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DEVELOPMENT OF MORPHOSYNTACTIC FEATURES OF THE COMPLEMENTIZER PHRASE IN L2 RELATIVE CLAUSES OF KOREAN LEARNERS

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DEVELOPMENT OF MORPHOSYNTACTIC FEATURES OF THE COMPLEMENTIZER PHRASE IN L2 RELATIVE CLAUSES OF KOREAN LEARNERS

By

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ABSTRACT

DEVELOPMENT OF MORPHOSYNTACTIC FEATURES OF THE COMPLEMENTIZER PHRASE IN L2 RELATIVE CLAUSES OF KOREAN LEARNERS

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This dissertation argues that the acquisition of phrase structure and the acquisition of relevant morphosyntactic features are independent of each other, as discussed in Lardiere (1998a, 1998b) and Haznedar (2003), and that the entire L1 phrase structure is available as the base of L2 acquisition. This claim supports the Full Transfer/Full Access (FT/FA) hypothesis of Schwartz and Sprouse (1994, 1996). Cross-sectional elicited spoken and written data from adult Korean learners of English show that they acquire *that/ø*-relative clauses retaining [–wh, +pred] prior to *wh*-relative clauses retaining [+wh, +pred] (cf. Rizzi 1990). *That/ø*-relative clauses are prevalent in the early stages of acquisition. *Wh*-relative clauses, however, dominate as the complexity of relative CPs escalates, as the L2 proficiency increases, and as the monitoring time extends. Korean teachers, as well as advanced L2 learners, typically opt for *wh*-relative clauses, whereas native speakers generally dispense with *wh*-relative clauses and prefer *that/ø*-relative clauses.

DEDICATION

To my parents and family.

Also to my teachers, colleagues, and friends.

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INTRODUCTION

The role of first language (L1) grammar has been an extensive topic of research in the acquisition of a second language (L2). The goal is to examine the extent to which L2 acquisition is constrained by the linguistic principles and parameters of UG instantiated in learners' L1. In examining this problem, two models found in the literature on this topic have been proposed. While both agree on the crucial role of L1-instantiated UG in the development of L2 acquisition, they have somewhat different perspectives in terms of the degree of availability of the L1 grammar.

The partial access model claims that only the principles and parameters of UG instantiated in L1 are available to L2 learners. The full access model, on the other hand, claims that the entire UG is available to L2 learners, just as with L1 acquisition. Neither model is, however, able to account fully for the data which show a dissociation of phrase structure and its relevant morphosyntactic features, reported in Hawkins and Chan (1997), Lardiere (1998a, 1998b), and Haznedar (2003).

Data from the complementizer phrase (CP) in the relative clause (relative CP) present supplemental evidence that the acquisition of phrase structure and the acquisition of morphosyntactic features are independent of each other. Such evidence can also lend support to one model over the other, and may lead to a better understanding of the acquisition of L2 grammar.

With respect to the two conflicting models, one issue that has received a considerable amount of attention is the availability of L1 functional projections such as the inflectional phrase (IP) and complementizer phrase (CP)[1] at the initial state of L2 acquisition. Of the two specific L2 models on that issue, one is the Minimal Trees (MT) hypothesis (partial access model for L1-instantiated UG) (Vainikka and Young-Scholten 1994, 1996a, 1996b, 1998), which claims that "only lexical categories are present in the earliest stages of both L1 and L2 acquisition, and during that acquisition, functional projections develop in succession" (1996a: 7). The other is the Full Transfer/Full Access (FT/FA) hypothesis (full access-to-UG model) (Schwartz and Sprouse 1994, 1996), which claims that "the initial state of L2 acquisition is the final state of L1 acquisition" (1996: 40). That is, the entire L1 grammar including all functional projections is readily available as the base of L2 acquisition.

In this dissertation, the data give evidence that morphosyntactic features in the relative CP develop from [–wh, +pred] to [+wh, +pred]. This feature development is independent of L1 phrase structure, which is available as a block. One may, therefore, reach the generalization that the phrase structure of other types of CP that typically appear at earlier stages of L2 acquisition is also fully available as a block. Necessary morphosyntactic features, however, develop from [–] to [+].

[1] The determiner phrase (DP) as a functional category is not an issue in this study. Vainikka and Young-Scholten (1996a: 31) claim that "since argument structure is not stated in terms of DPs, but rather in terms of theta-roles, a DP need not be present from the earliest stages of acquisition."

The same data are evidence that the developmental pattern of the morphosyntactic features in the relative CP observes the order anticipated by the Noun Phrase Accessibility Hierarchy (NPAH, Keenan and Comrie 1977).

With respect to the investigation of the availability of functional categories, previous research has focused on the types of CP structures that were typically elicited from the data of natural speech in yes-no questions, *wh*-movement, and subordinate clauses. These necessitate a CP, which can appear in earlier stages of L2 acquisition. Among the structures that also contain a CP is the restrictive relative clause, although the CP found in this type of clause is different from that found in questions or declaratives[2] because it involves different syntactic relationships and semantic co-indexation within the phrase and between the matrix and relative clauses. Arguably, the early acquisitional characteristics of the relative CP typically emerging at a more advanced state of L2 acquisition elucidate another facet of the developmental trend of CP acquisition. This fact is concerned with more definite and critical evidence for the growth of L2 phrase structure in terms of the development of morphosyntactic features.

The study presented here is organized as follows. In Chapter 1, the major claims of the two hypotheses, both of which are concerned with the issue of the early presence of L1 functional projections, are introduced in detail. This study opposes the MT hypothesis and favors the FT/FA hypothesis. The Dissociation Hypothesis claims that

[2] A typology of CPs and syntactic structures and morphosyntactic features of different CPs are discussed in detail in Chapter 1.

the development of morphosyntactic features is dissociated from the acquisition of phrase structure, which is already entirely available as a block at the onset of language acquisition. In the next section dealing with syntactic structures of CPs, a typology of CPs (cf. Rizzi 1990) is summarized. The syntactic structure of relative CPs in English is discussed from the perspective of the interpretive rule [Make OP] proposed by Munn (1994) and the rule of predication.

The next section introduces the structure of the relative CP in Korean. The cross-linguistic comparison leads to a view that the relative CP in English is underlyingly identical to that in English, but differs from English with regard to the existence of an optional morphosyntactic features [+wh, +pred] in English. The examination of the motivation for this study follows. One key motivation is that new data are needed to better justify the earlier claims on the acquisition of L2 functional categories that were based on data from natural speech in yes-no questions, *wh*-movement, and subordinate clauses, all structures which contain sorts of CP. Previous studies, however, failed to report on much data from relative CPs, possibly because complex structures like the relative CP are only rarely produced in natural speech and appear at a later stage of language acquisition.

Chapter 2 presents case studies based on the two contrasting models mentioned above: Vainikka and Young-Scholten's work on the MT hypothesis, and Schwartz and Sprouse's work on the FT/FA hypothesis. Subsequent controversial claims made by

each of these two hypotheses are pointed out. The dispute, however, seems still unsettled. Studies on the Dissociation Hypothesis (Hawkins and Chan 1997; Lardiere 1998a, 1998b; Haznedar 2003), which substantially clarify the dispute between the two hypotheses, are also discussed.

In Chapter 3, this study proposes that crucial data to support the Dissociation Hypothesis can be found in English relative CPs produced by adult Korean learners. The following sections contain relevant research questions, research hypotheses, and research methodology. The data are collected by a cross-sectional elicited production test using the picture-description instrument to obtain sufficient relative CPs within a single experiment. The production outputs are in the forms of speaking and writing.

In Chapter 4, the statistical results for the research hypotheses are interpreted by using various nonparametric statistical techniques.

In Chapter 5, the results are discussed in the context of the current research questions in this study. The data of learners, teachers, and native speakers, which are examined in some detail here, provide support for the view that the Dissociation Hypothesis is an empirically explanatory model that accounts for the availability of L1 grammar for L2 acquisition. Other relevant findings from the data are summarized. A variety of hybrid relative clauses that may reveal unknown properties of UG in human language are investigated. The theoretical significance and pedagogical implications of these investigations are pointed out.

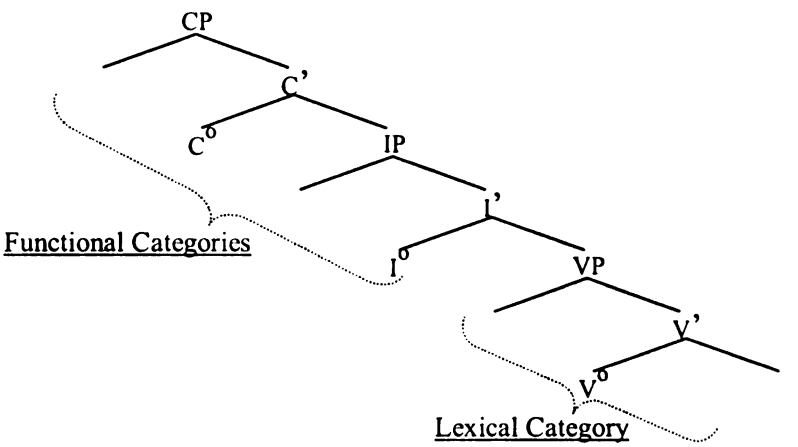
Chapter 6 presents conclusions, mention the shortcomings in this experimental study, and suggest needs for future research.

CHAPTER 1

1.1 Significance of the Study

One issue that has received a great deal of attention in the field of second language (L2) research is the influence of first language (L1) grammar on functional categories such as the inflectional phrase (IP) and complementizer phrase (CP) in the early stages of L2 acquisition (Lakshmanan and Selinker 1994; Schwartz and Sprouse 1994, 1996; Vainikka and Young-Scholten 1994, 1996a, 1996b; Hawkins and Chan 1997; Lardiere 1998a, 1998b; Prévost and White 2000; Bhatt and Hancin-Bhatt 2002; Haznedar 2003). Figure 1 presents a tree diagram illustrating the structural relationship of these phrases.

Figure 1: Phrasal structures of CP, IP, and VP



An on-going dispute about the availability of CP at the onset of L2 acquisition has been carried on, and two models have claimed rival but distinct viewpoints.

Theoretical and empirical shortcomings, however, exist in both models. A different approach, such as investigation of the CP in the relative clause (hence, relative CP), is, therefore, needed. Relative clauses typically do not appear until later stages of L2 acquisition, but studying them may help us better understand the stages in the development of previously acquired CPs and their morphosyntactic features such as [±wh] for *wh*-movement and [±pred] for predication.

This dissertation argues against the Minimal Trees (MT) hypothesis (Vainikka and Young-Scholten 1994, 1996a, 1996b), which claims that the functional categories IP and CP gradually develop in L2 after the acquisition of the L1 lexical category VP. That is, only the VP bearing the lexical items (therefore, Minimal Trees) is transferred from L1 grammar, whereas functional categories like CP emerge as learners are subsequently exposed to L2 input, which interacts with X'-Theory.

The opposing Full Transfer/Full Access (FT/FA) hypothesis (Schwartz and Sprouse 1994, 1996) assumes that the entire L1 grammar, including the functional categories IP and CP and their complement projections, is readily available as the base of L2 acquisition.

One major inadequacy of both models is that they fail to distinguish between the acquisition of phrase structure and the acquisition of morphosyntactic features. The availability and the development of CP, including the relative CP, are still debatable (Lardiere 1998a, 1998b, 2003; Schwartz 1998; Vainikka and Young-Scholten 1998;

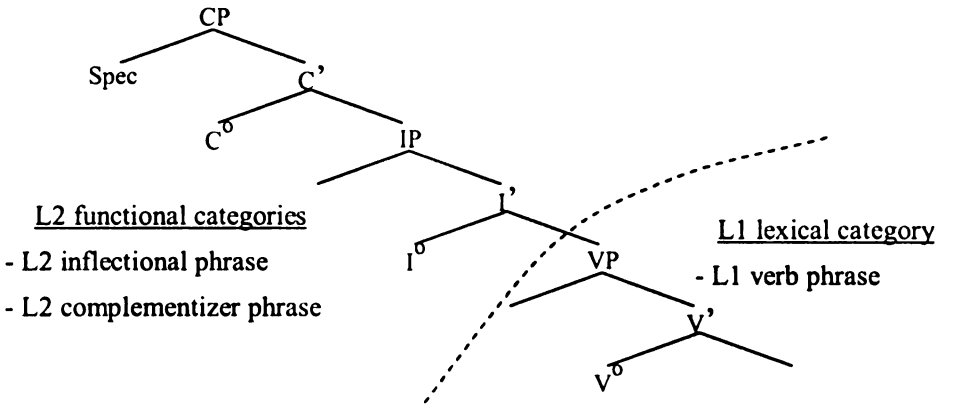
Prévost and White 2000; Selinker and Lakshmanan 2001; Bhatt and Hancin-Bhatt 2002; Haznedar 2003). Overcoming that inadequacy can prove that, in the initial state of L2 acquisition, morphosyntactic features may be absent, while the entire phrase structure is available as a block. The morphosyntactic features gradually develop from the absence of a feature to the presence of the feature.

In the following sections, both models are described in greater detail. The last section discusses an alternative approach to the understanding of the acquisition of the relative CP, an approach based on the assumption that syntactic and morphological developments are independent of each other (Lardiere 1998a).

1.1.1 Minimal Trees (MT) Hypothesis

The MT hypothesis, based on the Weak Continuity Approach in L1 acquisition (Radford 1988, 1990; Clahsen, Eisenbeiss, and Vainikka 1994), assumes that learners make use of the fewest possible positions and projections needed to analyze the input data, and no more (Vainikka and Young-Scholten 1994). The lowest possible position and projection needed for learners, according to Vainikka and Young-Scholten, is the VP as shown in Figure 2.

Figure 2: L2 phrase structure under the MT hypothesis

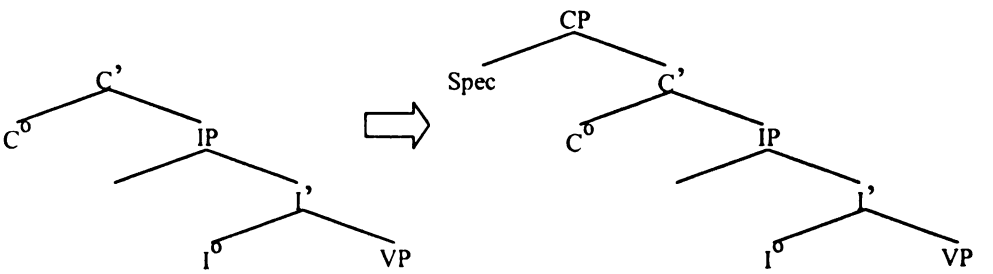


Vainikka and Young-Scholten claim that the functional projections of IP and CP develop as learners identify a potential head of a phrase that is situated higher than the VP. Once the head is identified from the input data, learners assume an argument position provided by X'-Theory. They further claim that learners use only the knowledge of L1 VP to establish the structural basis for L2 acquisition. After this point, functional categories like IP and CP are situated higher in the syntactic tree projection through the interaction of X'-Theory with the input data. A variation of the target-like grammar, an interlanguage, is due to the competition between the grammar based on higher functional categories (IP or CP grammar) and that based on VP (Vainikka and Young-Scholten 1996a).

The MT hypothesis, however, does not specify how relevant morphosyntactic features in functional categories like CP mature. For example, what cannot be determined under the hypothesis is whether the morphosyntactic features [–wh] and

[+wh] mature in sequence or emerge together. One of the features can be a default and the other an option, or both may be defaults. The MT hypothesis does not mention that issue. Rather, the hypothesis implicitly assumes that the features develop when the head of a phrase situated lower in the syntactic tree develops prior to its specifier as shown in Figure 3.

Figure 3: Development of CP projections under the MT hypothesis



Moreover, the claim that an incomplete sentence produced from the VP grammar competes with the grammar from a higher functional category, although plausible, cannot be empirically proven. Such shortcomings will be resolved with the alternative approach discussed in the last section of the chapter. Let us now examine in greater detail the development of L2 functional categories assumed under the MT hypothesis.

The MT hypothesis (Vainikka and Young-Scholten 1996a) assumes the following four sequential stages of syntactic development: (1) bare VP, (2) Finite Phrase (FP), (3) AgrP, and (4) CP. At the initial VP stage, learners transfer their L1 VP, but not any of

the L1 functional categories. Verb movement or overt production of auxiliaries and modals are absent. Agreement and tense morphemes in IP are lacking. Therefore, yes-no questions or *wh*-questions involving a CP are absolutely unimaginable. Learners initially use the literal L1 word order, but switch to the target order when exposed to negative evidence.

The FP stage is characterized by the presence of one functional category, a low IP-level projection like aspect or tense, which provides a position for a raised verb as well as a position for auxiliaries and modals. The production of yes-no questions or *wh*-questions with a CP is still not possible, but optional verb raising is evident. The option for apparent verb raising brings about two competing grammars: one with verb raising and one with the verb still in VP. Agreement and tense morphemes in IP are still underspecified so that learners still need to determine which specific person, number, and tense features must be assigned to which functional heads.

The AgrP stage involves the specification of full agreement and tense features. Verb raising is frequent, and auxiliaries and modals are common. Agreement and tense features are acquired. Some embedded clauses with a complementizer are apparent, and complex *wh*-questions can be produced. The status of CP at the AgrP stage is, however, not clear, and learners seem to be in the process of acquiring a CP.

Finally, the CP projection gradually emerges independently of learners' L1, and learners start to produce subordinate clauses, yes-no questions, or *wh*-questions at the

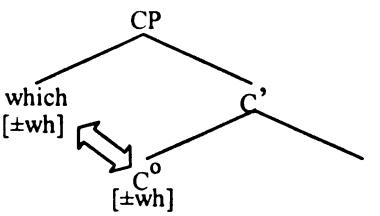
CP stage. If learners, however, violate the rather strict implicational stages during the acquisition of phrase structure as mentioned above, the MT hypothesis faces a critical challenge.

In opposition to the MT hypothesis, Schwartz (1998) raises thorny questions which could reveal a violation of strict implicational stages. For example, a subordinated CP complement *He thinks that Jane is pretty* which appears in earlier stages of L2 acquisition cannot be explained under the MT hypothesis because an L1 CP complement would not be permitted to transfer until the last stage. Lardiere (1998a: 20) also argues against the MT hypothesis, contending that "there is no direct correspondence between an affix (morphological feature) and syntactic phrase structure." Accordingly, Haznedar (2003: 5) criticizes the strict criterion for implicational stages assumed under the MT hypothesis and raises the question of "whether overt production of morphemes associated with a functional category is necessary for one to conclude that the category is acquired."

On the other hand, Bhatt and Hancin-Bhatt (2002: 366) extend the MT hypothesis and propose the Structural Minimality hypothesis, which claims that "at the initial state, all the features (and their strengths) and categories relevant to the IP-system are also borrowed from L1." Learners then gradually re-analyze the input data to accommodate the structure. That the IP emerges much earlier in the developmental stage than the CP is also claimed in Kaplan (1993) and Lakshmanan and Selinker (1994). Bhatt and

Hancin-Bhatt (2002) further assume that different aspects of the CP projections emerge at different stages, and that learners opt for the most economical way to acquire a CP. This choice projects Spec-CP only after acquisition of the head C^{o}. Such a claim, however, raises a serious theoretical objection: Spec-CP must be simultaneously projected with C^{o}, because C^{o} of the relative CP is always projected with an unspecified feature which needs to attract a lexical item with relevant features to Spec-CP, in order to check the unspecified feature of C^{o} (Radford 1997) as illustrated in Figure 4.

Figure 4: Agreement between Spec-CP and C^{o}



Hence, Bhatt and Hancin-Bhatt's claim (ibid: 360) that "the specific components of CP emerge at different levels of language learning experience" seems theoretically invalid for the case of relative CP. This dissertation argues against their claim, because once the lexical items are selected to produce a relative CP, both Spec-CP and C^{o} must be readily available. What they should have concluded, however, concerns the emergence of morphosyntactic features of CP such as [–wh, +pred] and [+wh, +pred]

(Rizzi 1990), not projections of CP.

To summarize, according to the MT hypothesis and its later version, the Structural Minimality hypothesis, CP is absent in the earliest stages of L2 acquisition, and different types of CPs (e.g. yes-no question CP, *wh*-question CP, subordinate clause CP, relative CP, etc.) emerge over time. The gradual emergence of CP projections and relevant features under the MT hypothesis and the Structural Minimality hypothesis seems to make specific and researchable predictions about developmental stages in the acquisition of CP.

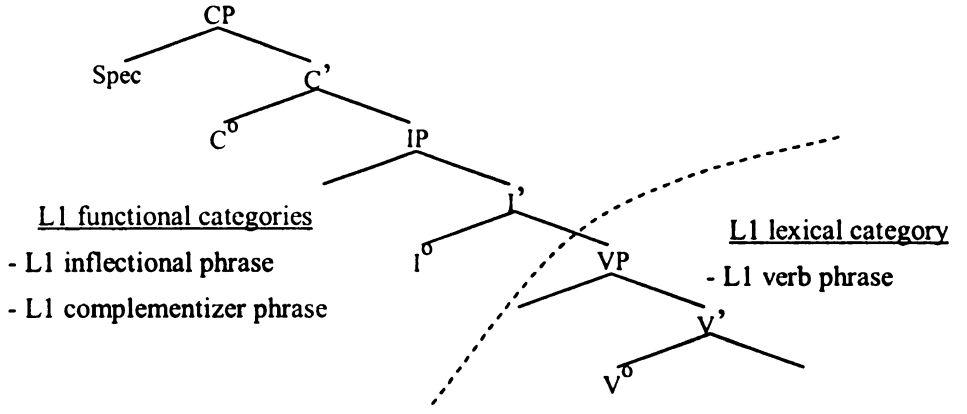
A serious theoretical modification must, however, take place to correspond to empirical data which show a full CP projection in the early stages of L2 acquisition (Schwartz and Sprouse 1996; Sprouse and Schwartz 1998; Lardiere 1998a; Prévost and White 2000; Haznedar 2003). The following hypothesis might offer a more promising, though still insufficient, explanation of the L2 acquisition of CP.

1.1.2 Full Transfer/Full Access (FT/FA) Hypothesis

The FT/FA hypothesis, based on the Strong Continuity Approach of full transfer and full access to Universal Grammar (UG), claims that all the principles and parameters instantiated in learners' L1 grammar transfer as the initial state of an L2 (Lakshmanan 1993/1994, 1998; Lakshmanan and Selinker 1994; Schwartz and Sprouse 1994, 1996; Epstein et al. 1996, 1998; Hawkins and Chan 1997; Schwartz

1998; Haznedar 2001, 2003). Figure 5 illustrates the initial projections of phrase structure in L2 acquisition under the FT/FA hypothesis.

Figure 5: L2 phrase structure under the FT/FA hypothesis



On first exposure to L2 input data, the L1-instantiated L2 grammar starts to change when the current grammar cannot generate the intended target phrase structure. The change results from a failure to assign a relevant structure for the data and forces restructuring dependent on the options of UG. Therefore, the L2 developmental course is partly determined by L1 grammar, L2 input, and UG options. That is, learners use their entire L1 knowledge to establish the structural basis for L2 acquisition, even for the production of *wh*-questions or relative CPs, which involve the highest functional category CP. When the interlanguage grammar fails to provide the intended structure, the options of UG guide learners, but individual differences determine choices among

the options and the ways to make the choice.

The FT/FA hypothesis (Schwartz and Sprouse 1994) suggests the following three successive stages of a developmental pattern analyzed from the data by an adult native speaker of Turkish acquiring German as an L2: Stage 1: $XSV_{<+fin>}$, Stage 2: $XV_{<+fin>}S_{<+pron>}$, and Stage 3: $XV_{<+fin>}S_{<\pm pron>}$. At the first stage, what follows $V_{<+fin>}$ are unattested, and the most common structure is a non-subject initial structure $(X)SV_{<+fin>}$, in which X is usually adverbial. The verb undergoes head movement to the head of AgrP ($AgrP^{o}$) and then ultimately to C^{o}. The subject originates inside the VP, and raises to Spec-CP via Spec-AgrP. The motivation for movement to Spec-CP is for nominative Case checking of the subject by way of a Spec-Head configuration with the verb settled in C^{o}.[3] The sentence-initial adverbial is base-generated in the extended CP. Their analysis may partially explain the presence of functional projections, although a paradigm of agreement and tense features is not fully specified in the early stages of L2 acquisition.

