

Phonological affinity-based output-to-output correspondence approach to exceptional affixes

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Kim, Sung-A. 2007. Phonological affinity-based output-to-output correspondence approach to exceptional affixes. *Studies in Phonetics, Phonology and Morphology* 13.2. 203-217. It is well known that many accent systems have a set of exceptional affixes that wipes out the accent contrast in the root to which they are added, resulting in accent neutralization in the root (Kenstowicz 1993). Unlike accent-neutral affixes, this exceptional set of affixes serves to eliminate accent contrast in roots by attracting accent. Therefore, exceptional affixes result in a uniform accent pattern for the words created by the same morphological affixation. Such a uniformity induced by exceptional affixes is also attested in Hamkyeong Korean. Adopting Bybee (1985, 1995, 2006)'s fully parallel network model, we present phonological affinity-based Output-to-Output Correspondence account for the exceptional affixes in Hamkyeong Korean. In this account, the uniform accent pattern is accounted for by matching the prosody of words derived by the same suffixation process, which leads us to avoid the arbitrary and powerful device of constraint-reranking as well as the use of diacritic markers for cyclic and non-cyclic affixes. (Kyung Hee University)

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1. Introduction

The vast majority of the work that has been done in Optimality Theory (Prince & Smolensky 1993, McCarthy & Prince 1995) has focused, sometimes directly, sometimes indirectly, on the interaction between markedness (or well-formedness) constraints and faithfulness constraints. The question of lexical exceptions to the patterns of phonotactic well-formedness has been relatively less often explored (but see, for example, Inkelas et al. 1997, Pater 2004, 2005 among others). In addition, there is not much consensus on the issue of lexical exceptions. There have been two lines of approaches to the issue of lexical exceptions in Optimality Theory. We may call them diacritic and non-diacritic approaches. The main difference between the two approaches lies in whether we put lexical markings on the lexical items with exceptional behaviors: the former supports the idea of putting a specific mark on each lexical element, while the latter does not. In the same line with the non-diacritic approach, we demonstrate in the paper that phonological affinity-based Output-to-Output Correspondence (O-O correspondence henceforth) can provide more explicit accounts for the phenomenon which has been considered as lexical exceptions in accent alternations in Hamkyeong Korean.

The rest of the paper is organized as follows: In section 2, relevant data of lexical exceptions in Hamkyeong Korean verbal accent alternations are

briefly presented. An Optimality analysis of verbal accent patterns in Hamkyeng Korean is presented in section 3. In section 4, phonological affinity-based O-O correspondence is discussed. In section 5, an Optimality analysis of verbal accent patterns in Hamkyeng Korean is presented. In section 6, phonological affinity-based O-O correspondence for the lexical exceptions is presented. Several advantages of the O-O correspondence account are discussed in the conclusion. Most of the data for the study were acquired from two native speakers of Hamkyeng Korean who have politically defected to South Korea, in addition to Ramsey (1975) and Cen (1993). Both informants are female in their sixties and fifties and they are from Northern Hamkyeng area. The accent patterns in the data have been confirmed by pitch-tracking.

2. Verbal Accent Patterns in Hamkyeng Korean

With regard to the accent pattern in Hamkyeng Korean, we should note three basic observations. First, roots and affixes both can be accented. Second, one and only one syllable is accented in a prosodic word in Hamkyeng Korean. Third, it shows a superiority of the leftmost accent in surface forms. When only a single accent surfaces, the surfaced accent corresponds to the leftmost one in the word. Specifically, if the root is accented, it is the root accent that surfaces as long as there are no accented prefixes. Otherwise it is the accent of the leftmost affix that wins over accents of other suffixes.

Because exceptional affixes are attached to verb forms, we should start with a brief introduction on verbal accent patterns in Hamkyeng Korean. In general, three classes of roots are recognized with regard to accent patterns (Kim 2003): post-root accent class, root accent class, and alternating accent class. They are illustrated in (1).

