영어어문교육 제7권 2호 2001년 겨울

Syllabification in English and Korean: An Optimality-Theoretic Approach*

Chin-Wan Chung
(Hannam University)

Chung, Chin-Wan. (2001). Syllabification in English and Korean: An optimality-theoretic approach. *English Language & Literature Teaching, 7*(2), 37-54.

Some Korean speakers have trouble in learning the correct pronunciation of many complex English words which have clusters in their onset and coda position. This study shows that the difficulties Korean students have acquiring English pronunciation partly come from syllable structure differences between English and Korean. We provide an analysis based on Optimality Theory (Prince and Smolensky 1993) of the syllable structure difference and suggest that Korean speakers learn the different constraint ranking between English and Korean. This will offer Korean speakers with some helpful methods which will facilitate their learning.

Ⅰ. INTRODUCTION

The syllable structure of one language is normally different from other languages. The difference in syllable structure sometimes causes some troubles for language learners. For example, Korean speakers sometimes have troubles in mastering the exact pronunciation of English words; this is not only because of the different phonemic inventory difference between two languages but also the difference in syllable structure.

---

* Part of this paper was presented at the ETAK 2000 Winter Conference held at Kongju National University on January 28, 2000. I am grateful for the critical comments from the audience and three anonymous reviewers for their helpful comments. I am solely responsible for any errors in this paper.

The main purpose of this paper is to investigate and elaborate on the already well-known syllable structure difference between English and Korean, focusing mainly on the constituents of onset and coda. We provide an analysis of this issue within the framework of Optimality Theory (Prince and Smolensky 1993), especially the more recent version of it termed Correspondence Theory (McCarthy and Prince (hereafter M&P) 1995). We also put forth some implications stemming from this study for teaching English in Korean, specifically for instructing pronunciation of English words containing onset and coda clusters.

The format of this paper is as follows. In section 2, we introduce the theoretical background of this paper. In section 3, we present detailed syllabification of English and Korean which is followed by comprehensive analysis of the data in section 4. Finally in section 5, we conclude the paper with the implications of this paper for English learners of Korean.

II. THEORETICAL BACKGROUND

The theoretical background of this paper is Optimality Theory (Prince and Smolensky 1993), especially the more elaborated and recent version of it, called Correspondence Theory (M&P 1995), which is set within Optimality Theory (henceforth OT).

1. Optimality Theory

Theoretical assumptions in this theory sets it apart from those in a rule-based theory. A rule-based theory mainly relies on rules and derivations. A rule describes an alternation as displayed in (1).

(1) A phonological rule: A ⟶ B / C _____ D

CAD ⟶ CBD

input structural change: output

As exemplified in (1), the input form meets the environment for the phonological rule. The rule then applies to the input form creating the output form CBD in (1). The application of a set of rules to an input form is referred to as a derivation. The

application of these rules derives the final output form.

In OT, however, there are rules to derive the desired output form. Instead of a set of rules and derivations, OT is fundamentally based on constraints and their interaction. OT assumes that Universal Grammar is composed of a set of conflicting constraints on representational well-formedness, and that an individual grammar consists of a ranking of these constraints. Thus, from the perspective of OT, any conflict between constraints is resolved in favor of the higher ranked constraint at the expense of violating a lower ranked constraint, given that all constraints in OT are in principle violable. A given input is associated with a number of possible output candidate forms provided by a generator (Gen). Those output candidates are evaluated with respect to a set of ranked constraints. The candidate that is most harmonic to the ranked constraints is chosen as the optimal output form or winning output form. Important aspects of the theory are explained in the principles of OT in (2).

(2) Principles of Optimality Theory (M&P 1993)

a. Universality. U(niversal) G(rammar) provides a set of constraints Con that are universal and present in all grammar.
b. Violability. Constraints are violable, but violation is minimal.
c. Ranking. The constraint Con are ranked on a language-particular basis; the notion of minimal violation is defined in terms of this ranking. A grammar is a ranking of the constraint set.
d. Inclusiveness. The constraint hierarchy evaluates a set of candidate analyses that are admitted considerations of structural well-formedness.
e. Parallelism. Best-satisfaction of the constraint hierarchy is computed over the whole candidate set. There is no serial derivation.