The next stage is characterized by a different kind of non-subject initial structure $(X)V_{<+fin>}S_{<+pron>}$, which is the inversion of the previous stage, but only when the subject is a pronoun. At this stage, X can be an adverbial phrase, a prepositional phrase, or a direct object. The verb raises to C^{o} via $AgrP^{o}$, and the subject pronoun

[3] According to Schwartz and Sprouse's data, it is evident that the subject moves to Spec-CP and the verb raises to C^{o}. It, however, cannot be for nominative Case checking because nominative Case is checked by Tense, independent of whether the subject is moves to C or not (Chomsky, 1995; Radford, 1997).

incorporates as a clitic to the finite verb in C^o for nominative Case checking. Finally, at the last stage $XV_{<+fin>}S_{<\pm pron>}$, learners are capable of inverting the verb with a non-pronominal subject as well as with verb-initial declarative utterances.

Under this claim, all functional categories including CP are expected to be available at the onset of L2 acquisition. If L2 data showed that the functional projections gradually emerge in learners' L2 knowledge, the FT/FA hypothesis would lose its standing. If learners start to utilize the full-fledged functional projections from the earlier stages of L2 acquisition, the data of such projections can support the FT/FA hypothesis, which this dissertation assumes.

Proponents of both models, with their supporting data and re-analyzing each other's data to support their own hypotheses, have continued to maintain their respective opinions (Schwartz and Sprouse 1996; Vainikka and Young-Scholten 1996a).

Neither theory is, however, able to differentiate the acquisition of morphosyntactic features from the acquisition of phrase structure. An alternative approach must be sought. Thus the next section discusses an alternative to the two hypotheses. It generally acknowledges the presence of the entire L1 grammar as well as the highest functional category CP. This claim amounts to supporting the FT/FA hypothesis, but further assumes that what gradually develops is not phrase structure *per se*, but the morphosyntactic features associated with phrase structure.

1.1.3 Alternative Approach

In this section, an alternative approach to the two previously mentioned hypotheses is discussed based on the pioneering works of Lardiere (1998a, 1998b). Lardiere (1998a) argues for a distinction between abstract morphosyntactic features and their syntactic representations, and she (1998b: 362) further proposes that there is "a dissociation of syntax from morphology in L2 acquisition." This approach supports the FT/FA hypothesis by supposing that all the functional projections such as CP must be available at the onset of L2 acquisition and that failure to produce the intended structure may be attributed to a failure to map morphosyntactic features. Put another way, the fully matured phrase structure for L2 acquisition exists from the beginning, where the command of mapping the relevant features [–] and [+] is obscure.

In hypothesizing the developmental pattern for the relative CP consistent with this alternative approach, it can be assumed that the relative CP structure always exists. In addition, learners are assumed to have acquired other simpler CP projections and their morphosyntactic features containing Spec-CP and C^{o} from the earlier productions of, for example, yes-no questions, *wh*-questions, subordinate clauses, etc. With the CP projections already acquired, later in the developmental stage, depending on the features acquired, learners may produce different types of relative CPs[4] which literally have the same meaning; e.g. *the book which I have*, *the book that I have*, and *the book*

[4] A typology of CPs and their morphosyntactic features are discussed in the next section.

ø I have. The lexical item *which* involves [+wh] and *that* and *ø* need [–wh]. If, in language development, a marked feature is acquired after an unmarked feature, high proficiency L2 learners (HPL) may produce a greater proportion of [+wh] relative CPs than low proficiency L2 learners (LPL), as HPL overcomes the difficulty of mapping the feature [+wh].[5]

In such a case, the result neatly supports the emergence of CP projections before the acquisition of specific features associated with them. The phrase structure must, however, be available as a block for feature checking between Spec-CP and C^{o}. This assumption lends support to the FT/FA hypothesis. It further assumes that the acquisition of specific features of a relative CP is independent of its phrase structure projections. Lardiere (1998a, 1998b), therefore, supports the view that morphological features are dissociated from syntactic development, and Haznedar (2003: 29) claims that "the acquisition of L2 functional categories overcomes the mapping problems that learners face in associating the surface form with underlying abstract features."

Overall, I assume that the alternative approach sketched here better explains the initial state and the development of relative CPs, which, in turn, may offer a better understanding of previously acquired CPs. Moreover, I hypothesize that HPL produces a greater proportion of [+wh] relative CPs than LPL.

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[5] Lakshmanan and Selinker (1994) also report the evidence from two adolescent L2 learners of English that there is a developmental link between the realization of [–wh, –pred] and the realization of [–wh, +pred].

Summing up from the alternative approach, I propose the Dissociation Hypothesis: The development of morphosyntactic features is dissociated from the acquisition of phrase structure, which is already entirely available as a block at the onset of the acquisition of an L2.

The next section provides an illustration of different types of phrase structure that contain a CP. Afterwards, a typology of CPs with distinct specifications is discussed, as proposed in Rizzi (1990). Movement and predication in English relative CPs are then presented. A discussion on the Korean relative CP follows, since the intended data are collected from the learners who speak Korean as an L1 and acquire English as an L2.

1.2 Syntactic Structures of CPs

CP is a functional category that contains a complementizer or an auxiliary in C^o and/or an operator in Spec-CP, which selects a sentence in IP (Radford 1997). Previous research on the early state of L2 acquisition was typically based on CP-containing structures such as the following:

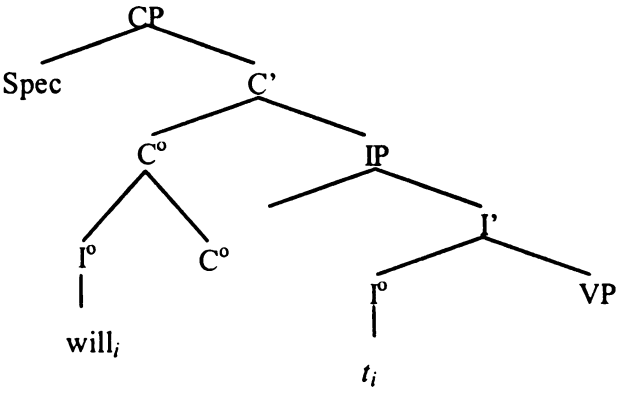
(1) a. She thinks $[_{CP}\ [_{C}$ that $[_{IP}$ she is pretty$]]]$ (*that*-subordinate clause)
b. She thinks $[_{CP}\ [_{C}\ \emptyset\ [_{IP}$ she is pretty$]]]$ (*ø*-subordinate clause)
c. $[_{CP}\ OP\ [_{C}$ Will$_i$ $[_{IP}$ you t_i work tomorrow$]]]$ (yes-no question)
d. $[_{CP}$ What$_j$ $[_{C}$ will$_i$ $[_{IP}$ you t_i buy t_j tomorrow$]]]$ (*wh*-question)

Each of the IP clauses in (1) is a complement clause of C^o. An IP functions as the complement of the C^o immediately including it. In (1a) a CP is formed when the based-generated complementizer *that*[6] in C^o merges with the IP, and Spec-CP in this case is empty. In (1b) the null complementizer *ø* subcategorizes a finite complement clause (Lakshmanan and Selinker 1994)[7] as does the overt complementizer *that* in (1a). The syntactic properties of a type of complement clause are encoded not in the lexical item, but in the phrase structure. Spec-CP is also empty in (1b). CP can also be filled by a question operator and an auxiliary or modal as in (1c) for yes-no questions and as in (1d) for *wh*-questions. In (1c) the auxiliary *will* has adjoined to C^o via head movement from the head of IP,[8] as motivated by unspecified features (Lasnik 1995) of the based-generated null question operator *OP* in Spec-CP and C^o. On the other hand, in (1d) Spec-CP is occupied by a *wh*-phrase *what* acting as an overt question operator

[6] On a historical linguistic claim that *that* is a complementizer, refer to Van der Auwera (1984, 1985) and Seppänen (1997). On a pragmatic perspective of *that*, refer to Cheshire (1996).

[7] The null complementizer *ø* can also select for a non-finite [–Tense] complement clause as well, as in *John preferred (for) Bill to leave* for *for* deletion (Munn, personal communication).

[8] Actually, when we say that an Aux is moved to C^o, we do not exactly mean that C^o contains the Aux. It is assumed that there is a null C^o to which the Aux adjoins. See the tree below.



raised from the verb complement site, and the auxiliary *will* has adjoined as it does in (1c).

Another type of CP is the relative CP as in (2) below, which has different morphological and semantic structures from other CPs in (1).

(2) the cup [$_{CP}$ *ø/which/that* [$_{IP}$ the girl is holding]] (relative CP)

The relative CP in (2) has never been a target structure for understanding the early state of L2 functional category development (cf. Hawkins and Chan 1997) mainly because earlier studies could not have acquired sufficient (especially production) data containing relative CPs. Such complex syntactic structures as relative clauses occur only infrequently in both L1 and L2 spontaneous speech, especially from children and beginning adult L2 learners (Crain and Thornton 1998). Nevertheless, the study of relative CPs can provide valuable evidence for the development of morphosyntactic features and for the syntactic dependency relation and semantic predication in CP, as shown in Figures 6(a-c) for a direct objective relative CP.

Figure 6(a): Morphosyntactic features in the relative CP

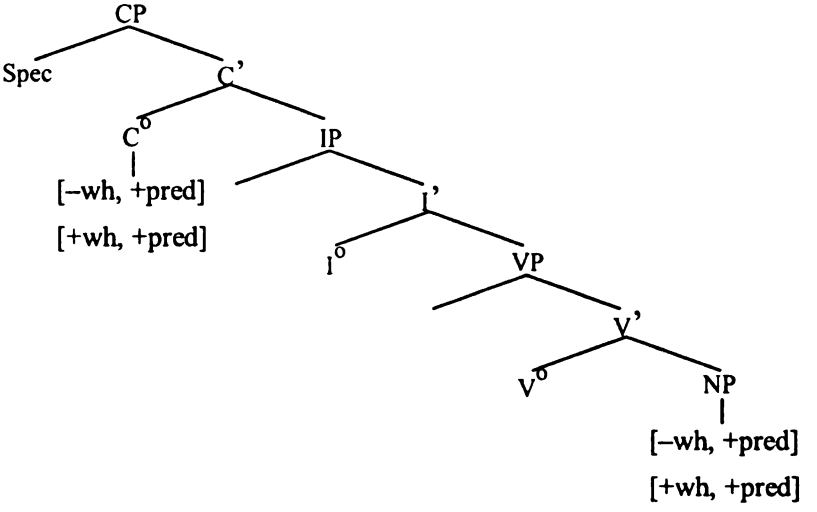
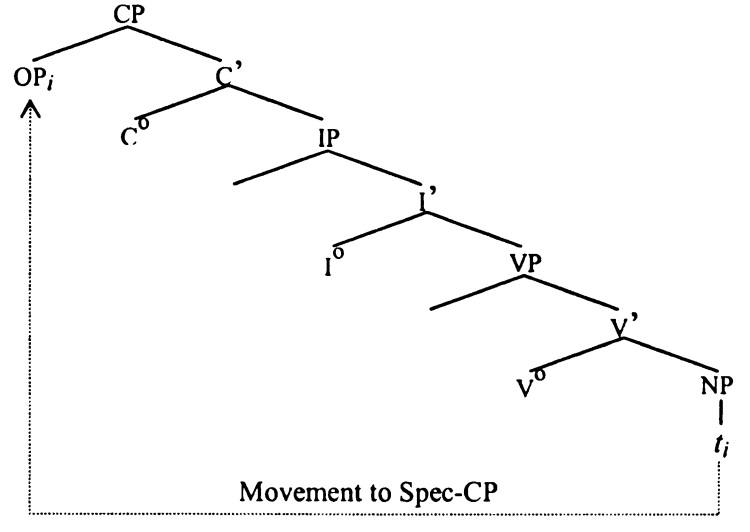
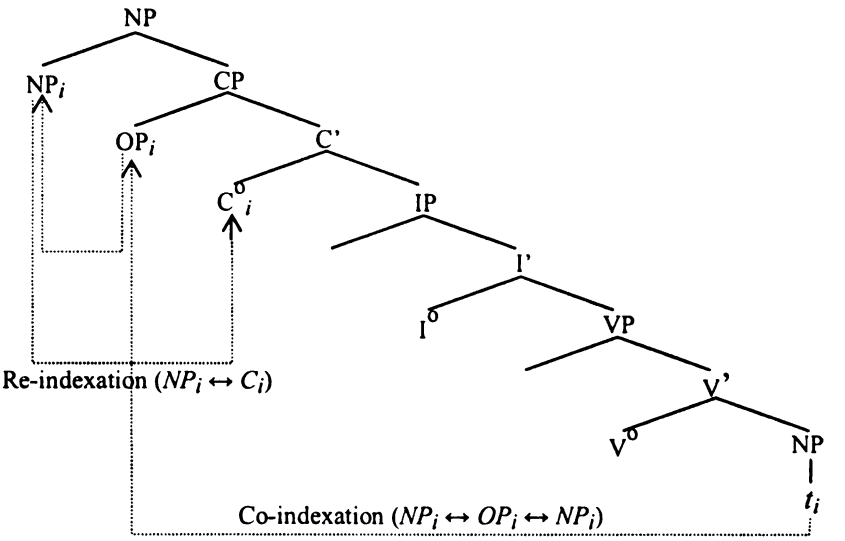


Figure 6(b): Syntactic dependency relation in the relative CP[9]



[9] A detailed explanation about the structure of relative CPs is dealt in Section 1.2.2.

Figure 6(c): Semantic predication in the relative CP



Findings from the current study support the Dissociation Hypothesis, which claims that L2 phrase structure exists from the onset of L2 acquisition and that its morphosyntactic features gradually mature. For this reason, the study on L2 relative CP acquisition may promise to provide insight into a better understanding of how UG determines syntactic structures. It is apparent that, without the data from relative CPs, previous acquisition studies on CP are incomplete and unsatisfactory. The next section discusses a typology of CPs as proposed in Rizzi (1990).

1.2.1 A Typology of CPs

Rizzi (1990) introduces a feature system which provides a partial specification of different types of C^o in yes-no questions, constituent questions, *wh*-questions,

subordinate clauses, relative clauses, etc. The feature system consists of [–] and [+] of *wh*-operator and predication, as follows:

(3) [±wh, ±pred]

These features are base-generated and specified on C^{o} and make possible four different types of CP in terms of morphosyntactic features: [–wh, –pred], [+wh, –pred], [–wh, +pred], and [+wh, +pred].

A C^{o} with [–wh] does not allow movement of a *wh*-phrase from the inside of IP to Spec-CP. Therefore, a subordinate clause or a relative clause generated by movement of a *wh*-phrase such as *what*, *which*, *to whom*, etc. cannot occur; that is, no overt operator can be moved to Spec-CP. When [–wh] is specified with [–pred], C^{o} can only head a non-predicated clause such as tensed subordinated clauses. In that case, no element such as the trace of a moved constituent is available to be semantically co-indexed with C^{o} and the head noun in the matrix clause. Any sort of predication is impossible. Therefore, in *I think that she is pretty* as in (1a) and *I think she is pretty* as in (1b), C^{o} has [–wh, –pred], which cannot assign a question operator to Spec-CP nor a predicated clause as a complement, because the two negative features in C^{o} specify declaratives. [+wh] is obligatory for questions. When [–pred] combines with [+wh], a possible case of CP is a question which involves question operator movement from the

inside of a non-predicated IP to Spec-CP. Examples of this are found in sentences like *I know where you live* and *wh*-questions as in (1d) and yes-no questions as in (1c), which contains a base-generated null question operator in Spec-CP.

The feature [+pred] is distinctly exclusive for the relative CP. It allows C^o to license a relative operator[10] in Spec-CP. Hence, C^o with [–wh, +pred] heads a relative clause with a null operator moved from the inside of relativized IP to Spec-CP. This results in the *ø*-relative CP with a null operator in Spec-CP and a null relative complementizer in C^o or the *that*-relative CP with a null operator in Spec-CP and the complementizer *that* in C^o. Rizzi (1990: 57) claims, supposedly in UG, that "[–wh] C^o is obligatory, while [+wh] C^o is optional." In that case, C^o with [+pred] heading a relative CP can optionally retain [+wh] to attract an overt relative operator from the inside of relativized IP to Spec-CP. This possibility generates the *wh*-relative CP. Summarized in (4) are the three possible cases of relative CPs, as in the typology of CPs illustrated above:

(4) a. [–wh, +pred] *ø*-relative CP: the cat $[_{CP}\ ø_i\ [_C\ ø\ [_{IP}$ the girl is kissing $t_i]]]$
b. [–wh, +pred] *that*-relative CP: the cat $[_{CP}\ ø_i\ [_C$ that $[_{IP}$ the girl is kissing $t_i]]]$
c. [+wh, +pred] *wh*-relative CP: the cat $[_{CP}$ which$_i$ $[_C\ ø\ [_{IP}$ the girl is kissing $t_i]]]$

[10] According to Rizzi (1990: 57ff), the relative operator in the relative CP is different from the null operator which is base-generated in Spec-CP for yes-no questions as in (1c) or the overt *wh*-operator raised from the position of the complement for *wh*-questions as in (1d). The relative operator is, however, often simply referred to as 'operator' in this dissertation.

The next section discusses both the movement and the rule of predication in English relative CPs in (4). The subsequent section reviews the structure of the Korean relative CP. This dissertation examines research questions concerning whether learners at different levels of proficiency produce a significantly similar or different proportion of [–wh] or [+wh] relative CPs.

1.2.2 Movement and Predication in English Relative CPs

The biclausal structure *the cat which the girl is kissing stole a fish* contains a relative clause *which the girl is kissing* that is headed, in this example, by a relative CP with an operator phrase containing *which*; 'operator' refers to the relative pronoun *which*. Cinque (1982: 271) says that "the dual nature of the relative operator serves as both an element binding the variable and an anaphor to the relative head." Clause-internally, the operator creates a relation by forming an operator-variable dependency relation and interprets its syntactic and semantic information stranded in the variable. Clause-externally, the dependency relation yields morphosyntactic agreement with the relative head. None of these relations are optional; they are all absolutely obligatory (Chomsky 1982). Once there exists a relative clause as an open predicate, then the variable must naturally seek an operator in the relative CP, or *vice versa*, to form a dependency relation, which, in turn, must agree with the relative head in the main

clause.[11]

The relative CP structure at issue fundamentally concerns the relative operator making its morphosyntactic agreement with C^{o}. The following are the three types of relative CPs being considered in this dissertation, in order to examine whether learners acquire the default feature [–wh] and the optional feature [+wh] in the relative CP at once or sequentially.

(5) a. Subject relative CP: the cat which __ is eating a fish
b. Direct object relative CP: the cat which the girl is kissing __
c. Indirect object relative CP: the cat which the girl is giving a fish to __

(5a) contains a subject (SUB) relative clause with the gap (i.e., the position of the variable) acting as the subject of the relative clause. (5b) and (5c) have an object relative CP. (5b) contains a direct object (DO) relative clause with the variable in the direct object position. The syntactic object is neither the relative head *cat* nor the *wh*-operator, but the intangible variable which has the semantic role of the object. This role preserves the local structural relations, while sensibly defining the object as 'sister to V'. (5c) contains an indirect object (IO) relative clause with the variable acting as the indirect object of the verb of the relative clause. According to previous accounts,

[11] Wiltschko (1998: 169) states this as the Extended Bijective Principle: "There is a bijective correspondence between an operator-variable chain and a range." That is, "each operator must A'-bind exactly one variable, and each variable must be A'-bound by exactly one operator, and for each operator-variable chain, there must be exactly one range" (cf. Chomsky 1982).

the *wh*-operator as an argument is inserted into the variable position in the relative clause, and then, subsequently moves to Spec-CP headed by C°. In any case in (5a-c), the *wh*-operator forms a dependency relation with the variable, and further makes morphosyntactic agreement with the relative head and C° in the relative CP.

A question that arises immediately is the motivation for movement in the relative clause when the *wh*-operator could, in fact, fulfill the variable's functions *in situ*, and not from the dislocated, more distant position Spec-CP. Under the feature checking theory in the minimalist framework, the sole role of lexical items like the *wh*-operator is to license and delete uninterpretable functional features that attract compatible lexical features for checking. Such uninterpretable functional features are the triggering mechanisms for movement (Chomsky 1999). The uninterpretable feature setting off *wh*-operator movement as in the relative CP is, following Rizzi (1990), [+pred] C°. Rizzi claims that [+pred] C° licenses an uninterpretable lexical feature of the *wh*-operator and attracts it to the checking domain in the relative CP; that is, Spec-CP. The *wh*-operator movement is contingent on the principle of Full Interpretation, which necessitates intact preservation of semantically-related features as well as the complete deletion of the operator feature in the base (Chomsky 1994, 1995).

Adopting the interpretive rule [Make OP] proposed in Munn (1994),[12] the relative

[12] [Make OP] is an interpretive rule that applies to the LF representation to yield a structure that is interpretable by the semantics. It also supervises the making of *OP* in Spec-CP and subsequent operations (Munn, personal communication).

CP basically involves two sequential operations: movement and copy/deletion processes. After *wh*-operator movement to Spec-CP (Move),[13] [Make OP] guides operator dependency with the variable in the base position (Copy), deletion of non-operator elements in Spec-CP (Delete 1),[14] and the operator copy in the base (Delete 2), as illustrated in (6a-d) for the SUB relative CP in (5a).

(6) a. the cat [$_{CP}$ which] [ ] is eating a fish (Move)
b. the cat [$_{CP}$ which cat] [which cat] is eating a fish (Copy)
c. the cat [$_{CP}$ which] [cat] is eating a fish (Delete 1)
d. the cat [$_{CP}$ which] [ ] is eating a fish (Delete 2)

In (6a) an uninterpretable feature in C° needs to attract the *wh*-operator to Spec-CP. The variable of the operator is left behind in the base position. In (6b) [Make OP] guides the *wh*-operator to bind the variable and to decode its syntactic and semantic information and functions. Subsequently, the *wh*-operator in Spec-CP and the variable in the base form a dependency relation. They are logically and fully interpreted as [*which cat*], showing a semantically identical dependency relation (Rizzi 1986; Chomsky 1992; Munn 1994; Sauerland 1998; Bissell 1999; Fox 1999, 2002). The *wh*-

[13] Actually, it is not the operator *per se* that moves. Rather, it is the phrase that contains the operator, called operator phrase (OP).
a. the cat which the girl is giving a fish to
b. the cat to which the girl is giving a fish
In (a) the OP contains only the *wh*-operator *which*; whereas in (b) it contains the *wh*-operator *which* and the pied-piped preposition *to*.

[14] [Make OP] considers unnecessary any element that comes along with the operator, and further eliminates it. For example, in *the roof of which Tom fixed*, [Make OP] only interprets *which* and deletes *the roof of* in LF (Munn 1994).

operator in the relative CP is phonologically realized, while the variable in the relative clause is logically and semantically interpreted. In (6c) [Make OP] deletes the unnecessary non-operator element *cat* in Spec-CP. The *which* in the base is also eliminated at this point, after its logical and semantic functions have been interpreted by the *which* in Spec-CP. Lastly, in (6d) the undeleted variable *cat* in the base is deleted because its identification is recoverable from the relative head (Munn 1994).[15]

Below in (7) and (8) are the derivations for the DO and IO relative CPs in (5b) and (5c). The processes are the same as the SUB relative CP in (6), but involve more derivational constraints which may hinder successful production.

(7) a. the cat [$_{CP}$ which] the girl is kissing [ ] (Move)
b. the cat [$_{CP}$ which cat] the girl is kissing [which cat] (Copy)
c. the cat [$_{CP}$ which] the girl is kissing [cat] (Delete 1)
d. the cat [$_{CP}$ which] the girl is kissing [ ] (Delete 2)

(8) a. the cat [$_{CP}$ which] the girl is giving a fish to [ ] (Move)
b. the cat [$_{CP}$ which cat] the girl is giving a fish to [which cat] (Copy)
c. the cat [$_{CP}$ which] the girl is giving a fish to [cat] (Delete 1)
d. the cat [$_{CP}$ which] the girl is giving a fish to [ ] (Delete 2)

Williams (1980) proposes that *wh*-operator movement creates a copy in the relative clause that can naturally turn into a variable, and the rule of predication

[15] The relative head has a certain potential range of c-commanding referents (Comrie 1989) where its information can be identified.

assigns the same referential index[16] from the operator to the relative head. Then, the relative clause turns into a semantically open predicate clause with which the operator needs to be co-referentially agreed (Chomsky 1977, 1982; Williams 1980; Fabb 1990; Moon 1995). See (9).

