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Utterance-Based Measurement of L2 Fluency in Speaking Interactions: A Constructionist Approach

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This study examines L2 fluency in speaking interactions based on the number and type of utterances. The participants were 25 Korean eighth-grade learners of English as a foreign language. They performed five communicative tasks in groups, and their speaking interactions were audio-recorded and analyzed to measure the frequencies of sentence-level and word-level utterances. Results showed that learners of different levels of L2 fluency greatly varied in their frequencies of sentence-level utterances. Construction-based analyses found that the frequency variation in sentence-level utterances was primarily attributable to the transitive construction and a small set of intransitive constructions. Further investigation of the transitive complementation patterns suggested that L2 learners' use of the nominal complementation [V+NP] became more productive as they expanded their repertoires of transitive complementation in developmental sequence based on a set of complementation clusters. Regarding these acquisitional patterns of the constructions in respect to L2 fluency development, the present study concludes with pedagogical implications and suggestions for future studies.

Key words: L2 speaking interaction, fluency, sentence-level utterance, argument structures, transitive construction

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1. INTRODUCTION

A primary goal of learning English as a second language (L2) is to gain an appropriate level of fluency in speaking interactions. However, many L2 learners of English, especially those learning English as a foreign language (EFL), complain that they have considerable difficulties in speaking fluently in English interactions. Having trouble spontaneously verbalizing their thoughts and feelings in L2 English, these learners appear to be less effective in making themselves understood in English speaking interactions (Lee, 2009; Yang, Kim, & Sung, 2014).

In response to this problem, many efforts have been made to diagnose specific areas of difficulty that L2 learners of English have in speaking fluently (e.g., Kim, 2012; Kormos & Dénes, 2004; Lennon, 1990; Skehan & Foster, 2012). Results have indicated that L2 learners, compared to native speakers, produce a fewer number of syllables or words during a certain amount of time (e.g., one minute), yield shorter stretches of speech without pauses (or shorter mean length of runs), and use more dysfluency markers such as repetition and hesitation.

These speech-rate-based diagnoses, however, provide quite limited implications for L2 English fluency education: Imagine how troubled teachers of English feel when trying to teach L2 learners to produce more syllables per minute or reduce dysfluency markers. Moreover, the speech-rate-based approach to L2 English fluency focuses on surface-level observations about acoustic and temporal units, so important structural and semantic elements are often disregarded. Finally, speech-rate-based measurements appear to be confined to the speaking mode of monologue where an individual speaker makes a long speech without being interrupted by other speakers (Tavakoli, Campbell, & McCormack, 2016). This condition is far from speaking interactions which are characterized by turn-taking, overlap, and interruption (Sacks, Schegloff, & Jefferson, 1974).

Against this backdrop, the present study aims to diagnose fluency issues of L2 learners in speaking interactions. To this end, it employs a working definition of fluency based on Fillmore (1979) and Faerch, Haarstrup, and Phillipson (1984), according to which fluent L2 speakers easily express their meanings in a variety of contexts and situations, using whatever linguistic forms they have. This definition leaves us specific questions regarding L2 English fluency: “Do L2 learners easily express their meanings in English speaking interaction?” and “What forms do they use?” Noting that these questions involve the analysis of both form and meaning, the present study examines every utterance in L2 English speaking interaction as an instance of a construction, a conventional pairing of form and meaning (Goldberg, 1995), and discusses the constructional features that L2 learners of English should address to be fluent in speaking interaction.

2. BACKGROUND

2.1. L2 English Fluency in Speaking Interactions

In L2 teaching and learning, fluency is generally understood as a native-like command of oral language and considered an important construct of L2 proficiency (Hedge, 2000). In such sense, fluency often refers to "delivery of speech" (Schmidt, 1992, p. 358) or "native-like rapidity" (Lennon, 1990, p. 389). In fact, fluency is a multi-dimensional element of language use. It pertains not only to speaking but also to writing, listening, and reading, which has motivated L2 teaching professionals to develop and use a variety of learning activities to improve fluency in different language skills (e.g., Iwahori, 2008; Nakatani, 2010; Thornbury, 2007).

Segalowitz's (2010) seminal work provided comprehensive discussion of the multidimensional nature of fluency and proposed three types of fluency in human language use, namely perceived, cognitive, and utterance fluency. Among these types, the diagnosis of L2 speaking fluency seems to have focused on utterance fluency and provided quantitative results based on observable acoustic features of L2 speech. For example, Kormos and Dénes (2004) defined L2 fluency as "the ability to talk at length with few pauses and to be able to fill the time with talk" (p. 147) and calculated the number of syllables articulated per minute as an indication of L2 fluency. Similarly, Skehan and Foster (2012) examined L2 fluency based on such numerical aspects of L2 speakers' utterance as the mean length of runs (i.e., streams of speech between overt pauses) and the number of dysfluency markers.