Given the principles above, the major challenger for the language learner is to determine the constraint ranking. In OT, two constraints C_1 and C_2 can be directly rankable if they are in conflict with each other. A constraint conflict can be seen in the comparison of the harmonic (or optimal) candidate with a suboptimal candidate. If the optimal candidate satisfies C_1 but violates C_2 while the suboptimal candidate satisfies C_2 but violates C_1, then C_1 and C_2 display a constraint conflict. C_1 would be ranked higher since it is the constraint that the optimal candidate respects. The ranking dominance relation between C_1 and C_2 can then be represented by $C_1 >> C_2$.

In standard OT, the representation of this ranking relation is exhibited graphically in a table as in 1 and 2. The first column presents possible candidates with their own assigned row. The dominance relation between constraints is indicated in the subsequent columns with the higher ranked constraint right after the column for the candidates. The optimal candidate is indicated by '☞', violation by '*', and fatal violations by '!'. Shading in a constraint table indicates the irrelevance of a constraint to the status of the candidate. Dotted line between columns for constraints is normally indicative of a lack of established ranking between them, which means the two constraints are not directly rankable. This is illustrated in constraint tables 1 and 2.

TABLE 1

Constraint conflict and ranking argument (Prince and Smolensky 1993)

Constraint C_1 dominates Constraint C_2: C_1 >> C_2

Candidate form /input/	C_1	C_2
☞ Optimal		*
Suboptimal	*!	

TABLE 2

No constraint conflict: Constraints C_1 and Constraint C_2 are not directly rankable

Candidate form /input/	C_1	C_2
☞ Optimal		*
☞ Optimal	*	

The constraint table 1 shows the dominance of C_1 over C_2. Moreover, one could view it as providing a ranking argument for C_1 over C_2, since if the constraints were reversed the suboptimal candidate would be the winning form.

The constraint table 2 illustrates a situation where two constraints C_1 and C_2 do not show any particular ranking with each other. In such case, the decision of selecting the most harmonic form would be passed to other constraints that are ranked lower than constraints C_1 and C_2. The unestablished ranking relation is indicated by the dotted lines between C_1 and C_2.

Constraints in OT are universal and are present in the grammar of all languages. Accordingly, each grammar is composed of a ranking of the constraint set, which is language specific.

In the next subsection, we will introduce the more elaborated version of OT, referred to as Correspondence Theory (M&P 1995).

2. Correspondence Theory

McCarthy and Prince (1995) further developed OT and proposed Correspondence Theory, which is also set within OT. A correspondence relation implies a one-to-one matching relation between strings. For example, an example would be when the input and the output, or the reduplicant and the base, stand in correspondence. However, since this paper does not have any relation to reduplication, the correspondence relation between the input and the output will suffice enough. The notion of a one-to-one correspondence relation as defined by M&P is given in (3).

(3) Correspondence (M&P 1995)
Given two strings S_1 and S_2, Correspondence is a relation from the elements of S_1 to those of S_2. Segments $\alpha \in S_1$, and $\beta \in S_2$ are referred to as Correspondence to one another when $\alpha \mathcal{R} \beta$.

The necessary correspondence relation needed for this paper is visually illustrated in the diagram given in (4). [I=input, O=output, R=reduplicant, B=base, Af=affix, RED=reduplicative morpheme.]

(4) Basic Model of Reduplicative Correspondence (M&P 1995)

Input:	$/Af_{RED}$ + Stem/		
		⇅	I-O Faithfulness
Output:	R	⇆ B	
	B-R Identity		

As seen in (4), the correspondence relation between the input and the output is monitored by faithfulness constraints which require that corresponding elements between the stem, morphologically defined input construct, and the base in the output be as analogous as possible. But in this paper the main faithfulness

constraints will only monitor the corresponding relation between the input and the output.

Faithfulness constraints requiring that corresponding elements be identical can be further divided into various types of constraints. The basic and important faithfulness constraints are Max and Dep and they regulate the faithfulness relation between corresponding segments. The former prohibits deletion and the latter insertion, respectively. The two important faithfulness constraints are represented in (5).

(5) Faithfulness constraints: S_1=input, base S_2=output, reduplicant
  a. Max: Every segment of S_1 has a correspondent in S_2. (No deletion)
  b. Dep: Every segments of S_2 has a correspondent in S_1. (No insertion)

In the next section, we will discuss the syllable structure in English and Korean.

