Introduction: Advances in Korean psycholinguistics

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The basics of Korean

This chapter briefly introduces some characteristics of the Korean language and its writing system and gives an overview of the chapters treated in this volume on Korean psycholinguistics.

Korean has the eleventh largest group of speakers in the world, approximately 73 million. Its dialects are mutually intelligible except for the Jeju (Cheyjwu) Island dialect, which retains old forms but is becoming endangered.

Korean has an SOV (subject-object-verb) head-final feature like Japanese and unlike Chinese or English. Sentence types such as declarative, interrogative, imperative and promissive are distinguished by means of markers that appear at the end. Nominals take case markers or postpositions after them and verb stems take tense, modal, speech level, and S-type markers linearly in that order after them agglutinatively. It is similar to Japanese in this respect. Honorification is a pragmatically motivated syntactic agreement phenomenon to show the speaker's respect for the subject. Speech levels mark the speaker's various attitudes toward the hearer including (non-)politeness. Honorification in Korean is a little more grammatical than in Japanese. The three East-Asian languages are topic-prominent, with object deletion via topicality unlike pro-drop languages such as Romance languages, although Korean and Japanese have subject or nominative markers as well as topic markers, unlike Chinese. Korean and Japanese have SOV in both matrix and embedded Ss unlike German. Korean and Japanese have a null argument in a relative clause, which is coreferential with the head noun on the right hand side of the clause. Korean has a pre-nominal modifying relator *-nun* (varied by tense) between the nonfinite verbal element and the head noun, but Japanese lacks such a relator. The Japanese relative clause ending is finite in form, creating a garden path at least in the written language (C. Lee, 1989). However, such a pre-nominal relative clause ending must have a different intonation from its matrix clause ending and Japanese psycholinguists have begun to pay attention to such prosodic differences (Nakyama and Lewis, 2001).

Apart from its syntactic characteristics, Korean is an abundant source of generative phonological study. Its sound patterns of combination and rich alternation are revealing for generative and subsequently optimality-theoretical investigations. Those theoretically plausible but perceptually difficult sound changes, as in *kwuk* (soup) + *mul* (water) => [kuŋmul], syllable-final neutralizations, and contractions in Korean position the language as one of the most difficult languages to understand and learn. Intonation and other prosodic features are closely interwoven with topic-focus information structure and other dynamic meaning aspects in contexts.

Korean uniquely has several thousands of sound symbolic lexical items of the native stock. These use contrasts in vowels and consonants. Bright vowels (a, ɛ, o) depict brightness and dark vowels (e, u, ə) darkness, as in *pollok* (protruded and round – small scale) vs. *pwullwuk* (protruded and round – large scale). Plain, aspirate and tense consonants connote slowness, crispness, and tightness/swiftness, respectively, as in *ping-ping*, *phing-phing*, and *pping-pping* (round and round – slowly, crisply, and swiftly), respectively. The contrasts in vowels and consonants are often adroitly combined to maximize the effect of vividness-vitality and expressiveness of sound symbolic expressions in daily conversations and literary works, which defy appropriate translation (see Sohn [1999] for examples, S.-C. Chang [1996] for a basic introduction to Korean, and C. Lee, H. Chae and J. Yoon [in preparation] for a full reference grammar of Korean).

Hangul, the Korean alphabet, has fourteen consonant and ten vowel (twenty-four in total) single letters and Korean adopts a morphophonemic (underlying phonological) spelling system. Although analyzed CVCs are grouped in syllables, Hangul is crucially different from the Japanese syllabary system, where a syllable composed of CV phonetically is one letter and not analyzed into C and V. Chinese used to have a separate ideographic system but the current simplified system is said to be not so ideographic. Before Hangul, Korean had developed a system of borrowing Chinese characters to represent Korean glossograms (meaning) and phonograms (sound) from the Three Kingdom Period and later Japanese developed its phonograms out of Chinese characters for its current syllabary. Hangul was invented in 1443 by King Sejong and is regarded as a unique distinctive 'feature'-based writing system (Sampson, 1985). Hangul and texts written in it have served as rich sources of perceptual and readability experiments. For romanizing Korean, there are three widely used systems: McCune-Reischauer, Yale, and the Ministry of Culture and Tourism system based on the previous Ministry of Education system from 2000. Linguists consistently use the Yale romanization system and we adopt this system for all acquisition and some processing papers in this book.