(9) a. the cat$_i$ which$_i$ ~~which~~$_i$ is eating a fish
b. the cat$_i$ which$_i$ the girl is kissing ~~which~~$_i$
c. the cat$_i$ which$_i$ the girl is giving a fish to ~~which~~$_i$

In (9a-c) after the *wh*-operator moves and binds the variable ~~*which*~~ which is left behind, the rule of predication assigns them the same referential index from the operator. Fabb (1990), Seppänen (1997), and Sharvit (1999a) claim that the relative head co-indexes the variable by a mechanism of index percolation. On the contrary, Chomsky (1977), Cinque (1982), Quirk et al. (1985), and Rizzi (1990) allege that it is not the relative head that assigns the index to the variable, but the relative operator in the relative CP bearing an anaphoric nature that binds the variable and shares the same index. Whichever the case may be, the relative head shares a referential index with the operator and the variable. The discussion so far touched briefly on the explanation of how the relative CP is traditionally assumed to be formed (cf. Chomsky 1977, 1992; Cinque 1990; Lebeaux 1990, 1991; Borsley 1997; Alexiadou et al. 2000).

Until now, I have focused only on the *wh*-relative CP; that is, [+wh] CP. In

[16] A referential index is not a syntactic element or a mental realization, but only a notation to indicate the entities sharing the same properties.

contrast, the relative CPs in (10) do not contain an overt *wh*-operator; hence, supposedly, they involve no visible[17] movement.

(10) a. the cat ø the girl is kissing
b. the cat ø that the girl is kissing

When relative CPs do not contain an overt *wh*-operator in Spec-CP, C° is assigned [–wh], and a null operator is inserted in the variable position and subsequently moves to CP (Kaplan and Whitman 1995).[18] That way, a dependency relation can be formed and the variable's syntactic and semantic information transfers to the null operator in the relative CP. The null operator makes subsequent morphosyntactic agreement with the relative head, and does the same for the overt *wh*-operator. Noticeably, the complementizer *that* is present in C° in (10b). According to Rizzi's (1990) analysis, the semantically-related head C° undergoes an abstract agreement with the relative head. In Safir's (1986) view, the second agreement between the complementizer *that* and the relative head is a process of re-indexation, possibly, at post-LF, as in (11).

[17] Null operator movement is "overt" in the sense that it occurs before Spell-Out, although it is not pronounced (Munn, personal communication).

[18] There is a different claim that the null operator and an arbitrary null variable *pro* are base-generated (Chomsky 1977; Rizzi 1986; Cinque 1990; Wiltschko 1998; Bissell 1999; Kornfilt 2000; Lee 2001). They claim that since Full Interpretation does not permit a free variable but a referential variable, the null variable *pro* must be at once bound by a null operator (Safir 1986; Chomsky 1989, 1992, 1995; Epstein 1989; Chomsky and Lasnik 1993; Wiltschko 1998). In addition, unless there is an operator in Spec-CP, relative clauses cannot be semantically interpreted. For this principled requirement, a null operator is assumed to be directly base-generated in Spec-CP (Stahlke 1976; Chomsky 1977, 1982; Safir 1986; Cinque 1990; McCloskey 1990; Shlonsky 1992; Moon 1995; Ariel 1999; Bissell 1999; Sharvit 1999b).

(11) a. the cat$_i$ ø$_i$ that the girl is kissing t_i (first co-indexation)
b. the cat$_i$ ø that$_i$ the girl is kissing t (re-indexation)

In (11a) the dependency relation [$ø_i$, t_i] is co-indexed with the relative head in the first round of co-indexation. In (11b) the relative head subsequently shares the index with *that* in C^o in the second round of co-indexation. As a result, the four entities (relative head, Spec-CP, C^o, and variable) bear the same referential index. The next section discusses the relative CP structure of Korean.

1.2.3 Structure of the Korean Relative CP

In Korean, an SOV language, the relative CP precedes the head noun and has an affixal complementizer *-nun*,[19] which is affixed to the verb as the head of the relative CP (Han 1992; Kaplan and Whitman 1995; Han and Kim 2004). *-Nun* has syntactic and phonological properties as shown below for SUB, DO, and IO relative clauses in (12).[20]

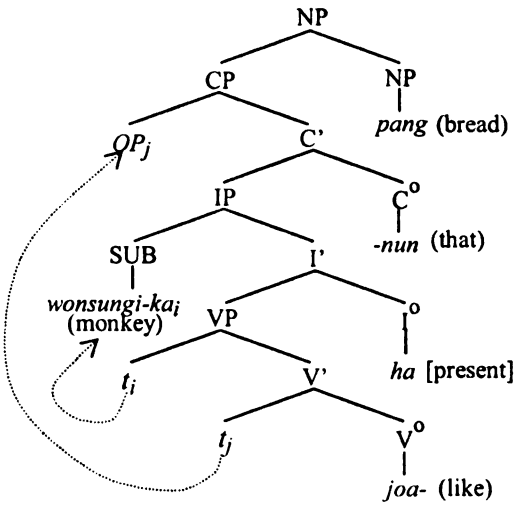
(12) a. SUB [$_{CP}$ OP_i [$_{IP}$ t_i *pang-ul* *joaha*] *-nun*] *wonsungi*
bread-ACC like C^o monkey
'the monkey that likes bread'
b. DO [$_{CP}$ OP_i [$_{IP}$ *wonsungi-ka* t_i *joaha*] *-nun*] *pang*
monkey-TOP like C^o bread
'the bread that the monkey likes'

[19] The affix *-nun* is used for the present, *-n* for the past, and *-l* for the future tense (Kim and Shin 1994).
[20] For a detailed analysis of relative clauses in Korean, refer to Tagashira (1972). She argues that the affixal complementizer is a tense marker rather than a relative clause marker. Also cf. McCawley (1972), Kuno (1974), Song (1991), Yang (1993), Lee, S.-B. (1994), among others.

c. IO [$_{CP}$ OP_i [$_{IP}$ *namja-ka* t_i *pang-ul* *ju*] *-nun*] *wonsungi*
man-TOP bread-ACC give C^o monkey
'the monkey that the man gives bread to'

As seen in Figure 7 for (12b), for example, the only available way to form the relative CP in Korean is to raise a null operator generated in VP within IP into Spec-CP in the sentence-initial position while realizing C^o as *-nun* (Kang 1988).

Figure 7: DO relative CP structure in Korean



Therefore, such relative CPs as in English *the cat which the girl is kissing* with an overt *wh*-operator in Spec-CP and no overt complementizer in C^o or *the cat the girl is kissing* with a null operator in Spec-CP and no overt complementizer in C^o are not possible in Korean because lexical items corresponding to *which*, *who*, *that*, etc. are missing. Keenan (1985) reports that relative pronouns are limited to languages that

allow postnominal relative CPs. There are no pronominal relatives in any language which clearly present relative pronouns.[21]

The reason for disallowing relative pronouns can be that Korean does not allow C^{o} to carry the optional feature [+wh] in the relative CP, but only the default feature [–wh], which consequently prohibits overt *wh*-operator movement in that language. Further, the affixal complementizer *-nun* is obligatory. It cannot be absent like the complementizer *that* in English DO and IO relative CPs. Then, the most similar type of relative CP in surface structure between the two languages is the relative CP with the default feature [–wh], not the optional feature [+wh], which Korean does not employ, mentioned in Rizzi (1990). The next section presents the motivating grounds for the current study.

1.3 Evidence from the Relative CP

One indicator of whether the morphosyntactic features in CP mature or whether they are, instead, available as a set is the frequency of the use of relative CPs in normal discourse. If HPL produces significantly more [+wh] relative CPs than LPL, then we can assume that the strength of [±wh] in the relative CP has been gradually developed from [–wh] to [+wh]. In that case, we must accept the Dissociation Hypothesis, since

[21] Keenan (1985) further explains that the use of a clause-final complementizer in the prenominal relative CPs is less common than the use of a clause-initial complementizer in the postnominal relative CPs. A regular difference between prenominal and postnominal relative CPs concerns the form of the main verb in the relative clause. In the former, the verb is almost always in some sort of non-finite form as in Korean.

its framework postulates that the features gradually develop, while the entire syntactic structure is available from the beginning. On the other hand, if both LPL and HPL produce [–wh] and [+wh] in a similar proportion, then the result argues for the claim that the entire syntactic structure is available from the beginning along with the fully matured morphosyntactic features. If this claim were true, we would have to subsequently modify the generalization that L1 influence changes as L2 proficiency increases (cf. Bardovi-Harlig 1987; Jarvis 2000), since all functional categories and relevant features would be operative at the beginning of L2 acquisition.

The gradual development of morphosyntactic features in CP can be tested with SUB, DO, and IO relative CPs to understand whether the expected phenomenon occurs more or less with a certain type of relative CP than others or whether there exists a hierarchy among different relative CPs in terms of the acquisition of morphosyntactic features. If a ranking is discovered, it may correspond – either directly or inversely – to the Noun Phrase Accessibility Hierarchy (NPAH, Keenan and Comrie 1977), which predicts the acquisition of SUB before DO and DO before IO relative clauses. Along the same lines, if HPL produces more pied-piped constructions such as *the dog to which a girl is giving a cookie* than LPL, then we can also assume that the optional feature [+wh] has been further developed to attract more lexical items to form a more complex type of relative CP. Furthermore, it will be interesting to see how learners behave differently in the production of relative CPs in speaking and

writing situations, where the degree of monitoring time differs.

1.4 Chapter Summary

Chapter 1 discussed the significance of the study and analyzed the syntactic structure of relative CPs in English and Korean. It was proposed that, in the initial state of L2 acquisition, morphosyntactic features are absent, while the entire phrase structure is available as a block. The morphosyntactic features gradually develop from the absence of a feature to the presence of the feature.

The Minimal Trees (MT) hypothesis claims that only the L1 lexical category VP is present at the earliest stage of L2 acquisition. Other functional categories like IP and CP develop in succession. This dissertation partly adopts the Full Transfer/Full Access (FT/FA) hypothesis. The FT/FA hypothesis claims that all L1 functional categories as well as the L1 lexical category are present for L2 acquisition from the earliest stage. That is, the entire L1 grammar – including the functional categories IP and CP, and their complement projections – is readily available as the base of L2 acquisition.

An alternative approach, the Dissociation Hypothesis based on Lardiere (1998a, 1998b), proposed that there should be a distinction between abstract morphosyntactic features and their syntactic representations such that the acquisition of syntax and its features are independent of each other.

This chapter also discussed different types of CPs that previous research has

focused upon. Based on Rizzi's (1990) analysis, two types of relative CPs with [–wh, +pred] and [+wh, +pred] can give proof of a developmental pattern in the acquisition of relative CPs. The former type renders the possibility of *ø*-relative CPs or *that*-relative CPs, neither of which allow for an overt relative operator in Spec-CP. The latter type, however, allows an overt relative operator with a *wh*-phrase in Spec-CP. Lastly, this dissertation hypothesizes that learners acquire the optional feature [+wh] after acquiring the default feature [–wh] for each type of SUB, DO, and IO relative CPs.

Furthermore, an acquisitional hierarchy of morphosyntactic features in CP is expected among SUB, DO, and IO relative CPs, and the pied-piped constructions may be derived more from HPL than from LPL. A comparison between spoken and written outputs may reveal some crucial similarities and differences in the developmental pattern of morphosyntactic features in CP based on different production modes. The next chapter reviews previous studies supporting the MT hypothesis, the FT/FA hypothesis, and the Dissociation Hypothesis.

CHAPTER 2

2.1 Review of Literature

Vainikka and Young-Scholten (1994), supporting the MT hypothesis, collected cross-sectional data from 11 Turkish and 6 Korean adults acquiring German, and proposed that learners acquire functional categories in a gradual developmental pattern that is similar to the way in which children acquire L1; that is, VP → IP → CP. By the CP stage, learners can produce subordinate clauses, *wh*-movement, and yes-no questions. Vainikka and Young-Scholten (1996a) re-analyze previous studies by Zobl and Liceras (1994), Epstein et al. (1996), and Grondin and White (1996), and, in so doing, further strengthen their own argument that only lexical projections constitute learners' initial state, and the functional categories IP and CP develop later.

Vainikka and Young-Scholten (1996b) provide additional evidence from Romance speakers, and conclude once again that L1 children and L2 adults acquire syntactic structure in much the same manner. This model can be empirically tested with a prediction that learners will acquire functional categories in a definite direction. Nevertheless, their claim does not explain the developmental pattern for morphosyntactic features associated with phrase structure. In other words, what needs to be further investigated is whether C^{o} is acquired before or after Spec-CP or simultaneously, and whether morphosyntactic features of CP are available along with phrase structure projections or independently, and also with respect to the complexity

of different relative CP structures; e.g., SUB, DO, and IO relative CPs.

Schwartz and Sprouse (1994), supporting the FT/FA hypothesis, collected extensive longitudinal interlanguage data from a Turkish speaker, Cevdet, learning German. They conclude that Cevdet's initial state of L2 acquisition of German was his final state of L1 acquisition of Turkish, and that each stage in his interlanguage development conforms to what UG follows. Schwartz and Sprouse (1996) further provide evidence for the inadequacy of Vainikka and Young-Scholten's MT hypothesis by re-analyzing previous studies of French speakers acquiring English. The French L2 speakers had trouble with the sentence-internal placement of adverbs and produced the S-V-Adv-O order in English. This suggests that the initial stage for learners already includes a phrase marker with the adverb adjoined to VP.

A critical study by Bhatt and Hancin-Bhatt (2002) reports a comparison of the two models in the L2 English grammar of Hindi L1 speakers, to show a developmental trend in the acquisition of CP. The result argues for the MT hypothesis and claims that different CP projections develop in sequence. Their argument further supports the gradual development of CP as reported in Japanese L2 learners of English in Kaplan (1993). Clahsen, Penke, and Parodi (1993/1994) report as well that early L1 German children also construct phrase-structure trees in a gradual fashion. Further, Bhatt and Hancin-Bhatt (2002) make a theoretical proposal that the L2 initial state includes not only VP, as hypothesized in the MT hypothesis, but also includes IP, and that only CP

develops later. However, they fail to further investigate whether morphosyntactic features [–wh] and [+wh] of the relative CP develop along with their syntactic projections or independently, or whether the two features emerge simultaneously or whether one precedes the other.

In this dissertation, one crucial reason to reject the MT hypothesis and Bhatt and Hancin-Bhatt's (2002) claim is that C^{o} simultaneously necessitates the presence of Spec-CP in the relative CP because C^{o} needs to attract a lexical item with unspecified features to Spec-CP in order to check the same unspecified features of C^{o}. That is, the components of CP structure cannot gradually emerge but must be present simultaneously with C^{o} in the relative CP.

Among earlier studies that support the FT/FA hypothesis, Lakshmanan and Selinker (1994) and Selinker and Lakshmanan (2001) examine longitudinal data from L1 Spanish and French children learning English as an L2, and conclude that Spec-CP and C^{o} are operative from the very beginning of L2 acquisition. Grodin and White (1996) argue against the MT hypothesis with data drawn from a longitudinal corpus of spontaneous production data by two L1 English children who started attending French kindergarten at age 5. Grodin and White suggest that functional categories and their projections are present in the earliest utterances available. Epstein et al. (1996) analyze the error data from Japanese L2 learners of English who were tested on pre- and post-posed sentence structures. They reject the no or partial transfer model such as the MT

hypothesis, and provide evidence that functional categories in L2 acquisition are fully available to learners.

Parallel to this view, Lardiere (1998a) collected naturalistic longitudinal production data from a Chinese woman, Patty, who had lived in the US for 18 years. Lardiere reports that the relationship between morphosyntactic features and abstract grammatical knowledge may be much less direct than other previous studies have reported. Lardiere's study rejects the MT hypothesis because it does not explain irregular appearances of certain morphosyntactic features in Patty's interlanguage. In her study, however, Lardiere accepts the assumption made by the FT/FA hypothesis about the existence of L1 phrase structure and the gradual emergence of its features. These features may or may not match the native speaker's knowledge.

Lardiere (1998b) re-analyzes the data from Patty and suggests that verb-raising is optional for L2 learners, due either to failure to acquire verbal agreement morphology or to an impairment of the morphosyntactic feature agreement system. She further states that syntax and morphology are dissociated in L2 grammar. If so, it can be assumed that the structure of relative CP and relevant morphosyntactic features for agreement are also dissociated, and their acquisition is independent of each other.

Furthermore, Haznedar (2003) examines the status of the functional categories in longitudinally collected data from a Turkish child, Erdem, acquiring English, and presents counterevidence for the MT hypothesis or any partial transfer explanations.

She claims that the development of CP is not implicationally contingent on the prior acquisition of IP. Haznedar (2003: 2) and a number of L2 researchers postulate the Missing Surface Inflection hypothesis that "the lack of morphosyntactic forms in interlanguage grammars reflects a problem with the realization of surface morphology."

Hawkins and Chan (1997) collected data from Chinese speakers learning English, based on the grammaticality judgment test, and make a similar proposition to the Missing Surface Inflection hypothesis. Hawkins and Chan (1997: 187) argue that "(the) divergence from native-speaker representations is an effect of the inaccessibility of features of functional categories in L2 acquisition." They refer the claim as the 'Failed Functional Features Hypothesis'.

Lakshmanan (2000) reports the findings of an experimental (cross-sectional) study which investigated the L1 acquisition of the syntax and pragmatics of relative clauses by Tamil-speaking children ranging in age from 2 years 11 months to 6 years 6 months. She argues that the observed age-related differences stem primarily from performance factors and that the younger children are probably not inferior to the older children in regard to their knowledge of the syntax and pragmatics of Tamil relative clauses. Lakshmanan's finding assumes the availability of full-fledged syntactic structure from the beginning of language acquisition, but the feature specification was different among the younger and older children. That is, the acquisition level for

morphosyntactic features was different although, "from a developmental perspective, children's knowledge of the syntactic and the pragmatic module go hand in hand and ... neither syntax nor pragmatics may be developmentally prior to the other" (Lakshmanan 2000: 615).

2.2 Chapter Summary

Chapter 2 reviewed previous literature on the availability of L1 grammar for L2 acquisition. Vainikka and Young-Scholten (1996a, 1996b) present data that support the partial availability of L1 grammar and a gradual development of CP phrase structure in L2 acquisition. They further re-analyze previous studies by Zobl and Liceras (1994), Epstein et al. (1996), and Grondin and White (1996) to support their own argument. Bhatt and Hancin-Bhatt (2002) put forth data to support Vainikka and Young-Scholten's claim, and they conclude that C^{o} emerges prior to Spec-CP in L2 acquisition.

On the other hand, Schwartz and Sprouse (1994, 1996) offer different data that support the availability of full-fledged L1 grammar for L2 acquisition, in line with Lakshmanan and Selinker (1994), Epstein et al. (1996), Grodin and White (1996), and Selinker and Lakshmanan (2001).

Lardiere (1998a, 1998b) contends that the acquisition of syntax is independent of the development of morphosyntactic features. While adopting Schwartz and Sprouse's

claim, her claim presupposes a full availability of L1 CP from the beginning, but the morphosyntactic features of L1 CP may be subject to gradual maturation. Hawkins and Chan (1997) refer this divergence of morphosyntactic features from phrase structure as the Failed Functional Features hypothesis. Haznedar (2003) further strengthens Lardiere's approach to the Dissociation Hypothesis, and proposes the Missing Surface Inflection hypothesis. Lakshmanan (2000) in her L1 study claims that syntax is not available at a different stage, but that performance factors such as feature specification cause the children to produce different outputs.

None of the previous studies have, however, collected production data from relative CPs, which may offer concrete insights into the development of functional categories as well as into the presence of L1 grammar for L2 acquisition.

CHAPTER 3

3.1 Purpose of the Study

The purpose of this study is to provide empirical evidence that the fully developed L1 functional categories are transferred and their morphosyntactic features develop in succession. This evidence is in accord with the Dissociation Hypothesis, which seems, therefore, to be superior to the MT hypothesis in its explanation of the early stages of the acquisition of phrase structure and the acquisition of its morphosyntactic features. This dissertation presents evidence to support the conclusion that one of the functional categories, relative CP, is transferred from L1 and that [±wh], which is specific to the relative CP, gradually develops from [–wh] to [+wh]. This finding can be generalized for other CPs that emerge at earlier stages in L2 acquisition.

Cross-sectional data on SUB, DO, and IO relative CPs are collected in an experimentally controlled situation. The three previously mentioned types of relative CPs are examined in one study in order to test whether there is a relationship between the syntactic and predicate complexity of a given CP structure and the development of morphosyntactic features. A reason for employing the IO relative CP is to collect pied-piped constructions to investigate whether the [+wh] relative CP can be further developed to attract a heavier, theoretically disfavored element to Spec-CP.[22] Both

[22] Under the minimalist framework, Chomsky (1992) proposes the Preference Principle that a minimally restricted relative CP in Spec-CP is always preferred so long as the grammar converges in this manner. In other words, according to this principle, only the relative operator itself should be

spoken and written data are collected from the same group of learners in order to examine whether different production modes play a role in the development of morphosyntactic features (cf. Ball 1996).

The intended linguistic data are different types of English relative CPs produced by adult Korean learners. The availability of the affixal complementizer marker with [–wh, +pred] in Korean may encourage learners to dispense with the relative CP having [+wh, +pred] in English. If so, learners might prefer to produce the relative CP in English that is syntactically compatible with the relative CP in Korean, regardless of the L2 proficiency level. If HPL produces a greater proportion of [+wh] relative CPs than LPL, it appears that L2 morphosyntactic features gradually develop. The gradual development may be affected by the complexity of relative CPs, leading to a sort of acquisitional hierarchy that can be anticipated based on learners' L2 knowledge of the morphosyntactic features of relative CPs.

It is expected that although the statistical significance across SUB, DO, and IO

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logically contained in Spec-CP. Now look at the two samples below.

a. the cat which the girl is giving a fish to
b. the cat to which the girl is giving a fish

In (a) only the *wh*-operator moves alone, stranding the preposition *to* (i.e., preposition stranded construction); while, in (b) *to which*, the whole prepositional phrase containing the *wh*-operator, moves to Spec-CP (i.e., preposition pied-piped construction), which requires more difficulty, and thus should be a disfavored derivation. The Preference Principle also favors (a) because it has a less restricted element in Spec-CP, compared to (b) with a more restricted one. In addition, (b) requires more difficulty than (a) does to copy and delete elements in the base (Munn 1994; Sauerland 1998; Safir 1999). [Make OP] copies and deletes *to which*; whereas in (a), only *which* is copied and deleted. Nevertheless, both constructions in (a) and (b) are considered grammatical in English and, more or less, entail the same interpretation; but they should not co-exist; (b) should be an illegitimate output because different derivations must compete, in the sense that the most economical one blocks other competing alternatives arising out of the same set of lexical items.

relative CPs might vary, HPL would generally produce more [+wh] relative CPs than LPL. Therefore, the expected conclusion would be that [±wh] of the relative CP develops from [–wh] to [+wh]. This outcome would support the Dissociation Hypothesis, which argues for the gradual development of L2 morphosyntactic features and a full transfer of L1 CP as a block. Also, more [–wh] relative CPs will be produced from DO than SUB relative CPs in speaking and writing situations. More DO than IO relative CPs with the same feature will be produced as well.

This result would suggest that the development of relative CPs may vary according to the syntactic and predicate complexities. The expected result can also be related to the generalization by the Noun Phrase Accessibility Hierarchy (NPAH), which predicts the acquisition of SUB before DO and DO before IO relative clauses.[23] To examine these hypotheses, two research questions are posed below.

3.2 Research Questions

Research Question 1: Do high proficiency L2 learners produce a greater proportion of [+wh] SUB, DO, and IO relative CPs in speaking and writing situations than low proficiency L2 learners?

Research Question 2: Do low proficiency L2 learners produce a greater proportion of [–wh] relative CPs than high proficiency L2 learners as the complexity of relative clause structures increases through SUB, DO, and IO relative CPs and in speaking and writing situations?

[23] Studies on the acquisition of relative clauses in SOV languages report that the object relative CP tends to be acquired prior to the subject CP by L1 children (Nirmala 1980; Bai 1989) and L2 learners (O'Grady et al. 2000; Ko 2002; O'Grady 2003).

3.3 Research Hypotheses

To understand more deeply and in more detail the possible effects of the research questions, six research hypotheses are proposed.

Hypothesis 1: High proficiency L2 learners produce a greater proportion of [+wh] SUB relative CPs than low proficiency L2 learners in speaking and writing situations.

Hypothesis 2: High proficiency L2 learners produce a greater proportion of [+wh] DO relative CPs than low proficiency L2 learners in speaking and writing situations.