III. SYLLABIFICATION IN ENGLISH AND KOREAN

1. Syllabification in English

A typical syllable is composed of onset, nucleus, and coda. Onset indicates the beginning of a syllable generally in consonant or cluster form. Nucleus denotes the peak of the syllable in terms of sonority normally by a vowel.[1)]

Normally the minimum requirement of a syllable is the nucleus, the syllable peak consisting of a vowel or possibly by a diphthong. While optional, the maximum number of consonants of English onset and coda is 3 for the onset elements and 2 for the coda elements. Thus, the English syllable constituents can be illustrated as presented in (5).

(5) Syllable structure of English
  (C_1) (C_2) (C_3) V (C_1) (C_2)

1) A vowel is not the only syllable peak element in English syllabification. Sometimes the unstressed schwa which is followed by 'n' or 'r' is deleted resulting in the syllabic 'n' indicated by a small dot right below 'n̩' or 'r' by 'r̩'. The syllabic 'n̩' and 'r̩' can be seen in fast speech English words such as cotton and water.

The data for English syllable constituents are grouped into two types: one for the onset elements and the other for the coda elements. As seen in (5), the onset cluster can consist of two or three as presented in (6). In (6), we only listed monosyllabic words to show the possible onset cluster of English. A dot indicates a syllable boundary in (6).

(6) Constituents of syllable onset in English

a. /kæt/	→	[.kæt.]	'cat'
b. /muːn/	→	[.muːn.]	'moon'
c. /ple/	→	[.ple.]	'play'
d. /fliː/	→	[.fliː.]	'flea'
e. /strayk/	→	[.strayk.]	'strike'
f. /sprayt/	→	[.sprayt.]	'sprite'

We present the data for the coda constituents in English syllabification, which can maximally be two elements. Unlike the onset elements in English syllabification, only two consonants can make up the elements of coda clusters in English as illustrated in (7).

(7) Constituents of syllable coda in English

a. /kæn/	→	[.kæn.]	'can'
b. /blʌd/	→	[.blʌd.]	'blood'
c. /kæmp/	→	[.kæmp.]	'camp'
d. /kolt/	→	[.kolt.]	'colt'

The syllable structure of English can best be represented in (5) and the sample example words are given in (6) and (7). Now we will consider syllabification in Korean in the next subsection.

2. Syllabification in Korean

In comparison with the syllable structure of English, the syllable structure of Korean is much limited in terms of the possible elements of the onset and the coda. The maximum number of onset consonants except glide ('y' and 'w') is just one whereas that of coda is underlyingly two. However, only one of the two underlying coda consonants appears in the phonetic realization in the final output because of

the simplification in that position. There are some Korean words that end with two consonants in Korean; however, the consonants are adjusted in order to satisfy the syllable structure of phonetic level. One way is that two coda consonants are separated into two different syllables when a coda cluster is followed by a vowel without any intervening compound boundary and in this case, there is no consonant deletion. The other way is to delete either of the two coda consonants (See more in detailed analyses on this issue: Whitman (1985), Oh (1994), Shim (1995), and Tak (1997, 1999)). The two ways to avoid the coda consonant cluster are shown in (8).

(8) Resyllabification and coda consonant simplification (Kim-Renaud, 1974, p.91)

a. /kap/	[.kap.]	'price'
/kap+i/	[.kap.s′i.]	'price (subject)'
b. /saks/	[.sak.]	'wage'
/saks+i/	[.sak.s′i.]	'wage (subject)'
c. /anc+ko/	[.an.k′o.]	'sit and'
/anc+ə/	[.an.ca.]	'sit!'

By taking account of this, the normal syllable structure of Korean can be illustrated as follows in (9).

(9) Syllable structure of Korean

(C_1) (G) V (C_1) (C_2)

The data for Korean syllabification are presented in (10) and (11). We only listed 3 data which show three different onset consonants but all the other consonants can be the onset element of a syllable except the velar nasal /ŋ/ in Korean.

In (10), '/t′/' indicates the tensed consonant in Korean, which is distinguished from the plain alveolar stop /t/ as in /tal/ 'moon'.

(10) Constituents of onset in Korean

a. /t′al/	→	[.t′al.]	'daughter'
b. /pal/	→	[.pal.]	'foot'
c. /mom/	→	[.mom.]	'body'

(11) Constituents of coda in Korean

a. /kuk/	→	[.kuk.]	'soup'

b. /paŋ/	→	[.paŋ.]	‘a room’
c. /kil/	→	[.kil.]	‘a road’
d. /salm/	→	[.sam.]	‘life’

Concerning the elements of coda consonants, almost all of the Korean consonants can be coda constituents except tensed consonants.