These speech-rate-based measurements, however, pose notable limitations in diagnosing L2 fluency in speaking interactions. First, the analysis of speech rate is applicable to specific types of speaking such as monologue where a speaker is not at risk of interruption by other speakers and holds the floor continuously throughout the talk. This may explain why the examination of interactive dialogue has been rare in the fluency research based on speech rate (Peltonen, 2017). Second, there is empirical evidence that L1 speech rate influences L2 speech rate: Those who speak fast in L1 tend to speak fast in L2 (Towell, Hawkins, & Bazergui, 1996). The influence of idiosyncratic characteristics in L1 use may question the reliability of speech rate when examining fluency as a construct of L2 proficiency or interlanguage development. Finally, the analysis of utterance frequency based on speech rate such as mean syllables per minute pays primary attention to acoustic and temporal aspects of L2 speech, with structural and semantic aspects neglected. Therefore, it provides limited implications for L2 teaching practice other than lengthening a stream of speech and removing dysfluency markers.

Therefore, L2 utterance fluency in speaking interactions should be measured by different methods which consider active turn-taking systems and avoid potential effects of L1 speech

rate. It would be better if the methods look into structural and sematic aspects of L2 utterance fluency and point out specific areas of difficulty that L2 teaching professional should be aware of. These requirements for measuring L2 utterance fluency are coherent with previous studies which highlighted fluency as an ability to communicate (Faerch et al., 1984; Fillmore, 1979; Hedge, 2000).

Faerch et al. (1984) proposed that fluency is a speaker's ability to make effective use of linguistic and pragmatic resources. More specifically, Hedge (2000) defines fluency as a communicative language ability "to link units of speech together with ease" (p. 409). That is, fluent speakers can effectively produce units of speech and link them together in communication. However, the effectiveness is not simply determined by rapidity of speech since fluency also involves functional aspects of speaking such as specificity, cohesiveness, ideation, and appropriateness (Fillmore, 1979).

Accordingly, the present study proposes a working definition that fluency is a communicative ability to effectively express one's meanings in a variety of contexts and situations, using whatever linguistic forms one has. This definition of fluency sees a single utterance as an attempt to map a set of meanings onto a set of forms, whether it is more or less successful, and argues that L2 speakers of different levels of fluency may vary in the number of utterances (Foster, Tonkyn, & Widdlesworth, 2000; Fraser, 2014). Therefore, the present study contends that the number of utterances is a meaningful indication of L2 fluency and examines utterance patterns that make significant contributions to L2 fluency based on a linguistic theory on form-meaning mapping, namely Construction Grammar (Goldberg, 1995, 2006).

2.2. Constructions of English Utterances

In constructionist approaches, the term *construction* indicates a conventional form-meaning mapping (Croft, 2001; Goldberg, 1995). It is proposed that "properties of morphological, lexical, and syntactic form are associated with particular semantic, pragmatic, and discourse functions" (Ellis, 2011, p. 141). In English, the association between form and meaning is made at multiple levels, resulting in a set of constructional categories with varying levels of structural and semantic complexities, ranging from word-level to sentence-level constructions (see Table 1).

This theoretical framework appears to be valid for the analysis of L2 English utterances in speaking interactions. L2 learners of English employ different types of utterance such as non-sentential fragments, idiomatic expressions, and simple sentences, using their limited L2 knowledge, and these various types of utterance can be analyzed as instances of different constructional categories. Whether an utterance is word-level or sentence-level, the constructional approach can examine both form and meaning of the utterance.

TABLE 1

Examples of Constructional Categories in English

Constructional Category	Example
Word	*tentacle, gangster, the*
Word (partially filled)	*post-N, V-ing*
Complex word	*textbook, drive-in*
Idiom (filled)	*like a bat out of hell*
Idiom (partially filled)	*believe* <one's> *ears/eyes*
Covariational conditional	*The more you watch, the less you know*
Ditransitive	*She gave him a kiss*
Passive	*The cellphone tower was struck by lightening*

Source: Adapted from Goldberg (2009, p. 94)

Moreover, Construction Grammar has particular advantages in analyzing the structural and semantic features of sentence-level utterances. According to Goldberg (1995), the basic unit of sentence is argument structure constructions, which constitute "a special subclass of constructions that provides the basic means of clausal expression" (p. 3). As shown in Table 2, major argument structure constructions in English "encode as their central senses event types that are basic to human experience" (p. 39), and these event types are associated with sentence-level configurations of arguments such as subject, object, and oblique.

TABLE 2

Major Types of English Argument Structure Constructions

Construction	Meaning	Form
Intransitive Motion	X moves to/from Y	Subj V Obl
Intransitive Resultative	X becomes Y	Subj V Xcomp
Intransitive Stative	X is Y	Subj V Xcomp
Transitive	X acts on Y	Subj V Obj
Ditransitive	X causes Y to receive Z	Subj V Obj_1 Obj_2
Caused-Motion	X causes Y to move Z	Subj V Obj Obl
Transitive Resultative	X causes Y to become Z	Subj V Obj Xcomp

As sentence-level form-meaning pairings, the argument structure constructions allow researchers to analyze the overall form and meaning of each sentence-level utterance. For example, the sentence-level utterance *she sneezed the napkin off the table* is an instance of the caused-motion construction, which associates the meaning of "X causes Y to move Z" with the specific configurations of subject, verb, object, and oblique. Note that this sentence-level linguistic information is difficult to attribute to the verb *sneeze.* Another example would be *he faxed me the letter,* a sentence-level utterance instantiated by the ditransitive construction. The utterance expresses the constructional meaning of "X causes Y to receive Z" by means of the constructional form [Subj V Obj_1 Obj_2]. Again, the verb *fax* explains little about this sentence-level information.