Hypothesis 3: High proficiency L2 learners produce a greater proportion of [+wh] IO relative CPs than low proficiency L2 learners in speaking and writing situations.

Hypothesis 4: L2 learners produce a greater proportion of [–wh] DO relative CPs than [–wh] SUB relative CPs in speaking and writing situations.

Hypothesis 5: L2 learners produce a greater proportion of [–wh] IO relative CPs than [–wh] DO relative CPs in speaking and writing situations.

Hypothesis 6: L2 learners produce a greater proportion of [–wh] IO relative CPs than [–wh] SUB relative CPs in speaking and writing situations.

3.4 Research Methodology

This research was conducted with the MSU IRB approvals, IRB #04-897 and IRB #X06-467.

3.4.1 Participants and Classification into Levels

The participants were Korean adults who were proficient enough in English to be

capable of producing relative clauses in English in the experimental situation. Moreover, since English relative clauses are rather complicated structures for L2 learners, only Korean college students were interviewed. These students, 126 from several English classes, were majoring or minoring in English at Kangwon National University in Chuncheon, Gangwon Province, Korea.

In order to classify participants according to level of English proficiency, a preliminary sentence combination test was given[24] in which two sentences containing the same noun had to be properly joined by using a relative pronoun *ø*, *that*, or *which*.[25] Twelve questions with fairly low level vocabulary were asked: four each concerning the SUB, DO, and IO relative CPs. Further, each relative CP consisted of a matrix sentence containing either a subject or an object that was supposed to be the relative head.

Furthermore, since Fox and Thompson (1990: 301) claim that "unlike nonhuman subject heads, 85% of which were definite, only 28% of the non-human object heads are definite," humanness and definiteness of the head noun were controlled to be non-human and definite, for example, *the apples*, *the dog*, etc.[26] Because the length of a

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[24] See Appendix A for the test sheet.

[25] The test has been adapted from the one originally used in Gass (1979). Although such a paper-and-pencil test for relative clause formation has provoked criticism in terms of pragmatic felicity (cf. Hamburger and Crain 1982; Crain and Thornton 1998), it has frequently been used in L2 studies.

[26] Fox and Thompson (1990: 310) further report that "the subject slot tends to be associated with definite, identifiable, specific human referents, while the object slot tends to be associated with non-identifiable, non-human, non-specific referents." The sensitivity to humanness is also reported in Kim and Shin (1994: 469) that "the $O_{nonhuman}$-RC pattern in English and the RC-$O_{nonhuman}$ pattern in Korean are relatively prevalent in comparison with other types."

clause may affect relativization, as reported in Yamashita (1994), the sentences being relativized were kept relatively short.

Thus, a total of 12 relative CPs were collected from the participants: two each of the types: SUB-SUB, DO-SUB SUB-DO, DO-DO, SUB-IO, and DO-IO relative CPs. Each sample sentence is listed below.

SUB-SUB: The apples that grow in the mountain are expensive.
DO-SUB: Paul hates the car that often breaks down.[27]
SUB-DO: The songs that the old man wrote are very sad.
DO-DO: The man kicked the car that his neighbor parked.
SUB-IO: The brother hates the cat that his sister gave a fish to.
DO-IO: The lady cleaned the room that the manager sent a bottle of wine to.

Participants were divided into two proficiency levels, LPL and HPL.[28] Seventy-nine participants were classified as LPL: Sixty-five of these participants had either fewer than 7 correct answers out of the 12 questions, and 14 participants had more than 6 correct answers without a single correct IO relative CP. The other 47 participants were classified as HPL. Table 1 shows the pre-test scores for LPL and HPL.

[27] What will be disregarded in this dissertation is whether the syntactic structure of the relative clause branches into DP (*the*) and NP (*dog that*...) or DP/NP (*the dog*) and CP (*that*...).
[28] Two colleagues, a Korean graduate student, and a Korean professor in Applied Linguistics acknowledged the level classification and commented that it was reasonable, according to their experience in language acquisition research.

Table 1: Pre-test scores for LPL and HPL

	SUB	DO	IO
LPL	176 correct	200 correct	25 correct
(79 learners, 316 tokens)	(56%)	(63%)	(8%)
HPL	151 correct	159 correct	74 correct
(47 learners, 188 tokens)	(80%)	(85%)	(39%)

LPL performed better on the DO than SUB relative CPs (176 and 200), while the number of correct IO relative CPs was just 25. HPL seemed to have done about the same on the SUB and DO relative CPs (151 and 159), and roughly twice as well as the IO relative CP (74).[29] The proportions, in general, indicate that HPL was better on the sentence combination test than LPL. One factor was more significant than others for classifying participants into LPL and HPL: the outcome of IO relative CPs.

Not all learners who took the initial test, however, participated in the actual experiment. Forty-eight of 79 LPLs participated, and 40 of 47 HPLs.

3.4.2 Data Collection Method

A cross-sectional elicited production method was employed to acquire sufficient data for the target structures within a single experimental session (cf. Hamburger 1980; Hilderbrand 1987; Crain et al. 1990; Labelle 1990, 1996; Pérez-Leroux 1995; McDaniel et al. 1996; Thornton 1996; Crain and Thornton 1998). The task enabled the

[29] Fox (1987) also reports that the ratio of subject and object relatives is 1:1 in her data of written English.

experiment to evoke complex syntactic structures such as the relative CP, which occurs quite infrequently in both L1 and L2 spontaneous speech. Speakers often avoided the intended construction by choosing an alternative, simpler means of expression. Hilderbrand (1987) finds in her acquisition study with L1 children that this type of elicitation task gives more direct access to the child's underlying competence than the spontaneous production or comprehension tasks. Crain and Thornton (1998) claim that such a production task can elicit language learners' grammar more directly than a comprehension task because correct derivations from the lexicon do not take place by accident.

Moreover, there are two other potential advantages of the elicited production task over other tasks. One is that it can acquire readily replicable results and the other is that the acquired data entail greater confidence and precision with respect to what learners meant in producing the relative clauses, as Hamburger and Crain (1982) state. McKee et al. (1998) take the production data as the truer indicator of children's early syntactic competence. They assume that in both children and adults comprehension data indicate aspects of language processing that may be influenced by factors other than syntactic knowledge.

In the current study, the experimental setting and linguistic environments during all sessions were managed in order to produce circumstances which were as similar as possible for each participant. Irrelevant but immediate extraneous variables were

possibly the time of the day for data collection, and participants' motivation and sincerity in the experiment. Results substantiate that the elicited production task helps uncover learners' grammatical knowledge of relative CPs more directly than comprehension tasks.

3.4.3 Data Collection Instrument

A picture-description instrument was employed with three critical aspects: situation, lead-in statement, and participant's production, as suggested in Crain and Thornton (1998). Each situation included two experimental pictures containing the same object (e.g., book, teddy bear, etc.) but in different settings. A sample picture for each relative CP is provided in Appendix B. For example, to elicit an IO relative CP, the participant was presented with two pictures of a teddy bear. The target object *teddy bear* was marked with a different colored sticker in each of the two pictures. One picture illustrated a teddy bear with a green sticker, and the teddy bear was lying on the picnic table. The other picture had another kind of teddy bear marked with a yellow sticker, and a girl was giving a ball to the teddy bear. In that situation, the research administrator asked the participant, "Which teddy bear has the yellow sticker?" An appropriate answer would be, for example, "the teddy bear which a girl is giving a ball to." Pictures for eliciting the written output were different, but the contents were similar. For example, if an intended DO relative CP for a spoken output was to utter

"The gloves that a lady is wearing," the corresponding DO relative CP for a written output was to write "The cup that a lady is holding." The order of picture presentation for different types of relative clauses and for the distractors was exactly the same in each of the two output modes.

The sticker method was first developed in Labelle (1990), and has since been uniquely modified and applied in Lakshmanan (2000) and O'Grady et al. (2000), among others.

This method of presenting the participant with the same target object in different settings was intended to construct a pragmatically felicitous discourse context in which the presuppositions of restrictive relative clauses could be satisfied. When just one object is present in the context, the restrictive relative clause becomes unnecessary because there is no potential ambiguity for referring to it (Hamburger and Crain 1982; Crain and Thornton 1998).

For every new situation, the research administrator read a manipulative lead-in statement to elicit a relative CP by using the set of pictures. The administrator, however, did not see the pictures being presented, requiring the participant to give a detailed and specific answer.

Participants were told to consider the question-and-answer situation as a telephone conversation in which two parties cannot see what they are describing. This method was effective when a participant wrongly answered such as *This one!*, *The first one!*,

etc.

The lead-in statements did not contain any relative CPs, but only short declarative and question sentences. A total of 14 situations were presented to each participant: 6 experimental situations and 8 distracting situations. The 6 intended relative CPs elicited from a participant consisted of two of each of the SUB, DO, and IO relative CPs.

The full list of the lead-in statements for the spoken and written situations is in Appendices C and D. Below is a version of a sample lead-in statement for eliciting an IO relative CP.

Administrator:	In one picture, some children and a teddy bear are on the picnic table. The teddy bear has a green star, right?
Participant:	Yes.
Administrator:	In another picture, a girl is giving a candy to the teddy bear. And it has a yellow star.
Administrator:	[*A distracting question*] Now tell me. Where is the candy in the picture? Answer with a full sentence.
Participant:	The candy is in the girl's right hand.
Administrator:	Good. One more. Do you see the yellow and red stars?
Participant:	Yes.
Administrator:	[*The experimental question*] Then, which teddy bear has the yellow star?
Participant:	[*Response*] The teddy bear that the girl is giving a candy to.

Before asking the experimental question, the administrator asked each participant some unrelated questions to distract him and also to verify whether he or she was following the lead-in statement. When he or she could not understand a question, it was repeated. Furthermore, all participants were asked to answer in full sentences and to repeat any responses that were incomprehensible to the administrator.

The spoken output was recorded with Aiwa TP-VS530 Cassette Recorder. It was placed aside from the participants to minimize their fear of being recorded.[30] The average recording time per participant was about 9 minutes. After a short pause, the written data elicitation procedure began and each participant was given a blank sheet with numbers on it that corresponded to the experimental questions. The average writing time was about 6 minutes. The reason for a shorter response time for the written output was partly that the participants were familiar by that time with how to answer the questions. In addition, there were significantly fewer questions and repetition requests during the second experiment for the written output, and participants were not allowed to make corrections to earlier responses.

3.4.4 Research Administrators

The research administrators for data collection were two adult native English speakers working as English conversation teachers in Korea. They were informed

[30] When the participants were discouraged with their spoken responses, the administrator encouraged them by saying what they had said was actually very difficult, but they did superbly.

about the purpose of the research, and administered the pilot study with some students for practice. When gathering the actual data, they each called one participant at a time into an empty classroom and introduced themselves and described the consent form.[31] The initial contact person who notified the potential participants for the research was a graduate student who had no personal relationship with them.

3.4.5 Data Treatment

The administrators audiotaped all spoken output and collected the written output, and the researcher transcribed the tapes. When transcribing the output, the researcher first distinguished understandable responses from those that could not be understood by the researcher and the administrators (e.g., *The one who's sitting on a picnic table whom the little girl giving*). The latter were excluded. Also excluded were good responses without a relative CP (e.g., *The girl puts a book on the chair*), or with a relative CP but in an unintended structure like a passivized SUB relative CP (e.g., *the cup that is held by a woman*) for the intended DO relative CP (e.g., *the cup that a woman is holding*).[32] When there was more than one response to a question (e.g., *the cup that a woman... Ah... the cup which a woman...*), the first grammatical relative CP was selected.

The data were coded on a spreadsheet of the SPSS for Windows 12.0.1, the

[31] See Appendix E for the consent forms.
[32] Passivization was also an avoidance strategy for the intended DO relative clause for the L1 children and adults in Fragman's (1997) study (also, cf. Keenan 1985; Pérez-Leroux 1995; McDaniel et al. 1998).

participants on the rows and the variables on the columns. The variables on the spreadsheet were the scores for the sentence combination test 'score', the proficiency level 'level', the participant's number 'id', spoken SUB relative CPs 'ssub', spoken DO relative CPs 'sdo', spoken IO relative CPs 'sio', written SUB relative CPs 'wsub', written DO relative CPs 'wdo', and written IO relative CPs 'wio'. The variable *level* was nominally categorized as 1 for LPL and 2 for HPL. The features of the different relative CPs were 1 for *ø*-relative CPs, 2 for *that*-relative CPs, 3 for *wh*-relative CPs, and 4 for pied-piped (ppd) relative CPs. Listed below in Table 2 is the numbers of spoken and written relative CPs from 48 LPLs and 40 HPLs, which were used for the statistical test.

Table 2: Numbers of spoken and written relative CPs

Spoken	SUB			DO			IO			
		[–wh]	[+wh]	[–wh]		[+wh]	[–wh]		[+wh]	
	-ing[33]	*that*	*wh*	*ø*	*that*	*wh*	*ø*	*that*	*wh*	*ppd*
LPL (96)[a]	61	1	16	4	8	13	8	4	10	0
HPL (80)[b]	30	16	32	9	17	25	10	16	17	0
Written	**SUB**			**DO**			**IO**			
		[–wh]	[+wh]	[–wh]		[+wh]	[–wh]		[+wh]	
	-ing	*that*	*wh*	*ø*	*that*	*wh*	*ø*	*that*	*wh*	*ppd*
LPL (96)	42	9	18	5	11	15	0	6	12	3
HPL (80)	15	19	43	13	12	28	10	13	18	5

[a] 48 LPLs x 2 tokens = 96 tokens [b] 40 HPLs x 2 tokens = 80 tokens

[33] The *-ing* nonfinite clause is not an abbreviated progressive form of a relative clause (Quirk et al. 1985), but I listed the figures to show the frequency of this substitute for the SUB relative CP. Kim and Shin (1994: 477) report that "English speakers show a strong preference for the use of prepositional phrases or reduced passive modifiers over the use of full-fledged relative-clause constructions."

Two tokens from each relative CP were elicited from every participant; that is, two from each SUB, DO, and IO relative CP for both spoken and written outputs. Therefore, the maximum number of tokens for LPL was 96 for each relative CP (48 LPLs x 2 tokens), and 80 for HPL (40 HPLs x 2 tokens). So, for example, a total of 25 spoken DO relative CPs for LPL (4 + 8 + 13) were successfully elicited out of the total 96 possible occasions; and 51 spoken DO relative CPs for HPL (9 + 17 + 25), out of the total 80 tokens.

3.4.6 Nonparametric Statistical Techniques

The data were counted by the number of occurrence and further analyzed to make inferences about the general tendency of the learners as a whole. The appropriate statistical tests for such types of data are the Binomial test for calculating the choice and the χ^2 test within the nonparametric statistical techniques (cf. Siegel and Castellan 1988; Franekel and Wallen 2003). The types of data and the expected sample size for the present research fit the general requirements for use of the techniques.

The procedure for hypothesis testing was followed in five steps as shown below, listed by the order of performance.

1. Stating the null hypothesis (H_0): A hypothesis of no differences, counter to the research hypothesis (H_1), was formulated for the purpose of being rejected. Since the testing wanted to reach a decision about differences, H_0 was tested against H_1.

H_1 was accepted if H_0 was rejected. Nevertheless, the degree of acceptance or rejection could be definite in some cases, while there might have been other cases in which it seemed questionable to accept the outcome of the statistical figures.

2. Choosing an appropriate statistical technique for testing H_0: An admissible statistical test was selected for each hypothesis. The one-sample tests like the Binomial test or the χ^2 test used for the goodness-of-fit type were carried out. Comparison between independent samples was tested with the χ^2 test. A research hypothesis, however, often required a few steps of testing, each of which involved a different kind of statistical test depending on the nature of the variables being compared.

3. Specifying a significance level (α) and sample size (N): For all hypothesis testing, $\alpha = .05$[34] was used for the probability that a statistical test would yield a feature under which H_0 was rejected. N was listed to draw for computing the statistical test. N for the total was 88: 48 for LPL and 40 for HPL. Two tokens for each relative CP (Spoken-SUB, Spoken-DO, Spoken-IO, Written-SUB, Written-DO, and Written-IO) were elicited; that is, 12 possible tokens from each participant.

4. Defining the region of rejection: The region of rejection, expressed by α, was a region of the significance level in which H_0 could be rejected in favor of H_1. The region was affected by the nature of H_1. If H_1 indicated the predicted direction of

[34] The level, $\alpha = .05$, is commonly used in educational research (Fraeken and Wallen 2003) and behavioral sciences (Siegel and Castellan 1988).

the difference, a one-tailed test was then called for. If H_1 did not indicate the direction of the predicted difference, then a two-tailed test was called for. The degree of freedom was mentioned in this step.

5. Decision: H_0 was rejected or accepted in favor of or in preference to H_1 according to the observed feature of significance whose associated probability of occurrence under H_0 was equal to or less than α.

3.5 Chapter Summary

Chapter 3 introduced the purpose of the study – to provide empirical evidence about the Dissociation Hypothesis, which fundamentally assumes that the fully developed L1 functional categories are transferred and their morphosyntactic features develop in succession from [–wh] to [+wh]. The results elicited from the examination of the data on relative CPs can also be discussed in terms of the generalization made by the NPAH. The research questions asked whether HPL produces a greater proportion of [+wh] SUB, DO, and IO relative CPs in speaking and writing situations than LPL and also whether LPL produce a greater proportion of [–wh] relative CPs than HPL, as the complexity of relative clause structures increases in speaking and writing. The six research hypotheses specifically proposed the possible outcomes out of the research questions.

Participants in the experiment were Korean adults who study English as an L2 at a

Korean university and were considered capable of producing the intended relative CPs. Initially, a sentence combination test was given to 126 potential participants for level classification into LPL and HPL. The resulting number of participants was 88: 48 LPLs and 40 HPLs.

A cross-sectional elicited production task was employed as the method for data collection to acquire a sufficient number of target structures within a single experimental session. Such a complex structure occurs quite infrequently in spontaneous speech and has to be experimentally evoked to maintain the consistent data elicitation setting and linguistic environment for each and every participant.

The instrument for data collection was a picture-description task. It contained three observable phenomena: situation, lead-in statement, and participant's production. Each situation contained two pictures with the same object but in a different setting. The intention was to construct a pragmatically felicitous discourse context in which the presuppositions of restrictive relative clauses could be satisfied.

Two adult native English speakers administered the data elicitation process at the university that the participants were attending. The experiment administrators recorded the spoken output on a cassette tape player and collected the written output. The researcher transcribed the spoken output.

Any production of relative clauses not containing the intended relative CP was discarded. When more than one response was collected for a single question, the first

relative CP was selected for analysis.

A nonparametric statistical technique was selected for data analysis because the data were counted by the number of occurrence. The appropriate statistical tests were the Binomial test for calculating the choice and the χ^2 test within the nonparametric statistical techniques. The procedure for hypothesis testing was followed in five steps: stating the null hypothesis (H_0), choosing an appropriate statistical technique for testing H_0, specifying a significance level (α) and sample size (N), defining the region of rejection, and making the decision.

CHAPTER 4

4.1 Testing Hypothesis 1: SUB Relative CP

H_1: High proficiency L2 learners produce a greater proportion of [+wh] SUB relative CPs than low proficiency L2 learners in speaking and writing situations.

The first part of Hypothesis 1 concerns whether LPL or HPL produced a significantly greater proportion of [+wh] SUB relative CPs than the one with [–wh], in speaking and writing. Since the SUB relative CP could be produced only as a *wh*-relative CP (*the bear which is catching a fish*) or a *that*-relative CP (*the bear that is catching a fish*), the Binomial test was considered. The test is of the goodness-of-fit type, which indicates whether a significant difference exists between the observed relative frequency (converted into a proportion) of a variant and the expected number of occurrence based on H_0. The subsequent statistical test was the χ^2 test for two independent samples, which determines the significance of differences of frequency between two independent groups.

1. H_0: *[–wh] = [+wh]*. There is no difference between LPL and HPL in the probability of occurrence of the [–wh] and [+wh] SUB relative CPs in speaking and writing. H_1: *[–wh] < [+wh]*.

2. Statistical test: The Binomial test was chosen because the data were in two discrete categories and the design was of the one-sample type. If the two possibilities [–wh] and [+wh] are randomly selected, there is no reason to think that one feature is

preferred to the other feature under H_0.

3. Significance level: Let $\alpha = .05$. $N = 96$ (48 LPLs x 2 tokens) and $N = 80$ (40 HPLs x 2 tokens).

4. Rejection region: Since H_1 predicted the direction of deviation from randomness, a one-tailed region of rejection was used. H_0 would be rejected if the observed value of the Binomial test was such that the probability associated with its occurrence under H_0 for the degree of freedom of 1 was equal to or less than $\alpha = .05$.

Table 3: The Binomial test result of SUB relative CPs for LPL

	Features	Categories	N	Observed Proportion	Test Prop.	Asymp. Sig. (2-tailed)
Spoken-SUB	[–wh, +pred]	that	1	.06	.50	.000
	[+wh, +pred]	which	16	.94		
	Total		17	1.00		
Written-SUB	[–wh, +pred]	that	5	.19	.50	.002[a]
	[+wh, +pred]	which	22	.81		
	Total		27	1.00		

[a] Z Approximation is used for the cells that are $N > 25$, which causes an asymptotic significance calculation.

5. Decision: We will discuss the data by LPL first. In the experiment, LPL used a greater proportion of [+wh] SUB relative CPs in both speaking and writing. The data are shown in Table 3 for LPL. The N column lists the total numbers of relative CPs produced.

In the speaking situation, the observed frequency of [–wh] SUB relative CPs for LPL is just 1 out of 17, while the frequency is 16 out of 17 for [+wh] SUB relative CPs. The probability associated with $x \leq 1$ for $N = 17$ is $p = .000$. Because this p is smaller than $\alpha = .05$, the decision is to reject H_0 in favor of H_1 for the spoken data.

In the writing situation, the observed frequency of [–wh] SUB relative CPs for LPL is 5 out of 27, while the frequency is 22 out of 27 for [+wh] SUB relative CPs. The probability associated with $x \leq 5$ for $N = 27$ is $p = .002$. Because this p is smaller than $\alpha = .05$, the decision is also to reject H_0 in favor of H_1 for the written mode.

We can conclude that [–wh] < [+wh] for LPL in both situations; that is, LPL tended to prefer the [+wh] SUB relative CP to the one with [–wh] in both speaking and writing. On the other hand, HPL also used a greater proportion of [+wh] SUB relative CPs. The data are shown in Table 4 for HPL.

Table 4: The Binomial test result of SUB relative CPs for HPL

	Features	Categories	N	Observed Proportion	Test Prop.	Asymp. Sig. (2-tailed)
Spoken-SUB	[–wh, +pred]	that	16	.33	.50	.029[a]
	[+wh, +pred]	which	32	.67		
	Total		48	1.00		
Written-SUB	[–wh, +pred]	that	19	.31	.50	.003[a]
	[+wh, +pred]	which	43	.69		
	Total		62	1.00		

[a] Z Approximation is used for the cells that are $N > 25$, which causes an asymptotic significance calculation.

In the speaking situation, the total number of [–wh] SUB relative CPs is 16 for HPL, while the total number of [+wh] SUB relative CPs is 32. The probability associated with $x \leq 16$ for $N = 48$ is $p = .029$. Because this p is smaller than $\alpha = .05$, the decision is to reject H_0 in favor of H_1. It can be concluded that [–wh] < [+wh] for HPL; that is, HPL preferred the [+wh] SUB relative CP in the speaking situation.

In the writing situation, the total number of [–wh] SUB relative CPs is 19 for HPL, while the total number of [+wh] SUB relative CPs is 43. The probability associated with $x \leq 19$ for $N = 62$ is $p = .003$. Because this p is smaller than $\alpha = .05$, the decision is to reject H_0 in favor of H_1. It can be concluded that [–wh] < [+wh]; that is, HPL as well as LPL tended to prefer the [+wh] SUB relative CP in both speaking and writing.

The next part of Hypothesis 1 concerns whether LPL and HPL differ significantly with respect to the relative frequency of the [+wh] SUB relative CP in speaking and writing. The χ^2 test for two independent samples is employed.

1. H_0: $LPL = HPL$. There is no difference between LPL and HPL in the probability of selecting the [+wh] SUB relative CP. H_1: $LPL < HPL$.

2. Statistical test: The χ^2 test was used to determine the significance of differences between the two groups since the data consisted of frequencies. For choosing the [–wh] or [+wh] SUB relative CPs, there is no reason to think that one or the other is preferred under H_0.

