

## Perceptual similarity in fricative-initial cluster adaptation

Suyeon Yun (University of Toronto Scarborough)

This study presents and analyzes novel cross-linguistic generalizations about vowel epenthesis in fricative-initial clusters in loanword adaptation. It is well known that clusters that begin with a sibilant fricative show variation in epenthesis sites. In Hindi, for example, word-initial sibilant-stop clusters are borrowed with external epenthesis (e.g., ‘school’ → [ɪskul]), whereas sibilant-sonorant clusters are borrowed with internal epenthesis (e.g., ‘slipper’ → [silper]; Singh 1985). Notably, Fleischhacker (2001) suggests an implicational universal in (1), in which if a cluster undergoes internal epenthesis, all the other clusters on its right also undergo internal epenthesis. (S: voiceless sibilant fricative, T: stop, Y: glide, R: sonorant)

(1) Epenthesis patterns in sibilant-initial clusters (Fleischhacker 2001)

ST		Sm		Sn		Sl		Sr		SY		TR
← external epenthesis						internal epenthesis →						

However, previous generalizations have only concerned epenthesis in word-initial sibilant-initial clusters, excluding (i) word-initial clusters that begin with a non-sibilant fricative and (ii) word-final sibilant-initial clusters. Also, they may have been confounded with language-specific phonotactic restrictions that may obligatorily determine the epenthesis site.

The present cross-linguistic survey considers loanwords from 50 languages, involving vowel epenthesis in word-initial or word-final clusters beginning with a sibilant or non-sibilant fricative. The main findings are: (i) variation in epenthesis sites is observed only in word-initial *sibilant-initial* clusters, not in *non-sibilant-initial* clusters showing internal epenthesis only; (ii) variation in epenthesis sites is observed only in *word-initial* sibilant-initial clusters, not in *word-final* sibilant-initial clusters showing internal epenthesis only; and (iii) Fleischhacker’s (2001) generalization partially holds between sibilant-stop and sibilant-sonorant clusters, when considering language-specific markedness in the borrowing language.

I argue that the typological patterns of epenthesis in fricative-initial cluster adaptation can be best explained by the presence or absence of intensity rise created inside or outside the cluster. Epenthesis is more likely to occur at an intensity rise because the epenthetic vowel insertion where there is an intensity rise makes a perceptually less salient change from the original cluster than epenthesis where there is no intensity rise, based on the P-map hypothesis (Steriade 2008) that an output involving a perceptually smaller change is more optimal. Specifically, the sibilant-non-sibilant asymmetry (i), the positional asymmetry (ii), and the revised implicational universal (iii) are explained by the difference in the intensity of the word-initial fricatives (2), the different intensity contours outside the cluster (3), and the different intensity pattern between the sibilant and the following consonant (4), respectively (S: sibilant, F: non-sibilant fricative, R: sonorant, T: stop).

(2)	#		S		R ...	vs.	#		F		R ...
		/		/			—		/		
		✓		✓			✗		✓		
(3)	#		S		R ...	vs.	...	S		R	#
		/		/				/		\	
		✓		✓				✓		✗	
(4)	#		S		R ...	vs.	#		S		T ...
		/		/			/		—		
		✓		✓			✓		✗		

## References

- Fleischhacker, H. (2001). Cluster-dependent epenthesis asymmetries. In Albright, A. and Cho, T., editors, *UCLA Working Papers in Linguistics*, volume 7, pages 77-116.
- Singh, R. (1985). Prosodic adaptation in interphonology. *Lingua*, 67:269-282.
- Steriade, D. (2008). The phonology of perceptibility effects: the P-Map and its consequences for constraint organization. In Hanson, K. and Inkelas, S., editors, *The Nature of the Word: Studies in Honor of Paul Kiparsky*, pages 151-179. MIT Press, Cambridge.