

Why [s]? An Analogical Account of the Epenthetic Consonant Quality in Non-standard Korean*

JI YEA KIM

Stony Brook University

1 Introduction

While variation has been of great interest to phonologists, there has been an asymmetry in the amount of attention that different variants of suffixed forms of nouns have received in Korean. In Korean, it has been well-established

* I would especially like to thank Professor Lori Repetti for her valuable comments. I am also grateful to Professor Jiwon Yun and Professor Jeffrey Heinz for their helpful suggestions. Thanks also go to the audience and anonymous reviewers of the 29th Japanese/Korean Linguistics Conference. Part of this research was presented at the 6th Annual Meeting on Phonology. All errors are my own.

Japanese/Korean Linguistics 29.

Edited by Kaoru Horie, Kimi Akita, Yusuke Kubota, David Y. Oshima, and Akira Utsugi.

Copyright © 2022, CSLI Publications.

that variation occurs when a vowel-initial suffix (e.g., *-i* nominative (NOM)) is attached to noun stems that end in a simplex consonant (C) or a consonant cluster (CC). First, output forms can be fully faithful to input forms, either simplex-final (1a) or complex-final (2a) stems. Second, as for noun stems ending in a consonant cluster, output forms can also be simplified via consonant deletion (2b). In addition, there is another yet relatively understudied form: [s] can appear after a consonant (1c, 2c) (Kim 2016, 2018, 2019). The consonant [s] is non-etymological and thus epenthetic since it does not have correspondence in input, either in noun stems (e.g., */paps/ ‘rice’, */talks/ ‘chicken’) or in vowel-initial suffixes (e.g., */si/ NOM).

- | | | |
|-------------------|---------------|---------------|
| (1) C-final stem | /pap-i/ | ‘rice-NOM’ |
| | a. [pa.p̥i] | |
| | b. N/A | |
| | c. [pap.si] | |
| (2) CC-final stem | /tal̥k-i/ | ‘chicken-NOM’ |
| | a. [tal̥.ki] | |
| | b. [ta.ki] | |
| | c. [tal̥k.si] | |

[s]-epenthesis occurs consistently in nonstandard, colloquial Korean (1c, 2c), but it has been relatively less studied than the other two variants for suffixed forms of nouns in Korean (e.g., Kenstowicz 1996, Ko 2006, Yun 2008). In particular, it has been a puzzle as to what determines the quality of this epenthetic consonant [s]: why is [s] but not any other consonant epenthesized? [s] is distinct from other consonants that are known to be often epenthesized in the languages of the world, such as glottal stop or glides. This study shows that [s]-epenthesis in nonstandard Korean is a problem for previous approaches that deal with the quality of epenthetic consonants. This paper instead proposes an analogical account, expanding on Kim (2018, 2019).

This paper is organized as follows. Section 2 reviews previous approaches that deal with the quality of epenthetic consonants: two purely phonological markedness-based approaches (Section 2.1 and Section 2.2), a splitting account (Section 2.3), and a historical approach (Section 2.4). It also shows that [s]-epenthesis in nonstandard Korean cannot be consistently accounted for by any of the previous accounts. Section 3 provides an analogical account with two pieces of evidence that are observed in other parts of Korean: [s] is likely to be preserved from input /Ts/ clusters (where ‘T’ represents a stop) (Section 3.1), and [s] can be an output variant of input /h/ in onset position (Section 3.2), as an extension of Kim (2018, 2019). Section 4 concludes the paper.

(5) Application of a modified markedness hierarchy to [s]-epenthesis

/pap-i/ 'rice-NOM'	*ʔ	*DORS	*LAB	*COR	*PHAR
a. [pap.ʔi]	*!				*!
● b. [pap.hi]					*!
c. [pap.ti]				*!	
⊖ d. [pap.si]				*!	

Since the context-free markedness hierarchy based on Place does not predict [s]-epenthesis in nonstandard Korean, one might argue that the hierarchy should be modified by considering various factors that are discussed in Section 2.2.

2.2 Markedness Hierarchy Based on Syllable Positions and Sonority

Uffmann (2007) proposes a more fine-tuned markedness hierarchy by taking syllable positions, such as syllable margins and peaks, and sonority into consideration (6). Syllable margins are onsets or codas, whereas syllable peaks are nuclei (Uffmann 2007: 459).

- (6) a. *Margin/V >> *Margin/r >> *Margin/l >> *Margin/nas >>
 *Margin/obs >> *Margin/lar
 b. *Peak/lar >> *Peak/obs >> *Peak/nas >> *Peak/l >> *Peak/r >>
 *Peak/V

For syllable margins (particularly onset), low-sonority sounds are preferred, which chooses glottal stop for the optimal epenthetic consonant (7a). For intervocalic position, in contrast, homorganic glides are inserted since higher-sonority sounds are preferred in peak position (7b, c).

