Linguistic Research 41(Special Edition): 209-239
DOI: 10.17250/khisli.41..202409.008

The gradual expansion of functional categories in L2 acquisition: Evidence from a learner corpus study

Keunhyung Park
(Kyungpook National University)

Park, Keunhyung. 2024. The gradual expansion of functional categories in L2 acquisition: Evidence from a learner corpus study. *Linguistic Research* 41(Special Edition): 209-239. The study examines how child L2 learners acquire various functional categories and gain access to the syntactic and semantic features encoded in them. The present research investigated child L2 learners' written production of two target structures, collected from a learner corpus including six proficiency levels (age: 8-13), and specifically compared their acquisition of sentential negation and question formation. The results of the study indicate that child L2 learners acquire certain structures at different rates and with varying degrees of linguistic complexity. The analysis of the learner corpus showed that the acquisition of sentential negation and question formation is asynchronous, while the functional categories of NegP, TP, and CP are acquired in a specific sequence. Moreover, the study found that the complexity of the grammatical representations and derivations affects the gradual expansion of functional categories in L2 grammar. In sum, the findings demonstrate that the order in which L2 learners acquire two distinct constructions has implications for both the impact of the distinct linguistic complexity and the gradual development of various functional categories, from a relatively simple to a more complex level. **(Kyungpook National University)**

Keywords L1 Korean, L2 English, sentential negation, question formation, functional category, learner corpus

1. Introduction

The current study investigates how L2 learners acquire syntactic constructions that differ in levels of syntactic and semantic complexity. Within generative grammar, Chomsky (1995) and other scholars argue that the limited capacity of the human

language process caused by working memory constraints is an important factor in defining the meaning of linguistic complexity (Gordon et al. 2001; Gibson et al. 2013; Scontras et al. 2015). Child L1 speakers or novice L2 learners who have limited linguistic capacity often commit grammatical errors missing obligatory inflectional morphology or syntactic derivation, as they naturally tend to prefer simpler constructions (Rizzi 2000; Friedmann and Novogrodsky 2011; Jakubowicz 2011). Accordingly, common errors made during a specific stage of interlanguage demonstrate that learners are not yet at a suitable stage to acquire complex structures. Given the unequal complexity among diverse constructions (Heine and Kuteva 2007; Jakubowicz and Strik 2008; Givón 2009; Sorace 2011; Culicover 2013), the current study is concerned with investigating how linguistic complexity affects the gradual development of functional categories in L2 grammar. When examining the connection between linguistic complexity and language acquisition, it is important to note that L2 learners tend to acquire the simplest structure that requires minimal processing effort. By accurately assessing the varying complexities of different structures, it may be possible to predict the order in which they will be acquired.

This study focuses on the acquisition of sentential negation and question formations by Korean children learning English, specifically focusing on the differences in derivational and representational complexity. Although there is existing literature on the acquisition of these structures, there has not been a direct comparison of their acquisition sequences. This paper not only compares the acquisition of these two structures but also presents evidence of the expansion, or maturation, of L2 grammar from the so-called "lexical category" stage to the "functional category" stage.

The process of acquiring functional categories has been extensively studied by linguists and L2 researchers in the past (Zobl and Liceras 1994; Vainikka and Young-Scholten 1996; Rizzi 1997; Benincà 2001; Rule and Marsden 2006). Nevertheless, there has been a lack of comparison of the syntactic and semantic complexity of diverse functional categories, which may contribute to understanding their sequential acquisition order. This study begins by examining the theoretical background of syntactic complexity regarding the target structures. Next, using data from a corpus-based L2 study, we demonstrate how linguistic complexity influences the sequential acquisition of sentence negation and question formation. Finally, we further discuss additional interesting phenomena that also support the gradual expansion of functional projections in L2 grammar.

2. Background: Complexity and language acquisition

2.1 Representational complexity

Under the theory of generative grammar, the syntactic complexity of structures can be estimated by word combinations and movement operations (as described in Syntactic Structure by Chomsky 1957, under the grammar [∑, F]). The idea that the complexity of structures can be numerically compared aligns with the computational process of human language processing. Hauser et al. (2002) argue that the human language faculty, which distinguishes it from animal communication, involves recursive computation that generates complex sentences within the limits of working memory, as illustrated in example (1) below. Different ways of combining constituents result in varying degrees of representational complexity. In the examples in (1), the representational complexity of structures increases gradually as additional projections are merged repeatedly. This means that as the hierarchical configuration of constructions becomes more complex and divergent, the structure becomes more complex as well.

(1) a. I ate the apples.
b. I ate the reddish apples.
c. I didn't eat the reddish apples.
d. I didn't eat the reddish apples on the table.
e. I didn't eat the reddish apples on the table which you gave me.
f. My mom asked whether I ate the reddish apples on the table which you gave me.

According to Simpler Syntax (Culicover and Jackendoff 2006), "the complexity of syntactic structure involves the extent to which constituents contain sub-constituents." The example sentences in (1) contain a specific number of maximal projections, and their representational complexity is directly related to the sum of those projections. The representational complexity of a sentence is determined by both visible and invisible levels of syntactic projections, which can be simplified or enriched depending on the informational structure. In considering the relative complexity of utterances, those that involve additional maximal projections are more complex. In

the current study, we presume that sentence complexity increases as phrase structures are expanded from words to simple sentences and then to more complex sentences.

2.2 Derivational complexity

We are also interested in another aspect of grammatical complexity called "derivational complexity." This type of complexity specifically looks at how complex a sentence is based on the operations used to transform it. This includes: the use of syntactic movement, how far things move, and how many times things need to be moved. Admittedly, the level of complexity can be estimated by considering the different types of movement used. Jakubowicz (2005) and Jakubowicz and Strik (2008) developed a method called the Derivational Complexity Metric (DCM) that uses the number of transformations (such as Merge and Move in the Minimalist program) to estimate the relative complexity of a sentence.

(2) Derivational Complexity Metric (Jakubowicz 2005)
   a. Merging α_i n times gives rise to a less complex derivation than merging α_i (n+1) times.
   b. Internal Merge of α gives rise to a less complex derivation than Internal Merge of α+β.

The DCM posits that constructions that involve fewer instances of Merge (or Internal Merge) are considered less complex. Jakubowicz and Strik aim to gauge derivational complexity by counting the total number of derivations, which leads us to believe that sentences listed in (3) can be distinguished based on their level of derivational complexity.

(3) a. [TP Hana [VP ate apples in the kitchen]].
   b. [CP Did_i [TP Hana t_i [VP eat apples in the kitchen]]]?
   c. [CP What_j did_i [TP Hana t_i [VP eat t_j in the kitchen]]]?
   d. [CP What_j did_i [TP he t_i [VP say [CP t_j [TP Hana [VP ate t_j in the kitchen]]]]]]?

The sentences in (3) can be ranked in terms of their derivational complexity. A simple declarative sentence without any movement, like (3a), is the least complex. A *wh*-question, such as (3c), is more complex because it involves moving a *wh*-word from inside a verb phrase to the beginning of the sentence. A *yes-no* question with Subject-Auxiliary Inversion (SAI), like (3b), is more complex than (3a) but less complex than (3c) because the movement is shorter and there are fewer movements overall. The most complex sentence is (3d), which involves a *wh*-movement that crosses over the clause boundary and moves successively. As compared in (3), by looking at the number and distance of movements involved, we can estimate the relative complexity of different sentence structures.

Based on generative grammar theory, the syntactic complexity of structures can be measured by the number of word combinations and movement operations. Sentential negation, such as in "I didn't eat the apples," involves fewer syntactic movements and is thus structurally simpler. In contrast, question formation, especially with *wh*-movement (e.g., "What did Hana eat?"), is more complex due to operations like T-to-C movement and *wh*-movement, which involve multiple derivational steps and longer movement distances. Therefore, these two structures exhibit distinct complexity levels, with negation being less complex than question formation. With this in mind, the next section will explore previous research on how L2 learners acquire the ability to form negative sentences and question formations.