We have seen some normal syllabification in English and Korean and both of them show some differences between the syllable structure specially regarding the number of onset and coda constituents. What is interesting about the syllable structure between the two languages is that they also have similarities in syllabification. Normally, a string $C_1V_1C_2V_2C_3$ is syllabified as [.C_1V_1.$C_2V_2C_3$.] but not as [.$C_1V_1C_2$ .V_2C_3.]. This is because of the fact that languages prefer a syllable with an onset rather than with a coda consonant. This can be accounted for by Itô (1986) as a Universal Core Syllable Condition or by Prince and Smolensky (1993) as a high ranking ‘Onset’ constraint from the perspective of optimality theory. In both English and Korean, it is true that the string $C_1V_1C_2V_2C_3$ is syllabified as [.C_1V_1.$C_2V_2C_3$.] but when the velar nasal /ŋ/ is C_2, this consonant is not syllabified as the onset of the second syllable but rather it is syllabified as the coda consonant of the preceding syllable.[2] The data for normal syllabification and syllabification with the velar nasal /ŋ/ as C_2, are presented in (12) and (13).

(12) Normal syllabification in English:

$C_1V_1C_2V_2C_3$ → [.C_1V_1.$C_2V_2C_3$.] *[.$C_1V_1C_2$.V_2C_3.]

UR		Normal speech	Gloss
a. /tek+on/	→	[.te.kon.]	‘take on’
b. /pʊt+in/	→	[.pʊ.ɾin.]	‘put in’
c. /rɛd+ay/	→	[.rɛ.ɾay]	‘red eye’
d. /brokən+arm/	→	[.bro.kə.narm.]	‘broken arm’

2) In a language such as Barra Gaelic (Bosch 1991, originally due to Borgstrøm 1937), each intervocalic consonants is syllabified as coda of the preceding syllable, which is contrary to what many languages including English and Korean syllabify in such an environment. Syllabification of an intervocalic consonant in Barra Gaelic as coda of the preceding syllable is shown by the following data.

bɔd.ɔx	‘old man’
ar.an	‘bread’
faL.u	‘empty’

As seen in (12), a syllable with an onset is preferred to a syllable without an onset consonant. However, this does not hold when a consonant that should be syllabified as the onset of the following syllable is /ŋ/. The data concerning this are presented in (13).

(13) Syllabification in English when C_2 is /ŋ/:

$C_1V_1C_2V_2C_3 \rightarrow [.C_1V_1C_2.V_2C_3.]$ *$[.C_1V_1.C_2V_2C_3.]$

UR		Normal speech	Gloss
a. /lɔŋ+arm/	→	[.lɔŋ.arm.]	'long arm'
b. /rɔŋ+ænsər /	→	[.rɔŋ.æn.sər.]	'wrong answer'
c. /yəŋ+onər/	→	[.yəŋ.o.nər.]	'young owner'

The data for syllabification of Korean are also divided into two groups. One group represents the normal syllabification where an intervocalic consonant is syllabified as onset of the following syllable while the other group has to do with the syllabification of an intervocalic consonant as coda of the preceding syllable. The data are presented in (14) and (15), respectively.

(14) Normal syllabification in Korean:

$C_1V_1C_2V_2C_3 \rightarrow [.C_1V_1.C_2V_2C_3.]$ *$[.C_1V_1C_2.V_2C_3.]$

UR		Normal speech	Gloss
a. /cam+os/	→	[.ca.mot.]	'pajamas'
b. /kan+i/	→	[.ka.ni.]	'simplicity'
c. /tal+in/	→	[.ta.lin.]	'master'
d. /pok+ɨm/	→	[.po.gɨm.]	'gospel'

(15) Syllabification in Korean when C_2 is /ŋ/:

$C_1V_1C_2V_2C_3 \rightarrow [.C_1V_1C_2.V_2C_3.]$ *$[.C_1V_1.C_2V_2C_3.]$

UR		Normal speech	Gloss
a. /saŋ+o/	→	[.saŋ.o.]	'morning'
b. /kaŋaci/	→	[.kaŋ.a.ci.]	'a puppy'
c. /toŋan/	→	[.toŋ.an.]	'an interval'
d. /paŋul/	→	[.paŋ.ul.]	'a small bell'

We have discussed some differences and similarities of constituents of the onset and the coda and how each language syllabifies a normal string and a string with

the velar nasal in it.