Constructional approaches to L2 acquisition have found that learners of English acquire and employ usage patterns of English constructions in terms of words (Boyd, Ackerman, & Kutas, 2012), sentences (Ellis & Ferreira-Junior, 2009), and word-sentence associations (Gries & Stefanowitsch, 2004). It has been noted that L2 learners of English increase their repertories of constructions along with their interlanguage development. For example, Kim and Sung (2019) found that advanced Korean EFL learners are distinguished from other L2 proficiency groups by their use of complex constructions. Regarding the close relationship between constructional knowledge and L2 proficiency, it is expected that the increased knowledge of English constructions may help L2 learners to produce utterances fluently in speaking interactions. To our best knowledge, however, the role of constructional knowledge in L2 fluency development has not been examined in the context of L2 speaking interactions. Therefore, the present study analyzes utterance patterns of L2 speaking interactions to examine the role of construction knowledge in L2 fluency. Specific research questions are as follows:

1. How does L2 fluency in speaking interactions, measured by the total number of utterances, vary among individual learners?
2. Do argument structure constructions contribute to L2 fluency in speaking interactions? If so, is there any variance in their contributions? What construction makes the most significant contribution?
3. What usage patterns of the construction do L2 learners with varying levels of fluency show in speaking interactions?

3. METHOD

3.1. Participants

Twenty-five (13 male and 12 female) Korean middle school learners of L2 English participated in this study. All were eighth graders (13 or 14 years old) in the same class at a public middle school located in Seoul, South Korea. They had been provided English classes at public school since the third grade, but the class hours per week varied according to the grade: generally, two class hours at the third and fourth grades and three class hours at the other grades. In addition, all the participants had experience of learning English at extra-curriculum programs such as private academies and afterschool lessons. Their English teacher assessed their overall proficiency as novice high.

The participants were evenly divided into five groups, each of which had both genders and mixed levels of proficiency based on their scores at a nationwide test for English

listening and reading. Such grouping was intended to reduce between-group frequency/gender variations, diversify within-group opinions, and prevent lower-level students from misunderstanding the target task. Every participant's consent for recording their L2 English interactions and using the data for research was obtained prior to the onset of this study. They were provided general information about this study and understood that it was conducted to examine their L2 English speaking patterns.

3.2. Tasks

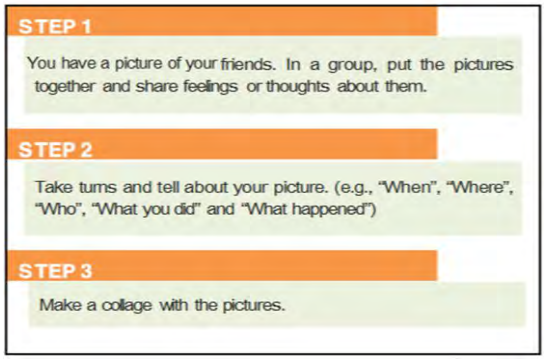
Five communicative tasks were conducted as part of the regular English class. In order to foster L2 interaction, the tasks were implemented as group activities. The five tasks employed five different interaction types suggested by Luoma (2004), presenting different communicative topics that Korean middle school learners were interested in (see Table 3). Each communicative task was carefully designed to set a goal which could be achieved only when the group members interactively shared their ideas. This design was intended to ensure every learner's active participation in the L2 speaking interaction. In addition, the tasks involved a variety of semantic elements such as appearance, action, and change of state so that the participants would have to express various meanings.

TABLE 3
Five Communicative Tasks

No	Interaction Type	Topic	Goal
1	Decision	School life	List of class rules
2	Description	People	Picture collage of friends
3	Role-play	Food	Recipe for new dish
4	Reaction	Travel	Drawing of school camp room/tent
5	Comparative	Career	Leaflet on jobs

The first task was a decision task which involved discussing an issue about school life from different viewpoints. The students came up with possible problems in a homeroom class, negotiated proper preventions, and made a list of class rules. The second task was a description task. Each student brought a picture of his or her friend, showed it to the group, and described it in as much detail as possible. Then, the group members asked questions about the friend described or gave feedback about the description and the picture (for specific instructions, see Figure 1). The third task was an adapted version of a role-play task in which social or service situations are simulated, such as buying goods or going to a restaurant. The students performed the roles of buyer and seller, exchanging food cards that they had drawn. They actively interacted one another since they needed various foods to create and present a new recipe.

FIGURE 1
Communicative Task II: Description of Friend



The fourth task focused on reactions in social situations. The students were given descriptions of social situations that they were likely to encounter at a school camp. They were asked to imagine themselves in the given situations and say how they would react. The last task was a compare/contrast task. The students comparatively portrayed career-related scenes based on an array of pictures and talked about contrastive elements among interesting, growing, and disappearing jobs.

3.3. Procedures

The communicative tasks were conducted in 30-minute-long sessions of the five English classes over two weeks. Each session consisted of three phases: pre-speaking, speaking, and post-speaking. Each pre- or post-speaking phase was approximately five-minutes long, and the L2 English speaking phase was twenty minutes.