3. Previous findings: The acquisition of sentential negation and question formation

3.1 L2 sentential negation

According to the literature on the acquisition of sentential negation, L2 learners of English acquire morphosyntactic and semantic features of negation following systematic acquisitional patterns, and the structural differences between L1 and L2 do not interfere with the acquisition of L2 negation (Klima and Bellugi 1966; Bellugi 1967; Wode 1977; Cancino et al. 1978; Stauble 1984; Choi and Zubin 1985; Eubank 1996). Research conducted by Cancino et al. (1978) and Perales et al. (2009) indicate that Spanish learners of English follow similar developmental stages in acquiring

sentential negation as native English speakers. Cancino et al. (1978) identified four developmental stages and the typical errors made by learners, as shown in Table 1.

Table 1. Four stages in the L2 acquisition of sentential negation in Cancino et al. (1978)

Stage	Type of Negation	Examples
1	*no* + verb	You ***no*** tell your mother But ***no*** is mine, is my brother I ***no*** can see
2	*no* + verb *don't* (unanalyzed) + verb	He ***no*** like it He ***don't*** like it I ***don't*** can explain
3	copula/auxiliary + *no*/*not*	It's ***not*** danger No, he's ***not*** skinny Somebody is ***not*** coming in He ***can't*** see
4	*don't* (analyzed) + verb (*no* + verb disappears)	He ***doesn't*** laugh like us I ***didn't*** even know

Note. The unanalyzed *don't* in Stage 2 does not show tense and number agreement.

Table 1 illustrates that, in the initial stage, Spanish learners of English simply insert the negator *no* before a VP without an auxiliary verb. It is noteworthy that *not* is not used by Spanish-speaking English learners at this early stage. In the second stage, L2 learners start using unanalyzed *don't*, which is not syntactically and semantically different from the unsupported negator *no* in Stage 1. Since English sentential negation requires an auxiliary verb (e.g., do-support), L2 learners must expand their syntactic capacity to NegP and TP to produce grammatical negative sentences in English. At Stage 3, Spanish learners of English use auxiliary and copula verbs accurately, indicating a vague understanding of the existence of functional categories such as NegP and TP. At the final developmental stage (Stage 4), these L2 learners correctly use analyzed *doesn't* or *didn't* and can almost perfectly express the properties of tense and agreement.

3.2 L2 question formation

In generative grammar, the CP projection is the highest node of local phrase structure, and the acquisition of CP is closely related to the development of question formation. Vainikka and Young-Scholten (1994, 1996) insist that the CP layer establishes to host

fronted non-subject constituents and a verb that has been moved from T. That is, to form grammatically correct interrogative sentences in English, L2 learners must understand the existence of CP projection, which is necessary for successful SAI and *wh*-movement. In the literature, the development of question formation has been extensively investigated across various L1 backgrounds (Bellugi 1965; Wode 1971; Pienemann and Johnston 1986, 1987; Clancy 1989; Lightbown and Spada 1993; White and Juffs 1998). Lightbown and Spada (1993) proposed a six-stage model for the acquisition of English interrogatives by L2 learners, as in Table 2.

Table 2. Six Stages in the L2 acquisition of question formation in Lightbown and Spada (1993)

Stage	Type of Negation	Examples
1	Single word / sentence fragments	One astronaut outside the spaceship?
2	Canonical word order	The boys throw the shoes?
3	*Wh*-fronting / *do*-fronting	Do you have a shoes on your picture? Where the little children are? Where is the sun?
4	Psuedo inversion	The ball is it in the grass or in the sky?
5	Do/auxiliary second position	How many astronauts do you have? What's the boy doing?
6	Question tags, negative question, subordinate question	You live here, don't you? Doesn't your wife speak English? Can you tell me where the station is?

In Lightbown and Spada's study, at the initial stages of the acquisition of question formation, L2 learners simply raise intonation to create questions with simple words or short phrases, without the use of movement operations (Stage 1-2). Next, they start utilizing a projection above the subject by moving (or simply inserting) auxiliary verbs or *wh*-words to the initial position of interrogative sentences (Stage 3-4). As they progress beyond the initial stage of the emergence of auxiliaries, L2 learners correctly move auxiliary verbs to the second position in *wh*-questions (Stage 5). In the last stage (Stage 6), L2 learners are able to generate various types of questions accurately and productively, even without moving the auxiliary verb in embedded questions or tag questions. These findings suggest that once L2 learners have fully

internalized the form and function of the CP layer in L2 grammar, they are able to use it correctly by moving auxiliary verbs to the head of CP and *wh*-words to the specifier of CP.

Taken together, the previous studies regarding the acquisition of sentential negation and question formation suggest that L2 learners, regardless of their L1 background, acquire the target structures through systematic stages of development. Given that L2 learners exhibit these patterns in their acquisition of each structure, the subsequent sections will explore how Korean L2 child learners acquire these structures and how the syntactic complexity of these structures affects the order of acquisition.

3.3 Hypotheses on the sequential acquisition of functional projections

3.3.1 Prediction 1: The earlier emergence of sentential negation

It is anticipated that child L2 learners will initially struggle with producing correct negative sentences due to incomplete acquisition of the functional category NegP. In English, sentential negation requires the auxiliary *do* for thematic verbs, and the negator *not* follows the finite verb. The formation of negative sentences does not involve overt movement of the negator but relies on the correct projection of NegP. Early-stage L2 learners, lacking full syntactic knowledge, may avoid do-support and incorrectly place the negator before the VP. However, as they gain knowledge of the NegP and its syntactic role, learners are expected to produce native-like negation structures.

Given the relatively straightforward nature of sentential negation, especially in the absence of overt movement, it is expected that Korean child learners of English will acquire the structure of negation earlier than more complex constructions like question formation. The emergence of sentential negation is also tied to tense and agreement features associated with TP, and learners with incomplete mastery of these functional categories will show non-target-like structures.

3.3.2 Prediction 2: The lagged emergence of *wh*-movement and subject-auxiliary inversion

The acquisition of question formation is predicted to lag behind sentential negation

due to the greater complexity of the functional categories involved. In English, *yes-no* questions require T-to-C movement, while canonical *wh*-questions involve *wh*-movement to Spec-CP. These operations necessitate syntactic movement and feature checking at the level of CP, making the process cognitively more demanding for L2 learners, especially those from a language background, like Korean, that does not overtly mark such movements.

Thus, Korean child learners of English are expected to initially rely on intonation patterns to mark questions, rather than the movement operations required for grammatically correct interrogative structures. Over time, as they acquire the necessary syntactic operations associated with CP and feature checking, learners will demonstrate native-like question formation.

3.3.3 Prediction 3: Proficiency-dependent grammatical errors in L2 acquisition

As discussed in previous sections, the two target structures associated with different functional categories demonstrate varying levels of complexity. Sentential negation, being less complex, does not require overt movement across clause boundaries, whereas question formation involves more intricate processes like T-to-C movement and *wh*-movement. These movements are more challenging as they involve elements outside TP and coordination with CP for feature checking.

The complexity arising from distinct functional projections, particularly between NegP and CP, is anticipated to cause Korean learners to acquire negation earlier than question formation. Therefore, the study predicts that learners at certain proficiency levels will display common grammatical errors linked to underdeveloped functional categories. Additionally, beginner L2 learners who struggle with sentential negation are likely to face similar difficulties in question formation.

4. Methods

4.1 A corpus study

Data on how child L2 learners produce negative sentences and questions was gathered from the Kyungpook National University English Learner Corpus (KELC), which is

made up of 830 written samples from elementary school students aged 8-13. The learner corpus was created by collecting writing samples from placement tests taken over a two-year period in an English language program at Kyungpook National University (Choi and Kim 2009; Bae and Lee 2011, 2012; Choi 2013; Park and Choi 2016; Seog and Choi 2018). During the tests, which lasted for thirty minutes, child L2 learners were asked to describe a picture prompt in as much detail as possible.