Part I Language acquisition

The first part of the acquisition section treats first language acquisition and the second part, second language acquisition. The first seventeen chapters are concerned with the acquisition of syntactic, semantic and pragmatic structures of Korean as a first language. The eighteenth chapter treats prosody acquisition and the chapters from 19 to 25 are about the acquisition of Korean as a second language, the acquisition of English as a second language by Koreans, and bilingual interaction. The last two chapters, somewhat different in orientation, are about ontological concept versus shape in word learning and Korean sign language.

The first three chapters focus on argument structure and argument markers. The first chapter is particularly about topic focus information structure as well. The second one concentrates on transitivity in a discourse-functional approach. The third chapter explores acquisition of structural case markers, nominative and accusative.

The first chapter by C. Lee and S. W. Cho examines the acquisition of the topic marker *-(n)un* and the subject (nominative) marker *-i/-ka* in Korean. The authors are concerned with how Korean children use or drop these markers on noun phrases, as well as how they produce or omit the entire topic/subject phrases over time. They show the developmental sequence of the stages: null topic/subject → bare nominal topic/subject → marker-marked topic/subject. It is argued that Korean involves both pragmatic and grammatical constraints on the emergence of null and overt topic and subject nominals and markers. Once these markers emerge, the developmental sequences for the functions of the topic and subject markers appear to be: contrastive topic → global/thematic topic and focus subject → neutral subject. These two sequences are surprising in terms of markedness because they proceed from 'marked' to 'unmarked', unlike the sequence null → bare → marked for the marking and use of topic and subject noun phrases.

Chapter 2 by P. Clancy presents an overview of recent research and issues in the acquisition of Korean argument structure and transitivity, emphasizing a discourse-functional theoretical approach. First, prior research from various theoretical perspectives is outlined, focusing on the nature and developmental origins of grammatical categories, the frequency and centrality of verbs, and the acquisition of a generalized transitive construction in Korean and other languages. Next, based on data from two Korean children and their caregivers, a discourse-functional model of argument structure is proposed, in which transitivity is understood as a multi-level phenomenon, with discourse (the discourse factors motivating use of particular surface forms to encode arguments) and lexicon (verb meaning and use) serving to shape the clause-level grammar of argument structure. To master transitivity, it is claimed, Korean children must acquire a set of

ARGUMENT STRUCTURE REALIZATIONS (ASRs) appropriate to particular types of discourse contexts. Special attention is given to the most common transitive ASR featuring at least one overt argument. This ASR, which reflects Preferred Argument Structure (Du Bois, 1987), usually consists of an elliptical, first or second person, human A argument (subject) that encodes given information and a lexical, third person, inanimate O argument (direct object) that may encode new information. Korean children, it is proposed, never experience a discourse-free transitive construction; instead, they acquire transitive ASRs along with the semantic and discourse-pragmatic patterns that motivate them. The chapter closes with a number of suggestions for future research.

Chapter 3 by G. No shows how children acquire the Korean case-marking system by examining their systematic utterances from longitudinal and experimental data. First, she considers the developmental sequence in the acquisition of case particles, focusing on the opposition of nominative and accusative case particles. Second, she investigates principles that guide children to bootstrap what the case particles indicate. She explores what strategies children employ to learn the case-marking system in production and comprehension. Third, she examines from the experimental data how a child indicates grammatical functions of each noun phrase in the early stages of language development, especially in cases where case particles and word order show a contradiction for grammatical roles. Finally, she accounts for the mechanisms for acquiring grammatical functions and describes their developmental changes. It is suggested that Korean children rely on word order prior to case particles for grammatical functions, not because of the fixed word order strategy, but because of the input to which they are exposed.