(1) Accent Classes in Hamkyeng Korean

(a) Post-root Accent Class

manna-ku	to meet+CONJ
manna-ki	to meet+NMN
manna-kes-ta	to meet +FUT+ DEC
manna-s-ta	to meet+PST+DEC
manna-lsulok	to meet+INT

(b) Root Accent Class

təlep-ku	to be dirty+ CONJ
təlep-ki	to be dirty+NMN
təlep-kes-ta	to be dirty +FUT+DEC
təlep-əs-ta	to be dirty+PST+DC
təlep-lsulok	to be dirty+ INT

(c) Alternating Accent Class

tatim-ku	to trim+CONJ
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tatim-ki	to trim+NMN
tatim-kes-ta	to trim+FUT+DEC
tatim-9-səli	to trim+PST+CONJ
tatim-9sulok	to trim+INT

In the post-root accent class shown in (1a), accent does not alternate and it is always on the leftmost affixal vowel immediately following the root. In the second one, the root accent class, accent is fixed to one of the root syllables regardless of following affixes, as illustrated in (1b). In the alternating accent class given in (1c), the location of the root accent varies depending on the following suffixes. Accent is realized on the root if it is followed by a consonant-initial suffix, otherwise the suffixal vowel is accented.

3. Exceptional Affixes in Hamkyeng Korean

When verb roots are followed by causative suffixes, the causative suffixes eliminate the accent contrast in the root, which leads to accent neutralization in the root. Unlike accent-neutral affixes (traditionally termed recessive affixes), this exceptional set of affixes (traditionally termed dominant affixes) serves to eliminate accent contrast in roots by attracting accent (Halle and Vergnaud 1987). In other words, it is always the affix that is accented regardless of the accent of an adjacent root. Therefore, exceptional affixes result in a uniform accent pattern for the words created by the same morphological affixation.

There are two types of causative affixes in Hamkyeng Korean: lexical causative and non-lexical causative. The former involves a root plus causative suffixes such as *-i*, *-hi*, *-ki*, *-u*, *-ku*, and *-c^hu*. They are called lexical because the root they combine to is idiosyncratically specified.¹ The latter uses causative *-ke* followed by an auxiliary verb *ha*-‘do’ (e.g., *kapyəp-ke-ha-ta* ‘to make something light’) and has no such restriction in choosing a root as the lexical causative affixes do. Many verbs do have both lexical and non-lexical forms. For example, both ‘*tol-ku-ta*’ and ‘*tol-ke-ha-ta*’ occur in Hamkyeng Korean.

The two types of causative affixes also show a difference in accent pattern. Lexical causatives correspond to accent-shifting one and non-lexical causative is accent-neutral. Examples of accent patterns in verbs with causative suffixes are given in (2) and (3).

(2) Accent-neutral Causative Affix: Causative /ke/

(a) Post-root Accent Class

tali-tá	to be different
tali-ké-ha-ta	to make something different

¹ Unlike Seoul Korean, a causative affix *-li* does not occur in Hamkyeng Korean.

(b) Root Accent Class

mantí-l-ta	to make something
mantí-ke-ha-ta	to make somebody produce something

(c) Alternating Accent Class

kapyǽp-ta	to be light
kapyǽp-ke-ha-ta	to make something light

(3) Accent-attracting Causative Suffix: Causative: /ki/²

(a) Post-root Accent Class

pəs-tá	to undress
pəs-kí-ta	to make somebody undressed
s'is-tá	to wash
s'is-kí-ta	to make somebody washed

(b) Root Accent Class

ól-m-ta	to be infected
ól-m-kí-ta	to make somebody infected

(c) Alternating Accent Class

al-ta	to know
al-kí-ta	to make somebody know, inform
kúl-m-ta	to starve
kúl-m-kí-ta	to make somebody starved

As the examples show, accent-shifting causative suffix is always accented even when preceded by the root accent or alternating accent classes.

A question arises here is whether these lexical causatives are totally fixed expressions or not: whether they are productive or not. In order to answer this question, we presented 6 nonce words and asked the informants to create corresponding causative forms as many as they can. The stimuli are given in (4).