4.2 Data description

KELC, the English learner corpus, is divided into six sub-corpora based on the proficiency scale of the English program (e.g., Primary, Basic, Pre-Intermediate, Intermediate, Advanced, Post-Advanced). Over a two-year period of collecting data, some participants showed continuous improvement in their proficiency levels from Primary to Post-Advanced. The part-of-speech information for all words in KELC is annotated following the British National Corpus (BNC) coding system, and WordSmith Tools was used to extract specific words and structures. Since each word in KELC is individually coded, the Concord(ance) function in WordSmith Tools was used to search for particular words or collocations in the text files. Table 3 provides general statistics on the KELC data.

Table 3. Statistics of KELC data

Level	Distinct Words	No. of Words	No. of Samples
Primary	289	1435	23
Basic	1427	24012	200
Pre-Intermediate	2025	39454	214
Intermediate	2273	41128	180
Advanced	2263	31210	113
Post-Advanced	2479	31287	100
Total	10756	168526	830

As KELC is composed of written data, it is not possible to confirm the use of rising intonation in *yes-no* questions. However, it is possible to differentiate non-standard question structures without SAI from declarative sentences by checking for question marks at the end of the questions. Unfortunately, there are not enough samples in the Primary sub-corpus of KELC. The participants in the English program were selected from a large pool of applicants due to limited capacity, so enrolled students

already had some basic understanding of L2 English.

In the 830 writing samples collected, a total of 851 negative sentences and 831 interrogative sentences were identified. It was expected that participants at the Primary level would not have sufficient proficiency in L2 English to produce full sentences but would instead list a few words to describe objects in the given picture prompt (e.g., "*flower, little, she, hand, hat, Apple, eat, boy, mouth, foot, crayon, dress*"). Unfortunately, none of the Primary level participants produced any negative sentences, and only one interrogative sentence was found. Due to the insufficient data, the Primary level will not be included in the subsequent corpus analyses. Table 4 displays the total number of negative and interrogative sentences in KELC categorized by proficiency level.

Table 4. Number of negatives and interrogatives in KELC by proficiency

Level	Distinct Words	No. of Words	No. of Samples
Primary	-	1	23
Basic	83	83	200
Pre-Intermediate	196	234	214
Intermediate	204	232	180
Advanced	162	154	113
Post-Advanced	206	127	100
Total	851	831	830

Table 4 indicates that L2 learners, with the exception of those at the Primary level, were able to effectively produce both negative and interrogative sentences. The overall distribution suggests that there is no significant difference in the total number of occurrences between negation and question formation. However, the quality of performance, including error rates and common error types, varies depending on the proficiency level of the L2 learners. In the subsequent sections, we will conduct a more thorough examination of the frequent error types and their characteristics to provide empirical evidence for further discussion.

5. Results

5.1 Grammatical production

The study found that informants at higher proficiency levels demonstrated better

writing skills than those at lower levels, but even those at the highest level did not achieve native-like proficiency. By analyzing L2 production of two target structures from the same corpus data, the study compared the percentage of correct sentences across proficiency levels to identify which structure was more accurately used and which was lagged behind at the underdeveloped level. Figure 1 shows a comparison of the percentages of grammatically correct production of the target structures across proficiency levels. The results indicated that correctness tended to increase with L2 proficiency for both structures, although the rates of improvement differed across the five levels. Despite an overall increase in correctness for both structures, the study found that they showed varying rates of improvement throughout the different proficiency levels. In the Basic level, most child L2 learners tend to struggle with correctly forming negative sentences, with only 56.6% accuracy. However, in the Post-advanced level, this accuracy increases significantly to 86.4%. On the other hand, question formation is particularly challenging for learners, with only 40.7% accuracy at the Basic level and a modest increase to 62.2% in the Post-advanced level. Interestingly, the accuracy of question formation is much lower than that of negative sentence formation in the highest level in KELC data (63.2% vs. 86.4%). This suggests that there are significant differences in the acquisition patterns of these two language structures. Figure 1 provides a clear visual representation of the gap in accuracy between the two structures.

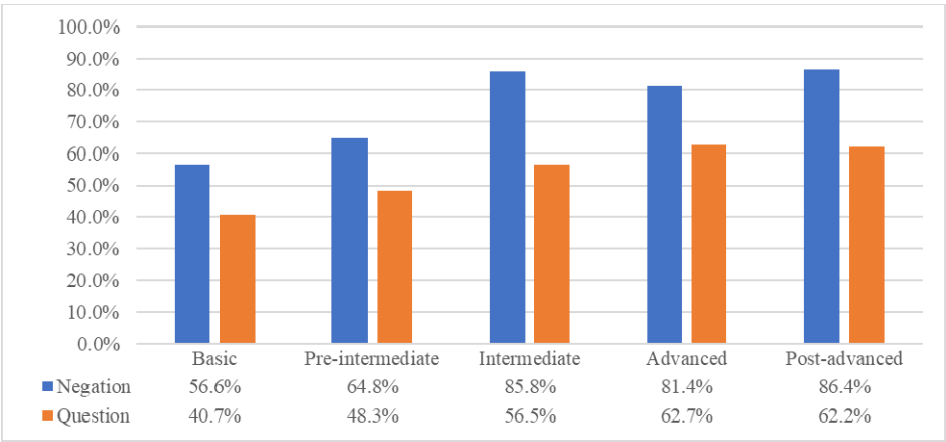

Figure 1. Mean percentage of grammatical production by proficiency

The bar graphs in Figure 1 provide interesting insights into the process of fossilization in child Korean L2 learners. At the Intermediate level, these learners are able to generate negative sentences with almost 80% accuracy, and there is only a slight improvement in accuracy at the Advanced and Post-advanced levels. This suggests that they have already reached the highest level of development in the acquisition of sentential negation. However, during the fossilization period, novice L2 learners still make frequent errors in tense and agreement, which are persistent issues for learners in general. This supports the idea that L2 learners may not fully acquire the morpho-syntactic and semantic properties of feature checking movement for tense and agreement, even after they have acquired the structure of sentential negation. In contrast, L2 learners at the same Intermediate level still struggle with question formation and have not yet reached the final stage of development in this area.

5.2 Error analysis

5.2.1 Sentential negation

Based on previous research on the developmental stages of negation (Bellugi 1965; Klima and Bellugi 1967; Cancino et al. 1978; Stauble 1984; Lightbown and Spada 2013; Thornton and Tesan 2013; Park and Choi 2016), we have categorized all negation errors into seven types. Each type of error (excluding Type 7, which does not have specific developmental properties) shares similar characteristics that allow them to be grouped together. To account for the development of functional categories in L2 grammar, six error types are further divided into three stages (N-Stage 1, N-Stage 2, and N-Stage 3). By examining the most frequent error types at each stage, we can observe how L2 grammar progresses from the lexical category stage to the functional category stage when acquiring sentential negation. Table 5 provides a comprehensive list of all error types and examples of typical errors at each stage.

Table 5. Types of negation errors in KELC

Stage	Property	Type	Erroneous Constructions
N-Stage 1	Lexical Negation	Type1 (no auxiliary)	*not* + XP
		Type2 (unanalyzed don't)	*can't/cannot/don't/do not* + XP
N-Stage 2	Emergence of NegP	Type3 (be-insertion)	*be* + *can't/cannot/don't/do not* + Verb
		Type4 (wrong auxiliary)	*be* + *not* + verb; *don't/do not* + Adj
N-Stage 3	Emergence of Inflection	Type5 (wrong agreement)	I/you/they *doesn't*; she/he *don't*
		Type6 (double inflection)	auxiliary/copular + *not* + inflected verb
		Type7 (others)	Extra types

Note. XP represents all possible lexical categories such as noun phrases (NPs), verb phrases (VPs), adjective phrases (AdjP), and adverb phrases (AdvP).