- (7) a. [ʔ]orkan 'hurricane' German (Uffmann 2007: 457)
 b. si[j]awase 'happiness' Japanese (Uffmann 2007: 458)
 c. gu[w]ai 'condition' Japanese (Uffmann 2007: 458)

Uffmann's hierarchy shows instances in which epenthetic qualities are context-dependent. However, it does not explain [s]-epenthesis in nonstandard Korean since a more fine-grained sonority scale suggests that stops are less sonorous than fricatives (Clements 1990) and that stops are more suitable for onset position (8).

- (8) Stops < Fricatives < Nasals < Liquids < Glides < Vowels

This then overpredicts [t] but not [s] to be inserted in onset position (9), but *[pap.ti] is not attested for /pap-i/ 'rice-NOM', even though there are no phonotactic violations with this form.

- (9) Application of a more fine-tuned context-dependent markedness hierarchy to [s]-epenthesis

/pap-i/ 'rice-NOM'	*Margin/fricative	*Margin/stop
● a. [pap.ti]		*!
☹ b. [pap.si]	*!	

We have seen in Sections 2.1 and 2.2 that markedness hierarchies for epenthetic consonants, either context-free or context-dependent, do not account for [s]-epenthesis in nonstandard Korean. One might doubt at this point whether [s] is in fact an epenthetic consonant, which is explored in Section 2.3.

2.3 Splitting Account

Unlike the two previous epenthetic approaches discussed above, Staroverov (2014) claims that there is no insertion process and that a seemingly epenthetic consonant is in fact the outcome of feature splitting of an input vowel, at the expense of INTEGRITY (10) (Staroverov 2014: 3 following McCarthy & Prince 1995: 124), as illustrated in Figure 1.

- (10) INTEGRITY: assign a violation for every input segment that has multiple correspondents in the output

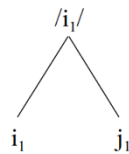


Figure 1. Illustration of splitting (Staroverov 2014: 6)

It is crucial that INTEGRITY is dominated by IDENT-F (11) (Staroverov 2014: 3 following McCarthy & Prince 1995).

- (11) IDENT-F: let α be a segment in the input and β be a correspondent of α in the output. Assign a violation if α is $[\gamma F]$, and β is not $[\gamma F]$.

The constraint ranking in which INTEGRITY is dominated by IDENT-F (for example, IDENT-[place]) accounts for homorganic glide formation via splitting: /i/ splits to [ij] (12a, 13a), and /u/ splits to [uw] (12b), as illustrated for Persian (Staroverov 2014: 135). Note that input and output segments that split share the same subscript.

- (12) a. /i₁/→[i₁j₁] /sep̚hi₁-ɔ₂n/ [sep̚hi₁j₁ɔ₂n] ‘soldiers’
 b. /u₁/→[u₁w₁] /ʔahu₁-i₂/ [ʔahu₁w₁i₂] ‘a deer’

(13) Splitting account

/sep̚hi ₁ -ɔ ₂ n/ ‘soldiers’	IDENT-[place]	INTEGRITY
☞ a. [se.pɔ̚.hi ₁ .j ₁ ɔ ₂ n]		*
b. [se.pɔ̚.hi ₁ .ʔ ₁ ɔ ₂ n]	*!	*

Splitting also accounts for the emergence of so-called marked segments. In Mongolian, for instance, dorsal consonants appear in intervocalic position (14).

- (14) a. /sana-iŋ/ [sanagɪŋ] ‘thought-GEN’
 b. /xu:-iŋ/ [xu:gɪŋ] ‘boy-GEN’

The emergence of dorsal consonants is problematic to markedness-based approaches, particularly Lombardi (2002), since Dorsals are relatively more marked: *DORSAL, *LABIAL >> *CORONAL >> *PHARYNGEAL. Staroverov, on the contrary, argues that Dorsals share the same Place feature with all vowels under the assumption that all vowels are [dorsal]. This again supports Staroverov’s claim for splitting from an adjacent vowel.

However, the splitting analysis does not account for [s]-epenthesis in nonstandard Korean since there is no featural identity between vowels and the particular consonant [s]. In other words, if we assume that [s] splits from the vocalic part of any vowel-initial suffix in nonstandard Korean (e.g., *-i* NOM, *-i* ACC(usative), *-e* DAT(ive)), there will be a fatal violation of IDENT-[place] since [s] is coronal, whereas all vowels are dorsal (15b).² The ranking will then incorrectly predict [pap.ki] for /pap-i/ ‘rice-NOM’ since /k/ and vowels share the same Place feature, [dorsal] (15a).