(4) Nonce word stimuli

s'il-ta	t'ol-ta	k ^h il-ta
c'əm-ta	c ^h il-ta	pək-ta

For all of the 6 words, new causative forms with non-lexical causative *-ke* were found. What is interesting is the recurrence of the lexical causative *-ki*. The total of 11 causative forms was produced and 6 of them involved *-ke*, whereas 5 of them used *-ki*. Other lexical causatives did not occur. In addition, we informed them that *-li* in Seoul Korean corresponds to *-ki* or *-ku* in Hamkyeng Korean and asked them to produce new words by using the new causative *-li*. They had a difficulty in producing a high toned *-li*. When they were forced to use *-li* suffix instead of *-ki* in *al-ki-ta* 'to make somebody know,' they had a tendency to preserve the accent pattern of the

² There are other accent-attracting causative suffixes such as *-ku*, *-u*, and *-i*. Examples of other accent-attracting causative suffixes, however, are skipped due to space limit.

uninflected root form. Namely, they were more likely to produce *al-li-ta* rather than *al-li-ta*.

From this nonce word test, we find that a lexical causative as well as non-lexical causative is still productive in word formation at least in Hamkyeng Korean.³ Our next question should be about why the causative affix-*ki* occurs in the coinage test and how to account for the accent-shifting behavior of the causative affix-*ki*. After taking a brief review of traditional account for this phenomenon, we are going to take a close look at this issue in the next section.

In the traditional generative model, the only way in which one lexical item affects the phonological shape of another lexical item is to use the operation of 'cycle.' One such analysis is Halle and Vergnaud (1987) where the different accent patterns between lexical and non-lexical causatives in Hamkyeong Korean could be accounted for by resorting to the diacritic use of cyclic and non-cyclic affixes. In English, for example, there are two types of suffixes: stress-shifting (*párent, paréntal*) and stress-neutral (*párent, párenthood*) (Burzio 1994 among others). Halle and Vergnaud re-analyze the difference as one of cyclicity, stress-shifting suffixes being cyclic and stress-neutral suffixes non-cyclic, and introduce the Stress Erasure Convention (SEC). In their analysis, affixes are assumed to bear diacritic marks, either cyclic or non-cyclic to indicate their phonological class. These marks will determine whether an affix triggers the 'cyclic' rules or the non-cyclic ones which apply only once at the end of all cycles. The stress-shifting affixes are cyclic, requiring the erasure and reconstruction of the stress/accent plane. Stress neutral affixes are non-cyclic, which does not change the metrical structure given in previous cycles. In sum, cyclic analysis of accent shifting affixes crucially refers to the diacritic mark of cyclic vs. non-cyclic affixes and a rule which recognizes a morphological environment and applies to a set of morphemes. The cyclic analysis may be applicable to accent patterns in Hamkyeng causative forms. Marking the accent-shifting causative suffixes in Hamkyeng Korean as cyclic affixes would account for the accent difference among the causative affixes.

The same idea is reflected in some of Optimality Theoretic analyses on such exceptional affixes in other languages. The accent affecting, exceptional affixes can be accounted for by assuming that the accent of exceptional affixes should be preserved at the cost of other constraints. Given that MAX (IO) (Tcaus) is a constraint preserving the accent of the exceptional affixes, MAX (IO) (Tcaus) is supposed to outrank the other constraints.

³ There are also many other studies indicating that exceptional forms participate in word formation process. For example, Bybee & Moder (1983) revealed that native speakers of English produced more marked forms with vowel mutations as in *sing-sang-sung* when they were asked to make up a new past form of a given nonce word.

This line of diacritics-based account, however, appears to have some drawbacks: it crucially relies on the distinction between cyclic & non-cyclic dichotomy and the notion that a set of morphemes suppresses a root accent: idiosyncrasy of the exceptional affixes. It, however, does not account for why *-ki* occurs in the coinage test for the native speakers of Hamkyeong Korean.