The next three chapters from 4 to 6 discuss verbs: a "verb bias" in verbs vs. nouns in acquisition, placement of the verb, and locative verbs. Chapter 7 on semantics and cognition is also about verbs, at least in the Korean data.

Chapter 4 by Y.-K. Chang-Song and S. Pae examines whether the perceptual saliency of verbs in the Korean language leads to a "verb bias" in early Korean acquisition. Careful comparisons of seven studies suggest that the criterion for verbs, data-gathering methods and small sample size used in the studies seem to be responsible for the conflicting results. In particular, when the number of total words children produced was very small and the criteria for verbs differed, the noun versus verb ratio changed significantly. However, if the actual numbers of nouns and verbs each child acquired from different studies were counted, the results supported a noun bias. Korean children actually acquired more nouns than verbs even though the noun versus verb ratio varied depending on the studies.

Chapter 5 by C. Han, J. Lidz and J. Musolino argues in a generative approach that in a head final language, the placement of the verb in the clause structure is hard to detect since there is no evidence from the string to distinguish a verb-raising analysis from a non-verb-raising analysis. This is so both for children

acquiring the language and for linguists developing an analysis of it. If the language has a clitic-like negation that associates with the verb in syntax, then scope facts concerning negation and a quantified object NP could provide evidence regarding the height of the verb. Even so, such facts are rare, especially in the input to children, and so we might be led to expect that not all speakers exposed to a head-final language acquire the same grammar as far as verb-raising is concerned. In this paper, we present evidence supporting this expectation. Using experimental data concerning the scope of quantified NPs and negation in Korean, obtained from both adults and 4-year-old children, we show that there are two populations of Korean speakers: one with verb-raising and one without. The results from this work are consistent with recent proposals in diachronic syntax and language acquisition literature that even given the restricted hypothesis space determined by Universal Grammar, insufficient input can lead to distinct grammars in a single population.

Chapter 6 by M. Kim focuses on locative verbs such as "pour", "fill", and "load" to re-examine the problem of argument structure learnability in the light of crosslinguistic variation, drawing on elicited production studies with adult and child (aged 36–48 months) speakers of Korean and English, and a typological study of fifteen languages. She found that children's syntactic errors are more restricted than previously thought, and are confined to the areas of greatest crosslinguistic variation, which is rather constrained. Her conclusion is that the existence of crosslinguistic variation in syntax–emantics mappings does not seem to pose a more serious learnability problem than the standard problem, since learning strategies based on universal syntax–semantics mappings and group-specific mappings can help children learn the syntax of locative verbs.

Chapter 7 by S. Choi reviews crosslinguistic differences in semantic categorization in adult grammars with a focus on the spatial semantics in Korean and English. The chapter then examines when and how children acquire the spatial semantic system of their native language and the way language and spatial cognition interact. Studies have shown that children acquire the language-specific spatial semantics from the single-word period. The author's recent data suggest that preverbal infants start out with a large repertoire of spatial categories. Taken together, studies suggest that at the beginning infants are sensitive to a number of features (including those not relevant for their native language), but as they become fluent speakers the language they have learned selectively channels their attention to linguistically relevant features. In this way, there is a dynamic interaction between language and cognition from a very early age.

In chapters from 8 to 17, specific areas of morpho-syntactic constructions are treated, such as negation, numeral classifiers, anaphora, relative clauses, functional categories, the 'functional' element *kes*, "one" before a relative head noun, passives, and universal quantifiers.

Chapter 8 by J. Y.-K. Baek and K. Wexler investigates a word-order error found in Korean-speaking children's productions of the so-called short-form negation within the generative framework of language acquisition. A brief review is provided of several previous syntactic accounts of the negative constructions in Korean, which is followed by a new analysis of the word-order error based on the lack of A-movement in the child grammar. A few more recent approaches to this classic problem are also included toward the end of this chapter.