In the pre-speaking phase, the teacher introduced the target task. In every group, two students were assigned as recorders and another student as a timekeeper. The recorders were instructed to audio-record the group members' speaking interactions with their smartphones. The smartphones were placed on the desk, and the recording app was on during the entire speaking phrase. The timekeeper of each group was asked to pay attention to the time limit and ensure that every group member participated to complete the communicative task within the given time.

In the speaking phase, the participants performed the target task, talking with and listening to one another. They were requested to interact only in English, but some cases of code-switching between English and Korean were observed. The teacher highlighted that the main purpose of the task was to have many opportunities to express their ideas without any concern about grammatical correctness. In addition, the teacher encouraged them to try to speak in full sentences, as a learning strategy to practice speaking in English.

The participants were also instructed to moderate the volume of their speech to prevent any interference with other groups' interactions and recordings. Walking around the class, the teacher provided affective support for some participants to overcome L2 speaking anxiety and confidently participate in L2 interaction, but she did not provide any lexical or phrasal support.

In the post-speaking phase, the participants and teacher jointly voted for and rewarded the best group's work. The teacher then praised their participation and encouraged them to actively interact in the next communicative task. The recorders of each group sent the recorded audio files to a researcher's email account.

3.4. Data Coding and Analysis

The participants' English utterances in L2 speaking interactions, which include partial code-switching (e.g., *I am worried about* gimalgosa [in English, *final exam*]), were transcribed and divided into separate tokens of the AS-unit (Analysis of Speech unit), which serves as an alternative to the T-unit, especially for the analysis of interactive spoken language (Foster et al., 2000). The AS-unit is "a single speaker's utterances consisting of an independent clause or subclausal unit, together with any subordinate clause(s) associated with either" (Foster et al., 2000, p. 365). Considering that successful interaction is a collaborative achievement characterized by prompt responses to previous utterances among the interlocutors (Schegloff, 1982), the AS-unit appears to be a better method of measuring fluency in speaking interaction than the T-unit because even a one-word answer to a question can be an AS-unit. For example, three AS-units in (1), despite their differences in structure and word number, jointly contribute to fluent speaking interaction.

(1) A sequence of three AS-units in a speaking interaction
A: For me it's ten
B: Ten?
A: Ten years (Foster et al, 2000, p. 370)

Every utterance of an AS-unit was classified as either word-level or sentence-level. Utterances that formed partial constituents of a sentence (e.g., *frog,* meaning *I drew a frog*) or had a non-sentential structure (e.g., *food for children*, meaning *I will make food for children*) were categorized as word-level, while those that demonstrated syntactic structures of finite sentences were categorized as sentence-level (adapted from Foster et al., 2000).

The sentence-level utterances were then coded by eight construction categories. Seven categories correspond to seven major argument structure constructions, basic units of English sentences (listed in Table 2, Section 2.2), while the last category includes an extra

set of constructions such as existential [*there* + *be*], causative [V + NP + (*to*) V], and evaluative [*it is* + Adj + *to* V/*that* SV], which were rarely used in the L2 data of the present study.

When identifying and coding argument structure constructions, grammaticality or appropriateness of the utterance was neglected. For example, the ungrammatical utterance *I painting tent red* was coded as a case of the transitive resultative despite the omission of a tensed auxiliary, and the less appropriate utterance *I do a ball* as that of the transitive construction. To test the reliability of the designed coding system, a native English speaker coded approximately 20% of the data. The coding system was found to be significantly reliable as Cohen's kappa for inter-coder agreement that corrects for chance agreement was .91 (Bakeman & Gottman, 1997).

The L2 data annotated with utterance levels and argument structure constructions were used for quantitative analyses of L2 fluency in English speaking interactions. First, L2 fluency of the learners was analyzed in respect to their word-level and sentence-level utterances. Then, the sentence-level utterances were further examined based on the frequencies and distributions of the argument structure constructions. Finally, for the constructions demonstrating notable learner variance, the type and token frequencies of complementation patterns were analyzed to identify specific areas of L2 development.

4. RESULTS

4.1. Utterance-Based Fluency in L2 Speaking Interactions

The L2 speaking data were comprised of 14,582 utterances, which means that an individual participant produced 583.3 utterances on average (see Table 4). The frequency analysis identified great learner variance in the frequency of utterances, as indicated by the notable standard deviation (231.8) and the huge frequency range from 237 (Learner 10) to 992 utterances (Learner 21). This indicates that the frequencies of individual learners' utterances were dispersed to a degree that Learner 21 produced utterances about four times more frequently than Learner 10.

TABLE 4
Frequency of Word-Level and Sentence-Level Utterances

Level	Total	*M*	*Min.*	*Max.*	*SD*
Word-level	8,186	327.4	233	419	42.7
Sentence-level	6,396	255.8	4	701	235.4
Sum	14,582	583.3	237	992	231.8

Another type of learner variance was identified for their sentence-level utterances. Overall, word-level utterances (8,186 tokens; 56.1 %) were more frequent than sentence-level utterances (6,396 tokens; 43.9%), with 17 students (68%) relying more on word-level than sentence-level utterances in performing the communicative tasks. These results appeared to indicate that some of the participants had considerable difficulty producing sentence-level utterances.

Indeed, the production of sentence-level utterances showed more notable learner variance than that of word-level utterances: both the frequency range (697 [4 to 701]) and the standard deviation (235.4) of sentence-level utterances were much greater than those of word-level utterances (186 [233 to 419] and 42.7).