With this question in mind, we will show that non-cyclic analysis in the frame O-O correspondence is equally plausible to account for the root accent neutralization caused by the exceptional affixes. Central to the analysis is the claim that the uniform accent pattern for words created by the same morphological process should be considered as a result of O-O correspondence (i.e., Word-to-Word Analogy). The accent pattern can result from matching the prosody of words derived by the same suffixation process.

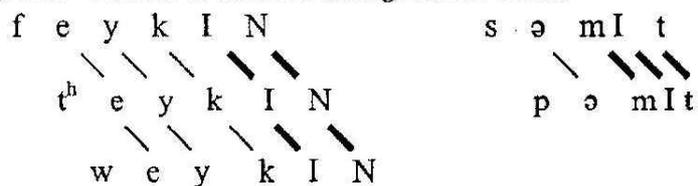
4. Phonological Affinity-Based Output-to-Output Correspondence

Extending correspondence theory to paradigmatic relations, Benua (1995, 1997) proposes that two output words that are morphologically related are subject to a transderivational faithfulness relation. In the transderivational correspondence theory, the O-O correspondence relation is regulated by a set of O-O identity constraints, which demands phonological identity of paradigmatically related elements in the two words.

From the section title, one may easily notice that the present analysis is named *phonological affinity-based* Output-to-Output Correspondence somewhat differently from the traditional O-O Correspondence proposed by Benua.

The reason is that it builds on a general conception of the lexicon which is fully parallel (network model of Bybee 1985, 1995, 2006 and Langaker 1987). In this model, morphological properties of words, paradigms and morphological patterns once described as rules emerge from associations made among related words in lexical representation. In other words, lexical connections rather than rules relate basic and derived forms as well as two derived forms which belong to different paradigms. Morphological affiliations are made by means of connections among surface forms as shown in Figure 1. The diagrams in Figure 1 illustrate the lexical connections among present participle forms and ones among phonologically similar words in English.

Figure 1. Lexical Connection among Surface Forms⁴



⁴ Thick lines stand for a relatively stronger priming effect.

It can be seen that affixes are represented lexically and that they are attracted to their bases and the affixes form phonological and semantic connections with other instances of the same affix. The diagram on the right indicates the lexical connections between the two phonologically similar words as they share the common sound sequence of '-mit.' Such a connection has been found in various works on lexical representation. For instance, it is found that there is a strong priming effect among the words related by the same pronunciation at the word final position even though they do not belong to the same paradigm (Fowler, Napps, and Feldman 1985, Feldman 1992). Because of their affinity in the surface phonological forms, words such as 'submit' prime semantically unrelated words like 'permit.' In the present analysis, these connections among words are targeted by certain constraints that play a role in determining phonological form (Burzio 1996).

The core idea of the phonological affinity-based O-O correspondence is concerned with extending the lexical connections among words with phonological similarity in the lexicon. Although the lexical connections among words are the base of O-O correspondence in Correspondence Theory, its idea of lexical connection is only assumed among words in the same paradigm (Benua 1995; Burzio 1994, 1996; Ito and Mester 1996; Kager 1996; Kensowicz 1997 and McCarthy 1995).

To recapitulate, the present analysis departs from the paradigm-based OT framework in the conception of lexicon. Unlike the paradigmatic framework, it is based on the fully parallel lexicon in which morphologically related words are connected to each other even though they are not in the same paradigm. Therefore, one of the contributions of this line of O-O correspondence theory is that it re-opens a way to account for the priming effects and to reflect speakers' intuition about lexical connection in a linguistic theory.

5. Optimality Analysis of Verbal Accent Patterns in Hamkyeng Korean

In order to understand the analysis of O-O correspondence for accent-neutralization, we should first discuss an Optimality analysis of verbal accent pattern in general. The culminativity of accent (i.e. only one accent per prosodic word) is accounted for by the interactions among constraints given in (5), (6) and (7). Since accented syllables surface as a high toned syllable in Hamkyeng Korean, accented words are assumed to be tone-bearing words in Hamkyeng Korean. Hence, tone is consistently used to indicate accent in the present analysis.