(15) Application of the splitting account

/pap-i/ ‘rice-NOM’	IDENT-[place]	INTEGRITY
☹ [*] a. [pap.ki]		*
☺ b. [pap.si]	*!	*

We have seen in Sections 2.1, 2.2, and 2.3 that none of the synchronic approaches, whether markedness-based epenthetic approaches or splitting account, explains why [s] is epenthesized in nonstandard Korean. One might then pursue a diachronic approach, which is stated in Section 2.4.

² Some argue that front vowels are coronal (e.g., Clements 1991, Hume 1992).

2.4 Diachronic Account

Samuels & Vaux (2019) mainly focus on dorsal epenthesis in Mongolian and provide an analysis that is different from Staroverov's (2014). They claim that modern Mongolian epenthetic dorsal consonants trace back to historical lenition and deletion of intervocalic dorsal consonants. To be specific, it was intervocalic dorsal consonants that underwent spirantization and deletion, which in turn resulted in vowel hiatus (Samuels & Vaux 2019). Speakers of modern Mongolian reanalyze vowel hiatus as the site for dorsal re-insertion or epenthesis.

Similarly, Blevins (2004, 2008) accounts for phonologically opaque patterns of epenthesis in Land Dayak from a historical perspective, especially from an Evolutionary Phonology perspective (16) (Blevins 2008: 11).

- (16) Change (i): Final laryngeal epenthesis $\emptyset > ? / V_]_{PrWd}$
 Change (ii): Spirantization $? > x / u_$
 *batu_ > *bahtu? > batu[x] 'stone'

According to Lombardi's (2002) markedness hierarchy, [x] is not an unmarked consonant. Blevins claims that the emergence of [x] traces back to the two independent sound changes (i.e., Change (i) and Change (ii)). Without the consideration of diachronic changes, it seems that the epenthesis phenomenon is phonologically opaque.

Diachronic approaches are appealing to some extent since they account for the emergence of the so-called marked segment (i.e., dorsal), which would not otherwise be explained from a synchronic perspective. However, although it is successful for some cases that align well with the historical story involving multiple phonological processes as in Mongolian and in Land Dayak, it is insufficient for other cases. In particular, there is no historical evidence for the presence of underlying /s/ either in stem-final (e.g., */paps/ 'rice') or in suffix-initial position (e.g., */-si/ NOM) in the Korean case.

In Section 2, we have reviewed four previous accounts of (seemingly) consonant epenthesis in the world's languages. Three of them were synchronic approaches, either markedness-based epenthetic accounts or a splitting account. There was also a diachronic view. In sum, none of the previously proposed analyses fully accounts for the peculiar epenthetic quality involved with [s] in nonstandard Korean. In the following section, I provide an alternative based on an analogical approach and show that it accounts for the particular consonant [s] that is used as an epenthetic consonant in nonstandard Korean.

3 Analogical Approach

We have reviewed previous approaches to consonant epenthesis and seen that [s]-epenthesis in the suffixed forms of nouns in nonstandard Korean is not accounted for by any of the accounts. In agreement with this evaluation, Kim (2018, 2019) proposes a different approach: [s]-epenthesis is accounted for by an analogy with frequent patterns in Korean. That is, [s] is chosen to be epenthesized since it is a frequent consonant both in input and output forms in the language. First, in input forms, /s/ is a third most frequent consonant (11.7%) among 18 consonants that appear in initial position (17) (Shin 2010).

(17) /k/ (12.3%) > /c/ (12.0%) > /s/ (11.7%) > /h/ (10.2%) ...

Considering that the difference between [s] and the top two consonants (i.e., /k/ and /c/) is not large in input forms, it will be meaningful to examine how frequent [s] actually is in output forms.

For output forms, it is notable that various stem-final coronal obstruents /s, t, t^h, c, c^h/ are most likely to be realized as [s] when a vowel-initial suffix (e.g., -e DAT) is attached to noun stems (18) (Jun 2010).

- (18) /so^{t^h}-e/ ‘pot-DAT’
a. [so.t^he]
~b. [so.te]
~c. [so.c^he]
~d. [so.se] (the most frequent form)

As an extension of Kim’s (2018, 2019) language-specific frequency-based analysis that considers both input and output forms, this paper provides two additional pieces of evidence for the analogical approach. Special attention is paid to the fact that /s/ tends to be preserved in the consonant clusters /ps/ and /ks/, and that it is syllabified in onset position (Section 3.1). Another supporting fact comes from the alternation between [h] and [s] in onset position in some regional varieties of Korean (Section 3.2). In other words, this paper proposes that having an epenthetic [s] in onset position in the suffixed forms of nouns in nonstandard Korean is due to the analogy of the frequent patterns that are observed in other phonological phenomena of the language.