Chapter 9 by K.-O. Lee and S.-Y. Lee investigates children's acquisition of numeral classifiers in Korean. The results of the two experiments show that Korean children's use of specific numeral classifiers did not reach 50 percent accuracy even by age 7. Even in the condition where the specific classifiers were prompted by the experimenter, children's use of them did not reach 50 percent accuracy before age 4. Korean children's acquisition of numeral classifiers showed similar tendencies to Chinese, Thai and Japanese children in that the syntactic structure of the numeral classifier was learned before its semantic structure. Korean children also learned general classifiers earlier than specific ones. However, the acquisition order of animate → shape → function proposed by the numeral classifier accessibility hierarchy was not found in Korean children's acquisition of numeral classifiers, providing counter-evidence to the universal constraint in children's acquisition of numeral classifiers.

Chapter 10 by S. W. Cho examines Korean-speaking children's knowledge of the principles governing the antecedent possibilities for the reflexive pronoun *caki* ("himself/herself"). It is noted that none of the previous views solely based on the subset principle, the priority condition, or logophoricity, are fully satisfactory to explain the distribution and acquisition of Korean reflexive anaphora. Evidence suggests that children are sensitive to locality, logophoricity, and the relational hierarchy in interpreting the antecedent possibilities for the reflexive pronoun. It is proposed that a unified account of Korean anaphora takes into consideration the effects of not just sentence-internal constraints, but also the semantic and pragmatic roles of the reflexive and the predicates co-occurring with it.

Chapter 11 by J. S. Jun claims that language learners encounter relative clauses all the time, regardless of their stage of language development. If they have not fully acquired the grammar of relative clauses, they tend to make guesses about the meaning of a sentence with relative clauses. For this reason, children's processing of relative clauses provides useful criteria to decide what developmental stage they are at. This chapter presents an overview of research questions and representative studies on the processing and acquisition issues of the Korean relative clause. In particular, the author tries to account for various experimental data on Korean subject vs. object relatives in terms of strategic understanding based on the word order and animacy.

Chapter 12 by Sookeun Cho and W. O'Grady provides a critical study of the status of head-internal relative clauses in early development, compared with that of the head-external relative clause. Both naturalistic speech and experimental work involving elicited production and comprehension tasks are employed. The authors examine whether the internal form is easier and more frequent and find that there is a greater preference for subject relative clauses than for object relative clauses regarding the grammatical relation of the relativized element. English, French and Japanese cases are also reported.

In Chapter 13 by H. Han, young children's speech is observed across languages that lack functional morphemes such as case particles, inflections, pronouns, and pre-/post-positions. As each functional morpheme constitutes a functional category that heads a functional projection, the lack of functional morphemes is argued to reflect the lack of functional projections. Young children's syntax is argued to be deficient in this sense, and furthermore it is a controversial issue whether syntactic "principles" (UG principles in generative grammar) work from the beginning or not. Most of the discussions on this issue have dealt with child English. In this chapter, Han introduces the development of functional morphemes in child Korean, which is an agglutinative language and thus shows a different developmental pattern. The child Korean data reveal that early child Korean utterances lack functional morphemes, and functional morphemes appear in a certain order. He argues that the lack of functional morphemes does not mean the lack of functional categories and projections, and supports the strong version of continuity hypothesis. He concludes that the whole picture of the development of functional morphemes should be considered under a processing account.

Chapter 14 by C. Lee on modality is mainly concerned with how mood/modal elements, along with temporal/aspectual and other functional elements, are acquired early in Korean, unlike in Indo-European languages (Radford, 1990), where all inflectional elements are acquired rather late, after age 2. Children acquiring Korean, a verb-final language, are sensitive to sentential endings encoding a variety of moods, sentence types, modal differences, and even politeness. This study, based on longitudinal diary notes, investigates interesting aspects of cognitive and linguistic development illuminated by the data. Moods as sentential types seem to be established before subtle subjective elements of modality are fully acquired.