Errors categorized as Type 1 and Type 2 in N-Stage 1 indicate that L2 learners have not yet learned to use the functional projection NegP for sentential negation. In Type 1 errors, as in (4), the negator *not* is simply inserted before a lexical category, such as an adjective phrase (AdjP), without a copular verb. In Type 2 errors, as in (5), we found examples of contracted forms of negative auxiliary verbs, such as *don't* or *can't*, but these forms are unanalyzed and do not differ from the unsupported *not* in Type 1 errors. Examples (4) and (5) illustrate how the negator *not* or unanalyzed forms of negative auxiliary verbs are adverbially inserted into the VP without any functional categories.

(4) [VP1 flowers [VP2 not [AdjP pretty]]] [Type 1; N-Stage 1]
(5) [VP1 I [VP2 don't [AdjP exhausted]]] [Type 2; N-Stage 1]

In example (4), negation without an auxiliary verb cannot verify tense and agreement features on T, and in example (5), the unanalyzed form of *don't* is also not inflected for either of these features. It is assumed that L2 learners in N-Stage 1 have not yet developed functional projections, such as NegP and TP, and therefore phrase structures in this stage only minimally project beyond the VP and do not include a TP.

In N-Stage 2, L2 learners begin to use negation with supporting auxiliary verbs, which indicates that the projection of NegP or TP is now available for representing negation and other semantic features. However, the form of sentential negation is still not entirely grammatical. Type 3 errors show that unanalyzed forms of *don't* or *can't* are still commonly used. Additionally, *be* verbs are redundantly inserted instead of using the correct do-support. In Type 4 errors, be verbs are also mistakenly inserted in the position of other auxiliary verbs or do-support.

(6) [TP We are [NegP don't [VP study]]] [Type 3; N-Stage 2]
(7) [TP I am [NegP not [VP draw very well]]] [Type 4; N-Stage 2]

Examples (6) and (7) indicate that novice L2 learners make mistakes by using *be* verbs to express their limited grasp of functional categories. By analyzing the frequent errors in N-Stage 2, we observed that when L2 grammar progresses from the lexical category stage to the functional category stage, these learners attempt to use be verbs to mark negation, tense, and agreement. We will revisit this phenomenon later.

By the time L2 learners reach N-Stage 3 in their development of sentential negation, they are significantly more skilled in utilizing do-support or other auxiliary verbs. Nonetheless, there are still some issues with tense and agreement in sentential negation at this stage. For instance, learners may use *doesn't* with plural subjects or *don't* with singular subjects. Moreover, in example (8), there is an incorrect inflection of the lexical verb in VP (e.g., *finished*). In example (9), despite using a correctly inflected finite verb, the participant still inflected the lexical verb in VP.

(8) [TP he do [NegP n't [VP finished homework]]] [Type 5; N-Stage 3]
(9) [TP the elephant did [NegP n't [VP came near me]]] [Type 6; N-Stage 3]

Compared to earlier stages, in N-Stage 3, there is some expansion in the use of functional categories, but more complex syntactic and semantic feature checking remains problematic. The tense and agreement errors in N-Stage 3 indicate that the process of checking abstract semantic features like [±PRESENT] or [3RD PERSON SINGULAR] is still challenging for beginner and intermediate L2 learners. Therefore, it is assumed that intermediate-level learners only view functional categories as a placeholder for

auxiliary verbs in negative sentences.

5.2.2 Question formation

The categorization of errors in question formation also shows clear evidence of the development of functional categories in the grammar of L2 children. Table 6, which draws on previous research (Wode 1971; Cancino et al. 1978; Pienemann and Johnston 1986; White and Juffs 1998; Rowland and Pine 2000; Grinstead 2001; Kim 2002) identifies nine common types of errors made by children L2 learners when forming *yes-no* questions and *wh*-questions in KELC data.

Table 6. Types of question errors in KELC

Stage	Property	Type	Erroneous Constructions
Q-Stage 1	Simple questions	Type1 (one-word Q)	Ready? What?
		Type2 (raising intonation)	You ate the pizza?
		Type3 (*wh*-in-situ)	you know what?
Q-Stage 2	Emergence of *wh*-movement /SAI	Type4 (no inversion)	How boy can eat pizza?
		Type5 (wrong auxiliary)	Why are you come here?
		Type6 (double auxiliary)	Isn't that is a basket ball?
Q-Stage 3	Emergence of Inflection	Type7 (wrong tense)	What did she said?
		Type8 (inversion in RC)	Do you know where is this dog?
		Type9 (others)	Extra types

In Table 6, error types in question formation (excluding Type 9) are divided into three distinct stages (e.g., Q-Stage 1, Q-Stage 2, and Q-Stage 3), which are comparable to the three stages in Table 5 that identify errors in negation. Errors that frequently occur in Q-Stage 1 are typically caused by the absence of functional projections, as in example (10).

(10) [VP skatch [VP is difficult?]] [Type 2; Q-Stage 1]

In Q-Stage 1, functional projections like TP/CP are not present, which means that the questions formed at this stage do not follow the typical structure of English interrogatives that require SAI and *wh*-movement. Instead, L2 learners at this stage raise their intonation at the end of phrases or clauses to form questions. Due to

the underdeveloped functional categories, they lack the ability to accommodate moved constituents such as auxiliary verbs or *wh*-words.

In example (11), as L2 grammar progresses to Q-Stage 2, *wh*-words are moved to the sentence initial position, above the subject, which is considered as the specifier of CP.

(11) [CP why [TP I can [NegP n't [VP draw well?]]]] [Type 4; Q-Stage 2]

However, this type of error involves the movement of *wh*-words to the sentence initial position (or simply inserted there), while auxiliary/modal verbs remain in their original position without undergoing SAI. These errors demonstrate that functional projections such as CP, as well as other semantically and pragmatically derived functional projections outside of TP, are not yet fully developed. As a result, there is insufficient structural space above the subject to accommodate both *wh*-movement and SAI correctly. In addition, as previously observed in negation errors, be verbs are frequently used instead of the grammatically correct do-support.

Finally, in Q-Stage 3, interrogatives are generated with proper *wh*-movement and SAI. Nevertheless, Type 7 and Type 8 errors in (12) and (13) show that there is only limited ability to correctly express complex semantic features such as tense and agreement.

(12) [CP Didn't [TP he [NegP [VP gave flowers to everyone?]]]]
[Type 7; Q-Stage 3]

(13) [TP I [VP wonder [CP is [TP there [VP is monkey like my sister?]]]]]
[Type 8; Q-Stage 3]

In (12), the lexical verb is redundantly inflected alongside the inflected do-support. While beside the point, it is worth noting that negative *yes-no* questions with pre-posed negation, as in (12), are syntactically, semantically, and pragmatically very complex structures. These negative questions are only used by advanced L2 learners who can produce both sentential negation and question formation. In addition, Example (13) demonstrates an overgeneralization of SAI in the embedded clause, where a [-Q] feature is mistakenly checked by the additionally inserted be verb. We assume that L2 learners who produce questions such as (12) or (13) have already reached an advanced stage

in the development of functional categories. Nevertheless, the representation of the functional category is not fully internalized, which still leads to grammatical errors. Most errors observed in Q-Stage 3 are the result of partially developed functional categories.

5.2.3 The distribution of negation errors in KELC

After analyzing six types of errors as shown in Table 5, the distribution of negation errors across five proficiency levels is presented. Table 7 displays the distribution of all errors based on proficiency level.