Table 5: Frequencies and Crosstabulations for SUB relative CPs

Crosstabulation	Frequencies					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Level*Spoken-SUB	65	36.9%	111	63.1%	176	100.0%
Level*Written-SUB	89	50.6%	87	49.4%	176	100.0%

		Spoken-SUB					Written-SUB		
		[–wh]	[+wh]	Total			[–wh]	[+wh]	Total
Level	LPL	1	16	17	Level	LPL	5	22	27
	HPL	16	32	48		HPL	19	43	62
Total		17	48	65	Total		24	65	89

3. Significance level: Let $\alpha = .05$. $N = 176$. The total number of the participants was 88 (48 LPLs and 40 HPLs), and two tokens from each participant were collected. Table 5 shows the frequency summary and crosstabulations for SUB relative CPs for LPL and HPL.

4. Rejection region: Since H_1 predicted the direction of deviation from randomness, a one-tailed region of rejection was used. would be rejected if the observed value of χ^2 was such that the probability associated with its occurrence under H_0 for the degree of freedom of 1 is equal to or less than $\alpha = .05$.

5. Decision: In the experiment, there was a difference between LPL and HPL in the probability of selecting the [+wh] SUB relative CP, especially in the spoken data. The two groups behaved differently when producing SUB relative CPs in that situation. The value of χ^2 for the spoken data is shown in Table 6.

Table 6: The χ^2 test for SUB relative CPs in the spoken data

Spoken-SUB	Value	df	Asymp. sig. (2-sided)	Exact sig. (2-sided)	Exact sig. (1-sided)
Pearson Chi-Square	4.898[b]	1	.027		
Continuity Correction[a]	3.580	1	.058		
Likelihood Ratio	5.994	1	.014		
Fisher's Exact Test				.029	.023
Linear-by-Linear Association	4.823	1	.028		
N of Valid Cases	65				

[a] Computed only for a 2x2 table

[b] 1 cell (25.0%) has expected count less than 5. The minimum expected count is 4.45.

In the speaking situation, the probability of occurrence under H_0 for $\chi^2 \geq 4.898$ with the degree of freedom of 1 is $p = .023$. Because this p is less than $\alpha = .05$, the decision is to reject H_0. However, H_1 is not supported either. The opposite of H_1 is supported instead, because the probability of occurrence of the [+wh] SUB relative CP in speaking is greater for LPL ($p = .000$ from Table 3) than HPL ($p = .029$ from Table 4). LPL produced a greater proportion of [+wh] SUB relative CPs in speaking than HPL.

In the writing situation, there was, however, no difference between LPL and HPL in the probability of selecting the [+wh] SUB relative CP. The value of χ^2 for these data is shown in Table 7.

Table 7: The χ^2 test for SUB relative CPs in the written data

Written-SUB	Value	df	Asymp. sig. (2-sided)	Exact sig. (2-sided)	Exact sig. (1-sided)
Pearson Chi-Square	1.404[b]	1	.236		
Continuity Correction[a]	.856	1	.355		
Likelihood Ratio	1.473	1	.225		
Fisher's Exact Test				.303	.178
Linear-by-Linear Association	1.389	1	.239		
N of Valid Cases	89				

[a] Computed only for a 2x2 table

[b] 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.28.

The probability of frequency under H_0 for $\chi^2 \geq 1.404$ with the degree of freedom of 1 is $p = .178$. Because this p is greater than $\alpha = .05$, the decision is to accept H_0 in preference to H_1 in the writing situation.

4.2 Testing Hypothesis 2: DO Relative CP

H_1: High proficiency L2 learners produce a greater proportion of [+wh] DO relative CPs than low proficiency L2 learners in speaking and writing situations.

The first part of Hypothesis 2 concerns whether LPL or HPL produced a significantly greater proportion of [+wh] DO relative CPs in speaking and writing. Although the DO relative CP has three variants (a *wh*-relative CP with [+wh] and a *ø*-relative CP and a *that*-relative CP with [–wh]) the number of categories is two: [–wh] and [+wh]. Therefore, the Binomial test was again used as it was used for Hypothesis 1.

1. H_0: *[–wh] = [+wh]*. H_1: *[–wh] < [+wh]*.

2. Statistical test: The Binomial test was again used as it was used for Hypothesis 1.

3. Significance level: Let $\alpha = .05$. $N = 96$ (48 LPLs x 2 tokens) and $N = 80$ (40 HPLs x 2 tokens).

4. Rejection region: Equal to or less than $\alpha = .05$.

5. Decision: The Binomial test result is presented in Table 8 for LPL (See Table 2 for all participants). We will discuss the data by LPL first. The table shows that, out of a total of 96 occurrences, LPL successfully produced 25 DO relative CPs in speaking: 4 *ø*-relative CPs, 8 *that*-relative CPs, and 13 *wh*-relative CPs (12 [–wh] and 13 [+wh]). Of the 31 DO relative CPs in writing, there were 5 *ø*-relative CPs, 11 *that*-relative CPs, and 15 *wh*-relative CPs (16 [–wh] and 15 [+wh]).

Table 8: The Binomial test result of DO relative CPs for LPL

LPL	Features	Categories	N	Observed Proportion	Test Prop.	Asymp. Sig (2-tailed)
Spoken-DO	[–wh, +pred]	ø 4 that 8	12	.48	.50	1.000
	[+wh, +pred]	which	13	.52		
		Total	25	1.00		
Written-DO	[–wh, +pred]	ø 5 that 11	16	.52	.50	1.000[a]
	[+wh, +pred]	which	15	.48		
		Total	31	1.00		

[a] Based on Z Approximation

In the speaking situation, the probability associated with $x \leq 12$ for $N = 25$ is $p =$

1.000. Because this p is greater than $\alpha = .05$, the decision is to accept H_0 in preference to H_1. It can be concluded that LPL randomly selected a DO relative CP in speaking.

In the writing situation, the probability associated with $x \leq 16$ for $N = 31$ is $p = 1.000$. Because this p is greater than $\alpha = .05$, the decision is to accept H_0 in preference to H_1. It can be concluded that LPL randomly selected a [–wh] or [+wh] DO relative CP in both the speaking and writing situations.

The frequency data for HPL are presented in Table 9. The table shows that, of the total of 80 occurrences in the spoken data, HPL produced 51 DO relative CPs: 9 *ø*-relative CPs, 17 *that*-relative CPs, and 25 *wh*-relative CPs (26 [–wh] and 25 [+wh]). Of the 53 DO relative CPs in the written data, HPL produced 13 *ø*-relative CPs, 12 *that*-relative CPs, and 28 *wh*-relative CPs (25 [–wh] and 28 [+wh]).

Table 9: The Binomial test result of DO relative CPs for HPL

HPL	Features	Categories	N	Observed Proportion	Test Prop.	Asymp. Sig (2-tailed)
Spoken-DO	[–wh, +pred]	ø 9 that 17	26	.51	.50	1.000[a]
	[+wh, +pred]	which	25	.49		
		Total	51	1.00		
Written-DO	[–wh, +pred]	ø 13 that 12	25	.47	.50	.784[a]
	[+wh, +pred]	which	28	.53		
		Total	53	1.00		

[a] Based on Z Approximation

In the speaking situation, the probability associated with $x \leq 26$ for $N = 51$ is $p = 1.000$. Because this p is greater than $\alpha = .05$, the decision is to accept H_0 in preference to H_1.

The writing situation was similar. The probability associated with $x \leq 25$ for $N = 53$ is $p = .784$. Because this p is greater than $\alpha = .05$, the decision is to accept H_0 in preference to H_1. It can be concluded that HPL as well as LPL randomly selected a [–wh] or [+wh] DO relative CP in both the speaking and writing situations.

The χ^2 test for two independent samples to assess whether LPL and HPL would differ with respect to the relative frequency of the [+wh] DO relative CP, was not employed. The reason was that the both groups failed to produce a greater proportion of [+wh] relative CPs in both speaking and writing. Therefore, the statistical procedure for χ^2 test became unnecessary unlike the procedure for the SUB relative CP.

4.3 Testing Hypothesis 3: IO Relative CP

H_1: High proficiency L2 learners produce a greater proportion of [+wh] IO relative CPs than low proficiency L2 learners in speaking and writing situations.

Hypothesis 3 concerns whether LPL or HPL produced a significantly greater proportion of [+wh] IO relative CPs than [–wh] IO relative CPs. Although an IO relative CP can be produced in four ways: *ø*-relative CP and *that*-relative CP with [–wh] and *wh*-relative CP and pied-piped (*ppd*) relative CP with [+wh], the number of

categories under consideration is again two: [–wh] and [+wh]. The Binomial test was appropriate for understanding whether a significant difference exists between the observed relative frequency (converted into a proportion) of a variant and the expected number of occurrence based on H_0.

1. H_0: *[–wh] = [+wh]*. H_1: *[–wh] < [+wh]*.

2. Statistical test: The Binomial test was again used as it was used for Hypotheses 1 and 2.

3. Significance level: Let $\alpha = .05$. $N = 96$ (48 LPLs x 2 tokens) and $N = 80$ (40 HPLs x 2 tokens).

4. Rejection region: Equal to or less than $\alpha = .05$.

5. Decision: The Binomial result is presented in Table 10 for LPL. The table shows that, out of a total of 96 occurrences in the spoken data, LPL produced 22 IO relative CPs in speaking with 8 *ø*-relative CPs, 4 *that*-relative CPs, 10 *wh*-relative CPs, and no *ppd*-relative CPs (12 [–wh] and 10 [+wh]). Of the 21 IO relative CPs, the observed frequencies in writing were no *ø*-relative CPs, 6 *that*-relative CPs, 12 *wh*-relative CPs, and 3 *ppd*-relative CPs (6 [–wh] and 15 [+wh]).

Table 10: The Binomial test result of IO relative CPs for LPL

LPL	Features	Categories		N	Observed Proportion	Test Prop.	Asymp. Sig (2-tailed)
Spoken-IO	[–wh, +pred]	ø	8	12	.55	.50	.832[a]
		that	4				
	[+wh, +pred]	which	10	10	.45		
		ppd	0				
		Total		22	1.00		
Written-IO	[–wh, +pred]	ø	0	6	.29	.50	.078[a]
		that	6				
	[+wh, +pred]	which	12	15	.71		
		ppd	3				
		Total		21	1.00		

[a] Based on Z Approximation

In the speaking situation, the probability associated with $x \leq 12$ for N =22 is p = .832. Because this p is greater than α = .05, the decision is to accept H_0 in preference to H_1. It can be concluded that LPL randomly selected an IO relative CP in speaking.

In the writing situation, the probability associated with $x \leq 6$ for $N = 21$ is p = .078. Because this p is greater than α = .05, the decision is to accept H_0 in preference to H_1. It can be concluded that LPL randomly selected a [–wh] or [+wh] IO relative CP in both the speaking and writing situations.

The frequency data for HPL are presented in Table 11. The table shows that, of the total of 80 occurrences, HPL produced 43 IO relative CPs in speaking with 10 *ø*-relative CPs, 16 *that*-relative CPs, 17 *wh*-relative CPs, and no *ppd*-relative CPs, (26

[–wh] and 17 [+wh]). Of the 46 IO relative CPs, the observed frequencies in writing were 10 *ø*-relative CPs, 13 *that*-relative CPs, 18 *wh*-relative CPs, and 5 *ppd*-relative CP (23 [–wh] and 23 [+wh]).

Table 11: The Binomial test result of IO relative CPs for HPL

HPL	Features	Categories		N	Observed Proportion	Test Prop.	Asymp. Sig (2-tailed)
Spoken-IO	[–wh, +pred]	ø	10	26	.60	.50	.222[a]
		that	16				
	[+wh, +pred]	which	17	17	.40		
		ppd	0				
		Total		43	1.00		
Written-IO	[–wh, +pred]	ø	10	23	.50	.50	1.000[a]
		that	13				
	[+wh, +pred]	which	18	23	.50		
		ppd	5				
		Total		46	1.00		

[a] Based on Z Approximation

In the speaking situation, the probability associated with $x \leq 26$ for $N = 43$ is $p = .222$. Because this p is greater than $\alpha = .05$, the decision is to accept H_0 in preference to H_1.

In the writing situation, the probability associated with $x \leq 23$ for $N = 46$ is $p = 1.000$. Because this p is greater than $\alpha = .05$, the decision is to accept H_0 in preference to H_1. It can be concluded that HPL randomly selected a [–wh] or [+wh] IO relative CP in both the speaking and writing situations.

The χ^2 test for two independent samples to assess whether LPL and HPL would differ with respect to the relative frequency of the [+wh] IO relative CP, was not employed. The reason was that the both groups failed to produce a greater proportion of [+wh] IO relative CPs with in both speaking and writing.

In the first step for testing Hypotheses 4, 5, and 6, the data of LPL and HPL were combined since the hypotheses were assumed for the learners as a whole, not based on their proficiency levels. Table 12 shows the observed number of each relative CP in speaking and writing from all 88 participants (48 LPLs and 40 HPLs). The expected number of each relative CP is 176 (88 participants x 2 tokens).

Table 12: Numbers and percents of relative CPs for all L2 participants

	SUB		DO		IO	
	[–wh]	[+wh]	[–wh]	[+wh]	[–wh]	[+wh]
Spoken	17	48	38	38	38	27
	9.7%	27.3%	21.6%	21.6%	21.6%	15.3%
Total	65 (37%)		76 (43%)		65 (37%)	
Written	28	61	41	43	29	38
	15.9%	34.7%	23.3%	24.4%	16.5%	21.6%
Total	89 (51%)		84 (48%)		67 (38%)	

A participant who produced a SUB relative CP, however, did not always produce a DO relative CP, and vice versa, or a participant who produced a DO relative CP did not always produce an IO relative CP either, and vice versa. Therefore, those tokens which were not successful in producing both types of relative CPs that each of Hypotheses 4,

5, and 6 intends to compare had to be eliminated. Table 13 shows the numbers of research tokens after exclusion.

Table 13: Numbers of tokens that produced both types of relative CPs

		Research Tokens
Hypothesis 4	Spoken-SUB (65) vs. Spoken-DO (76)	36
(SUB vs. DO)	Written-SUB (89) vs. Written-DO (84)	58
Hypothesis 5	Spoken-DO (76) vs. Spoken-IO (65)	33
(DO vs. IO)	Written-DO (84) vs. Written-IO (67)	54
Hypothesis 6	Spoken-SUB (65) vs. Spoken-IO (65)	34
(SUB vs. IO)	Written-SUB (89) vs. Written-IO (67)	45

4.4 Testing Hypothesis 4: SUB < DO

H_1: L2 learners produce a greater proportion of [–wh] DO relative CPs than [–wh] SUB relative CPs in speaking and writing situations.

The McNemar test for the significance of differences with two related samples is particularly applicable to this type of design in which measurement is in the strength of a nominal scale. Thus, McNemar is apt for testing the effectiveness of a particular difference on learners' preference among variables.

1. H_0: $SUB = DO$. The probability that L2 learners would produce a greater proportion of [–wh] SUB relative CPs was equal to the probability that they would produce a greater proportion of [–wh] DO relative CPs. H_1: $SUB < DO$.

2. Statistical test: The McNemar test for the significance of differences was chosen

because the study used two related samples, the SUB relative CP and the DO relative CP, with nominal data. If [–wh] and [+wh] are randomly selected for every relative CP, there is no reason to think that one was preferred to the other.

3. Significance level: Let $\alpha = .05$. $N = 176$, the number of tokens from 88 participants (48 LPLs and 40 HPLs) and two tokens from each participant.

4. Rejection region: Since H_1 specified the direction of the predicted difference, the region of rejection is one-tailed. The region of rejection consisted of all values of χ^2 which were so large that they had a one-tailed probability associated with their occurrence under H_0 of .05 or less. The degree of freedom was 1.

Table 14: Differences of the numbers of SUB and DO relative CPs

Spoken-SUB & Spoken-DO		
(36 tokens)	Spoken-DO	
Spoken-SUB	[–wh]	[+wh]
[–wh]	4	4
[+wh]	13	15

Written-SUB & Written-DO		
(58 tokens)	Written-DO	
Written-SUB	[–wh]	[+wh]
[–wh]	13	5
[+wh]	15	25

5. Decision: According to Table 14, the spoken SUB and DO relative CP data with 36 tokens show that the participants who preferred [–wh] for both the spoken SUB and DO relative CPs are 4 (the left '4' in the table) and those who preferred [+wh] for the same relative CPs are 15. The participants who showed a preference for different features for different relative CPs are 13 and 4 (the second '4' in the table). These data

are the ones that we are interested in, and the statistics calculates the differences of preference based on these two values.

Thirteen is the number of the participants who selected [+wh] SUB relative CPs, but preferred [–wh] DO relative CPs: That is, they selected [+wh] for the SUB relative CP, but selected [–wh] for the DO relative CP. Four is the number of participants who selected [–wh] for the SUB relative CP, but preferred [+wh] for the DP relative CP.

For the written SUB and DO relative CP data in Table 14, the participants who chose [+wh] for SUB relative CPs and [–wh] for DO relative CPs are 15. The participants who chose [–wh] for SUB relative CPs and [+wh] for DO relative CPs are 5. The statistics uses these two values which show a difference of occurrence. Those who preferred [–wh] SUB and [–wh] DO relative CPs are 13, and those who preferred [+wh] SUB and [+wh] DO relative CPs are 25. Statistics, however, leaves out these two values which show no difference of preference.

Table 15 reveals that the probabilities of differences of preference under H_0 for the spoken and written SUB and DO relative CPs.

Table 15: The McNemar test result for SUB and DO relative CPs

	Spoken-SUB & Spoken-DO	Written-SUB & Written-DO
N	36	58
Exact Sig. (2-tailed)	.049[a]	.041[a]

[a] Binomial distribution used.

In the speaking situation, the probabilities for the spoken SUB and DO relative CPs show that $p = .049$ for 36 research tokens. The value, however, has to be halved because a one-tailed test is called for and the table gives two-tailed values. Therefore, the actual value when the degree of freedom is 1 is .0245. Because the probability under H_0 associated with the occurrence we observed is $p = .0245$ and is less than $\alpha = .05$, the observed value of χ^2 is in the region of rejection, and thus the decision is to reject H_0 in favor of H_1.

In writing, the probability of occurrence under H_0 for 58 tokens is half of $p = .041$; that is .205 with the degree of freedom of 1. Because the probability under H_0 associated with the occurrence we observed is $p = .0201$ and is less than $\alpha = .05$, the observed value of χ^2 is in the region of rejection, and thus the decision is also to reject H_0 in favor of H_1.

According to the data, learners as a whole produced a greater proportion of [–wh] DO relative CPs than [–wh] SUB relative CPs in both the speaking and writing situations.

4.5 Testing Hypothesis 5: DO < IO

H_1: L2 learners produce a greater proportion of [–wh] IO relative CPs than [–wh] DO relative CPs in speaking and writing situations.

1. H_0: $DO = IO$. H_1: $DO < IO$.

2. Statistical test: The McNemar test was chosen again as it was used for Hypothesis 4.

3. Significance level: Let $\alpha = .05$. $N = 176$.

4. Rejection region: $\alpha = .05$ or less.

Table 16: Differences of the numbers of DO and IO relative CPs

Spoken-DO & Spoken-IO		
(33 tokens)	Spoken-IO	
Spoken-DO	[–wh]	[+wh]
[–wh]	16	3
[+wh]	7	7

Written-DO & Written-IO		
(54 tokens)	Written-IO	
Written-DO	[–wh]	[+wh]
[–wh]	14	10
[+wh]	10	20

5. Decision: According to Table 16, the tokens that show a difference of preference for [–wh] DO and IO relative CPs in the speaking situation are 7 (the left '7' in the table) and 3. Seven indicates the number of the participants who selected [+wh] for the DO relative CP, but chose [–wh] for the IO relative CP. Three is the number of the participants who selected [–wh] for the DO relative CP, but preferred [+wh] for the IO relative CP. The probability of difference of preference is calculated, based on these numbers.

Other two tokens 16 and 7 are excluded from the statistical analysis. Sixteen is the number of the participants who preferred [–wh] for both the DO and IO relative CPs; seven is the number of those who preferred [+wh] for the same relative CPs.

In the writing situation, the number of the participants that showed a difference of

preference for [+wh] for the DO relative CP and for [–wh] for the IO relative CP is 10 (the left '10' in the table). The right '10' in the table is a difference of preference for those who selected [–wh] for the DO relative CP and for [+wh] for the IO relative CP. From the same table, the statistics disregards the numbers 14 and 20. Fourteen is the number for those who preferred [–wh] and 20 is the number for those who preferred [+wh] for both DO and IO relative CPs. Table 17 below presents the statistical result for the differences of preference.

Table 17: The McNemar test result for DO and IO relative CPs

	Spoken-DO & Spoken-IO	Written-DO & Written-IO
N	33	54
Exact Sig. (2-tailed)	.344[a]	1.000[a]

[a] Binomial distribution used.

In the speaking situation for 33 tokens, the probability of occurrence for preference shows that $p = .344$. The value again needs to be halved because a one-tailed test was called for, and the table gives two-tailed values. Therefore, the actual value when the degree of freedom is 1 is .172. Because the probability under H_0 associated with the occurrence we observed is $p = .172$ and is greater than $\alpha = .05$, the observed value of χ^2 was not in the region of rejection, and thus the decision was to accept H_0 in preference to H_1.

In the writing situation for 54 tokens, the probability of occurrence under H_0 is

half of p = 1.000; that is .500 with the degree of freedom of 1. Because the probability under H_0 associated with the occurrence we observed is p = .500 and is greater than α = .05, the observed value of χ^2 is not in the region of rejection, and thus the decision is also to accept H_0 in preference to H_1.

These data lead to the conclusion that the learners as a whole did not seem to produce a greater proportion of [–wh] IO relative CPs than [–wh] DO relative CPs in either the speaking or writing situations.

4.6 Testing Hypothesis 6: SUB < IO

H_1: L2 learners produce a greater proportion of [–wh] IO relative CPs than [–wh] SUB relative CPs in speaking and writing situations.

1. H_0: *SUB = IO*. H_1: *SUB < IO*.

2. Statistical test: The McNemar test was chosen as it was used for Hypotheses 5 and 6.

3. Significance level: Let α = .05. N = 176.

4. Rejection region: α = .05 or less.

Table 18: Differences of the numbers of SUB and IO relative CPs

Spoken-SUB & Spoken-IO

(34 tokens)	Spoken-IO	
Spoken-SUB	[–wh]	[+wh]
[–wh]	6	3
[+wh]	12	13

Written-SUB & Written-IO

(45 tokens)	Written-IO	
Written-SUB	[–wh]	[+wh]
[–wh]	7	9
[+wh]	12	17

5. Decision: According to Table 18, in the speaking situation, the tokens that show a difference of preference for SUB and IO relative CPs are 12 and 3. Twelve indicates the number of the participants who selected [+wh] for the SUB relative CP, but chose [–wh] for the IO relative CP. Three is the number of the participants who selected [–wh] for the SUB relative CP, but preferred [+wh] for the IO relative CP. Excluded from the statistics are 6 for those who preferred [–wh] and 13 for those who preferred [+wh] for both the SUB and IO relative CPs.

In the writing situation, the number of the participants that showed a difference of preference for [+wh] for the SUB relative CP and for [–wh] for the IO relative CP is 12. The number of the participants who showed a difference of preference for [–wh] for the SUB relative CP and for [+wh] for the IO relative CP is 9. From the same table, the numbers 7 and 17 are discarded from the statistics because they indicate no difference of preference. Seven is for those who preferred [–wh] and seventeen is for those who preferred [+] for both the SUB and IO relative CPs. Table 19 below presents the statistical result for the differences of preference.

Table 19: The McNemar test result for SUB and IO relative CPs

	Spoken-SUB & Spoken-IO	Written-SUB & Written-IO
N	34	45
Exact Sig. (2-tailed)	.035[a]	.664[a]

[a] Binomial distribution used.

In the speaking situation with 34 tokens, the probability of occurrence for preference shows that $p = .035$. After halving this number, the actual value when the degree of freedom is 1 is .0175. Because the probability under H_0 associated with the occurrence we observed is $p = .0175$ and is greater than $\alpha = .05$, the observed value of χ^2 is not in the region of rejection, and thus the decision is to reject H_0 in preference to H_1.

In the writing situation for 45 tokens, the probability of occurrence under H_0 is half of $p = .664$; that is .332 with the degree of freedom of 1. Because the probability under H_0 associated with the occurrence we observed is $p = .332$ and is greater than $\alpha = .05$, the observed value of χ^2 is not in the region of rejection, and thus the decision is also to accept H_0 in preference to H_1.