Chapter 15 by J. Whitman discusses overmarking in early child Korean involving the 'functional' element *kes* "one, thing that" before a relative head noun, noted since Y. Kim (1987). He argues this pattern is on a par with auxiliary overmarking in early child English and genitive and pronominal *no* in Japanese: the common feature of overmarking is that it involves functional elements, although Y. Kim sees *kes* as 'nominal.' Based on natural speech corpora Whitman argues that the functional category which is overmarked – that is,

spelled out overtly where adult grammar has a silent category – in child Korean is the category Determiner.

Chapter 16 by Y. Lee and K.-O. Lee notes some peculiar properties of children's passives in various languages, such as an asymmetry between actional passives and non-actional passives. These peculiarities have been accounted for under the hypothesis that children's early passives are adjectival, and as such exhibit properties of adjectival passives in adult grammar (see Borer and Wexler, 1987, among others). Under this hypothesis, a new prediction follows, namely that children's comprehension of passive predicates will vary depending upon the event structures of predicates. If a predicate has a target state in its event structure, it makes a good adjectival passive, and children will comprehend the predicate more easily. By contrast, if a predicate lacks a target state, it does not make a good adjectival passive, and children will comprehend the predicate less easily. This paper tests and confirms this prediction in Korean children's passives. In a picture-aided comprehension task with 67 Korean children ranging from 3:10–8:8, the authors found a contrast due to the event structures of the predicates. The result shows that children are sensitive to the event structures of passive predicates, and thus provides additional support for the adjectival passive hypothesis.

Chapter 17 by H.-K. Kang investigates Korean children's spreading errors in universal quantifiers. Young children tend to give interpretations to universal quantifiers different from those used by adults. In response to the English question *Is every bear holding a honey-pot?* where three bears are holding a honey-pot each, and there is a fourth, unheld, honey-pot, children, unlike adults, respond negatively because one honey-pot is not held. Syntactically, they spread the scope of the universal quantifier *every* to the remote argument *honey-pot* in the sentence as well as to the argument *bear* in its own maximal projection. To see whether quantifier spreading is also found in Korean, Kang carried out an experiment on 62 Korean monolingual children, ranging in age from 4.5 to 7.5 with a mean age of 5.8, with universal quantifiers *modun* and floated quantifiers *modu* (*every*) and *kakkak* (*each*). The results showed that quantifier spreading is a general phenomenon found in a certain young age group crosslinguistically, perhaps universally. The phenomenon has been analyzed in two different ways, structurally and cognitively, the latter by considering different error rates in different age groups.

Y. Choi and R. Mazuka's Chapter 18, unlike the previous ones, is unique in discussing prosody acquisition. Until recently, such studies have been done mainly with infants learning English, where it has been shown that infants become sensitive to clausal boundaries by 6 months of age (Hirsh-Pasek et al., 1987) and to phrasal units by 9 months (Jusczyk et al., 1992). In this chapter the authors describe a recent experimental study in which they found evidence that Korean children (3 to 5 years) are indeed sensitive to prosodic phrasal

boundaries and are capable of using the prosodic boundary information in segmenting input speech correctly. They can detect a critical prosodic unit in learning Korean accentual phrases (AP), using physical properties associated with the prosodic structure and they can also use these units to process the input speech. Also, it appears that children come to produce these prosodic units increasingly reliably with age in their speech.

Chapters from 19 to 25 represent studies on second-language acquisition, either on L1-Korean learners of L2-English, Korean English bilinguals, or codeswitching.

The UG-based approach is predominant among those from a Linguistics background. The authors in these chapters try to evaluate theoretical linguistic claims in generative grammar via acquisition and/or psycholinguistic data in such chapters as 1, 3, 5, 6, 8, 9, 13, 14, 15, 16, 17, 20, 21, 22 and 23. In general, they successfully show how generative principles work in Korean acquisition and Koreans' L2 learning, but most of them also find it necessary to explore specific parametric variations in acquiring Korean and in Koreans' L2 learning.