Table 7. Number of negation errors by error types and proficiency levels

	Type 1	2	3	4	5	6	7	Total N of Error (%)	Total Neg
	N-Stage 1: Lexical Negation		N-Stage 2: Emergence of NegP		N-Stage 3: Emergence of Inflection				
Basic	10 (28.6)	1 (2.9)	9 (25.7)	5 (14.3)	4 (11.4)	4 (11.4)	2 (5.7)	35 (42.2)	83
Pre-int	17 (24,6)	3 (4.3)	6 (8.7)	14 (20.3)	12 (17.4)	10 (14.5)	7 (10.1)	69 (35.2)	196
Int	3 (6.5)	-	7 (15.2)	2 (4.3)	9 (19.6)	20 (43.5)	5 (10.9)	46 (22.5)	204
Adv	3 (10.3)	1 (3.4)	1 (3.4)	4 (13.8)	6 (20.7)	12 (41.4)	2 (6.9)	29 (17.9)	162
Post-adv	2 (6.9)	-	1 (3.4)	2 (6.9)	6 (20.7)	16 (55.2)	2 (6.9)	29 (14.1)	206

Note. Cells in darker colors represent the higher rate of errors. There are four levels of brightness (0-9.9%; 10.0-19.9%; 20.0-29.9%; more than 30.0%).

Excluding the peripheral Type 7 errors, the distribution of errors from Type 1 to Type 6 demonstrates a clear correlation with the level of proficiency. L2 learners at lower levels (e.g., Basic and Pre-intermediate) contribute to the higher number of errors in Type 1 through Type 4. In contrast, L2 learners in upper levels (e.g., Advanced and Post-advanced) are less likely to make these basic errors, but instead, their errors tend to be more concentrated on Types 5 and 6. Furthermore, the

occurrence of negation errors decreases as proficiency level increases, dropping from 42.2% (35/83) at the Basic level to 14.1% (29/206) at the post-Advanced level. A chi-square test for sentential negation indicates strong evidence, with $\chi 2$ (8, N=190) = 36.34, P < .001*, that the frequency of different types of negation errors is not equally distributed across the five distinct proficiency levels. That is, the number of errors in three different developmental stages varies significantly depending on L2 learners' proficiency.

Figure 2 displays bar graphs that illustrate a clear correlation between proficiency levels and the frequency of errors. As L2 proficiency increases from Basic to Post-Advanced, the percentage of N-Stage 1 and 2 errors decreases steadily, while the percentage of N-Stage 3 errors increases steadily.

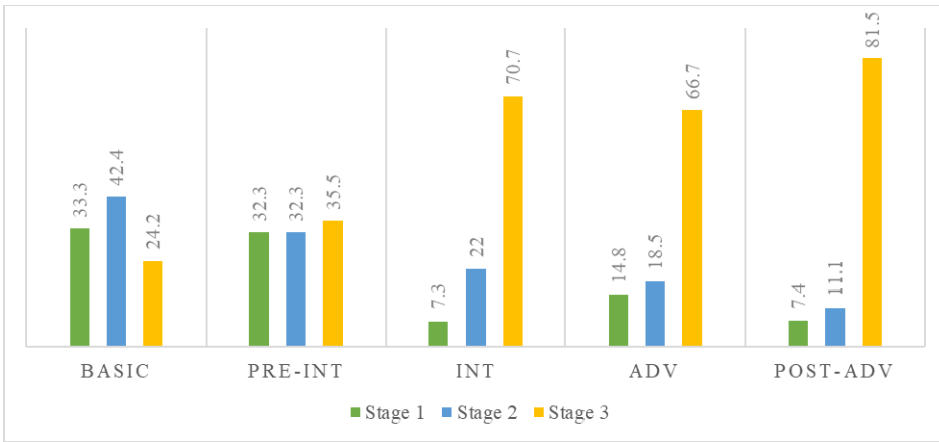

Figure 2. Percentage of three stage N-errors by proficiency

5.2.4 The distribution of question errors in KELC

Table 8 also shows a strong tendency in the distribution of question errors. Compared to the distribution of negation errors in Table 7, the distribution of interrogative errors is more prominently skewed towards basic error types such as Type 1 and Type 2 at all proficiency levels (e.g., Basic 77.8%, Pre-intermediate 70.6, Intermediate 78.3%, Advanced 65.5%, and Post-advanced 60.8%). In contrast, Type 7 and Type 8 errors categorized as Q-Stage 3 are only observed at Intermediate, Advanced, and Post-advanced levels, and these errors are not present at the Basic and Pre-intermediate

levels.

Table 8. Number of Q-formation errors by error types and proficiency levels

	1	2	3	4	5	6	7	8	9	Total N of error (%)	Total Qs
	Q-Stage 1: Non-movement			Q-Stage 2: Emergence of CP			Q-Stage 3: Emergence of Inflection				
Basic	25 (55.6)	10 (22.2)	1 (2.2)	8 (17.8)	1 (2.2)	-	-	-	-	45 (57.7)	78
Pre-int	54 (45.4)	30 (25.2)	1 (0.8)	21 (17.6)	5 (4.2)	1 (0.8)	-	-	7 (5.9)	119 (51.3)	232
Int	55 (54.5)	24 (23.8)	1 (1.0)	12 (11.9)	4 (4.0)	-	1 (1.0)	1 (1.0)	3 (3.0)	101 (43.5)	232
Adv	28 (48.3)	10 (17.2)	-	7 (12.1)	4 (6.9)	2 (3.4)	6 (10.3)	1 (1.7)	-	58 (37.9)	153
Post-adv	22 (47.8)	6 (13.0)	2 (4.3)	8 (17.4)	-	2 (4.3)	3 (6.5)	1 (2.2)	2 (4.3)	46 (36.8)	125

Note. Cells in darker colors represent the higher rate of errors. There are four levels of brightness (0-9.9%; 10.0-19.9%; 20.0-29.9%; more than 30.0%).

It should be noted that the KELC data exhibit an interesting pattern, where Q-Stage 1 errors are over represented across all proficiency levels This trend is attributed to the frequent usage of single-word questions (such as “Why?” and “What?”) and non-movement questions (such as “You knew?”). As with negation errors, the percentage of question errors decreases as proficiency level increases, dropping from 57.7% in Basic to 36.8% in Post-advanced. A chi-square test on the distribution of question errors also indicates strong evidence ($\chi 2$ (8, N=357) = 24.67, P < .001*) that the frequencies of different types of interrogative errors are not equally distributed across the five proficiency levels.

In Figure 2, we reported that negation errors in N-Stage 1 decrease as proficiency develops, and there is a shift towards N-Stage 3 errors becoming more frequent. However, in Figure 3, question errors in Q-Stage 1 including Type 1 and Type 2 errors show the highest percentage across all proficiency levels. Compared to Q-Stage 1 errors, Q-Stage 2 and Q-Stage 3 errors are not as prominent across all proficiency levels. Even in Advanced and Post-advanced levels, Q-Stage 1 errors are still over 65%.