These data lead to the conclusion that only in the speaking situation, learners produced a greater proportion of [–wh] IO relative CPs than [–wh] SUB relative CPs ($p = .0175$), but not in the writing situation ($p = .332$). The next section summarizes the hypothesis testing.

4.7 Chapter Summary

This chapter tested the six hypotheses in response to the research questions. The first three hypotheses concerned the first research question – Do high proficiency L2 learners produce a greater proportion of [+wh] SUB, DO, and IO relative CPs in

speaking and writing situations than low proficiency L2 learners?

Hypothesis 1: high proficiency L2 learners produce a greater proportion of [+wh] SUB relative CPs than low proficiency L2 learners in speaking and writing, was not supported, despite the fact that both types of learners exclusively preferred the [+wh] SUB relative CP to the one with [–wh]. Both groups, however, produced a statistically significant proportion of [+wh] relative CPs in both the speaking and writing situations.

Hypothesis 2: high proficiency L2 learners produce a greater proportion of [+wh] DO relative CPs than low proficiency L2 learners, was not supported in both speaking and writing situations.

Hypothesis 3: high proficiency L2 learners produce a greater proportion of [+wh] IO relative CPs than low proficiency L2 learners, was not supported.

The last three hypotheses were related to the second research question – Do low proficiency L2 learners produce a greater proportion of [–wh] relative CPs than high proficiency L2 learners as the complexity of relative clause structures increases in speaking and writing?

Hypothesis 4: L2 learners produce a greater proportion of [–wh] DO relative CPs than [–wh] SUB relative CPs, was evidenced in both speaking and writing situations.

Hypothesis 5: L2 learners produce a greater proportion of [–wh] IO relative CPs than [–wh] DO relative CPs, was rejected in both speaking and writing situations.

Hypothesis 6: L2 learners produce a greater proportion of [–wh] IO relative CPs

than [–wh] SUB relative CPs, was accepted only in the speaking situation, but not in the writing situation. The next chapter discusses the result of the hypothesis testing.

CHAPTER 5

5.1 Discussion

In this dissertation, I assumed that the relative CP structure is universally available, and what learners acquire are relevant morphosyntactic features of the relative CP. I further proposed that learners acquire the optional feature [+wh] after acquiring the default feature [–wh], and HPL is expected to produce a greater proportion of [+wh] relative CPs than LPL.

The data suggest that LPL as well as HPL overcomes the difficulty of mapping [+wh], especially for the SUB relative CP. The data, however, did not support the claim for the DO and IO relative CPs. It appeared that both [–wh] and [+wh] were randomly selected. Nevertheless, the statistical result for Hypothesis 4 shows that learners as a whole more often selected the optional feature [+wh] for the SUB relative CP than for the DO relative CP (p = .0245 in speaking and p = .0205 in writing). Thus the data indicate that the optional feature [+wh] was more prevalent for the SUB relative CP, whereas both the default feature [–wh] and the optional feature [+wh] were selected in a similar proportion for the DO and IO relative CPs.

The present chapter includes an in-depth discussion of the research questions and detailed interpretation of the statistical outcomes. The relevant findings discussed here are based on the six hypotheses proposed in the previous chapter and upon the spoken and written data of Table 2 in Chapter 3, repeated here:

Hypothesis 1: High proficiency L2 learners produce a greater proportion of [+wh] SUB relative CPs than low proficiency L2 learners in speaking and writing situations.

Hypothesis 2: High proficiency L2 learners produce a greater proportion of [+wh] DO relative CPs than low proficiency L2 learners in speaking and writing situations.

Hypothesis 3: High proficiency L2 learners produce a greater proportion of [+wh] IO relative CPs than low proficiency L2 learners in speaking and writing situations.

Hypothesis 4: L2 learners produce a greater proportion of [–wh] DO relative CPs than [–wh] SUB relative CPs in speaking and writing situations.

Hypothesis 5: L2 learners produce a greater proportion of [–wh] IO relative CPs than [–wh] DO relative CPs in speaking and writing situations.

Hypothesis 6: L2 learners produce a greater proportion of [–wh] IO relative CPs than [–wh] SUB relative CPs in speaking and writing situations.

According to Table 20, for the SUB relative CP, both LPL and HPL produced a greater proportion of [+wh] SUB relative CPs in both the speaking and writing situations.

First, in the speaking situation, LPL produced 17 SUB relative CPs out of 96 possible responses: only 1 [–wh] and 16 [+wh]. This means that LPL predominantly preferred the [+wh] relative CP in speaking (p = .000). HPL produced 48 SUB relative CPs out of 80 possible responses: 16 [–wh] and 32 [+wh]. That is, for HPL, [+wh] was chosen twice as often as [–wh] (p = .029). Both groups most often chose the optional feature [+wh] in speaking.

Table 20: Numbers of spoken and written relative CPs (repeated)

Spoken	SUB		DO		IO	
	[–wh]	[+wh]	[–wh]	[+wh]	[–wh]	[+wh]
LPL (96)[a]	1	16	12	13	12	10
HPL (80)[b]	16	32	26	25	26	17
Written	**SUB**		**DO**		**IO**	
	[–wh]	[+wh]	[–wh]	[+wh]	[–wh]	[+wh]
LPL (96)	9	18	16	15	6	15
HPL (80)	19	43	25	28	23	23

[a] 48 LPLs x 2 tokens = 96 tokens [b] 40 HPLs x 2 tokens = 80 tokens

Also with the spoken data, when the two groups were compared in order to understand whether HPL produced more [+wh] SUB relative CPs than LPL in speaking, an additional statistical test was employed. Although the difference of occurrence between LPL and HPL shows a significant value of p = .023, it was, however, LPL not HPL that produced a greater proportion of SUB relative CPs with the optional feature [+wh]. The probability of occurrence of [+wh] for LPL was more significant (p = .000) than for HPL (p = .029). This result, thus, did not sustain Hypothesis 1 in speaking, but the opposite of Hypothesis 1; that is H_2: LPL produced a greater proportion of [+wh] SUB relative CPs in speaking.

For the SUB relative CP in writing, both LPL and HPL also produced a greater proportion of [+wh] relative CPs than [–wh] relative CPs. LPL produced 27 SUB relative CPs out of 96 possible responses: 9 [–wh] and 18 [+wh]. [+wh] was twice more frequently selected than [–wh], and the result is statistically supported (p =

0.002). On the other hand, HPL produced 62 SUB relative CPs out of 80 possible responses: 19 [–wh] and 43 [+wh]. The SUB relative CP with the optional feature [+wh] was selected at a significantly greater proportion than that with the default feature [–wh] ($p = .003$).

The two groups were compared again in order to understand whether HPL produced more [+wh] SUB relative CPs in writing than LPL. An additional statistical test was carried out, but the result shows that there was no significant difference of occurrence between the two groups in writing ($p = .178$). Both LPL and HPL employed a similar proportion of [+wh] SUB relative CPs in writing. This result did not sustain Hypothesis 1 for the SUB relative CP in writing.

Although Hypothesis 1, which served as a basis for investigating the difference of occurrence between the groups, was not supported, learners as a whole, nevertheless, significantly preferred the optional feature [+wh] to the default feature [–wh] for the SUB relative CP.

According to the initial observation of the data of SUB relative CPs in Table 20, contrary to the theoretical expectation that morphosyntactic features develop from [–] to [+], LPL seemed to be in the process of acquiring the default feature [–wh], after having already acquired the optional feature [+wh]. LPL produced only 1 [–wh] in speaking and 9 [–wh] in writing. When monitoring was possible in writing, they seemed to revert to the default feature [–wh]. The numbers of the optional feature

[+wh] are greater than those of the default feature [–wh]: 16 [+wh] in speaking and 18 [+wh] in writing. It appears as if LPL had acquired the optional feature [+wh] prior to the default feature [–wh] in both speaking and writing.

On the other hand, HPL more actively used the optional feature [+wh]: 32 [+wh] in speaking and 43 [+wh] in writing. The numbers of [–wh] are 16 [–wh] in speaking and 19 [–wh] in writing. Along with LPL, HPL also seemed to be in the process of acquiring the default feature [–wh], while the optional feature [+wh] had already been acquired.

Careful observation of the data of SUB relative CPs for LPL reveals that LPL, however, seemed not to have fully acquired the optional feature [+wh], as did HPL. If this is true, the data can be interpreted as saying that while HPL acquired the optional feature [+wh] and actively used it for the SUB relative CP in both the speaking and writing situations, LPL could use the optional feature only in the speaking situation, but reverted to the default feature in the writing situation.

In the developmental perspective view, it then appears that the default feature [–wh] emerges prior to the optional feature [+wh], and the optional feature is more actively used first in speaking and then in writing. This may be the reason that HPL produced a greater proportion of [+wh] SUB relative CPs in writing than in speaking and that LPL had to revert to the default feature [–wh] in writing.

This assumption corresponds to the anticipated mapping of the relevant features

from [–] to [+], as claimed in Rizzi (1990: 57) that "[–wh] C^o is obligatory, while [+wh] C^o is optional." Furthermore, the features tend to be initially employed in speaking and later in writing, at least producing the SUB relative CP for the learners in this study. Data from other types of relative CPs needed to be examined.

For the DO relative CP, LPL and HPL behaved quite similarly in both the speaking and writing situations. In the speaking situation, LPL produced 25 DO relative CPs out of 96 possible responses: 12 [–wh] and 13 [+wh]. They seemed randomly to select a DO relative CP (p = 1.000). HPL produced 51 DO relative CPs out of 80 possible responses: 26 [–wh] and 25 [+wh]. They also randomly selected a DO relative CP (p = 1.000).

The result was similar in the writing situation. Both LPL (p = 1.000) and HPL (p = .784) seemed randomly to select a DO relative CP. The statistical result did not support Hypothesis 2 that HPL produces a greater proportion of [+wh] DO relative CPs than LPL in both the speaking and writing situations.

Table 21: Numbers of relative CPs of all learners

Spoken	SUB		DO		IO	
	[–wh]	[+wh]	[–wh]	[+wh]	[–wh]	[+wh]
LPL (96)[a] + HPL (80)[b]	17	48	38	38	38	27
Written	**SUB**		**DO**		**IO**	
	[–wh]	[+wh]	[–wh]	[+wh]	[–wh]	[+wh]
LPL (96) + HPL (80)	28	61	41	43	29	38

[a] 96 tokens = 48 LPLs x 2 tokens [b] 80 tokens = 40 HPLs x 2 tokens

The crucial point seems to arise when LPL and HPL are combined as a single group. Table 21 presents the number of relative CPs for the learners as a whole.

According to Table 21, when the structure was relatively less complex, as in the SUB relative CP, learners relied extensively on the optional feature [+wh]: 17 [–wh] vs. 48 [+wh] in speaking (p = .000) and 28 [–wh] vs. 61 [+wh] in writing (p = .001). For more complex structures such as the DO relative CP, the default feature [–wh] was, however, chosen as frequently as the optional feature [+wh]: 38 [–wh] vs. 38 [+wh] in speaking (p = 1.000) and 41 [–wh] vs. 43 [+wh] in writing (p = .913). Comparison of the data of SUB and DO relative CPs may provide useful insight into understanding the developmental pattern of morphosyntactic features of the relative CP for at least one group of learners.

To understand this developmental pattern, two inferences can be proposed, as illustrated in Table 22.

Table 22: Comparison of two inferences for SUB and DO relative CPs

	SUB		DO	
	[–wh]	[+wh]	[–wh]	[+wh]
First inference ([–wh] → [+wh])	less	more	more	less
Second inference ([+wh] → [–wh])	more	less	less	more

In Table 22, the first inference is based on the previously mentioned claim in Rizzi (1990: 57) that "[–wh] C^{o} is obligatory, while [+wh] C^{o} is optional." That is, at the

present stage, learners have acquired the default feature [–wh] prior to the optional feature [+wh]. They then extensively select the optional feature [+wh] for the SUB relative CP, and gradually use it for the DO relative CP where they have already been actively opting for the default feature [–wh].

In other words, learners employ the optional feature [+wh] starting from less complex relative CPs such as the SUB relative CP to more complex relative CPs such as the DO relative CP, perhaps because the [+wh] DO relative CP is too complex for learners to use so that they revert to the default feature [–wh].

If the first inference is correct, the data should reveal as an outcome that the difference of occurrence of [–wh] is greater for the DO relative CP than for the SUB relative CP. The difference of occurrence of [+wh] should be greater, therefore, for the SUB relative CP than for the DO relative CP.

The second inference is that the optional feature [+wh] is acquired prior to the default feature [–wh]. That is, at this stage, learners have initially acquired the optional feature [+wh] prior to the default feature [–wh], which they select extensively for the SUB relative CP and gradually use for the DO relative CP. If this inference were correct, the acquired data should show that the difference of occurrence of [+wh] is greater for the DO relative CP than for the SUB relative CP, and the difference of occurrence of [–wh] is greater for the SUB relative CP than for DO relative CP. The developmental pattern under this inference, however, seems to be contradictory to the

theoretical assumption in Rizzi (1990).

Based on the testing of Hypothesis 4, the difference of occurrence of [–wh] was significant. Learners produced a significantly greater proportion of relative CPs with the default feature [–wh] for the DO relative CP than for the SUB relative CP in both speaking (p = .0245) and writing (p = .0201). This result lends support for the first inference since it correctly proposes that the default feature [–wh] is more prevalent for the DO relative CP than for the SUB relative CP. Thus the first inference that learners acquire [–wh] prior to [+wh] can be a logical explanation for the development of morphosyntactic features of the relative CP.

Figure 8: Numbers of SUB and DO relative CPs for all learners

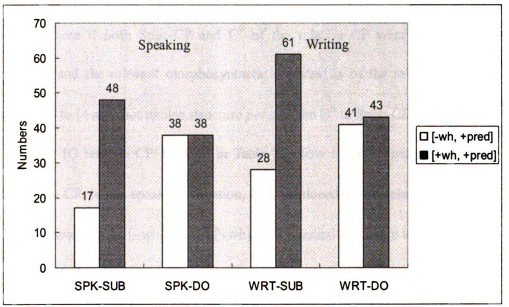


Figure 8 illustrates different numbers of [–wh] and [+wh] for the SUB relative CP and the DO relative CP for all learners. In both speaking and writing, the numbers of [–wh] increase from the SUB relative CP to the DO relative CP, while the numbers of [+wh] decrease, presumably as the complexity of the relative CP structures increases.

The differences of preference for selecting the two features [–wh] and [+wh] solidly support the Dissociation Hypothesis, since the acquisition of the default feature [–wh] precedes before the acquisition of the optional feature [+wh]: The default feature [–wh] of C^{o} of the relative CP is acquired before the optional feature [+wh].

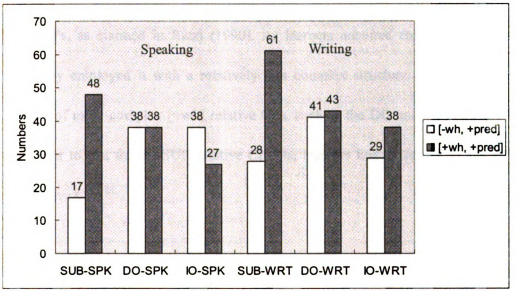
The MT hypothesis (Vainikka and Young-Scholten 1994, 1996a, 1996b) and the Structural Minimality hypothesis (Bhatt and Hancin-Bhatt 2002) assume that different aspects of the CP projections emerge at different stages. This might have been supported here if both Spec-CP and C^{o} of the relative CP were present from the beginning, and the relevant morphosyntactic features, as of the relative CP, develop from [–wh] to [+wh], not phrase structure *per se* from C^{o} to Spec-CP.

For the IO relative CP, the data in Table 20 show a similar pattern to that of the DO relative CP. In the speaking situation, LPL produced 22 IO relative CPs out of 96 possible responses: 12 [–wh] and 10 [+wh]. LPL seemed randomly to select a [–wh] or [+wh] IO relative CP (p = .832). HPL produced 43 IO relative CPs out of 80 possible responses: 26 [–wh] and 17 [+wh]. HPL also appeared randomly to select a [–wh] or [+wh] IO relative CP (p = .222).

For the IO relative CP in writing, LPL produced 21 IO relative CPs out of 96 possible responses: 6 [–wh] and 15 [+wh]. HPL produced 46 IO relative CPs out of 80 possible responses: 23 [–wh] and 23 [+wh]. Both groups seemed randomly to select a [–wh] or [+wh] IO relative CP in writing (p = .078 for LPL and p = 1.000 for HPL).

Figure 9 illustrates different numbers of [–wh] and [+wh] for the SUB, DO, and IO relative CPs for all learners.

Figure 9: Numbers of SUB, DO, and IO relative CPs of all learners



In both speaking and writing, the numbers of [–wh] increase from the SUB relative CP to the DO relative CP, presumably as the complexity of the relative CP structures increases. In speaking, however, the numbers of [–wh] from the DO relative CP to the IO relative CP remain constant, while the number of [+wh] decreases. In

writing, the pattern is the same as in speaking, but the decrease of [–wh, +pred] IO relative CPs in writing is an unexpected outcome.

Regarding Hypotheses 1 to 3, although the result was not statistically significant for DO and IO relative CPs, it does seem that learners started to acquire the default feature [–wh] prior to acquiring the optional feature [+wh],[35] thus supporting the Dissociation Hypothesis. If more data had been collected, the phenomenon might have been more apparent.

The default feature [–wh] seemed to be obligatory for producing all types of relative CPs, as claimed in Rizzi (1990). As learners acquired the optional feature [+wh], they employed it with a relatively less complex structure. Perhaps learners' command of more complex [+wh] relative CPs, such as the DO and IO relative CPs, was inferior to that for the SUB relative CP. The learners had to default to [–wh] for those relative CPs.[36]

5.1.1 Korean Teachers and Native Speakers

An interesting question is whether learners' productions of relative CP was similar to that of native speakers or that of Korean teachers, whose English proficiency is supposed to be mature in the former case and more advanced in the latter. For this

[35] According to Kayne (1994), any relative CP with [+wh, +pred] involves a derivation with more steps than one with [–wh, +pred]. Because such structural or derivational complexity affects language production, McDaniel et al. (1998) report that [+wh, +pred] relative CPs were produced less than [–wh, +wh] for their L1 child and adult participants.

[36] Fragman (1997) reports that the SUB relative clause posed little or no difficulty for English-speaking L1 children as compared to English-speaking adults in her experiment.

reason, a further experiment was carried out to collect the data from eight English native speakers who were traveling or residing in Korea, and from six Korean English teachers who were teaching at the university where the participants of this study were attending.

Table 23 shows the numbers of spoken and written relative CPs collected from these groups, using the elicitation method also used for the learners in this study.

Table 23: Numbers of relative CPs from Korean teachers and native speakers

Spoken	SUB		DO		IO	
	[–wh]	[+wh]	[–wh]	[+wh]	[–wh]	[+wh]
KT (12)[a]	2	8	4	5	3	7
NS (16)[b]	3	1	10	3	4	3
Written	**SUB**		**DO**		**IO**	
	[–wh]	[+wh]	[–wh]	[+wh]	[–wh]	[+wh]
KT (12)	2	9	1	9	0	10
NS (16)[37]	4	2	6	7	3	5

[a] 12 = 6 participants x 2 of each type of relative CP

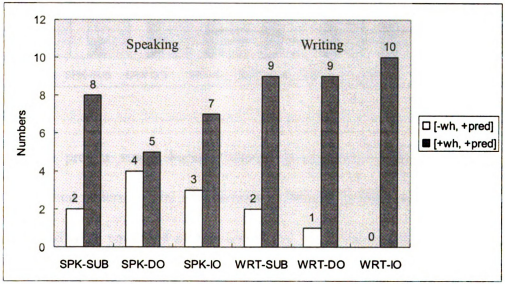
[b] 16 = 8 participants x 2 of each type of relative CP

The data reveal that Korean teachers generally depended heavily on the optional feature [+wh], and the tendency was greater in writing than in speaking. As shown in Figure 10, for example, they produced 4 [–wh] and 5 [+wh] for the DO relative CP in

[37] The reason for low frequencies of relative CPs from the native speakers is that they almost categorically avoided the relative CP in their responses to the questions by using strategies such as the *-ing* infinitive for the SUB relative CP and the preposition *with* or relative pronoun *where* in place of the IO relative CP (e.g., *the office with the man writing a letter to it* or *the office where the man is writing a letter* instead of *the office that the man is writing a letter to*).

speaking. In writing, however, they produced only 1 [–wh] and 9 [+wh] for the same relative CP. In the case of the IO relative CP, the tendency was greater. Teachers produced no [–wh] and 10 [+wh] IO relative CPs in writing,[38] while they produced 3 [–wh] and 7 [+wh] IO relative CPs in speaking.

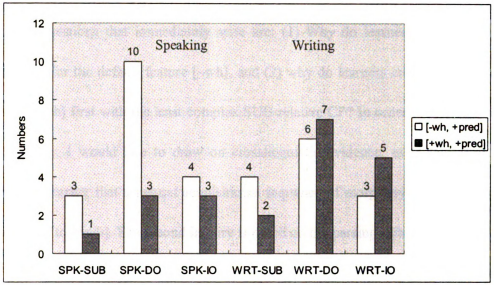
Figure 10: Numbers of relative CPs of Korean teachers



On the other hand, native speakers relied more on [–wh] for every type of relative CP, except for the DO and IO relative CPs in writing. As shown in Figure 11, the default feature [–wh] was more frequently employed by native speakers in speaking and at a similar frequency in writing.

[38] Nearly half of the [+wh] IO relative CPs were pied-piped constructions. Native speakers did not produce any of these. In the L1 production data of McDaniel et al. (1998), the pied-piped construction was never produced by any subject, including the youngest children and adults.

Figure 11: Numbers of relative CPs of native speakers



In the present study, learners seemed generally to follow their teachers' developmental pattern for the morphosyntactic features [–wh] and [+wh]. Although learners had some command of both [–wh] and [+wh], they ultimately favored the latter as their L2 proficiency improved and structure complexity increased. The case was the opposite for the native speakers, who typically used the default feature [–wh] for their relative CPs. This result supports, at least weakly, the Dissociation Hypothesis in the sense that the development of morphosyntactic features seems independent of phrase structure development. Furthermore, such a development seems only possible with a fully available relative CP structure, which lends support the FT/FA hypothesis relative to the MT hypothesis.

5.1.2 Interpretation of the Findings

Two questions that immediately arise are: (1) Why do learners start off with a preference for the default feature [–wh], and (2) why do learners employ the optional feature [+wh] first with the least complex SUB relative CP? In order to respond to the first inquiry, I would like to draw on crosslinguistic evidence, even though it was mentioned earlier that a natural acquisitional sequence of morphosyntactic features is from [–wh] to [+wh]. The second inquiry is based on the parsing effect.

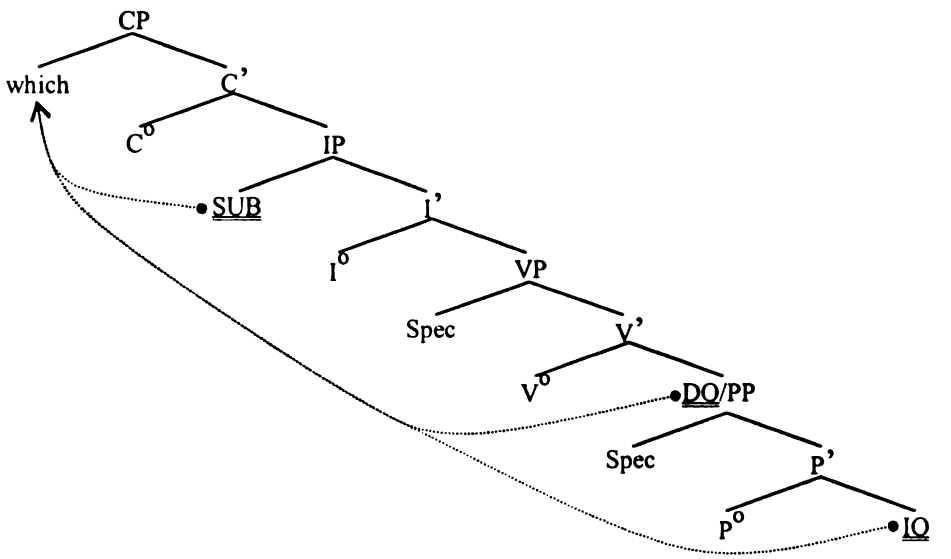
Learners' initial preference for the default feature [–wh] may have been due to the transfer of the same L1 feature along with L1 CP phrase structure. Korean has the [–wh] affixal complementizer *-nun*, which is used to introduce a relative clause. In theory, a null operator is generated in IP and raises into Spec-CP in the sentence-initial position while allowing C^{o} to obtain the overt affixal complementizer *-nun* (Kang 1988) (See Figure 7 for the tree diagram in p.39). This is the only way of forming a relative CP in Korean. Neither [+wh] C^{o}, which allows a lexical item with the matching features to move to Spec-CP, nor the lexical item corresponding to *which* possessing [+wh], which can be attracted to Spec-CP, is missing in Korean. In other words, Korean does not allow the relative CP to have the optional feature [+wh], but only the default feature [–wh]. Hence, learners may draw on their existing knowledge for producing a [–wh] relative CP in Spec-CP in English. This can be the underlyingly, basic type of relative CP in the two languages, as claimed in Kaplan and Whitman

(1995: 30) that "Korean and English differ on the surface only in that in Korean the relative complementizer is affixal, requiring the verb to raise to C^0 in order to support the affixal."

