The Role of Perception in Loanword Adaptation: Evidence from Nepali

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Introduction: The research presents experimental data from Nepali to advocate for the perception-based analysis of loanword adaptation. There are three competing phonological processes for breaking consonant clusters (prothesis, anaptyxis and metathesis). Auditory discrimination experiments show that the selection of a phonological process (during production) is done such that there is maximum perceptual similarity between the input and the output. Hence, perceptual patterns in the source language influence the production behavior in loanwords. This proposal is in accord with the perception-based analysis of loanwords (Peperkamp & Dupoux 2003, Peperkamp 2005).

Prothesis-Anaptyxis asymmetry and Metathesis in Nepali: Nepali does not allow word initial and word final consonant clusters. A vowel is inserted *before* sibilant + stop/nasal clusters (Prothesis) but *into* obstruent + sonorant clusters (Anaptyxis). Some representative examples are shown in Figures 1 & 2. Under certain circumstances obstruent + sonorant cluster can also be simplified using metathesis (Figure 3). In those circumstances, anaptyxis is also available (e.g., /prəkaʃ/ → [pərkas] or [pərəkas]). Closer examination of the environment reveals two facts. First, in the C1C2 cluster C2 is always [r] and not [l] (Judgments of native speakers prohibit /slika/ → [silka]). Second, [r] is always followed by a [ə] or an [i] and not other vowels (e.g., /pranə/ → [parnə] is judged impossible by native speakers).

The case of metathesis is especially interesting because as far as I am aware, no previous research has shown the role of perception in metathesis with respect to loanword adaptation. Cross-linguistic survey shows that instances of rhotic metathesis have *perceptual* basis associated with phonetic cues of the rhotic segment (Blevins & Garrett, 2004). Also, [r] has acoustic properties which make it difficult to locate exactly in time (Hall 2006). As a result of such elongation of phonetic cues associated with [r], rearrangement of [r] in order to repair a consonant cluster becomes possible. Thus, perceptual analysis enables us to explain why [r] triggers metathesis in Nepali (but not, for example [l]).

Experiment design: The study recruited 30 high school students from Nepal. Subjects heard audio stimuli in pairs through headphones and they were asked to judge whether the pairs sounded the same or different. In such stimuli pairs, only one word had a consonant cluster. The cluster in the other word was broken using one of the repair strategies that Nepali speakers use for avoiding clusters. If the participants were unable to discriminate between the stimuli pairs, then we could conclude that the degree of confusability is high for such pairs.

Results and Discussions: The results of auditory discrimination experiments establish that the prothesis-anaptyxis asymmetry is directly correlated to the perceptual confusion posited by the consonant cluster. It was found that the prothetic modifications of sibilant + stop/nasal clusters are perceived to be more similar to the non-epenthesized input (Figure 4) while anaptyctic modifications of obstruent + sonorant clusters are closer to input (Figure 5). So, the claim is that it is because of this perceptual confusion that Nepali inserts vowels before sibilant + stop/nasal clusters (Prothesis) but into obstruent + sonorant clusters (Anaptyxis). The results for metathesis in figure 6 shows that people actually confuse C[r]V clusters with CV[r] clusters. Hence, it is this perceptual confusion which explains why metathesis is used to repair C[r]V clusters even though anaptyxis is also an available repair.

Conclusions: First, this study shows that the prothesis-anaptyxis asymmetry in Nepali loanwords is directly correlated to perceptual confusion posited by consonant clusters. Empirically, this result is similar to Fleischhacker's (2002) findings on cluster splittability. Second, I add a specific argument from the metathesis pattern in Nepali loanwords to the perception-based theory of loanword adaptation.

	English	*Nepali*	
a.	/skul/	/iskul/	'school'
b.	/smail/	/ismail/	'smile'

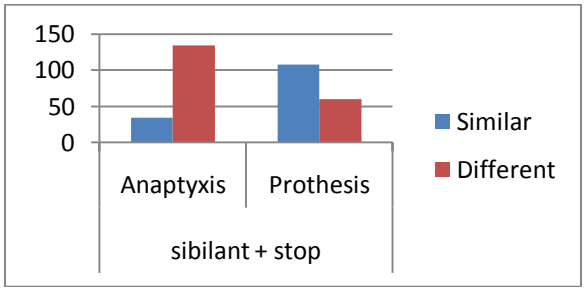
Figure 1: Prothesis

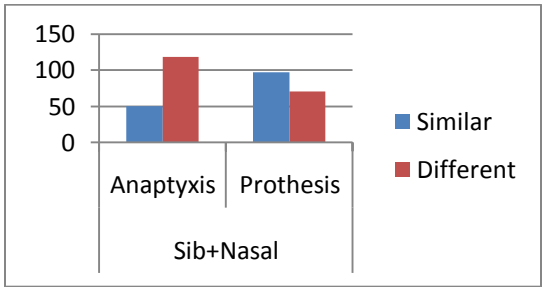
	English	*Nepali*	
c.	/slip/	/silip/	'slip'
d.	/slim/	/silim/	'slim'

Figure 2: Anaptyxis

	Sanskrit	*Nepali*	
e.	/kriti/	/kirti/	'creation'
f.	/prəkaʃ/	/pərkas/	'light'

Figure 3: Metathesis





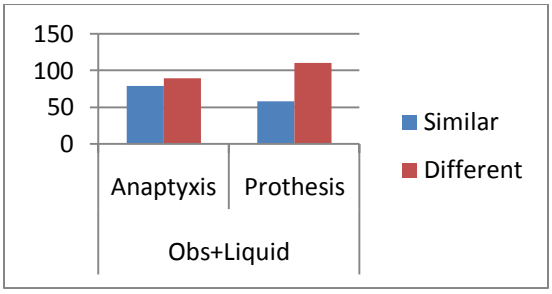
Stimuli	epen_type	Similar	Different	Total
Sib+stop	Anaptyxis	34	134	168
	Prothesis	108	60	168

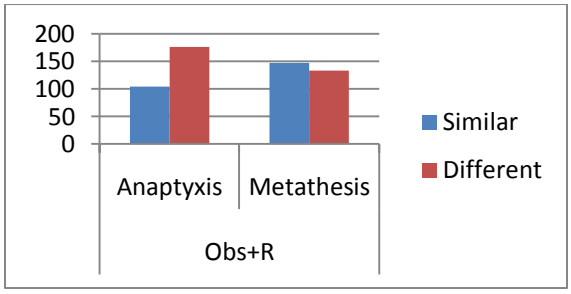
(Fisher's exact test, P-value: 2.10e-16)

Stimuli	epen_type	Similar	Different	Total
sib+nasal	Anaptyxis	50	118	168
	Prothesis	97	71	168

(Fisher's exact test, P-value: 4.22e-07)

Figure 4: Results for sibilant + stop/nasal clusters





Stimuli	epen_type	Similar	Different	Total
Obs+Liquid	Anaptyxis	79	89	168
	Prothesis	58	110	168

(Fisher's exact test, P-value: 0.026)

Figure 5: Results for obstruent + liquid clusters

Stimuli	epen_type	1	4	Total
Obs+R	Anaptyxis	104	176	280
	Metathesis	147	133	280

(Fisher's exact test, P-value: 0.00035)

Figure 6: Results for Obstruent + [r] clusters

References

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