In the next section, we provide an analysis based on the theory introduced in section II.

IV. ANALYSIS

In this section, we provide an analysis of syllabification in English and Korean employing Correspondence Theory (M&P 1995). First, we will discuss the syllabification in English onset and coda clusters along with normal syllabification and then repeat this process for the Korean language. After that, we will discuss syllabification in English and Korean when having an intervocalic /ŋ/.

As we have discussed in section 3, the number of onset constituents of English is 3 and that of coda is 2. In order to account for this, we need a faithfulness constraint which ensures that each and every element of the input should faithfully be realized in the output. On the other hand, we also need a faithfulness constraint that makes sure that there is not any inserted segment in the output resulting in an unfaithfulness relation between the output and the input. Along with these two constraints, we need a constraint that regulates the number of elements in the onset and the coda. The constraints that we need for our analysis of English syllabification with consonant clusters are presented in (16).

(16) Constraint for English syllabification with consonant clusters
   a. *Complex (Prince and Smolensky 1993)
      No more than one C may associate to any syllable position.
   b. Max-Seg: Every segment in the input has its correspondent in the output. (no deletion)
   c. Dep-IO: Every segment in the output has its correspondent in the input. (no insertion)

Max-Seg and Dep-IO should be ranked higher than *Complex in order for each element in a word with more than one constituent either in onset or coda to faithfully appear in the output form. The constraint ranking relation of (16) is graphically illustrated in Table 3.

TABLE 3
/ple/ → [.ple.] 'play'

/ple/	Max-Seg	Dep-IO	*Complex
a. .pe.	*!		
b. .pi.le.		*!	
c. ☞ .ple.			*

In Table 3, the incorrect candidates (a) and (b) are eliminated because of their violation of high ranking Max-Seg and Dep-IO.[3] Candidate (a) violates Max-Seg once because the output form lacks the input correspondent /l/ in the output. This results in one violation of Max-Seg. Candidate (b) violates Dep-IO since it has one outside element**[i]** in the output form which in turn does not have its corresponding element in the input form causing one violation of Dep-IO. The violation is critical because each constraint is ranked higher than *Complex which is ranked low and allows the optimal candidate (c) to have more than one constituent in the onset. Table 3 also shows that there is no special ranking between the faithfulness constraints Max-Seg and Dep-IO.

The constraint ranking shown in Table 3 also can account for a word that has more than one consonant as coda. This is exemplified in the Table 4.

TABLE 4
/kæmp/ → [.kæmp.] 'camp'

/kæmp/	Max-Seg	Dep-IO	*Complex
a. .kæm.	*!		
b. .kæm.pi.		*!	
c. ☞ .kæmp.			*

3) The candidates (a) and (b) do not violate the *Complex constraint even though they have a diphthong as a nucleus. In this paper, however, we regard a diphthong as a singleton rather than a doubleton for the simplicity of the analysis; therefore, candidates (a) and (b) do not violate *Complex indicated by no asterisk mark. This also applies to the optimal output (c) and it only violates the *Complex constraint once because of the complex onset constituents [p] and [l].

As seen in Table 4, the same constraint ranking that explained the syllabification of complex onset in English accounts for the complex coda in English also. The established constraint ranking for English syllabification is given in (17).

(17) Constraint ranking for English syllabification
Max-Seg, Dep-IO >> *Complex

In order to account for the syllabification of Korean, we use the same constraints listed in (16) and we add one more constraint.

(18) Constraints for Korean syllabification
a. *Complex (Prince and Smolensky 1993)
No more than one C may associate to any syllable position.
b. Max-Seg: Every segment in the input has its correspondent in the output. (no deletion)
c. Dep-IO: Every segment in the output has its correspondent in the input. (no insertion)
d. Coda Con: Only seven consonants /p, t, k, m, n, ŋ, l/

For Korea syllabification, *Complex should be ranked higher than Max-Seg because as explained in section 3, Korean allows complex constituents only in the coda position underlyingly; the faithfulness constraint Max-Seg is inevitably violated to satisfy the coda requirement in Korean syllabification. The other constraints such as Dep-IO and Coda Con do not show any particular constraints with *Complex; therefore, by transitivity Coda Con and Dep-IO outrank Max-Seg. The constraint relation of these constraints is illustrated in Table 5.

