaking tasks? The characteristics of the conversation task may explain this. In the conversation task of the corpus, the participants had to interact spontaneously, without any interference of the task manager. It seemed, as a consequence, that the students who were more confident in their English speaking skill tended to dominate the conversation and produced longer and more complex structures. It is possible that people with the higher speaking proficiency levels spoke more than others, so there was greater difference in the relative frequency of complex sentences according to the proficiency level than other modes. In other words, the syntactic complexity in conversation is the best correlated with L2 proficiency because the spontaneous and dynamic nature of casual conversation may make discourse condition more favorable for more proficient speakers to produce more complex structures.

Second, in this study, MLS and CNT were the best predictors of L2 speaking proficiency. The fact that the Mean Length of Production is one of the factors that determine L2 proficiency was easily predictable because it has been revealed in a number of previous studies. In addition, Complex Nominal per T-unit was revealed to be one of the factors that significantly explain the L2 proficiency. Many empirical studies (Biber et al., 2011; Biber et al., 2016) have demonstrated that complex nominal is the most related to writing. However, this study found that CNT is one of the most predictors for the L2 proficiency even in conversation. Therefore, considering the previous research (Biber et al., 2011; Biber et al., 2016) and this study together, we hypothesize that the development of complex nominals is related to developing not only writing proficiency but also speaking proficiency. This needs further research in the future.

The findings reported here are significant in that it characterized syntactic complexity indices in speaking and writing tasks as well as in the two speaking tasks of conversation and monologue, by considering cognitive and executive processes of each mode. As far as we know, there has been no studies of syntactic complexity in casual and spontaneous conversation of EFL learners. Considering that conversation is the most universal and basic form of speech, which speakers experience every day, from the earliest stage of their lives (Peltridge, 2012), and that learners also experience conversation in various settings (e.g., as lingua franca in academy, business, tourism settings), it is essential to examine conversation of EFL learners. This study contributes to understanding more complete picture of learners' use of syntactic structure in various modes. The findings also have a pedagogical implication: We can enhance learners' syntactic complexity in speaking by providing specific topics even in conversation, and by controlling the practicing conditions, e.g., starting from a cognitively relaxed condition, like a monologue task, to a more cognitively effortful condition, like a debate condition.

References

- Andringa, S., K. de Glopper, and H. Hacquebord. 2011. Effect of explicit and implicit instruction on free written response task performance. *Language Learning* 61.3, 868-903.
- Biber, D., B. Gray, and K. Poonpon. 2011. Should we use characteristics of conversation to measure grammatical complexity in L2 writing development?. *Tesol Quarterly* 45.1, 5-35.
- Biber, D., B. Gray, and S. Staples. 2016. Predicting patterns of grammatical complexity across language exam task types and proficiency levels. *Applied Linguistics* 37.5, 639-668.
- Casal, J. E. and J. J. Lee. 2019. Syntactic complexity and writing quality in assessed first-year L2 writing. *Journal of Second Language Writing* 44, 51-62.
- Cleland, A. A. and M. J. Pickering. 2006. Do writing and speaking employ the same syntactic representations?. *Journal of Memory and Language* 54.2, 185-198.
- Crossley, S. A. and D. S. McNamara. 2014. Does writing development equal writing quality? A computational investigation of syntactic complexity in L2 learners. *Journal of Second Language Writing* 26, 66-79.
- Ellis, R. 1987. Interlanguage variability in narrative discourse: Style shifting in the use of the past tense. *Studies in second language acquisition*, 1-19.
- Foster, P. and P. Tavakoli. 2009. Native speakers and task performance: Comparing effects on complexity, fluency, and lexical diversity. *Language learning* 59.4, 866-896.
- Foster, P., A. Tonkyn, and G. Wigglesworth 2000. Measuring spoken language: A unit for all reasons. *Applied linguistics* 21.3, 354-375.
- Hunt, K. W. (1965). *Grammatical Structures Written at Three Grade Levels*. Champaign, Ill: National Council of Teachers of English.
- Hwang, H., H. Jung, and H. Kim. 2020. Effects of Written Versus Spoken Production Modalities on Syntactic Complexity Measures in Beginning-Level Child EFL Learners. *The Modern Language Journal* 104.1, 267-283.
- Jiang, J., P. Bi and H. Liu. 2019. Syntactic complexity development in the writings of EFL learners: Insights from a dependency syntactically-annotated corpus. *Journal of Second Language Writing* 46, 1-13.
- Kellogg, R. T. 1996. *A model of working memory in writing*. In C. M. Levy & S. Ransdell (Eds.), *The science of writing: Theories, methods, individual differences and applications* (pp. 57-71). Mahwah, NJ: Lawrence Erlbaum.
- Khushik, G. A. and A. Huhta. 2020. Investigating Syntactic Complexity in EFL Learners' Writing across Common European Framework of Reference Levels A1, A2, and B1. *Applied Linguistics* 41.4, 506-532.
- Kormos, J. 2014. Differences across modalities of performance. In H. Byrnes and R. M. Manchón (Eds), *Task-based language learning: Insights from and for L2 writing* (pp. 193-216). Amsterdam: John Benjamins.
- Kyle, K. 2016. *Measuring syntactic development in L2 writing: Fine grained indices of syntactic complexity and usage-based indices of syntactic sophistication*. (Unpublished doctoral dissertation). Georgia State University, Atlanta, GA.
- Lan, G. and Y. Sun 2019. A corpus-based investigation of noun phrase complexity in the L2 writings of a first-year composition course. *Journal of English for Academic Purposes* 38, 14-24.
- Levelt, W. 1989. *Speaking: From intention to articulation*. Cambridge, MA: The MIT Press.
- Lintunen, P. and M. Mäkilä 2014. Measuring syntactic complexity in spoken and written learner language: comparing the incomparable?. *Research in Language* 12.4, 377-399.
- Lu, X. 2010. Automatic analysis of syntactic complexity in second language writing. *International Journal of Corpus Linguistics* 15, 474-496.