3.1 [s]-preservation as Onset in /Ts/ Clusters

As shown in (2), when a vowel-initial suffix is attached to noun stems that end in a consonant cluster, output forms can be either fully faithful to the input form (2a), or simplified by deleting one of the two consonants (2b). Results of Kim’s (2016) production experiment show that among the four consonant clusters /ps/, /ks/, /lk/, /ls/ that appear in the stem-final position of

nouns, the /Ts/ clusters (i.e., /ps/ and /ks/) were much more likely to be realized in fully faithful forms than in simplified forms, compared to the non-/Ts/ clusters (i.e., /lk/ and /ls/). For example, [kap.si] (99%) and [sak.si] (81%) were much more frequently produced than [ka.pi] (1%) and [sa.ki] (19%) for /kaps-i/ ‘price-NOM’ and /saks-i/ ‘wage-NOM’, respectively, whereas the non-/Ts/ clusters showed the opposite pattern (i.e., the preference for simplified forms for /lk/ and /ls/) (Figure 2).

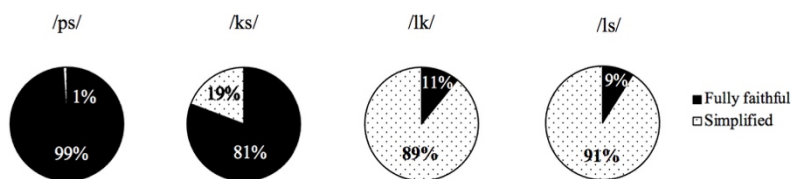


Figure 2. Percentages (%) of fully faithful forms and simplified forms by consonant clusters (Kim 2016)

The fully faithful forms maintain both input consonants by syllabifying the first one as coda and the second one as onset. Note that the second consonant in onset position is [s], which is followed by the vocalic part of the vowel-initial suffix. This means that the syllable structure [sV] is a frequent pattern (e.g., [si] in [kap.si] ‘price-NOM’ and [sak.si] ‘wage-NOM’). As speakers are exposed to the [sV] structure frequently, they may extend it even to non-etymological-/s/ contexts by inserting an [s] (1c, 2c). In addition, since the output forms where both consonants are preserved are standard forms, it is likely that speakers epenthesize [s] in other irrelevant contexts as a case of hypercorrection.

3.2 [s] as a Variant of /h/ in Onset

[s] is not only chosen for epenthesis but also as an alternative to /h/ before the high vowel /i/ in some regional dialects of spoken Korean, which is referred to as *h-to-s* alternation or *h-palatalization* (19) (Bae 2014: 41).

- (19) a. /him/ [him]~[sim] ‘power’
 b. /hjuŋ/ [hjuŋ]~[suŋ] ‘fault’

It is widely accepted that a less salient sound is more prone to deletion or alternation. Turkish /h/, for instance, undergoes optional deletion before sonorants (e.g., [fihrist] ~ [fi:rist] ‘index’; Mielke 2002: 385). Likewise, it is likely that Korean /h/ undergoes a sound change since it is a perceptually weak sound. I propose that the perceptually weak consonant /h/ in onset position in particular is replaced with the perceptually stronger consonant [s].

Based on the optional phonological rule that requires *h-to-s* alternation, native speakers of Korean may make an analogy and extend the knowledge of [s] even to the phenomena that are not necessarily relevant to *h-to-s* alternation. In other words, having an [s] in syllable onset position may have been applied to an excessive degree.

In this section, we have discussed the two pieces of evidence for the analogical approach to the quality of the epenthetic consonant [s]. They support the hypothesis that [s] is the optimal consonant that is epenthesized in onset position.

4 Conclusion

This paper has examined [s]-epenthesis in the suffixed forms of nouns in non-standard Korean, addressing the question of why [s] but not any other consonant is epenthesized. While there have been various accounts of epenthetic qualities in the world's languages, none of them predicts [s] as an epenthetic consonant. Following Kim (2018, 2019), this paper argues for an analogical approach and suggests that speakers of a language make an analogy with a consonant that is involved in productive alternations and frequent even in other parts of the language and choose to epenthesize it. The overall proposal of this study puts emphasis on and contributes to the role of frequent patterns and the robustness of analogy in determining the quality of the epenthetic consonant [s] in nonstandard Korean.