In sum, high learner variance was identified for two types of frequency: total utterances and sentence-level utterances. Firstly, it was found that the learners substantially varied in their frequencies of utterances despite the turn-taking nature of the communicative tasks that they performed: Each task was designed to ensure the participation of every group member. In the second task, for example, the whole group had to take turns to describe their friends before making a picture collage. In addition, the timekeeper of each group ensured that each and every group member would be provided with a similar amount of time for speaking English. Therefore, the dispersed frequencies of individual learners' utterances seemed to indicate that notable fluency variance existed among the participants of the present study. The finding that the learners of varying levels of L2 fluency were being taught in the same English class is noteworthy for its pedagogical impacts. This issue will be further discussed in the conclusion section.

Secondly, the present study found great learner variance in the frequency of sentence-level utterances as the majority of students relied more on word-level utterances. That is, many secondary school students failed to produce English sentences even when they were encouraged to have interactions in full English sentences, as exemplified in (2)

(2) Task 2: Describe a picture of their friend
Learner 5: *Summer vacation … girlfriend* (Intended meaning: *During the summer vacation, my girlfriend went on a trip to the ocean*)
Learner 1: *Girlfriend went to sea trip?*
Learner 5: *Yes*
Learner 10: *My friend and concert …* (Intended meaning: *My friend played the violin in a school music concert*)
Learner 7: *For school music concert, Jaemin played violin.*

This finding was quite alarming since the ability to produce sentence-level utterances is an essential constituent of basic communicative competence, which is the goal of secondary English education in Korea (Ministry of Education, 2015; Yang et al., 2014).

Interestingly, the variance in the total frequency of utterances appeared to be primarily due to the learner variance in sentence-level utterances. For example, Learner 25 and Learner 21 were in the same group, but their total frequencies of utterances varied greatly, 342 vs. 992 tokens, respectively. This frequency gap was mainly attributable to the variance in sentence-level utterances (14 vs. 701 tokens), not to that in word-level utterances (328 vs. 291 tokens). Similar patterns were observed in other groups, for instance, Learner 15 and Learner 11, whose high variance in the total frequencies of utterances (335 vs. 955 tokens) should be attributed to the variance in sentence-level utterances (7 vs. 654), not to that in word-level utterances (328 vs. 301).

The findings showed that L2 fluency in speaking interactions varied in the Korean middle school EFL learners, and there was a close relationship between the L2 fluency and the number of sentence-level utterances such that learners with higher fluency produced a greater number of sentence-level utterances. To identify specific areas of the problem, we examined their sentence-level utterances according to the basic units of English sentences, i.e., argument structure constructions (Goldberg, 1995, 2006).

4.2. Argument Structure Constructions in L2 Speaking Interactions

The usage patterns of argument structure constructions were examined for the 6,396 sentence-level utterances. The frequency-based analysis was conducted to examine how frequent each construction was in the entire L2 speaking dataset as well as in a data subset for each participant. Results show that the Korean learners' sentence-level utterances in L2 English speaking interactions were found to be skewed to a small set of constructions (see Table 5). The top four constructions—transitive (e.g., *I do a ball*), intransitive stative (e.g., *soccer is good*), intransitive resultative (e.g., *I got worried*), and intransitive motion (e.g., *girlfriend went to sea trip*)—accounted for the most of their sentence-level utterances (6,117 tokens; 95.6%), with the other constructions used only two or three times on average by a learner in a communicative task[1].

[1] Students' utterances of each construction are exemplified as follows: caused-motion (e.g., *I'll draw flower pig on Sujung's face*), transitive resultative (e.g., *let's color it red*), ditransitive (e.g., *he give me food*), and others (e.g., *there*-structure: *there is a picture*).

TABLE 5
Frequency Information of Argument Structure Constructions

Rank	Construction	Total Frequency (%)	*M*	*Min.*	*Max.*	*SD*
1	Transitive	4,396 (68.7%)	175.8	0	488	167.3
2	Intransitive stative	835 (13.1%)	33.4	2	81	25.0
3	Intransitive resultative	547 (8.6%)	21.9	0	61	20.3
4	Intransitive motion	339 (5.3%)	13.6	0	35	11.2
5	Caused-motion	134 (2.1%)	5.4	0	21	6.8
6	Transitive resultative	67 (1.0%)	2.7	0	14	4.9
7	Ditransitive	42 (0.7%)	1.7	0	7	2.4
8	Others	36 (0.5%)	1.4	0	6	2.1

Being the most frequent, the transitive construction (i.e., SVO) constituted the majority of sentence-level utterances (4,396 tokens; 68.7%). This result was rather expected from the previous studies of native English speech which reported that "monotransitive use typically constitutes the greatest proportion of occurrences" (Biber, Johansson, Leech, Conrad, & Finegan, 1999, p. 390). Such recurrent use of the transitive construction was common among both speakers of British English (Altenberg, 1993) and those of American English (Scheibman, 2001). Therefore, the Korean EFL learners' great reliance on the transitive construction may indicate that they followed the general usage patterns of spoken English.

