



# The Curious Absence of Aspiration in Indian English: The Role of Phonetics in Adaptation

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## Background

- Phonological behavior is known to take precedence over phonetic cues in cases of loanword adaptation (for example, illusory vowels)
- The opposite case rarely observed since phonetic cues typically align with phonological behavior
- In Indo-Aryan (IA) loanwords, English voiceless stops adapted as unaspirated, even though aspirated stops in IA languages are contrastive
- This is also seen in Indian English (IE)
- For example, [p<sup>h</sup>iz] → [piz]

English	/p <sup>h</sup> /	/t <sup>h</sup> /	/k <sup>h</sup> /
IA	/p/ /p <sup>h</sup> /	/t/ /t <sup>h</sup> /	/k/ /k <sup>h</sup> /
IA loans / IE	[p]	[t], [t̪]	[k]

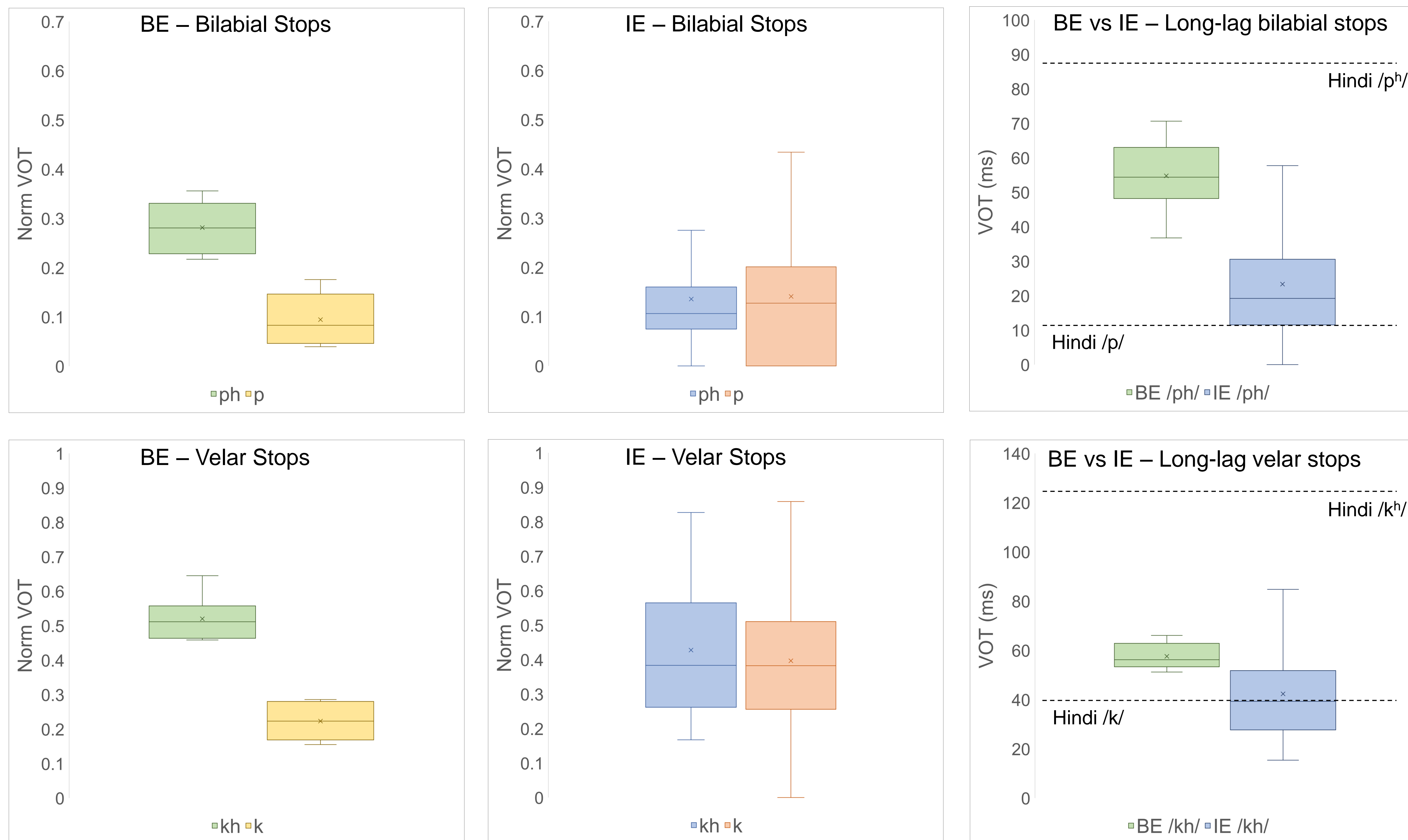
## A Purely Phonetic Explanation?

- Perceptual adaptation is based on phonetic, rather than phonological cues only
- English and IA languages like Hindi and Marathi show phonetic differences
  - IA VOT (long-lag stops) > English
  - Aspiration lowers F0 in IA but raises F0 in English
- These phonetic differences could explain the IA and IE adaptation pattern

## Methods

- Participants: Speech samples from The Speech Accent Archive of 102 native speakers of one of 10 IA languages and IE
- Control group: 6 speakers of British English (BE)
- Materials: Target words *spoons*, *peas*, *scoop* and *kids* from recordings of speakers reading the same passage in English
- Measurements: VOT and onset f0 of target words

## Results - VOT



## Results

- BE short-lag and long-lag stops have significantly different VOT
- IE short-lag and long-lag stops do not have significantly different VOT
- VOT (IE "long-lag" stops) ≈ VOT (Hindi short-lag stops) < VOT (BE long-lag stops) < VOT (Hindi long-lag stops)
- Significant negative correlation between aspiration and onset f0
- Longer aspirated release correlates with lower onset f0
- IE aspiration-f0 ~ IA aspiration-f0

## Conclusion

- IA short-lag stops - short VOT + slight lowering of onset f0
- IA long-lag stops - long VOT + considerable lowering of onset f0
- English long-lag stops – in-between VOT + raising of onset f0
- IA short-lag stops acoustically less dissimilar to English long-lag stops
- Since VOT of English long-lag stops < VOT of IA long-lag stops, English aspirated stops categorically perceived as being unaspirated by IA native speakers
- Adaptation patterns may be rooted in perception and accented speech provides a way of looking into on-line loan adaptations with non-trivial results
- IA speakers must ignore the fact that the stops are phonologically aspirated, only engaging in low-level perceptual adaptation
- Phonetics can play a role in loanword adaptation
- Cases where phonetics and phonology match may also have an entirely phonetic explanation

## Results – Onset f0