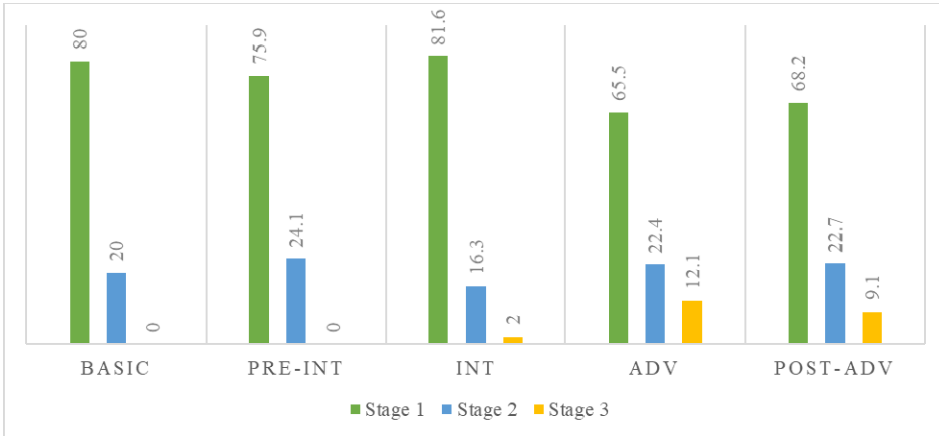

Figure 3. Percentage of three stage Q-errors by proficiency

6. Discussion

6.1 Frequent errors in negative and interrogative constructions

The learner corpus data in the current study reveals that frequent error types are consistent with the expansion of functional categories in L2 grammar. Child L2 learners with lower proficiency levels more frequently made Stage 1 errors for both structures (i.e., Type 1/2 in N-Stage 1; Type 1/2/3 in Q-Stage 1). These fundamental errors share the characteristic that L2 learners do not use auxiliary verbs correctly. In phrase structures generated at the Basic and Pre-intermediate levels, it appears that functional categories have not yet developed, and the highest maximal projection is still below the VP shell. As a result, novice L2 learners insert the negator *not* before lexical verbs without do-support, and they form interrogative sentences without SAI or *wh*-movement. After acquiring some knowledge of functional categories, child L2 learners in N-Stage 2 and Q-Stage 2 begin to use auxiliary verbs and do-support for negation, but still struggle with movement operations, leading to Stage 2 errors (i.e., Type 3/4 in N-Stage 2; Type 4/5/6 in Q-Stage 2) and Stage 3 errors (i.e., Type 5/6 in N-Stage 3; Type 7/8 in Q-Stage 3). These errors involve the incorrect use of *be*-verbs and omitted SAI, indicating that L2 learners are attempting to check semantic features in the functional projections they have recently acquired. Once L2 learners

overcome this intermediate stage, they progress to the final stage of acquiring functional categories and can produce grammatically correct negative and interrogative sentences.

Table 9 provides a comparison between the development of negation and question structures at different stages, highlighting a noticeable difference in the acquisition process between the two structures.

Table 9. Examples negative and interrogative constructions in KELC

N-Stage 1	I don't exhausted. Flowers not pretty. Everyone no answered.	Q-Stage 1	Sketch is difficult? You knew? OK?
N-Stage 2	I'm not draw very well. We are don't study. I'm don't draw picture very well. I can't waiting for lunch. I wasn't finish it.	Q-Stage 2	why you cry? How draw I can well? Why I can't draw well? What this noisy sound? Why are you call Pizza hut? How much your family ate?
N-Stage 3	The elephant didn't came near me. I didn't knew that. I doesn't like monster.	Q-Stage 3	I think this girl had a good day, don't she? I wonder is there is monkey like my sister? Do you slept comfortable my dear? Didn't he gave flowers to everyone?

The developmental gap can be attributed to the varying levels of syntactic complexity inherent in the two structures. This observation reinforces the notion that the acquisition of functional projections, such as NegP, TP, and CP, is not a random or simultaneous process but rather a systematic expansion that progresses alongside the development of L2 learners' syntactic abilities.

6.2 Syntactic complexity and sequential acquisition

The corpus data indicates that L2 learners gradually acquire various constructions as they develop functional projections. In this study, the differing syntactic complexity between negation and question formation significantly influences the uneven

acquisition process. Simpler structures are acquired with relative ease, while more complex ones lead to persistent grammatical errors, resulting in prolonged non-native-like performance.

Notably, Korean learners with similar English proficiency levels showed greater accuracy and frequency in using sentential negation compared to question formation. The KELC data consistently highlights that question formation is more challenging than negation. This reveals that the syntax related to NegP is relatively simpler than that of TP and CP, which involve complex movement operations for feature checking. As a result, novice L2 learners face difficulties acquiring these more complex structures even as they develop functional projections.

O'Grady (2013) argues that syntactic derivations crossing clause boundaries are more demanding than those within a single clause, a concept that can also apply to hierarchical complexity within a clause. Studies by Lee (2009) and Lee et al. (2011) reveal that C-command affects scope interpretation, with L2 learners favoring less cognitively demanding interpretations. Analysis of KELC errors shows that early-stage L2 learners primarily project VP without advancing beyond the subject position. Consequently, derivations beyond basic phrase structure, such as SAI or *wh*-movement, require more cognitive effort than those within VP/TP, such as negation. Similarly, Orfitelli and Polinsky (2013) argue that fronting a *wh*-word creates a complex dependency and leaving it in situ reduces processing effort. In the KELC data, intermediate learners can produce negative sentences with auxiliary verbs and do-support but struggle with native-like question formation until they fully develop their CP projection.

6.3 More issues on the gradual expansion of functional categories

The current study has observed several interesting phenomena related to the gradual expansion of functional projections and how they impact L2 syntactic development. Firstly, the operation of *wh*-movement is prioritized over SAI in the overall developmental trajectory of question formation. Specifically, in Q-Stage 2, child Korean learners of English start moving *wh*-words to the sentence initial position, but most of them do not implement SAI. This phenomenon may be due to i) the possibility that fronting *wh*-elements is less complex than SAI, or ii) the fact that fronted

wh-elements occur more frequently in natural language. This suggests that the frequency of input may play a role in the acquisition of certain syntactic structures. Previous research by Pires and Taylor (2007) and Guasti (2000) investigated *wh*-movement in question formation among L1 English-speaking children. Pires and Taylor found only two instances of *wh*-in-situ productions out of 174 (1.15%), while Guasti identified 41 questions that did not use *wh*-movement out of 2,809 (1.46%). Similarly, KELC data also reveals a very low number of Type 3 errors, with only five instances of *wh*-in-situ out of 831 (0.60%). Returning to the complexity theory, moving a constituent to a higher functional projection is costlier than leaving it in its original position. However, previous literature and the current study have shown that when L1 and L2 learners develop their syntactic knowledge into the functional categories above TP or VP, they tend to move *wh*-words instead of leaving them in situ. Although in some cases, such as echo-questions, *wh*-words may not be intentionally moved in adult language, they should typically appear in the initial position of canonical English *wh*-questions. In contrast to almost consistent *wh*-movement, L2 learners tend to use SAI less frequently. This raises the question of why there is an asymmetry between *wh*-movement and SAI in L1/L2 production if movement operations are indeed syntactically complex.

We could hypothesize that *wh*-movement emerges earlier than SAI because *wh*-elements are more noticeable due to their lexical nature, their role as arguments or adjuncts, and their consistent placement in first position. In contrast, SAI involves moving the head of a phrase and is less noticeable because it involves non-lexical elements and inconsistent placement. This can be illustrated through example (14) which highlights the distinct properties of these syntactic movements.

(14) a. What did you buy?
b. Who bought that?

In (14a), the *wh*-word for the object undergoes both *wh*-movement and SAI, resulting in the *wh*-word appearing at the beginning of the sentence. However, in (14b) with a subject *wh*-word, even without SAI, the *wh*-word remains in the initial position. Concerning the structure of interrogatives, Rizzi (1997) proposes that CP is the highest projection in all clauses, regardless of whether or not they are finite. On this view, Guasti (2000) proposes the Null Auxiliary Hypothesis to explain the absence of SAI.

Under this hypothesis, SAI occurs even when the auxiliary is null, with Øaux moving to the head of CP, as in (15).

(15) [CP wha t_i [C $Ø_j$ [+WH] [TP dat train t_j [VP doing t_i ?]]]]

Guasti proposes that even though there are structural differences between adult and child language, they share the same underlying structure. In the example (15), which was generated by an English-speaking child (2;4-year-old), the null auxiliary is equivalent to do-insertion. Guasti's hypothesis states that SAI applies even when the auxiliary is null, with the null auxiliary moving to the head of CP.

However, in contrast to Guasti's proposal, we suggest that the structure of finite clauses in the underdeveloped L1 and L2 interlanguage of children is not identical to the structure of adult language. We argue in this study that L2 learners have limited syntactic knowledge of functional categories during the intermediate stages and may not recognize the divergent functions of the CP projection. Therefore, L2 learners may initially utilize CP for *wh*-movement only, and not for SAI. One possible explanation for this is that intermediate L2 learners gradually develop higher functional projections above the ordinary subject position, passing through VP, TP, and FP stages, before ultimately acquiring the full CP structure, as illustrated in (16).