TABLE 5
/moks/ → [.mok.] 'share'

/moks/	*Complex	Coda Con	Dep-IO	Max-Seg
a. .moks.	*!			
b. .mos.		*!		*
c. .mok.si.			*!	
d. ☞ .mok.				*

Ranking *Complex, Coda Con, and Dep-IO over Max-Seg is critical in Table 5 since if reversed the ranking between them, the optimal output form either (a) or (b), which is not the actual output form in Table 5.

The constraint ranking established in Table 5 is given in (19).

(19) Constraint ranking for Korean syllabification
*Complex, Coda Con, Dep-IO >> Max-Seg

Now we turn our attention to the syllabification of a string which has an intervocalic consonant. In such an environment, the intervocalic consonant usually is syllabified as the onset of the second syllable rather than the coda of the preceding syllable. In order to account for this, we add two constraints, Onset and Syll Con, to faithfulness constraints such as Max-Seg and Dep-IO, which are presented in (20).

(20) Constraint for normal syllabification in English and Korean
a. Onset (Prince and Smolensky 1993)
Syllables must have onsets.
b. Max-Seg: Every segment in the input has its correspondent in the output. (no deletion)
c. Dep-IO: Every segment in the output has its correspondent in the input. (no insertion)
d. Syll Con (Vennemann 1988, Davis 1998)
Rising sonority is prohibited over a syllable boundary

Onset requires that all syllables have onset in their structure while Syll Con stipulates that over the syllable boundary the sonority of the preceding segment must be higher or as high as that of the following segment. The constraints listed in (20) do not show any special ranking among themselves both in English and Korean when there is an intervocalic consonant in a string. This is represented in Table 6 and Table 7.

TABLE 6

Normal syllabification in English /tek+on/ → [.te.kon.] 'take on'

/tek+on/	Max-Seg	Dep-IO	Syll Con	Onset
a. .tek.on.			*!	*!
b. .te.ki.on.		*!		*!
c. .te.on.	*!			*!
d. ☞ .te.kon.				

TABLE 7

Normal syllabification in Korean /kani/ → [.ka.ni.] 'take on'

/kani/	Max-Seg	Dep-IO	Syll Con	Onset
a. .kan.i.			*!	*!
b. .kan.	*!			
c. ☞ .ka.ni.				

As shown by Tables 6 and 7, the normal syllabification of English and Korean is accounted for by the four constraints that do not show specific ranking when a string has a consonant between two consonants.

However, when the intervocalic consonant is the velar nasal /ŋ/, it is not syllabified as the onset of the following syllable but syllabified as the coda of the preceding syllable. We add one more constraint, Onset Con, to the constraints in (20) and the result is shown in (21).

(21) Onset Con: The velar nasal /ŋ/ is not allowed as an onset element.

This constraint should be ranked higher than both Syll Con and Onset because when the intervocalic velar nasal /ŋ/ is syllabified as the coda of the preceding syllable, Syll Con and Onset are forced to be violated in order to satisfy the higher ranked Onset Con. The other two faithfulness constraints such as Max-Seg and Dep-IO do not show any particular ranking with Onset Con. Thus, by transitivity Max-Seg and Dep-IO are ranked higher than Syll Con and Onset, which in turn does not have any special ranking between them.

The constraint interaction of these constraints are illustrated in Tables 8 and 9

for English and Korean, respectively.

TABLE 8

Syllabification in English when the intervocalic consonant is /ŋ/

/lɔŋ+arm/ → [.lɔŋ.arm.] 'long arm'

/lɔŋ+arm/		Onset Con	Max-Seg	Dep-IO	Syll Con	Onset
a.	.lɔ.ŋarm.	*!				
b.	.lɔ.arm.		*!			*
c.	☞ .lɔŋ.arm.				*	*
d.	.lɔŋ.narm.			*!		

TABLE 9

Syllabification in Korean when the intervocalic consonant is /ŋ/

/paŋul/ → [.paŋ.ul.] 'a small bell'

/paŋul/		Onset Con	Max-Seg	Dep-IO	Syll Con	Onset
a.	.pa.ŋul.	*!				
b.	.pa.ul.		*!			*
c.	☞ .paŋ.ul.				*	*
d.	.paŋ.nul.			*!		