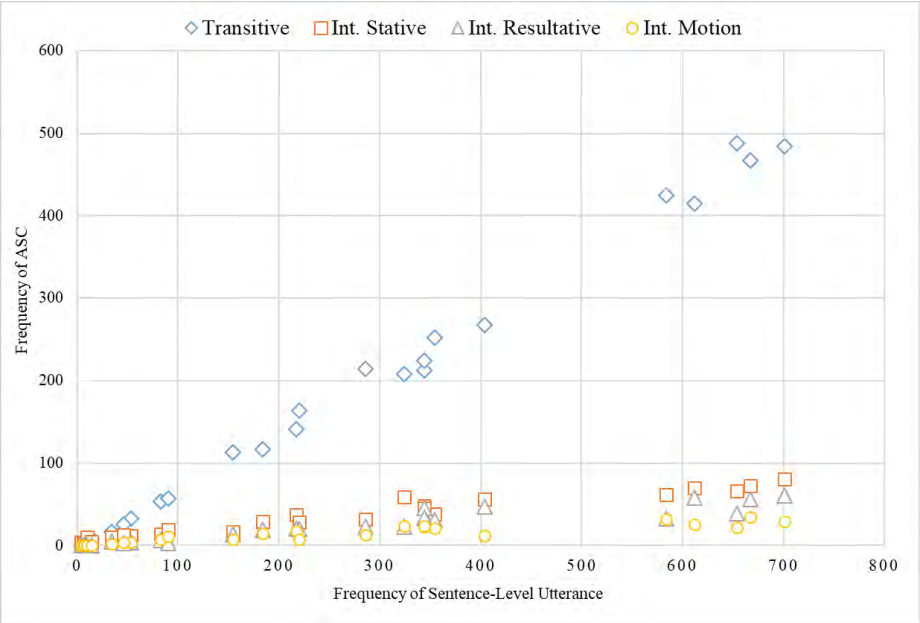
However, the transitive construction was found to be the locus for great learner variance, as indicated by the greatest standard deviation (167.3) and the huge frequency range (0 to 488). This learner variance was distinctive in comparison to that in the other frequent constructions such as intransitive stative (*SD* = 25.0; 2 to 81), intransitive resultative (*SD* = 20.3; 0 to 61), and intransitive motion (*SD* = 11.2; 0 to 35).

Accordingly, the present study assessed the significance of the learner variance in the transitive construction as well as the other frequent constructions for the learners' sentence-level utterances. That is, the individual learners' frequencies of the top four constructions were examined on the basis of their frequencies of sentence-level utterances.

As seen in Figure 2, the individual learners' frequencies of the transitive construction increased along with their frequencies of sentence-level utterances. Such a parallel pattern was not obvious in the other frequent constructions. This observation was further supported by a multiple regression analysis with frequencies of the four constructions as independent variables and frequencies of sentence-level utterances as a dependent variable. While the overall model and the coefficient for every construction were statistically significant at the alpha level of .05, the relative explanatory power indicated by each standardized coefficient distinguished the transitive construction (standardized coefficient of .773) from the other constructions (standardized coefficients of .119, .095, and .027). Therefore, it can be argued that the great learner variance in sentence-level production was mainly due to the variance

in the production of the transitive construction. Given this finding, a further investigation was conducted to observe specific patterns of learner variance in the use of the transitive construction.

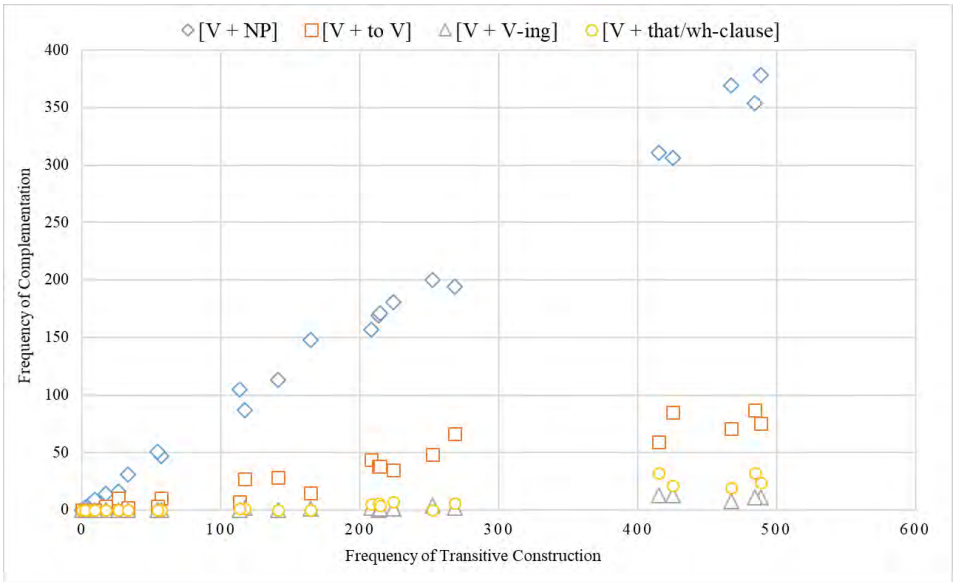
FIGURE 2
Frequency Distributions of Argument Structure Constructions Based on Frequencies of Learners' Sentence-Level Utterances



4.3. Usage Patterns of Transitive Construction in L2 Speaking Interactions

Considering that the transitive construction was the important locus of learner variance regarding L2 English fluency in speaking interactions, the usage patterns of the construction were further analyzed, focusing on the four complementation patterns, namely nominal [V + NP] (e.g., *I do a ball*), infinitive [V + *to* V] (e.g., *I want to play*), gerundive [V + V-*ing*] (e.g., *She like eating ice cream*), and clausal [V + *that/wh*-clause] (e.g., *I think that's okay*). Overall, the most frequent complementation pattern was the nominal one, appearing in 3,418 utterances and accounting for about 80% of the transitive constructions in the L2 speaking data. For the other complementation patterns, the infinitive one (751 tokens) was more frequent than the gerundive (69 tokens) and the clausal one (158 tokens).