(16) a. [VP dat train doing what?]
b. [TP what$_i$ [T [+WH] [VP dat train doing t_i ?]]]
c. [FP what$_i$ [F [+WH] [TP dat train doing t_i ?]]]
d. [CP what$_i$ [C is$_k$ [+WH] [TP that train$_j$ [T t_k [VP t_j t_k doing t_i ?]]]]]

This assumption involves the *wh*-feature initially being instantiated in the head of TP, and then checked via the specifier-head relation between this head and the moved *wh*-word in (16b). By (16c), intermediate L2 learners may have acquired an unspecified functional category FP above TP, wherein FP hosts the *wh*-feature triggering *wh*-movement. Only in the last stage do L2 learners utilize a full-fledged CP that triggers both *wh*-movement and SAI.

In addition to the preference of *wh*-movement over SAI, we also noticed that copular be is excessively used at the initial stage of functional category for both sentential negation and question formation. Previously, Zobl and Liceras (1994) and

Ionin and Wexler (2002) have observed that L2 learners of English at beginner and intermediate proficiency incorrectly overuse *be*-verbs. According to Ionin and Wexler (2002), because of L2 learners' underdeveloped morpho-syntactic knowledge, they prefer to use suppletive inflection than affixal inflection. Thus, be verbs are frequently used to indicate tense and agreement instead of suffixes such as *-s* or *-ed* attached to the main verb. Moreover, Stauble (1984) discovered that beginners tend to use *be*-verbs in their initial attempts at sentential negation *n't*/*not*. The fact that these L2 learners try to insert a lexical element before negation in (17a) indicates their uncertainty about the presence of a functional projection. Additionally, in KELC, beginners tend to add copular be unnecessarily even in declarative sentences, such as (17b), where the inserted be verb is inflected to check the tense feature in the head of TP. Instead of using Move or Merge (Chomsky 1995) to check different features on functional projections, L2 learners opt for the simpler solution of inserting *be*-verbs in the underspecified functional projection, which requires less effort than the parametric feature checking process. Similarly, L2 learners often make the error of using *be*-verbs in interrogative sentences, such as (17c), instead of correctly using do-support and SAI.

(17) a. I'm don't saw many animals.
b. I was give some plant for sheeps.
c. what I'm draw?

There are situations where even though there is already a suitable auxiliary verb or do-support, the initial auxiliary verb does not move for SAI (which is more complicated), but an extra *be*-verb is needlessly added at the beginning of the sentence (which is less complicated). The complexity hypothesis suggests that it is more challenging and demanding to move a constituent from its original location to a proper syntactic and semantic position, compared to just inserting *be*-verbs into the recently acquired functional projection.

The third issue pertains to negative questions, which are the combination of negation and question. Only advanced L2 learners who have reached the ultimate developmental stage of both structures are capable of producing negative questions that are grammatically correct, including proper syntax, semantics, and pragmatics. To use negative questions correctly, three functional projections such as NegP, TP,

and CP need to be thoroughly involved. Compared to positive questions, which only require the involvement of TP/CP, negative questions are linguistically more complex by means of the number of maximal projections and movement operations. Besides the syntactic and semantic complexity, negative questions are also more pragmatically complicated. This is because they are always associated with discourse-pragmatic knowledge, such as conversational implicatures, which is not necessarily relevant to ordinary positive questions. For instance, when a questioner poses the positive question (18a), they do not have any background information or a particular bias towards a specific answer. However, negative questions such as (18b) or (18c) give the impression that the questioner may possess some reliable evidence about the expected answer from the conversational context (see Park and Dubinsky 2019; Dimitrova 2022; Kim 2024; Kim et al. 2024 for a detailed discussion).

(18) a. Is it raining?
b. Isn't it raining?
c. Is it not raining?

7. Conclusion

The present study focuses on the acquisition of sentential negation and question formation in child L2 learners and illustrates how they gradually expand their phrase structures from lexical to functional projections. Through comparing the different rates of acquisition between the two structures, we were able to demonstrate the sequential acquisition of various functional categories including NegP, TP, and CP. Our corpus analysis shows that Korean L2 learners of English tend to acquire sentential negation before question formation. This can be attributed to the derivational and representational complexity of the target structures, where question formation requires more complex movement operations and access to additional functional projections, making it more challenging for L2 learners to acquire compared to sentential negation.

Due to the scarcity of data from the Primary level in KELC, this study lacks sufficient samples from L2 learners in very low stages. Additionally, since the KELC data is written, it is limited in terms of examining spontaneous spoken language production. Despite these limitations, the general findings of this research are

significant for comprehending how functional categories develop in child L2 grammar.

References

Bae, Jungok and Yae-Sheik Lee. 2011. The validation of parallel test forms: 'Mountain' and 'beach' picture series for assessment of language skills. *Language Testing* 28(2): 155-177.

Bae, Jungok and Yae-Sheik Lee. 2012. Evaluating the development of children's writing ability in an EFL context. *Language Assessment Quarterly* 9(4): 348-374.

Bellugi, Ursula. 1965. The development of interrogative structures in children's speech. In Klaus F. Riegel (ed.), *The development of language functions*, 103-138. Ann Arbor, MI: University of Michigan Language Development Program.

Bellugi, Ursula. 1967. *The acquisition of the system of negation in children's speech*. PhD Dissertation. Harvard University.

Benincà, Paola. 2001. The position of topic and focus in the left periphery. In Guglielmo Cinque and Giampaolo Salvi (eds.), *Current studies in Italian syntax: Essays offered to Lorenzo Renzi*, 39-64. Amsterdam: North-Holland.

Cancino, Herlinda, Ellen J. Rosansky, and John H. Schumann. 1978. The acquisition of English negatives and interrogatives by native Spanish speakers. In Evelyn M. Hatch (ed.), *Second language acquisition: A book of readings*, 207-230. Rowley, MA: Newbury House Publishers.

Choi, Incheol. 2013. Why is 'be' appear there?: Topic marker vs. underdeveloped functional category. *Linguistic Research* 30(3): 567-581.

Choi, Incheol and Jeong-Im Kim. 2008. The noun phrase accessibility hierarchy and second language acquisition: Corpus analyses. *Linguistic Research* 25(2): 83-104.

Choi, Soonja and David Zubin. 1985. Acquisition of negation. In Susumu Kuno, John Whitman, Ik-Hwan Lee, and Young-Se Kang (eds.), *Harvard studies in Korean linguistics-Proceedings of the 1985 Harvard Workshop on Korean Linguistics (Harvard WOKL-1985)*, 135-144. Cambridge, MA: Department of Linguistics, Harvard University.

Chomsky, Noam. 1957. *Syntactic structures*. The Hague: Mouton.

Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: MIT Press.

Clancy, Patricia M. 1989. Form and function in the acquisition of Korean *wh*-questions. *Journal of Child Language* 16(2): 323-347.

Culicover, Peter W. 2013. *Grammar and complexity: Language at the intersection of competence and performance*. Oxford: Oxford University Press.

Culicover, Peter W. and Ray Jackendoff. 2006. The simpler syntax hypothesis. *Trends in Cognitive Sciences* 10(9): 413-418.

Dimitrova, Margarita. 2022. Evaluation and bias in negative *yes-no* questions. *Linguistic Research* 39(3): 405-429.

Eubank, Lynn. 1996. Negation in early German-English interlanguage: More valueless features in the L2 initial state. *Second Language Research* 12(1): 73-106.

Friedmann, Naama and Rama Novogrodsky. 2011. Which questions are most difficult to understand?: The comprehension of *Wh* questions in three subtypes of SLI. *Lingua* 121(3): 367-382.