(5) SPEC(T): a prosodic word should have a tonal specification.

(6) *T: penalize a tone.

(7) MAX(IO)(T): every tone in an input has a correspondent in an output.

Notice that the three constraints conflict with one another. SPEC(T) which requires a prosodic word have a tone conflicts with *T. *T, in turn, conflicts with MAX(IO)(T) since it requires deletion of a tone in the input at the cost of MAX(IO)(T) violation. Therefore, when SPEC(T) dominates *T, which dominates MAX(IO)(T), one and only one accent/tone per prosodic word is possible.

(8) Culminativity of Accent: SPEC(T) >> *T >> MAX(IO)(T)

Post-root accent class is characterized by invariantly toneless roots, immediately followed by a high toned affixal syllable. The invariantly toneless roots motivate a constraint ensuring realization of a high tone on the leftmost affixal syllable, as suggested in (9):

(9) ALIGN-L (T, Affixes): tones should align with the left edge of an affix domain where an affix domain refers to a maximal sequence of affixes. (Penalize the syllables separating the tone-bearing syllable from the syllable containing the leftmost affixal segment.)

At this point, recall that there are two additional types of accent patterns in Hamkyeng Korean as mentioned in section 2. Let us examine each type. First, in alternating accent class, tone is realized on root-final syllables when followed by consonant-initial suffix. This motivates a constraint ALIGN-R (Tr, Root) which requires a root tone to be realized on the root final syllable as shown in (10). This constraint should dominate ALIGN-L (T, Affixes) in order to get the tone pattern realized in alternating accent class as illustrated in (11).

(10) ALIGN-R (Tr, Root): right edge of a root tone is aligned with right edge of a root.

(11) Tone Pattern in Alternating Accent Class:
ALIGN-R (Tr, Root) >> ALIGN-L (T, Affixes)

Second, the tone in root accent class is fixed to a syllable in a root. This indicates that faithfulness constraints such as MAX (IO)(T) and MAX (IO)(A), which require preservation of a root tone in an input, dominate ALIGN-R (Tr, Root).

(12) MAX (IO)(A): every association line in an input has a correspondent in an output.⁵

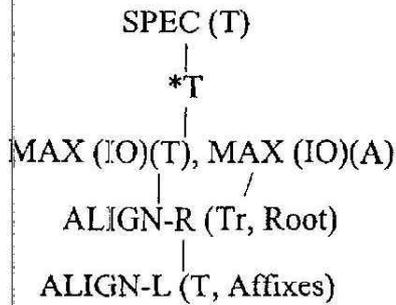
⁵ McCarthy and Prince (1995) defines the correspondence between strings (i.e. segments) for simplification. They, however, acknowledge that the correspondence can be defined over any set of elements in representations (McCarthy and Prince 1995: 262 footnote 7).

Hence, the constraint ranking for the root accent class can be expressed as follows:

- (13) Immobility of Root Accent in Root Accent Class:
 MAX (IO)(T), MAX(IO)(A) >> ALIGN-R (Tr, Root)
 >> ALIGN-L (T, Affixes)

The constraints discussed so far are ranked in (14):

- (14) Constraint Ranking for Verbal Accent Patterns in Hamkyeng Korean



In this section, we have shown that the verbal accent patterns in Hamkyeng Korean are accounted for by the interaction between faithfulness constraints and alignment constraints. With the constraint ranking given in (14) in mind, let us move to the analysis of the accent pattern in causative forms in the next section.

6. Accent-Neutralization of the Exceptional Affixes as an Effect of O-O Correspondence

The constraint ranking given in the previous section correctly predicts an optimal output form for accent-neutral affix *-ke* as illustrated in tableau 1 and tableau 2. Tableau 1 illustrates the case where it is combined with an alternating accent class.