FIGURE 3
Frequency Distributions of Complementation Patterns Based on Frequencies of Learners' Transitive Utterances



For these complementation patterns, we identified two sorts of learner variance: One was the varying token frequencies of the nominal complementation, and the other was the varying complementation type frequencies. First, notable learner variance was observed in the token frequencies of the nominal complementation, as shown by the great standard deviation (125.8) and the huge frequency range (0 to 378). The variation of the token frequencies of the nominal complementation appeared to be parallel with that of the transitive construction, while such parallel variation was less evident for the other complementation types (see Figure 3). Another multiple regression analysis with frequencies of the four complementation patterns as independent variables and frequencies of the transitive construction as a dependent variable distinguished the nominal complementation (standardized coefficient of .752) from the other constructions (standardized coefficients of .177, .027, and .062).

Second, the type frequency of the transitive construction varied among the learners: Some students used only the nominal complementation, while other students used various complementation types. This learner variance showed certain developmental clusters (see Table 6). For example, all the learners who produced only one complementation type exclusively relied on the nominal complement, while all of those who produced two complementation types relied on the nominal and the infinitive complements. There was no such case that a learner producing one or two types of transitive complementation used the

gerundive or the clausal. When an individual learner produced three transitive complementation types, the learner relied on the nominal, the infinitival, and either of the gerundive or the clausal. Obviously, those with greater complementation type frequencies appeared to have greater token frequencies of the transitive construction, as marked by the mean token frequencies in Table 6.

TABLE 6
Structural Usage Patterns of Transitive Construction

Type Frequency	Cluster	Learner (*n*)	Token Frequency			
			M	*Min.*	*Max.*	*SD*
0	-	2	0	0	0	0
1	Nominal	3	5.3	2	9	3.5
2	Nominal-Infinitive	6	54.6	17	141	45.1
3	Nominal-Infinitive-Clausal	2	163.0	113	213	70.7
3	Nominal-Infinitive-Gerundive	2	208.0	164	252	62.2
4	Nominal-Infinitive-Gerundive-Clausal	10	331.0	117	488	138.4

5. DISCUSSION AND CONCLUSION

The present study examines Korean EFL learners' fluency in speaking interactions, focusing on their usage patterns in respect to utterance levels, argument structure constructions, and complementation types. In this section, we will discuss major findings for each research question. The first research question seeks for the constructional effects on the fluency variation among L2 learners of English. Based on the varying frequencies of English utterances among the learners, we suggest that the learners should be understood as forming a heterogeneous population with different degrees of L2 English fluency. For example, when the most and the least fluent student were compared, the former made about four times more utterances than the latter. The observation that such gaps existed despite each learner's equal chance to participate in L2 interactions may indicate that there was great learner variance in L2 English fluency.

The L2 fluency variance among the learners was primarily attributable to the usage patterns of sentence-level production. Whereas the learners' frequencies of word-level utterances did not effectively account for their fluency variance, those of sentence-level utterances appeared to contribute to the varying degrees of L2 fluency. That is, those who had difficulty producing English sentences were less fluent in L2 speaking interactions than those who were at ease in making English sentences. The finding that there is a close relationship between L2 English fluency and the ability to make sentences may seem to be common sense, but this rather obvious relationship has not been given due attention, with

much effort having been made to link the sentence-generating ability with such other areas of L2 speaking as accuracy (Skehan & Foster, 2012) or complexity (Lu, 2010).

L2 English speakers, of course, need to make accurate sentences with varying degrees of complexity; however, the domains of accuracy and complexity should be considered as less important than the domain of meaning in L2 speaking interaction, where L2 learners make full use of their limited communicative competence to make themselves understood. If learners have difficulty in expressing their thoughts and feelings (i.e., meanings), the difficulty will cause them to sound less fluent. The present study has identified such difficulty and its negative impacts on Korean EFL learners' production of sentence-level utterances. That is, it seems that these learners' lack of fluency primarily stems from their limited capacity to express sentence-level meanings.

This diagnostic discussion is in line with the second research question, which asks whether or not a set of argument structure constructions, the basic formal units of event meanings (e.g., A acts on B) vary in their contributions to L2 learners' sentence-level utterance. Results indicate that only a small subset of constructions accounted for the vast majority of sentence-level utterances in L2 speaking interaction: The four most frequent constructions (transitive, intransitive stative/resultative/motion) constituted about 95% of the sentence-level utterances. In particular, the transitive construction was more frequent than the other construction categories altogether.