Gibson, Edward, Harry Tily, and Evelina Fedorenko. 2013. The processing complexity of English relative clauses. In Montserrat Sanz, Itziar Laka, and Michael K. Tanenhaus (eds.), *Language down the garden path: The cognitive and biological basis for linguistic structures*, 149-173. Oxford: Oxford University Press.

Givón, Talmy. 2009. *The genesis of syntactic complexity: Diachrony, ontogeny, neuro-cognition, evolution*. Amsterdam: John Benjamins Publishing Company.

Gordon, Peter, Randall Hendrick, and Marcus Johnson. 2001. Memory interference during language processing. *Journal of Experimental Psychology: Learning, Memory & Cognition* 27(6): 1411-1423.

Grinstead, John. 2001. *Wh*-movement in child Catalan. *Issues in Applied Linguistics* 12(1): 5-28.

Guasti, Maria Teresa. 2000. An excursion into interrogatives in early English and Italian. In Marc-Ariel Friedemann and Luigi Rizzi (eds.), *The acquisition of syntax*, 105-128. Harlow: Longman.

Hauser, Mark D., Noam Chomsky, and W. Tecumseh Fitch. 2002. The faculty of language: What is it, who has it, and how did it evolve? *Science* 298(5598): 1569-1579.

Heine, Bernd and Tania Kuteva. 2007. *The genesis of grammar: A reconstruction* (Vol. 9). Oxford: Oxford University Press.

Ionin, Tania and Kenneth Wexler. 2002. Why is 'is' easier than '-s'?: Acquisition of tense/agreement morphology by child second language learners of English. *Second Language Research* 18(2): 95-136.

Jakubowicz, Celia. 2005. The language faculty: (Ab)normal development and interface constraints. *Paper presented at Generative Approaches to Language Acquisition.* University of Siena.

Jakubowicz, Celia and Nelleke Strik. 2008. Scope-marking strategies in the acquisition of long distance *wh*-questions in French and Dutch. *Language and Speech* 51(Pt 1-2): 101-132.

Jakubowicz, Celia. 2011. Measuring derivational complexity: New evidence from typically-developing and SLI learners of L1 French. *Lingua* 121(3): 339-351.

Kim, Jong-Bok. 2024. Parametric differences between English and Korean response particles: A discourse-based HPSG approach. *Studia Linguistica* 78(2): 280-314.

Kim, Jong-Bok, Jungsoo Kim, and Yunju Nam. 2024. Variations in answering negative polar questions in Korean: An experimental study. *Lingua* 310: 103792.

Kim, Jung-Tae. 2002. Development of L2 *wh*-questions by Korean learners of English. *English Teaching* 57(2): 163-186.

Klima, Edward S. and Ursula Bellugi. 1966. Syntactic regularities in the speech of children.

In John Lyons and Roger J. Wales (eds.), *Psycholonguistic papers*, 183-208. Edinburgh: Edinburgh University Press.

Lightbown, Pasty M. and Nina Spada. 1993. Instruction and the development of questions in L2 classrooms. *Studies in Second Language Acquisition* 15(2): 205-224.

Lightbown, Pasty M. and Nina Spada. 2013. *How languages are learned* (4th edition). Oxford: Oxford University Press.

O'Grady, William. 2013. The illusion of language acquisition. *Approaches to Bilingualism* 3(3): 253-285.

Orfitelli, Robyn and Maria Polinsky. 2013. Is it all processing all the way down? *Linguistic Approaches to Bilingualism* 3(3): 335-340.

Park, Keunhyung and Stanley Dubinsky. 2019. The syntax and semantics of negative questions and answers in Korean and English. In Patrick Farrell (ed.), *Proceedings of the Linguistic Society of America* (PLSA), 1-9. Washington, DC: Linguistic Society of America.

Park, Keunhyung and Incheol Choi. 2016. The acquisition of English negatives by young Korean speakers: A learner corpus study. *Studies in Modern Grammar* 89: 169-187.

Perales, Susana, María del Pilar García Mayo, and Juana M. Liceras. 2009. The acquisition of L3 English negation by bilingual (Spanish/Basque) learners in an institutional setting. *International Journal of Bilingualism* 13(1): 3-33.

Pires, Acrisio and Heather Lee Taylor. 2007. The syntax of *wh*-in-situ and common ground. *Proceedings from the Annual Meeting of the Chicago Linguistic Society* 43(2), 201-215. Chicago, IL: Chicago Linguistic Society.

Pienemann, Manfred and Malcolm Johnston. 1986. An acquisition based procedure for second language assessment (ESL). *Australian Review of Applied Linguistics* 9(1): 92-122.

Pienemann, Manfred and Malcolm Johnston. 1987. Factors influencing the development of language proficiency. In David Nunan (ed.), *Applying second language acquisition research*, 45-141. Adelaide: National Curriculum Research Centre, Adult Migrant English Program.

Rizzi, Luigi. 1997. The fine structure of the left periphery. In Liliane Haegeman (ed.), *Elements of grammar*, 281-337. Dordrecht: Springer.

Rizzi, Luigi. 2000. Remarks on early null subjects. In Marc-Ariel Friedemann and Luigi Rizzi (eds.), *The acquisition of syntax*, 269-292. London: Longman.

Rowland, Caroline F. and Julian M. Pine. 2000. Subject-auxiliary inversion errors and *wh*-question acquisition: 'What children do know?' *Journal of Child Language* 27(1): 157-181.

Rule, Sarah and Emma Marsden. 2006. The acquisition of functional categories in early French second language grammars: The use of finite and non-finite verbs in negative contexts. *Second Language Research* 22(2): 188-218.

Scontras, Gregory, William Badecker, Lisa Shank, Eunice Lim, and Evelina Fedorenko. 2015. Syntactic complexity effects in sentence production. *Cognitive Science* 39(3): 559-583.

Seog, Daria Soon-Young and Incheol Choi. 2018. Interlanguage development of young Korean EFL learners' modal usage: A learner corpus study. *Linguistic Research* 35(Special Edition):

83-103.
Sorace, Antonella. 2011. Pinning down the concept of "interface" in bilingualism. *Linguistic Approaches to Bilingualism* 1(1): 1-33.
Stauble, Ann-Marie Elizabeth. 1984. A comparison of Spanish-English and a Japanese-English second language continuum: Negation and verb morphology. In Roger Anderson (ed.), *Second languages: A cross-linguistic perspective*, 323-353. Rowley, MA: Newbury House.
Thornton, Rosalind and Graciela Tesan. 2013. Sentential negation in early child English. *Journal of Linguistics* 49(2): 367-411.
Vainikka, Anne and Martha Young-Scholten. 1994. Direct access to X'-theory: Evidence from Turkish and Korean adults learning German. In Bonnie Schwartz and Teun Hoekstra (eds.), *Language acquisition studies in generative grammar*, 265-316. Amsterdam: John Benjamins Publishing Company.
Vainikka, Anne and Martha Young-Scholten. 1996. Gradual development of L2 phrase structure. *Second Language Research* 12(1): 7-39.
White, Lydia and Alan Juffs. 1998. Constraints on *wh*-movement in two different contexts of nonnative language acquisition: Competence and processing. In Suzanne Flynn, Gita Martohardjono, and Wayne O'Neil (eds.), *The generative study of second language acquisition*, 111-129. New York: Psychology Press.
Wode, Henning. 1971. Some stages in the acquisition of questions by monolingual children. *Word* 27(1-3): 261-310.
Wode, Henning. 1977. Four early stages in the development of L1 negation. *Journal of Child Language* 4(1): 87-102.
Zobl, Helmut and Juana Liceras. 1994. Functional categories and acquisition orders. *Language Learning* 44(1): 159-180.

Keunhyung Park
Lecturer
Department of English Education
Kyungpook National University
80 Daehak-ro, Buk-gu
Daegu 41566, Korea
E-mail: khpark0115@gmail.com

Received: 2024. 08. 15.
Revised: 2024. 09. 09.
Accepted: 2024. 09. 10.