As shown in Tables 8 and 9, when the intervocalic consonant is the velar nasal /ŋ/, it is normally syllabified as the coda of the preceding syllable both in English and Korean. The syllabification in both languages is explained by the high ranking Onset Con constraint over Syll Con and Onset.

In this section, we have provided an analysis of syllabification in English and Korean based on the Correspondence Theory (M&P 1995). In the next section, we conclude the paper with some implication on the acquisition of correct pronunciation of English complex words.

Ⅴ. CONCLUSION

In this paper, we provided an optimality-theoretic account for syllabification in English and Korean. As shown in section Ⅳ, there are some structural differences as well as similarities between the two languages in terms of their syllable

structures. But the most noticeable difference is that while in English a complex onset and coda are allowed, in Korean they are prohibited in a final phonetic realization. This is accounted for by the constraint ranking difference as discussed in (17) for the syllabification in English and in (19) for Korean, which are reproduced in (22) and (23).

(22) Constraint ranking for English syllabification
Max-Seg, Dep-IO >> *Complex

(23) Constraint ranking for Korean syllabification
*Complex, Coda Con, Dep-IO >> Max-Seg

The optimality-theoretic ranking difference in (22) and (23) is crucial for those Korean students who try to learn correct English pronunciation of words having complex onset and coda because it is indicative of the fundamental differences between the two languages. Practicing and acquiring the syllable structure should go along with acknowledging the ranking difference between them because from the perspective of the optimality theory, all languages in the world are composed of universal constraints and the grammar consists of an ordered set of constraints. Since this is the case, if students acquire the ranking difference between the two languages concerning syllable structure, it will facilitate their acquisition of complex pronunciation of English words.

REFERENCES

Borgstrøm, C. H. (1937). The dialect of Barra in the outer Hebrides. *Norsk TidskriftSprogvidenskap 8*, Oslo.

Bosh, A. (1991). *Phonotactics at the level of phonological word.* Doctoral dissertation. University of Chicago.

Cho, Young-Mee Yu. (1997). *Liquid specification in Korean as geminate alterability.* Harvard Studies in Korean Linguistics 7, 78-92.

Davis. S. (1998). Syllable contact in optimality theory. *Korean Journal of Linguistics*, 23, 181-211.

Itô, J. (1986). *Syllable theory in prosodic phonology.* Doctoral dissertation. University of Massachusetts.

Kim-Renaud, Y.K. (1974). *Korean consonantal phonology*. Doctoral dissertation. University of Hawaii.

Lee, Shin-Sook. (1999). Consonant cluster simplification in English and Korean. *The Journal of Studies in Language*, 15(1), 183-202.

McCarthy, J.J. & Prince, A. (1993). *Prosodic morphology I: Constraint interaction and satisfaction.* ms., University of Massachusetts at Amherst and Rutgers University.

McCarthy, J.J. & Prince, A. (1995). Faithfulness and reduplicative identity. *UMOP* 18, 249-384.

Oh, Mira. (1994). A reanalysis of consonant cluster simplification and s-neutralization. In Y. K. Kim-Renaud (Ed.), *The theoretical Issues in Korean Linguistics* (pp. 157-174). CSLI: Stanford University.

Prince, A. & Smolensky, P. (1993). *Optimality Theory: Constraint interaction in generative grammar*. ms., New Brunswick: Rutgers University and Boulder: University of Colorado.

Shim, Minsu. (1995). A syllabification and consonant cluster simplication. *FLSM* 6, 50-61.

Tak, Jin-Young. (1997). Uniform exponence in accounting for post-obstruent tensification with special reference to Korean. *Harvard Studies in Korean Linguistics* 7, 213-224.

Tak, Jin-Young. (1999). Candidate-to-candidate faithfulness for tensification in Kyungsang Korean. *Harvard Studies in Korean Linguistics* 8, 182-193.

Vennemann, T. (1988). *Preference laws for syllable structure.* Berlin: Muton de Gruyter.

Whitman, J. (1985). Korean clusters. *Harvard Studies in Korean Linguistics* I.

정 진 완
한남대학교 영어영문학과
306-791 대전시 대덕구 오정동
Tel: (042) 335-4940
Email: atchung@hanmail.net

Revised version received in January, 2002