- Lu, X. 2011. A corpus-based evaluation of syntactic complexity measures as indices of college-level ESL writers' language development. *TESOL Quarterly* 45, 36-62.
- Lu, X. and H. Ai 2015. Syntactic complexity in college-level English writing: Differences among writers with diverse L1 backgrounds. *Journal of Second Language Writing* 29, 16-27.
- Nippold, M. A., M. W. Frantz-Kaspar, P. M. Cramond, C. Kirk, C. Hayward-Mayhew, and M. MacKinnon 2014. Conversational and narrative speaking in adolescents: Examining the use of complex syntax. *Journal of Speech, Language, and Hearing Research* 57, 876-886.
- Nippold, M. A., M. W. Frantz-Kaspar, and L. M. Vigeland 2017. Spoken language production in young adults: Examining syntactic complexity. *Journal of Speech, Language, and Hearing Research* 60.5., 1339-1347.
- Norris, J. M. and L. Ortega 2009. Towards an organic approach to investigating CAF in instructed SLA: The case of complexity. *Applied linguistics* 30.4, 555-578.
- Ortega, L. 2015. Syntactic complexity in L2 writing: Progress and expansion. *Journal of Second Language Writing* 29, 82-94.
- Park, S. J. 2020. A corpus study of modal verbs in Korean learners' speech. *Journal of Linguistic Studies*, 25.2, 121-137.
- Park, S. J. 2021. A corpus study on the relationship between syntax complexity and English speaking proficiency. *Journal of Linguistic Studies*, 26.1, 43-61.
- Peltridge, B. 2012. *Discourse Analysis* (2ndEd). Bloomsbury.
- Taguchi, N., W. Crawford, and D. Z. Wetzel 2013. What linguistic features are indicative of writing quality? A case of argumentative essays in a college composition program. *Tesol Quarterly* 47.2, 420-430.
- Tavakoli, P. 2014. Storyline complexity and syntactic complexity in writing and speaking tasks. *Task-based language learning: Insights from and for L2 writing*, 217-236.
- Tavakoli, P. and P. Foster 2011. Task design and second language performance: The effect of narrative type on learner output. *Language Learning* 61, 37-72.
- Yang, W., X. Lu, and S. C. Weigle 2015. Different topics, different discourse: Relationships among writing topic, measures of syntactic complexity, and judgments of writing quality. *Journal of Second Language Writing* 28, 53-67.
- Yoon, H. J. 2017. Linguistic complexity in L2 writing revisited: Issues of topic, proficiency, and construct multidimensionality. *System* 66, 130-141.

Park, Shinjae, Instructor
 119 Academy-ro, Yeonsu-gu, Incheon, 22012, Republic of Korea
 Department of English Language and Literature, Incheon National University
 E-mail: tlswo@naver.com

Yoon, Soyeon, Professor
 119 Academy-ro, Yeonsu-gu, Incheon, 22012, Republic of Korea
 Department of English Language and Literature, Incheon National University
 E-mail: syoon@inu.ac.kr