Tableau 1: H (alternating accent class)
 /kapyəp-ke-ha-ta/ 'to make something light'

	SPEC (T)	*T	MAX (IO) (T)	ALIGN-R (Tr, Root)	ALIGN-L (T, Affixes)
a. H kapyəp ke:hata		*		*!	
⇒ b. H kapyəpkəhata		*			*

Notice that the decision for an optimal output is made in ALIGN-R (Tr, Root). Candidate (a) with a root tone on the causative affix is less optimal than candidate (b) because it crucially violates ALIGN-R (Tr, root). Therefore, candidate (b) which has no violations of ALIGN-R (Tr, Root) is the optimal output. A similar explanation holds for tableau 2 where *-ke* is attached to a root accent class.

Unlike the case in tableau 1, the decision for an optimal output is made by the constraint, MAX (IO)(A) in tableau 2. Candidate (b) violates MAX (IO)(A) because the association between the word initial syllable and the accent is deleted and another association line between a suffixal syllable and the tone is added in the output, while candidate (a) has no violation of MAX(IO)(A) since no change in the association is involved. Therefore candidate (a) is an optimal output.

Tableau 2:

H	(root accent class)
/mantil-ke-ha-ta/	
	‘to make somebody produce something’

	SPEC (T)	*T	MAX (IO)(T)	MAX (IO)(A)	ALIGN-R (Tr, Root)	ALIGN-L (T, Affixes)
⇒ a. H mantilkehata		*				*
b. H mantilkehata		*		*!	*	

The constraint ranking given in (14), however, incorrectly predicts an output form when an exceptional affix is preceded by a root which belongs to root accent class, as shown in tableau 3.

Tableau 3:

H ¹ H ²	(exceptional tonal behavior of causative <i>-ki</i>)
/olm-ki-ta/	
	‘to make somebody infected’

	SPEC (T)	*T	MAX (IO)(T)	ALIGN-R (Tr, Root)	ALIGN-L (T, Affixes)
⇒ a. H ¹ olm-ki-ta		*	*		* (incorrect optimal output form)
b. H ² olm-ki-ta		*	*	*	(actual output form)

The problem in tableau 3 results from the fact that the root accent in root accent class is always preserved by the constraint ranking in (14). An alternative way to address this problem is 'reranking' of the two constraints as in (15)

(15) An alternative: reranking of the two constraints:

Exceptional affixes: ALIGN-L (T, Affixes) >> ALIGN-R (Tr, Root)

Other affixes: ALIGN-R (Tr, Root) >> ALIGN-L (T, Affixes)

Putting aside the absence of independent evidence for the reranking of constraints, this line of account may encounter a problem: As mentioned in section 3, Hamkyeng Korean lacks the affix *-li*. Instead, affixes such as *-ki*, or *-ku* are used. After native speakers of Hamkyeng Korean were informed that *-li* is the same kind of causative affix as *-ki*, or *-ku*, they were asked to use *-li* instead of *-ki* or *-ku*. Unexpectedly, they had a difficulty in producing a high toned *-li*. Instead, they tend to keep the same accent pattern as the bare root has. Repeating the examples mentioned in section 3, they were more likely to produce *ál-li-ta* 'to make somebody know' rather than *al-li-ta*. This is hardly explained by the reranking approach. According to reranking approach, the new form of causative is expected to acquire a diacritic and behave exactly like the other lexical causatives in Hamkyeng Korean. Several questions naturally arise: If they simply resort to reranking of constraints, why do they have a difficulty in produce *al-lí-ta* correctly, even after being informed that *-li* corresponds to *-ki* or *-ku*? Will this be a mere performance error or will this suggest something?

The answer to the latter question appears to be yes. We propose the native speakers' responses suggest that they employ word-to-word analogy for the prosody matching. In their lexicon, there is no high-toned *-li*, and thus there is no base to match the prosody. It seems natural that they have a hard time in getting a correct prosody for a new form when there is no base to match with. Put differently, the uniform accent pattern in lexical causative verbs is an effect of correspondence between two words with the same form of causative affix. This idea is reflected in the constraint in (16).