Secondly, a parsing effect may influence learners first of all in the early selection of the optional feature [+wh] with the least complex SUB relative CP: "As the head of a relative clause is farther from the position to which it relates (both in linear distance and in depth), the parser has a harder time keeping track of the association" (McKee and McDaniel 2001: 114). McKee and McDaniel (2001: 139), reporting from an experiment of the production and grammatical judgment of resumptive pronouns in English relative clauses, claim, however, that rather than depth, "extractability of the variable had the biggest effect for the adult group, whereas distance played a larger role than extractability for the young group" (also, cf. Hawkins 1987; Dickey 1996). Since learners start to acquire an L2 with full-fledged L1 phrase structure, as assumed under the Dissociation Hypothesis, extractability may play a greater role for the adult learners.

Extractability depends on the position at which the variable sits away from the operator in Spec-CP. Figure 12 illustrates the positions at which the variables locate in the SUB, DO, and IO relative CPs.

Figure 12: Extracting positions in the SUB, DO, and IO relative CPs



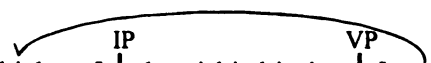
Since learners produced a greater proportion of [+wh] SUB relative CPs than [+wh] DO relative CPs, there seems to be some kind of condition imposed on the extractability of the direct object, an extractability that is not imposed on the subject. Close observation of the tree diagram in Figure 12 reveals that in order to be extracted to Spec-CP and to leave behind its copy (Munn 1994), a variable must cross at least one phrasal boundary.[39]

(13)	a.	the cat [$_{CP}$ which]	[ ] is eating a fish	(Move)
	b.	the cat [$_{CP}$ which cat]	[which cat] is eating a fish	(Copy)
	c.	the cat [$_{CP}$ which]	[cat] is eating a fish	(Delete 1)
	d.	the cat [$_{CP}$ which]	[ ] is eating a fish	(Delete 2)

[39] The boundaries can be referred to phases stated in Chomsky (1998, 1999, 2001), where the phases are CP and *v*P. The CP phase includes the subject position, and the *v*P phase includes the complement of the verb. Syntactic operations proceed "phase by phase" (Chomsky 1998: 20).

In (13a) in order for *which* to be extracted from the SUB position to Spec-CP, it must cross the IP boundary. Afterwards, [Make OP] supervises the processes of Copy and Deletion over the IP boundary. If a learner produces an ungrammatical sentence **I see the cat which it is eating a fish*, it can be interpreted as a failure for [Make OP] to properly supervise the production of a relative CP. A reason for failure can be attributed to some kind of condition imposed on the IP boundary. However, learners as a whole in this study seemed to have no great difficulty crossing the IP boundary for the [+wh] SUB relative CP: 17 [–wh] vs. 48 [+wh] in speaking and 28 [–wh] vs. 61 [+wh] in writing. The case was similar for the teacher group: 2 [–wh] vs. 8 [+wh] in speaking and 2 [–wh] vs. 9 [+wh] in writing.

A direct object, however, must cross two phrasal boundaries (VP and IP) from its direct object position to Spec-CP as in (14).



			IP	VP	
(14)	a.	the cat [$_{CP}$ which]	the girl is kissing	[ ]	(Move)
	b.	the cat [$_{CP}$ which cat]	the girl is kissing	[which cat]	(Copy)
	c.	the cat [$_{CP}$ which]	the girl is kissing	[cat]	(Delete 1)
	d.	the cat [$_{CP}$ which]	the girl is kissing	[ ]	(Delete 2)

In (14) *which* is extracted across the IP and VP boundaries, and [Make OP] has to guide the processes of Copy and Deletion at a greater distance than the SUB relative CP. Perhaps for this reason, learners in this study produced a lower proportion of [+wh] DO relative CPs than [+wh] SUB relative CPs. While they produced [+wh]

SUB relative CPs 73% of the time in speaking and 69% of the time in writing, they produced [+wh] DO relative CPs only 50% of the time in speaking and 51% of the time in writing.

The teacher group, however, produced [+wh] DO relative CPs 56% of the time in speaking and 90% of the time in writing. It seems that extractability across an additional phrasal boundary, as in the DO relative CP, may reasonably be considered a more advanced skill. Teachers were proficient enough to extract *which* from the direct object position in both speaking and writing. When the L2 proficiency is inferior, as for learners, the extraction of *which* across two phrasal boundaries is challenging. Therefore, in dealing with the DO relative CP, perhaps learners draw back to simpler, alternative constructions to avoid a more challenging extraction and thus, those learners settled for a DO relative CP with the default feature [–wh] in both the speaking and writing situations.

Van Riemsdijk and Williams (1981) and Law (1998) point out that the prepositional phrase (PP) contains a Spec as an escape hatch that can also be a boundary[40] along with the IP and VP boundaries. The indirect object *which* as in (15) requires the burden of extraction out of its position across PP, VP, and IP boundaries to Spec-CP.

[40] This assumption is based on the Phase Impenetrability Condition (Chomsky 1998: 22), according to which movement must escape through every edge of successive phases because "A'-movement targets the edge of every phase."

		IP	VP	PP	
(15)	a.	the cat [$_{CP}$ which]	the girl is giving	a fish	to [ ] (Move)
	b.	the cat [$_{CP}$ which cat]	the girl is giving	a fish	to [which cat] (Copy)
	c.	the cat [$_{CP}$ which]	the girl is giving	a fish	to [cat] (Delete 1)
	d.	the cat [$_{CP}$ which]	the girl is giving	a fish	to [ ] (Delete 2)

Extraction across three phrasal boundaries in an IO relative CP may reasonably be assumed to require more effort – thus, more difficulty – than crossing two phrasal boundaries as in the DO relative CP in (14), or one phrasal boundary as in the SUB relative CP in (13). [Make OP] distantly guides the processes of Copy and Deletion of the operator in Spec-CP and the variable in the base.

Learners produced [+wh] IO relative CPs 42% of the time in speaking and 58% of the time in writing. Teachers, on the other hand, produced [+wh] IO relative CPs 70% of the time in speaking and 100% of the time in writing. It is apparent that the [+wh] relative CP seems to be more employed in writing, when sufficient time is allowed for monitoring and when L2 proficiency improves.

Contrary to the Preference Principle (Chomsky 1992), which favors no lexical item in Spec-CP (that is, [–wh]), learners as well as teachers seemed to prefer the lexical item *which* in Spec-CP (that is, [+wh]). Combining the numbers of all relative CPs, in the speaking situation, teachers, for example, produced [+wh] relative CPs 69% of the time and native speakers did so 25% of the time. In the writing situation, the differences for teachers occur 90% of the time and for native speakers 52% of the

time.

The data reveal that while phrase structure is fully available for L2 acquisition, the morphosyntactic features of the relative CP develop independently. This development, however, does not seem directed toward the target language norm, at least for one group of learners in this study. The relative CP with the complementizer *that*, a feature of [–wh], is more prevalent among native speakers in ordinary conversational situations (Adamson 1992; Guy and Bayley 1995; Morpeth 1998; Bayley 1999).[41,42] One reason for selecting the [+wh] relative CP may be that this perhaps more properly meets the pragmatic and social requirements that Korean learners and teachers consider necessary.

Furthermore, the results from the testing of the hypotheses correspond to the Noun Phrase Accessibility Hierarchy (NPAH), which predicts the acquisition of SUB before DO and DO before IO relative clauses. Hypothesis 4, which states that learners produce a greater proportion of [–wh] DO relative CPs than [–wh] SUB relative CPs in both speaking and writing situations, is significantly supported (p = .0245 and p = .0201). That is, the SUB relative CP precedes the DO relative CP in the acquisition

[41] Based on an interference-based account of the restrictive relative CPs with *which* and *that*, Bundrick (1989) argues that the [+wh] relative CP is used referentially and the [–wh] relative CP attributively. That is, native speakers, as well as learners who are at a low level of proficiency tend to describe the object using arbitrary or attributive reference in that context, while more advanced learners tend to describe the same object using definite or particular references in the same context. Bundrick concludes that the two relative CPs denote systematically different use conditions and consequent implicatures.

[42] Interestingly, according to Kroch and Small (1978), cited in Adamson (1992), a clause with the complementizer (that is, [–wh]) is closer to logical form than a clause without the complementizer (that is, [+wh]) because the complementizer makes clear the relationship of the embedded clause to the main clause. Their argument implies that native speakers and low proficiency learners use the more logical form of the relative CP than more advanced learners.

of [+wh]. This kind of relationship, in which learners produced a greater proportion of [–wh] IO relative CPs than [–wh] DO relative CPs in speaking and writing, was not apparent for Hypothesis 5. Hypothesis 6 holds that learners produce a greater proportion of [–wh] IO relative CPs than [–wh] SUB relative CPs. This hypothesis was supported only in speaking (p = .0175), but not in writing (p = .332).

A general finding with respect to the NPAH is that learners acquire the relative CP with the optional feature [+wh] in the order SUB > DO > IO relative CPs and that the dependence on the default feature [–wh] observes the reverse order; that is, in the order SUB < DO < IO relative CPs. That is, the frequency of [+wh] is greater for the SUB relative CP than for the DO relative CP and, in turn, the DO relative CP than the IO relative CP. The statistical result, however, shows a significant difference only between the SUB relative CP and the DO/IO relative CPs. That is, the order anticipated by the NPAH was substantiated by the SUB and the DO/IO relative CPs. Had sufficient data been gathered, the difference of occurrence between the DO and IO relative CPs could have been more significant. The next section discusses a variety of hybrid relative clauses evidenced during the production of intended relative CPs.

5.1.3 Other Findings

The types of relative CPs discussed up to now were not all that existed in the elicited data. There was evidence of some relative clause equivalents to the SUB, DO,

and IO relative CPs, as shown in (16).

(16) a. *the kangaroo _ is eating a fish has... (SUB relative CP)
b. *the glove which the lady is wearing *it* has... (DO relative CP)
c. *the teddy bear which the girl is giving a ball _ has... (IO relative CP)

The sentences in (16) are unacceptable in the prescriptive grammar, but may reflect intermediate stages in the acquisition of grammatical counterparts. Investigating such ungrammatical, interim relative clauses may reveal unknown properties of UG in human language. (16a) is called a presentational amalgam construction (PAC), in which a missing element in CP is either a *which* in Spec-CP or the complementizer *that* in C° (Lambrecht 1988; Radford 1990). It is, however, likely the latter is missing because learners who can produce a [+wh] relative CP can supposedly produce a [–wh] relative CP. So, a PAC is a failure to produce a [–wh] SUB relative CP with due to the immature CP (Rizzi 1990).

From the CHILDES database, Diessel and Tomasello (2000; also, cf. 1999, 2001) conclude that an average of 92.5% of the earliest relative clauses occurs in constructions that express a single proposition like the PAC. Evidently, the learners at the PAC stage were generally unable to construct a grammatical DO or IO relative CP due to the same immature CP as the SUB relative CP. They often chose an alternative rule present in their grammar, such as conjoining the main clause and the subordinate relative clause to produce a conjoined clause such as *The kangaroo is looking at the*

camera and it has the blue star for *The kangaroo that is looking at the camera has the blue star*, as discussed in Solan and Roeper (1978), Tavakolian (1981), and Lebeaux (1990). In this case, the conjunction *and* behaves as an operator that conjoins two clauses (Munn 1992). PACs were more frequently evidenced with LPL.[43]

(16b) contains a resumptive pronoun, which HPL produced more frequently than LPL. Such a construction is often reported in many studies of L2 relative clause acquisition (Tarallo and Myhill 1983; Wolfe-Quintero 1992; Hamilton 1994, 1995; Tsimpli 1997). With a resumptive pronoun, the sentence was not grammatically perfect, but the pronoun marginally improved the meaning of the relative clause.

A standard assumption about the structure of relative clauses with resumptive pronouns is that the dependency relation is headed by the base-generated overt *wh*-operator and tailed by a base-generated resumptive pronoun as a variable at post-LF (Safir 1986) or at PF (Chomsky 1982; Cinque 1990; Suñer 1998). As the variable, however, situated a step deeper from the operator, the resumptive pronoun improved the interpretability of information on the dependency relation, while sacrificing grammaticality. Ariel (1999) reports that this phenomenon is more regularly found in interlanguage grammars. Suñer (1998) views this strategy of formulating resumptive relative clauses as an attempt to abide by economy conditions. This strategy may

[43] According to some earlier studies in L1 acquisition (Menyuk 1969; Flynn and Lust 1980), children may place *what* in the relative CP at a stage after the PAC, as in *I got everything what you got* and *I see a dog what's white* (Menyuk 1969: 96).

achieve the same interpretation by employing a more economical and minimalist means because movement is costly as the dependency relation extends across different phases. McKee and McDaniel (2001) claim that resumptive pronouns should be ruled out by the grammar but sanctioned by the parser because of their distance from the head. The use of resumptive pronouns is an option provided by the grammar as a saving device captured in the Spell-Out account (also, cf. Bernstein et al. 1998; McDaniel and Cowart 1999). Resumptive pronouns are often used in Korean relative clauses (Lee 1984).

The hybrid type of IO relative CP in (16c) with a missing preposition (NoPrep) occurred for almost all incidents of IO relative CPs, in which the absence of the stranded preposition destroyed grammaticality.[44] Nonetheless, while the NoPrep construction is still marginal, it is not totally unacceptable. It is usable, interpretable, and structurally more minimal than its grammatical counterparts, but not strictly convergent as Chomsky (1998: 8) proposes. The NoPrep construction typically appears in the grammar of learners whose English prepositions are not strong enough to locally license a variable (French 1984; Bardovi-Harlig 1987; Cowper 1987; Wolfe-Quintero 1992; Klein 1993, 1995, 2001; Klein and Casco 1999; Bergh and Seppänen 2000).

According to the Preposition Incorporation account of UG, prepositional strength

[44] Part of the explanation about the NoPrep construction has been borrowed from Lee (2004).

matures.[45] While it matures, the stranded preposition is incorporated into the verb and licenses the variable, not locally but remotely (Baker 1985). This remoteness causes marginality (Rizzi 1990; Chomsky 1995; Dekydtspotter et al. 1998; Law 1998). See (17).

(17) *the teddy bear which the girl is [giving+to] a ball ( ) ~~which~~

In (17) the preposition *to* is incorporated into the verb and remotely licenses the variable, causing the marginality. It is a last resort operation at PF for the preposition to license the variable by a way of being absorbed into the verb. Until the licensing strength of the preposition matures, emergence of the NoPrep construction in (16c) should precede its grammatical counterparts with the stranded preposition in (18a) and the pied-piped preposition[46] in (18b).

(18) a. the teddy bear which the girl is giving a ball to has...
b. the teddy bear to which the girl is giving a ball has...

The stage of the NoPrep construction seems to survive for rather a long period of time because even most HPL and teachers produced it regularly and frequently. The construction might have been fossilized for the majority of learners and teachers who

[45] For the Maturation Hypothesis, refer to Borer and Wexler (1987), Newport (1990), Wexler (1991), Guasti and Shlonsky (1995), Klein (1995, 2001), Lakshmanan (2000), Guasti (2002), among many.
[46] McDaniel et al. (1996: 473) propose that "the pied-piped construction is not a natural option in English, but rather a prescriptive artifact probably picked up during schooling." Radford (1997) calls it a dialect that L1 learners acquire as an L2.

participated in the experiment.

In addition to the UG account just mentioned, a transfer account is also viable to explain the missing preposition in learners' relative CP.[47] Note that English and only a few other languages are known to require a strong preposition in the relative clause, while the majority of the languages do not (Bardovi-Harlig 1987). If so, we can then assume that weak prepositions are typologically more pervasive among languages in general. In that case, learners whose L1 allows prepositions to be incorporated into the verb, as in (17), may transfer the knowledge to an L2 such as English. For example, in Korean, prepositions are required in declaratives, as in (19a) and (20a), but dropped or absent from IO relative clauses, as in (19b) and (20b).

(19) a. *John-un* *kal-ro* *cake-ul* *jaletta*
John-NOM knife-with cake-ACC cut-past
'John cut the cake with a knife'

b. *ikesi* *John-i* *cake-ul* *jal-n* *kal-ita*
this John-TOP cake-ACC cut-C^{o} knife-is
'This is the knife that John cut the cake with'

(20) a. *Tom-un* *sofa-ese* *jan-ta*
Tom-NOM sofa-on sleeping-present
'Tom is sleeping on the sofa'

b. *Tom-i* *ja-nun* *sofa* *elmani*
Tom-TOP sleep-ing sofa how-much
'How much is the sofa that Tom is sleeping on?'

[47] Flanigan (1995) finds in her study that transfer from L1 appears not to be significant as a strategy by the young ESL learners she tested for comprehension and production of different relative clauses. On the contrary, White (1987), Flynn (1989a, 1989b), and Wolfe-Quintero (1992) indicate L1 transfer interfering with the patterns of acquisition of relative clauses in English.

(19a) is a declarative with the preposition *-ro* (*with*) and (20a) is a declarative with the preposition with *-ese* (*on*). These prepositions are both absolutely obligatory, suggesting that Korean prepositions are undoubtedly strong in declaratives. But in (19b) and (20b), the situation is the opposite, so that, in both relative clauses a preposition is impermissible.[48] If so, it was then not so uncommon or unnatural for the learners to produce the NoPrep constructions in (16c) when the derivation actually tried to guide them to produce the preposition stranded construction.[49]

The pied-piped construction as in (21) occurred only in writing: HPL (5 out of 23 [+wh] IO relative CPs) and LPL (3 out of 15 [+wh] IO relative CPs). Teachers also produced the construction. It did not happen in the speaking situation.

(21) the teddy bear to which the girl is giving a ball...

This phenomenon is a clue that the stylistic component in learners' language system can override the production system and select a less economical alternative. This implies that the overriding can be activated when sufficient time is allowed, as in the writing situation.

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[48] Actually, Korean prepositions in declaratives are not always strong. They can be deleted if the information on the preposition is pragmatically recoverable or trivial. For example, in *He lives in the country*, the preposition can be deleted in Korean if it is recoverable from the context. On the contrary, in *He lives near the country*, the information from the preposition is pragmatically unanticipated so that the preposition is required both in declaratives and IO relative clauses in Korean.

[49] For a detailed analysis on the structures and movement of relative clauses in Korean, refer to Tagashira (1972) and Kaplan and Whitman (1995).

5.2 Significance and Implications

This research substantiates the hypothesis that learners acquire the default feature [–wh] of the relative CP prior to the optional feature [+wh], while the entire L1 phrase structure, assumedly, forms the base of L2 acquisition. This finding offers a different perspective to early L2 studies that have failed to view L2 syntax acquisition in terms of dissociating the acquisition of relative clause structure and the acquisition of its morphosyntactic features.

The dissociation of the relative CP structure and its relevant features further resolves the controversial issue of the availability of L1 grammar for L2 acquisition. This supports the FT/FA hypothesis (Schwartz and Sprouse 1994, 1996) that the entirety of L1 grammar is available for L2 acquisition from the early stages and rejects the MT hypothesis (Vainikka and Young-Scholten 1994, 1996a) that L2 functional categories gradually mature. The morphosyntactic features mature independently, and they may be fossilized at a steady state (Hawkins and Chan 1997; Lardiere 1998a, 1998b; Haznedar 2003). Ultimately, the studies on L2 syntax acquisition should distinguish the acquisition of phrase structure from the acquisition of its morphosyntactic features.

The acquisition of the optional feature [+wh] observes the acquisitional order anticipated by the Noun Phrase Accessibility Hierarchy. This feature was most apparently employed for the SUB relative CP and then the DO/IO relative CPs. On the

same ground, the dependence on the default feature [–wh] was more noticeable in the order of the IO relative CP, DO relative CP, and SUB relative CP. It fits the reverse order anticipated by the NPAH. If a sufficient amount of data had been collected, the order between the DO and IO relative CPs could have been statistically significant in this experiment.

Judging from the results of the data from teachers, it appears that the optional feature [+wh] dominates in all types of relative CPs as L2 proficiency increases. This seems to be true for both speaking and writing situations. Native speakers, however, predominantly favor the default feature [–wh] for all relative CPs.

This research provides pedagogic implications. It shows evidence that the way in which the Korean curriculum is used to teach L2 learners of English is, in some aspects, different from the way in which native speakers use English. Learners as well as teachers tend to employ a more complex type of structure as proficiency or monitoring time increases, which was not evident from the data derived from native speakers.

Nakamori (2002) shows that the hierarchical teaching method that respects developmental sequences was a great help to Japanese learners learning English relative clauses in high school, although new kinds of developmental errors occurred such as the resumptive relative clause. A similar finding is also reported in Kupferberg and Olshtain (1996).

The relative clause structures in English and Korean may be syntactically similar,

but they are quite distinct in terms of word order. Unlike the relative clause in English, the relative clause in Korean occurs frequently in ordinary speaking and writing (Crain and Thornton 1998). Korean learners of English need to master the usage of English relative clause structure in order to precisely produce intended meaning in English (cf. Bundrick 1989). The Korean curriculum, therefore, should dedicate a substantial portion of grammar lessons to this goal. Without learning the relative clause structure, learners can only produce a series of declaratives using conjunctions like *and*.

Typically, English teachers in Korea do not seem to distinguish between *which* and *that*. All teachers and learners whom I asked about the difference between the two lexical items responded that the two can be interchangeably used or that *that* is simpler because it works for both humans and non-humans, while *which* works only for non-humans. None of those questioned knew that learners tend to produce a *that*-relative CP at a low proficiency level and gradually shift to produce a *which*-relative CP as their proficiency increases.

5.3 Chapter Summary

Chapter 5 discussed the results of hypothesis testing, reported hybrid relative clauses, and pointed out the significance and implications of this dissertation. An in-depth discussion was presented interpreting the statistical outcomes of the hypotheses. The results lend support to the view that the emergence of relative CP projections

precedes the acquisition of specific features [–wh] and [+wh] associated with them. This, in turn, seems to support the view that syntactic phrase structure is available as a block for feature checking between Spec-CP and C^{o}, which further supports the Dissociation Hypothesis and the FT/FA hypothesis.

It seems apparent that learners first acquired the default feature [–wh], and then the optional feature [+wh] for all types of relative CPs. As learners, however, acquired the optional feature [+wh], they started to employ that feature with relatively less complex structures such as the SUB relative CP. Furthermore, the same feature was more actively selected when learners had sufficient monitoring time to produce the intended relative CP. Such a phenomenon was conspicuous in more proficient learners such as teachers. That is, as L2 proficiency increased, the use of the optional feature [+wh] was more recurrent. Also, as the monitoring time increased, the use of the feature was also more noticeable. The optional feature [+wh], however, decreased as the complexity of the relative CP increased, and learners depended more on the default feature [–wh]. It seems that learners' command of more complex relative CPs had probably not been developed enough, and they had to rely on the default feature [–wh], in order to produce those complex relative CP structures.

In addition, the outcomes were compared to data collected from six Korean English teachers who taught at the same university that the learners attended, and data from eight native speakers of English who were traveling or residing in Korea. The

purpose of the comparison was to further understand whether the general developmental pattern of morphosyntactic features of the relative CP is on a par with that of the English produced by teachers or whether it was on a par with that of the English produced by native speakers. The result showed that learners were on a developmental pattern similar to that of the teachers, who heavily depended on employing the optional feature [+wh]. Native speakers made use of the default feature [–wh] in most cases.

Two inquiries were raised: (1) Why did the L2 learners start off with [–wh] and tend to use it as a default over [+wh] and (2) why did the L2 learners employ [+wh] first with the least complex SUB relative CP? For the first inquiry, a cross-linguistic explanation was discussed. Learners might have transferred the previously existing [–wh] of the relative CP in L1 Korean and used it for early L2 production of English relative CPs.