Chapter 19 by T. K. Au and J. S. Oh claims that heritage languages are quickly lost in predominantly monolingual environments such as the United States. Heritage cultures are also lost. At a broader level, the nation loses valuable linguistic resources much needed for bridging cultures within the nation and across nations. This chapter examines the acquisition, maintenance/loss, and re-acquisition of Korean as a heritage language in the US. Many children in immigrant families shift quite rapidly from their heritage language to the majority language once they enter school. It is therefore crucial to understand what predicts heritage language development/loss during this time window. The authors review the research literature on relevant family characteristics and report some findings on family characteristics that may predict heritage language development/loss in Korean-speaking children. The chapter also touches on adult heritage language learners. They report on how childhood language experience as well as other factors such cultural identity and participation, learning motivation, and heritage language use during the school years may play a role when adults learn or relearn their heritage language.

Chapter 20 by D. Lee examines the critical/sensitive period hypothesis in the context of L2 acquisition. It claims that there exist multiple sensitive periods with rather long onsets and closures. The claim is based on the findings of two experiments regarding L2 acquisition of English reflexives and pronouns by L1 Korean speakers.

Chapter 21 by H. Ko, T. Ionin, and K. Wexler investigates how L2-learners whose L1s lack articles acquire the semantics of articles, with special focus on article use by L1-Korean learners of L2-English. Based on their experimental studies, they argue that article choice in L2-acquisition reflects systematic access to universal semantic features: *definiteness*, *specificity*, and *partitivity*.

It is shown that L2-learners associate *the* with [+specific] and [+partitive] features, which results in non-random error patterns: overuse of *the* with specific indefinites and partitive indefinites. Our findings provide further evidence that L2 learners' errors are traceable to parameter settings that are not necessarily instantiated in their L1 or L2 – but which are available through UG. The chapter also presents evidence that the interlanguage grammar of L2-learners has important parallels to that of child L1-learners in the domain of article semantics, supporting our conclusion that L2-acquisition, like L1-acquisition, is guided by UG.

Chapter 22 by S.-O. Kweon's begins with an overview of studies on a UG approach to second-language acquisition (SLA), some of which argue and support the hypothesis that UG will constrain the L2 acquisition process, while others are against it. Based on production and grammaticality judgment tasks, her own study of *want to* to *wanna* contraction with advanced adult Korean learners of English goes against the hypothesis. Another such contraction is the auxiliary copula contraction. Both are blocked when there is an intervening trace between them.

In Chapter 23 by G. H. Yeni-Komshian, a series of studies is reviewed on the phonological abilities of a group of native Koreans who had emigrated to the US at different ages, ranging from 2 to 23 years. As found before, earlier acquisition of English is associated with better pronunciation than later acquisition. There was a linear relationship between age of L2 acquisition and pronunciation proficiency. In contrast, overall Korean pronunciation ratings for the same group of participants indicated markedly lower levels of proficiency among those who had come to the USA at ages 2–7 years than those who had emigrated at an older age, of 12 years, who showed levels as high as monolingual Koreans living in Korea. The discussion focuses on two models of language acquisition, the critical or sensitive period hypothesis and a position that highlights the effects of interference between L1 and L2. The findings do not support any one position fully; they tend to be more consistent with the view that deviations from native pronunciation result from interactions between the languages of bilinguals rather than with the view of a maturationally defined critical period of language learning. The findings showed that for native Koreans who learned English as a second language, segmental phonemes in verbs were pronounced more accurately than in nouns. This effect was more pronounced in late than in early L2 learners. The results of this study provide a first demonstration of a link between pronunciation and the lexicon.

Chapter 24 by K. K. Yoon is concerned with the creative, yet constrained nature of bilingual speech. Codeswitching, the use of more than one language within a single sentence or across sentences, is a highly sophisticated process, subject to linguistic description, and also understandable in social and psychological terms. Yoon tries to account for morpho-syntactic switching patterns and