5 References

- Bae, H.-J. 2014. Study on Variation and Change of k-Palatalization, h-Palatalization and 'o>u' Appearing in Dalseong Dialect. *Hanmincokemwunhak* 66: 31-59.
- Bat-El, O. 1996. Selecting the Best of the Worst: The Grammar of Hebrew Blends. *Phonology* 13: 283-328.
- Blevins, J. 2004. *Evolutionary Phonology: The Emergence of Sound Patterns*. Cambridge; New York: Cambridge University Press.
- Blevins, J. 2008. Consonant Epenthesis: Natural and Unnatural Histories. *Linguistic Universals and Language Change*, ed. J. Good. Oxford: Oxford University Press.
- Clements, G. N. 1990. The Role of the Sonority Cycle in Core Syllabification. *Papers in Laboratory Phonology I: Between the Grammar and Physics of Speech*, eds. J. Kingston & M. E. Beckman, 283-333. Cambridge: Cambridge University Press.
- Clements, G. N. 1991. Place of Articulation in Consonants and Vowels: A unified Theory. *Working Papers of the Cornell Phonetics Laboratory* 5: 77-123.
- Davis, S. & S.-H. Shin. 1999. The Syllable Contact Constraint in Korean: An Optimality-theoretic Analysis. *Journal of East Asian Linguistics* 8.4: 285-312.
- Hume, E. V. 1992. Front Vowels, Coronal Consonants and their Interaction in Non-linear Phonology. Doctoral dissertation, Cornell University.

- Jun, J. 2010. Stem-final Obstruent Variation in Korean. *Journal of East Asian Linguistics*, 19.2: 137-179.
- Kenstowicz, M. 1996. Base Identity and Uniform Exponence: Alternatives to cyclicity. *Current Trends in Phonology: Models and Methods*, eds. J. Durand & B. Laks, 363-93. Salford, Manchester: European Research Institute of the University of Salford.
- Kim, J. Y. 2016. Variation in Stem-final Consonant Clusters in Korean. Ms, Seoul National University.
- Kim, J. Y. 2018. Variation in Stem-final Consonant Clusters in Korean Nouns. Qualifying Paper. Stony Brook University.
- Kim, J. Y. 2019. Motivations for Consonant Epenthesis in Nonstandard Suffixed Forms of Korean Nouns. *Supplemental Proceedings of the 2018 Annual Meeting on Phonology*, eds. K. Hout, A. Mai, A. McCollum, S. Rose & M. Zaslansky. Washington, DC: Linguistic Society of America.
<http://dx.doi.org/10.3765/amp.v7i0.4570>
- Ko, H. 2006. Base-Output Correspondence in Korean Nominal Inflection. *Journal of East Asian Linguistics* 15: 195-243.
- Lombardi, L. 2002. Coronal Epenthesis and Markedness. *Phonology* 19.2: 219-251.
- McCarthy, J. J. & A. Prince. 1993. Prosodic Morphology I: Constraint Interaction and Satisfaction. Ms, University of Massachusetts, Amherst & Rutgers University.
- McCarthy, J. J. & A. Prince. 1995. Faithfulness and Reduplicative Identity. Ms, University of Massachusetts, Amherst & Rutgers University.
- Mielke, J. 2002. Turkish /h/ Deletion: Evidence for the Interplay of Speech Perception and Phonology. *Proceedings of the North East Linguistics Society* 32.2: 383-402.
- Payne, D. L. 1981. The Phonology and Morphology of Axininca Campa. Arlington: Summer Institute of Linguistics & University of Texas at Arlington.
- Samuels, B. D. & B. Vaux. 2019. Mongolic Dorsals are Truly Epenthetic. Manuscript available in *Radical: A Journal of Phonology*. <http://radical.cnrs.fr/samuels-vaux-mongolic-dorsals-are-truly-epenthetic/>.
- Shin, J. 2010. Phoneme and Syllable Frequencies Based on the Analysis of Entries in the Korean Dictionary. *Korean Journal of Communication Disorders* 15: 94-106.
- Staroverov, P. 2014. Splitting Theory and Consonant Epenthesis. Doctoral dissertation, Rutgers University.
- Uffmann, C. 2007. Intrusive [r] and Optimal Epenthetic Consonants. *Language Sciences* 29.2-3: 451-476.
- Yun, J. 2008. Noun-Verb Asymmetries in Korean Phonology. *Proceedings of the West Coast Conference on Formal Linguistics*, eds. N. Abner & J. Bishop, 449-57. Somerville: Cascadilla Proceedings Project.