For the second inquiry, a parsing effect was discussed to explain the early selection of the optional feature [+wh] with the least complex SUB relative CP. Extractability of *which* to cross the IP, VP, or PP boundaries from its base position to Spec-CP may play a great role in the production of successful relative CPs. Extraction across all of the three phrasal boundaries in an IO relative CP may reasonably be assumed to be more difficult than crossing IP and VP boundaries as in the DO relative CP or just IP boundary as in the SUB relative CP in (13). When extraction fails, learners seem to

revert to the default feature [–wh].

Unlike native speakers preferring the default feature [–wh], learners and teachers preferred a more restricted OP with the optional feature [+wh], possibly due to the pragmatic and social requirements that they felt were necessary.

The pied-piped construction was evidenced only in the writing situation. As would be expected, the teacher group used this construction the most out of the three groups: learners, teachers, and native speakers.

The result also corresponded to the Noun Phrase Accessibility Hierarchy to a certain extent. Learners seem to acquire the [+wh] relative CP in the order of SUB > DO > IO, and the use of the [–wh] relative CP seems to be apparent in the order of SUB < DO < IO. The statistical results, however, show only the significant difference between the SUB relative CP and the DO/IO relative CPs. More data may have to be collected to improve the statistical significance.

Next, ungrammatical but acceptable relative clauses that learners constructed in the process of producing the intended relative CPs were reported: the presentational amalgam construction (Lambrecht 1988) with a missing default feature [–wh] for the SUB relative CP, the relative clause with a resumptive pronoun in the base for the DO relative CP, and the IO relative clauses with a missing preposition (NoPrep). The NoPrep construction was prevalent because, as is common in Korean, the prepositional strength is not mature enough to license the variable or IO relative clauses with a

missing preposition (Bardovi-Harlig 1987; Wexler 1991).

In conclusion, it is proposed here in agreement with the Dissociation Hypothesis (Lardiere 1998a, 1998b; Haznedar 2003) that future studies on the acquisition of L2 syntax should distinguish the acquisition of phrase structure from the acquisition of relevant morphosyntactic features. One pedagogic finding of the current study is that learners acquire the English produced by their teachers, although the quality of the teachers' English was very different from that of the English of native speakers.

CHAPTER 6

6.1 Summary and Conclusions

Although previous studies have dealt with the CPs of questions and declaratives, none have examined the productions of relative CPs, despite the fact that studying the relative CP could potentially contribute crucial empirical information about the development of morphosyntactic features [+wh] and [–wh]. This study, therefore, investigated this issue from the theoretical perspective of both the Full Transfer/Full Access (FT/FA) hypothesis and the Dissociation Hypothesis, looking specifically at whether both of the morphosyntactic features mentioned above are available at the same time or whether they develop in succession, one after the other, and whether the result would abide by the Noun Phrase Accessibility Hierarchy (NPAH) to a certain degree.

Two extensive research questions were proposed: (1) Do high proficiency L2 learners produce a greater proportion of [+wh] SUB, DO, and IO relative CPs in speaking and writing situations than low proficiency L2 learners? (2) Do low proficiency L2 learners, in speaking and writing situations, produce a greater proportion of [–wh] relative CPs than high proficiency L2 learners as the complexity of relative clause structures increases? By way of a cross-sectional elicited production method with a picture-description instrument, the data were collected from Korean university students majoring or minoring in English. A nonparametric statistical

technique was selected for data analysis because the data were counted by the number of occurrence.

Although some of the specific hypotheses have not been significantly supported, the FT/FA hypothesis and the Dissociation Hypothesis seemed, in general, to be better models to account for the early state of L2 CP acquisition and the development of relevant morphosyntactic features. Learners did not seem to acquire the two features simultaneously, but the default feature [–wh] was initially prevalent and the optional feature [+wh] emerged afterwards, starting from a less complex structure such as the SUB relative CP. The optional feature [+wh], which was acquired later, was more often selected when the structure was not complex and also when learners had sufficient time for monitoring, as in the writing situation.

Additional data were collected from Korean teachers of English, and the data show that these teachers predominantly preferred the optional feature [+wh] across-the-board. This tendency was even greater in the writing situation.

As the Dissociation Hypothesis leads us to expect, the development of morphosyntactic features was independent of syntax. Korean learners and teachers initially preferred a less restricted OP (that is, [–wh]) at earlier stages, but preferred a more restricted OP (that is, [+wh]) at a later stage of L2 acquisition. This finding is contrary to the Preference Principle (Chomsky 1992), preferring no lexical item in Spec-CP. The development of these features was from [–wh] at earlier stages to [–wh]

and [+wh] mixed at the intermediate stage, and finally, to [+wh] at the end stage.

The data collected from native speakers, however, showed that, in general, they seemed to dispense with the optional feature [+wh]. They seemed to be satisfied with the default feature [–wh] across-the-board.

A cross-linguistic reason was given for learners starting off with the default feature [–wh]. This study suggests that learners might have relied on their existing knowledge of [–wh] in their L1 Korean, which does not have [+wh].

Sociolinguistically, learners might have felt a necessity to produce stylistic productions for pragmatic and social requirements.

Extractability based on the parsing explanation was also provided to explain why learners first used the optional feature [+wh] with the less complex SUB relative CP. The contention is that such usage was because the SUB relative CP involves the least number of phrasal boundaries for a variable to be extracted to Spec-CP from its base position within IP.

It was found that the results also corresponded to the NPAH to a certain extent. Learners employed the optional feature [+wh] in the order of SUB > DO > IO relative CPs.[50]

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[50] The same order as anticipated by the NPAH is also reported in Gass (1979, 1980), Chiang (1980), Adjémian and Liceras (1984), Hyltenstam (1984), Hansen (1986), Prideaux and Baker (1986), Eckman et al. (1988), Eckman et al. (1989), Doughty (1991), Shin and Lee (1992), Hamilton (1994, 1995), Kim and Shin (1994), Lee, Y.-K. (1994), Sadighi (1994), Aarts and Schils (1995), Tanaka (1996), Aviar (1997), Ito (1997, 2001), Tezel (1998), Park (2000), O'Grady (2001), Kim (2001), Nakamori (2002), among others.

This study cited some hybrid relative clauses that learners produced in the course of constructing the intended relative CPs. These hybrid relative clauses contained: (1) no element in CP for the SUB relative CP, (2) resumptive DO relative CP, and (3) the NoPrep IO relative CP.

Lastly, the dissociation between phrase structure and morphosyntactic features in L2 acquisition was pointed out. Pedagogically, it was emphasized that the quality of the teachers' English was very different from that of the English of native speakers. The next two sections discuss the shortcomings of the research and suggest the need for future research.

6.2 Shortcomings

There are theoretical, experimental, and statistical shortcomings which were not so crucial to the overall result, but might have influenced it in a particular sense.

Theoretically, this research has focused only on the relative CP, in order to prove whether morphosyntactic features in the functional category are available as a whole or whether they develop in succession. The result revealed that morphosyntactic features gradually mature. The findings, however, are too premature to be generalized for other functional categories such as IP or DP (determiner phrase) or the lexical category VP. In other words, it is not apparent whether the viability of the FT/FA hypothesis and the Dissociation Hypothesis resulted from the relative CP provides a

broad view in respect to other syntactic categories.

A conceptual shortcoming existed in the determination of how early was *early* in the acquisition of relative CPs. The view was adopted that the early stage was not necessarily found at the very onset of language acquisition, but at the beginning stage of a certain phrase structure like the relative CP or the subjunctive mood, which can occur only in more proficient learners.

Experimentally, some crucial evidence occurred from the data by teachers and native speakers, but they were not included as research groups for testing the research hypotheses. If the data by HPL are combined with the data by teachers, the difference of occurrence between LPL and HPL may be more statistically significant for all relative CPs.

The participants were limited to Korean university adults who had learned English in the academic setting. If the research, however, had instead limited the participants to Korean adults who had learned English in a natural setting or had resided for a long period of time in an English speaking country, the result could have been different from the one reported in this dissertation and would probably have been similar to that of native speakers

Another experimental shortcoming lies in the classification of participants, who were categorized either into LPL or HPL. Such groupings lacked a clearer picture of the developmental pattern than the classification into, for example, LPL, MID, and

HPL, where HPL and LPL may unveil a distinctive contrast. Such a study would have required a much larger amount of data.

Furthermore, the data collection time for each participant was, on average, no more than 15 minutes, though some participants sometimes felt that the time was too long. The less proficient participants, especially, often seemed to be exhausted at the end of the experiment, perhaps due to nervousness. This nervousness may, to some degree, have introduced variability in the experiment, with respect to the validity of the data. The time constraint was one of the main reasons that the researcher decided not to study a more complex type of relative CP, such as the genitive relative CP.[51]

The ideal ratio for distractors and target tokens is 3:1 in cognitive sciences (Schmitt, personal communication) but, after a pilot study, it was adjusted to 2:1 due to the time constraint and learners' exhaustion.

Two research administrators collected the data. Therefore, there might have been some unknown individual differences in the way of presenting the lead-in statements, although the administrators attempted to treat each participant in exactly the same way. It would have been nearly impossible to collect all the data if only one research

[51] In essence, the genitive relative CP with *whose* possessing [+wh] may be developed out of the [–wh] relative CP. McDaniel et al. (2002: 55) argue with data from their English-speaking children that "*that's* is either an alternate form of *whose* or a contraction of the complementizer *that* with the genitive marker *s*." McDaniel et al. further claim that "*that's* was not a speech error" (ibid: 57) and that "American English is changing in the direction of allowing the *that's* constructions ... *That's* is just an alternative form of *whose* for adults." (ibid: 68). Seppänen and Kjellmer (1995: 397) also argue for early appearances of the [–wh] genitive relative CP with *that's*, as indicated in their journal title called '*The dog that's leg was run over*'. Seppänen and Kjellmer say that "the genitive *that's* is a neologism which seems to be comparatively recent in all varieties of the language but which shows signs of spreading in present-day usage."

administrator had had to deal with about 100 participants.

In the statistical analysis, the researcher decided to accept the NoPrep construction as a successful IO relative CP because most IO relative CPs were produced with a missing preposition. The data, otherwise, would not have contained a sufficient number of IO relative CPs.

6.3 Future Research

In order to overcome the shortcomings mentioned in the previous section, a number of needs for future research are suggested to further strengthen the findings from this dissertation. Studies on the morphosyntactic features of other syntactic categories like IP, DP, VP, etc. must be carried out to generalize the claim of the Dissociation Hypothesis. The same experiment conducted with Korean adults who have immigrated or been residing in an English speaking country may reveal a comparative acquisitional view of the development of morphosyntactic features mentioned in this dissertation.

Another interesting study would be to compare how learners behave in terms of the production of morphosyntactic features of the relative CP when they converse with native vs. non-native speakers, with the more educated vs. the less educated, in more or less formal circumstances (cf. Pavesi 1986), etc. If data are collected from a sufficiently large number of participants at a variety of proficiency levels, a

comprehensive layout of the developmental pattern might be captured. It may be, however, possible only with a paper-and-pencil test, computerized test, survey, etc. to collect a massive amount of data. Interviews or longitudinal studies would be impractical for such a study.

Japanese learners of English would also be a good target group to focus on in investigating the order of acquisition between [–wh] and [+wh], because, unlike the Korean language, Japanese does not have an overt complementizer. If the findings in this dissertation are, in fact, universally applicable, it can be assumed that Japanese learners would also start off with the default feature [–wh] before the optional feature [+wh] in the production of relative CPs.

Yet another interesting study may be to properly document the types of alternative constructions that native speakers employ instead of producing the complex DO, IO, or genitive relative CPs.[52] Those alternative constructions may be the structural norms that learners should have targeted, instead of relative CPs.

Findings here can perhaps be pedagogically implemented to help learners better comprehend prescriptive grammar and practical grammar.

[52] McDaniel et al. (1998) report that their L1 subjects who avoided the relativized genitives often used grammatical alternatives instead of being reduced to blubbering ungrammatical strings.

APPENDIX A: Sentence Combination Test

다음의 두 문장을 각각 연결하세요. 반드시 *that, which, ø*만 사용하고, 절대 빈 칸을 두지 말고, 다른 단어로 교체하지 마세요. 반드시 문장 A를 먼저 쓰고 문장 B를 문장 A에 연결시키세요. 절대 *and* 혹은 *but*은 사용하지 마세요.

1. (A) The apples are expensive. (B) The apples grow in the mountain.

---

2. (A) The computer is made in Korea. (B) The computer works very well.

---

3. (A) Everyone likes the dog. (B) The dog can swim very well.

---

4. (A) Paul hates the car. (B) The car often breaks down.

---

5. (A) The cat chases the bird. (B) Tom owns the cat.

---

6. (A) The songs are very sad. (B) The old man wrote the songs.

---

7. (A) Paul kissed the ring. (B) His wife bought the ring.

---

8. (A) The man kicked the car. (B) His neighbor parked the car.

---

9. (A) The office opens at 11:00. (B) Jack wrote the office an urgent e-mail.

---

10. (A) The cat hates dogs. (B) His sister gave the cat a fish.

---

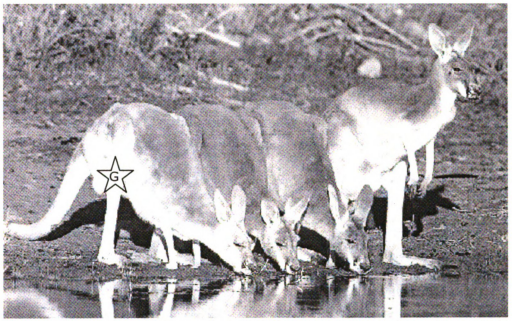
11. (A) The lady cleaned the room. (B) The boy sent the room a bottle of wine.

---

12. (A) Mr. Lee owns the company. (B) SONY offers the company a new deal.

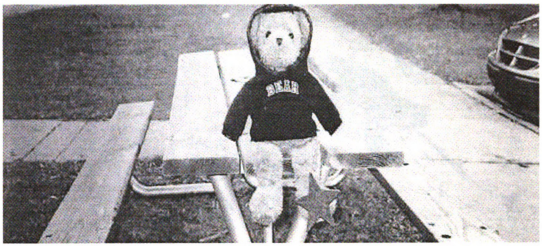
APPENDIX B: Sample Pictures

A Sample Picture for SUB relative CP in the Speaking Situation (SUB 1)



A Sample Picture for DO relative CP in the Speaking Situation (DO 1)

A Sample Picture for IO relative CP in the Speaking Situation (IO 1)



A Sample Picture for SUB relative CP in the Writing Situation (SUB 1)

A Sample Picture for DO relative CP in the Writing Situation (DO 1)

A Sample Picture for IO relative CP in the Writing Situation (IO 1)

APPENDIX C: Lead-In Statements for Spoken Data

Lead-In Statement

1. Listen carefully to the words and sentences as I describe the pictures.
2. When you answer, use my words. Don't use different words.
3. I have never seen the pictures, so when you say like "right one, left one, red one, top picture, or bottom picture," I will not understand.
4. You will see a set of 14 pictures.
5. When I ask you a question, please be sure you understand the question exactly!
6. These are very easy. So don't worry!

Page 1

1. There are 2 pictures – each with a clock, right?
2. In one picture, a clock is on the sofa. And the sofa has a yellow star.
3. In another picture, a clock is on the table. And the table has a green star.
4. Now tell me. Where is the yellow (or green) star in the picture?

Page 2

1. There are two persons in the picture.
2. What would you call the person with the blue star?
   Is she a lady, a young lady, a young woman, or a woman?
3. How about the person with the yellow star?
   Lady, young lady, young woman, or woman?

Page 3 (SUB 1)

1. Two pictures of kangaroos.
2. In one picture, a kangaroo is drinking water with his friends. A kangaroo is drinking water with his friends. And it has a green star.
3. In another picture, a kangaroo is looking at the camera man. A kangaroo is looking at the camera man. And the kangaroo has a blue star, right?
4. Then, look at the blue and green stars. Which kangaroo has the blue star?

Page 4

1. In one picture, a girl has a butterfly in her hands. And the butterfly has a yellow star.
2. In another picture, a teacher is talking with a student, right?
3. Then, tell me in a full sentence. What is the girl doing in the first picture?
4. Again, the question is: What is the girl doing in the first picture?
5. One more. What is the teacher doing in the second picture?

Page 5 (DO 1)

1. I believe there are two pictures – each with a lady, right?
2. Now look at the gloves. They both have gloves, right?
3. In one picture, a lady is carrying gloves and a handbag. A lady is holding gloves and a handbag, and there's a blue star on the gloves.
4. In another picture, a lady is wearing gloves. A lady is wearing gloves. And her gloves have a red star, right?
5. Look at the blue and red stars. Tell me. Which gloves have the red star?

Page 6

1. Two men, right? A Korean man and a western man.
2. Now listen. They both speak very good English.
3. If you choose, who do you want to be your English teacher?
4. The Korean man or the western man?

Page 7

1. OK. In one picture, a Korean man is smiling and reading a book. And the book has a yellow star.
2. In another picture, a black man is looking for a book in the library. And the book has a blue star.
3. Now listen. What is the Korean man doing in the picture?
4. One more. See the black man? Which star does his book have?

Page 8 (IO 1)

1. Two pictures of teddy bears.
2. In the first picture, a teddy bear is sitting on the picnic table. A teddy bear is sitting on the picnic table. And it has a purple star.
3. In the next picture, a girl is giving a ball to the teddy bear. A girl is giving a ball to the teddy bear. And it has a blue star, correct?
4. Look at the blue and purple stars. Which teddy bear has the blue star?

Page 9

1. A picture of a lady.
2. OK. Tell me. Where is the red star in the picture?
3. One more. Where is the yellow star?

Page 10

1. This time, two ladies.
2. The same question as before. They both speak very good English.
3. If you choose, who do you want to be your English teacher?
4. The Korean person or the western person?

Page 11 (SUB 2)

1. Now monkeys!
2. In one picture, a mother monkey is carrying a baby monkey on her back. A mother monkey is carrying a baby monkey on her back. And the baby monkey has a yellow star.
3. In another picture, a baby monkey is holding on to a tree. A baby monkey is holding on to a tree. And it has a white star, right?
4. Look at the yellow and white stars. Which monkey has the white star?

Page 12 (DO 2)

1. Now potatoes!
2. In one picture, a lady is happily thinking of a potato. A lady is happily thinking of a potato. And that potato has a green star, right?
3. In another picture, a lady is holding a potato. A lady is holding a potato. And it has a red star, right?
4. Look at the green and red stars. Which potato has the red star?

Page 13

1. There is a telephone in one picture. And there is a swing set in another picture, right?
2. Say in full sentence. Where is the yellow star exactly? Where is the red star?

Page 14 (IO 2)

1. These are very interesting pictures.
2. In one picture, a man is writing an e-mail to his company. A man is writing an e-mail to his company. And a blue star is on the company, right?
3. In another picture, a man is writing a letter to the company. A man is writing a letter to the company. And the company has a red star, right?
4. Did you understand!!
5. Look at the red and blue stars. Which company has the red star?

APPENDIX D: Lead-In Statements for Written Data

Lead-In Statement

Page 1

1. There are 2 pictures, right?
2. In one picture, there are a teddy bear and a chair. And the teddy bear is sitting on the chair. And the chair has a yellow star.
3. In another picture, a dog is sitting on a picnic table. And the dog has a green star.
4. Question 1: Where is the green star in the picture?

Page 2

1. There are two persons in the picture.
2. Question 2: The person with the red star? Do you think she is a lady, a young lady, a young woman, or a woman? Please write in a full sentence.

Page 3 (SUB 1)

1. Two pictures with bears, right?
2. In one picture, three bears are looking at the camera. Three bears are looking at the camera. And the bear in the middle has a green star.
3. In another picture, a bear is catching a fish. A bear is catching a fish. And that bear has a red star, right?
4. Look at the green and red stars. Question 3: Which bear has the red star?

Page 4

1. In one picture, a girl has long green hair and there is a red star.
2. In another picture, a woman has long gray hair and there is a blue star, right?
3. Question 4: Which star is on the green hair?
   Please write your answer in a full sentence!

Page 5 (DO1)

1. Two pictures--each with a lady, right? Look at the cups, please.
2. In one picture, a lady is kissing a cup. A lady is kissing a cup. And the cup has a yellow star.
3. In another picture, a lady is holding a cup. A lady is holding a cup. And it has a white star, right?
4. Question 5: Which cup has the yellow star?

Page 6

1. Two men, right? A western man and a Korean man.
2. Question 6: Who do you want to be your English teacher?
3. The Korean man or the western man? Write your answer in a sentence.

Page 7

1. There are 7 lipsticks in the picture, right? Listen, remember, and write.
2. The blue star is on the lipstick on the very left.
3. The red star is on the third lipstick from the right. Understand?
4. Question 7: Where is the red star?

Page 8 (IO 1)

1. In one picture, some children and a teddy bear are on the picnic table. Some children and a teddy bear are on the picnic table. The teddy bear has a green star, right?
2. In another picture, a girl is offering a candy to the teddy bear. A girl is offering a candy to the teddy bear. And it has a yellow star. Is that correct?
3. Question 8: Which teddy bear has the yellow star? Write it in sentence.

Page 9

1. A picture of a lady.
2. OK. Write in full sentence. Question 9: Where is the blue star?

Page 10

1. Two ladies, right? A Korean and a Canadian.
2. Question 10: Who do you want to be your English teacher?
3. The Korean or the Canadian? Write it in sentence.

Page 11 (SUB 2)

1. Glasses!
2. In one picture, an eye doctor is adjusting her patient's glasses. An eye doctor is adjusting her customer's glasses. So she is helping her. And the glasses have a red star, right?
3. In another picture, a woman is wearing glasses. A woman is wearing glasses. And the glasses have a green star, right?
4. Look at the red and green stars. Question 11: Which glasses have the green star?

Page 12 (DO 2)

1. Pictures of two women.
2. In one picture, a woman is taking a bath. And she is tilting a wine glass and pouring red wine into the water. The wine glass has a red star.
3. In another picture, a woman is lifting a wine glass. A woman is lifting a wine glass. And the glass has a blue star, right?
4. Look at the red and blue stars. Question 12: Which glass has the blue star?

Page 13

1. A young man.
2. Question 13: Where is the yellow star in the picture?

Page 14 (IO 2)

1. Two men!
2. In one picture, a man is working in his office. A man is working in his office. And the office has a red star.
3. In another picture, a man is writing a report to his office. A man is writing a report to

his office. And the office has a blue star, right? The small picture is the office.

4. Look at the red and blue stars. Question 14: Which office has the blue star?

APPENDIX E: Consent Forms

Dissertation Title: DEVELOPMENT OF MORPHOSYNTACTIC FEATURES OF THE COMPLEMENTIZER PHRASE IN L2 RELATIVE CLAUSES OF KOREAN LEARNERS

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By signing this consent form, you are agreeing to participate in a study. The study is for the above secondary investigator's doctoral dissertation from the Department of Linguistics and Languages at Michigan State University in the US. A purpose of the study will be to collect and analyze English spoken and written production data by Korean college learners who are currently taking a major course in the English department at Kangwon National University in Korea.

You will be asked to describe and write about some pictures. Your voice has to be recorded into a cassette tape for later transcription. Signing this consent form also allows the investigator to record your voice. The experiment will take no more than 20 minutes.

Notice that participation is voluntary; you may choose NOT to participate at all, or you may refuse to answer certain questions or may discontinue the experiment at any time without penalty or loss of benefits to which you are otherwise entitled. *We assure that your privacy and confidentiality will be protected to the maximum extent allowable by law.*

Your signature above indicates your voluntary agreement to participate in this study and to record your voice.

Signature_____

If you have any questions about this study, please contact the investigator. If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact – anonymously, if you wish – Peter Vasilenko, M.D., Chair of the University Committee on Research Involving Human Subjects (UCRIHS) by phone: 001-1-517-355-2180, fax: 001-1-517-432-4503, e-mail: ucrihs@msu.edu, or regular mail: 202 Olds Hall, East Lansing, MI 48824.

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By signing this consent form, you are agreeing to participate in a study. The study is for the above secondary investigator's doctoral dissertation from the Department of Linguistics and Languages at Michigan State University in the US. It will be to collect and analyze English spoken and written production data by Korean college learners who are currently taking a major course in the English department at Kangwon National University in Korea, English teachers, and native English speakers.

You will be asked to describe and write about some pictures. Your voice has to be recorded into a cassette tape for later transcription. Signing this consent form also allows the investigator to record your voice. The experiment will take no more than 20 minutes.

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Signature:_____ Date: _____

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