(16) IDENT(OO)(Tcaus): Let *x* be a tone-bearing causative morpheme in a base and *y* be any correspondent in an output. Correspondents have identical tonal specification.

IDENT(OO)(Tcaus) ensures that a lexical causative suffix in a base has the same tone specification in its correspondent in another output. Therefore it is violated if the lexical causative has non-uniform tone pattern in two words created by the same suffixation.

Introduction of a constraint as in (16) will naturally raise a question about how to derive the base of O-O correspondence. The answer is that it is driven by the same constraint ranking employed for the general accent

pattern in verbs. Consider tableau 4, which illustrates how to derive a base for O-O correspondence. It contains two optimal output forms for two different inputs. One of the input forms belongs to the post-root accent class and the other to the root accent class.

Candidate (a) and candidate (c) in tableau 4 are optimal outputs for input /pəs-ki-ta/ and /olm-ki-ta/ respectively under the constraint ranking in tableau 4. Notice that the base for O-O correspondence is selected by the same constraint given in (14). It is chosen by comparing the two optimal outputs. Though both candidates (a) and (c) are optimal output forms of two different inputs, candidate (c), with fewer violations in Max (IO)(T) and MAX (IO)(A) is better than candidate (a) and thus predicted to be a base for O-O correspondence.

Tableau 4:



	MAX (IO) (T)	MAX (IO) (A)	ALIGN-R (Tr, Root)	ALIGN-L (T, Affixes)
Input H ¹ H ² olm-ki-ta				
⇒ a. H ¹ olm-ki-ta	*	*		*
b. H ² olm-ki-ta	*	*		
Input H pəs-ki-ta				
⇒ ⇒ c. H pəs-ki-ta (base)				
d. H pəs-ki-ta		*!		*

Given the base selected, the accent neutralization is shown to be an effect of IDENT (OO) (Tcaus) dominating other alignment constraints as illustrated in tableau 5.

Tableau 5:

Input H¹ H²

cɪm-ki-ta

'to make someone be infected'

Base: pɔs-ki-ta	IDENT (OO)(Tcaus)	MAX (IO)(T)	ALIGN-R (Tr, Root)	ALIGN-L (T, Affixes)
⇒ a. oɪmkita		*	*	
b. oɪmkita	*	*		*

Tableau 5 shows that accent neutralization of the exceptional affixes is an effect of IDENT(OO)(Tcaus) dominating other alignment constraints. Candidate (b) is less optimal than candidate (a) because the high toned suffix *-ki* in the base is not high toned in the corresponding output form (i.e., candidate (b): *oɪmkita*). On the other hand, the causative *-ki* is high toned in the base and is also high toned in candidate (a). Therefore candidate (a), satisfying IDENT(OO)(T) is chosen as the optimal output.

In this section, we have shown that accent neutralization is an interaction between IDENT(OO)(T), ensuring the same tonal specification for lexical causative suffixes, and other constraints regarding input-out correspondence.

7. Conclusion

In this paper, we have argued that accent-neutralization found in causative forms in Hamkyeng Korean can be equally explained by an effect of phonological affinity-based O-O correspondence. The O-O correspondence analysis finds several advantages over previous approaches to the accent neutralization: First of all, the distinction between an accent-attracting affix and an accent-neutral affix results from a fundamental tenet of OT, namely constraint ranking, and thus this analysis does not require the use of a diacritic marker of cyclic and non-cyclic affixes. Consequently, the distinction between cyclic & non-cyclic dichotomy and the notion that a set of morphemes suppresses a root accent are no longer required in O-O correspondence approach.

Second, the O-O correspondence approach can be extended to effects in word classes created by nonaffixal morphology, namely in compounding and nonconcatenative processes, whereas the cyclic approach to a certain set of affixes is limited to affixation.

Finally, this present analysis does not require arbitrary reranking of constraints. More importantly, it incorporates the notion of analogy within the framework of theoretical phonology.

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