These findings are in line with quantitative linguistic studies on the Zipfian nature of human language, a distributional pattern that the total frequency of a category (e.g., word) was not evenly distributed to its all members but proportionally skewed to a small set of members, for example, *the, of,* and *and* accounted for about 13% of the word token frequency in the Brown Corpus. The same pattern has been observed for English argument structure constructions: The high frequencies of the transitive and other few constructions are one of the Zipfian distributions that a large collection of L1 English speech makes manifest (Altenberg, 1993; Biber et al., 1999; Scheibman, 2001). One possible account of the finding that L2 data showed such Zipfian distributions is that Korean EFL learners may have generalized and internalized the proportional pattern of native English speech from L2 input that they have been exposed to. This issue, however, needs to be attested in separate studies.

More noteworthy is that there was great learner variance in the frequency of the most frequent construction, i.e., transitive. In particular, the frequency variance of the transitive construction appeared to contribute to the learner variance in the use of sentence-level utterances. This implies that the productive use of the transitive construction is a significant constituent of sentence-level utterances, a major determinant of fluency in L2 English speaking interaction.

The last research question concerns this issue, seeking out specific differences between those who productively used the transitive construction and those who didn't. The

frequency analysis based on the four complementation patterns (i.e., V + NP, V + *to* V, V + V-*ing*, V + *that*-/*wh*-clause) revealed two notable phenomena. Firstly, the most frequent complement, i.e., [V + NP], showed varying frequencies among the learners, which appeared to be aligned with those of the transitive construction. This may imply that the productive use of the nominal complementation is an important constituent in the productive use of the transitive construction in L2 English speaking interaction. Another implication is that L2 learners may gradually gain productive use of the [V + NP] construction. That is, L2 learners who have acquired and can use the transitive construction with a nominal complementation may vary significantly in the productive use of the complementation. In the present study, for example, the frequency range for the nominal complementation among those who employed it was from 2 (Learner 20) to 378 (Learner 11).

Secondly, there were developmental clusters of complementation patterns shown by learners with different type frequencies of the transitive construction. As all four complementation patterns are commonly used in English textbooks in Korea, the developmental clusters should be seen as a case of predetermined sequence of L2 acquisition. That is, different complementation patterns of the transitive construction are acquired at different phases of L2 acquisition, and the acquisition sequence is quite rigid according to linguistic and/or cognitive properties (Kim & Sung, 2019; Tomasello, 2003). The present study suggests that the use of the nominal complementation was followed by that of the infinitive one at early stages of L2 acquisition, while the gerundive and the clausal complementation began to be used by L2 learners at later stages. The early acquisition of the nominal complementation, however, may also be attributable to input frequency because English textbooks for young learners have a great number of transitive sentences with a single NP. This frequency issue needs to be investigated in future research.

The major findings of the present study lead us to propose pedagogical implications for L2 fluency in speaking interactions. First, the fact that L2 learners with great fluency variance were being taught in the same English class should be considered when making pedagogical decisions such as student placement and lesson design. For example, it might be effective to place students in different levels of English-speaking classes based on their L2 English fluency. If this is implausible, teachers should design speaking activities to be inclusive so that every student can actively participate and attain their own zone of proximal development of L2 fluency.

Second, the finding that sentence-level utterance is crucial for L2 fluency implies that students should be taught to develop the ability to make sentences. However, it should be noted that knowing a sentence structure is far from using it productively, as indicated by the varying frequencies of the transitive construction among the participants. Regarding this issue, a series of meaningful approaches to the production of English sentences have been made by constructionists, who have proposed that argument structure constructions serve as

basic templates mapping between sentence forms and event meanings (De Knop & Gilquin, 2016; Goldberg, 2019; Kim, 2018; Kim & Sung, 2019; Rah & Kim, 2018; Yang et al., 2014). For example, teachers of English can present the event of voluntary/natural motion in the constructional frame of [S-V-PP] and ask L2 learners to use the constructional frame to express various kinds of the motion event.

Finally, the proportional significance of the transitive construction in L2 speaking interaction should be appreciated. Teachers should help EFL learners to conceptualize form-meaning mappings of different complementation patterns (e.g., mapping between [V + *to* V] and future/hypotheticality aspects; Cowan, 2008) and to develop the productive use of the mappings. Speaking activities should be carefully designed to highlight important linguistic properties of the transitive construction and provide the learners with ample opportunities to produce the construction.

In conclusion, the present study shows that fluency in L2 English speaking interaction is greatly influenced by a speaker's ability to produce English sentences with various argument structure constructions. In particular, we have noted the importance of the productive use of the transitive construction based on learner variance in type and token frequency. The present study, however, has several limitations that need to be addressed in future research. First, word-level utterances, though being more frequent than sentence-level ones in the L2 data, were given little attention in the present study. In-depth analyses of word-level utterances will suggest systematic categorizations of learner speech and identify the cases where intended event meanings were expressed less effectively. Second, the analysis of argument structure constructions in the present study narrowly focused on the transitive construction. Comprehensive research on L2 usage patterns of other constructions will provide more meaningful illustrations of L2 fluency and sentence-level utterance. Third, the interaction types and topics of the speaking tasks might have affected the participants' utterances because they were more familiar with certain interaction types (e.g., description) or topics (e.g., school life) than others. Last, the participants of the present study did not manifest homogeneity in L2 fluency. Future research with prior control of L2 English fluency will enable the investigation of each fluency group's utterance patterns in speaking interaction.

Applicable levels: Secondary

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