What we know about what we have never heard: Evidence from perceptual illusions

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Abstract
The human capacity for language is explained by the hypothesis that people are equipped with a specialized language faculty that constrains language structure (e.g., Chomsky, 1980). This hypothesis predicts that languages should consistently favor certain linguistic structures to others. Moreover, these structural preferences should be available to all speakers, irrespective of whether the structures under consideration are attested in their own language (Prince & Smolensky, 1993/2004). Thus, if across languages, structure A is preferred to B, then all speakers should favor A>B, regardless of whether their language manifests both A&B, one or neither.

We examine this hypothesis by investigating the sensitivity of English speakers to the sonority of onset clusters. Linguistic research demonstrates that certain onset clusters are universally preferred (e.g., bd>lb). Our results suggest that such preferences might modulate the perception onsets that are unattested in the English lexicon. We show that monosyllabic auditory nonwords with onsets that are universally-dispreferred (e.g., lbif) are more likely to be classified as disyllabic and misperceived as identical to their disyllabic counterparts (e.g., lebif) compared to universally-preferred onsets (e.g., bdif). Consequently, dispreferred onsets benefit from priming by their epenthetic counterpart (e.g., lbif-lebif) as much as they benefit from identity priming (e.g., lbif-lbif). The perceptual illusions of English speakers are irreducible to several statistical properties of the English lexicon. It is also unlikely that the misperception of English speakers is solely due to an inability to discriminate the phonetic properties of dispreferred onsets and their epenthetic counterparts (e.g., lbif vs. lebif). First, we demonstrate that universally-dispreferred clusters are perceived accurately by speakers of Russian, a language where clusters of this type occur. Second, we show that English speakers can perceive such onsets accurately under conditions that encourage precise encoding of phonetic cues for epenthesis. Finally, the preferences concerning onset-clusters appear to modulate the perception of their disyllabic counterparts: People are less likely to misperceive lebif (the counterpart of lbif, an onset that is universally-dispreferred) as monosyllabic compared to benif (the counterpart bnif, a preferable onset). These results indicate that the preferences concerning onset structure are dissociable from the phonetic properties of the input. We suggest that the systematic misperception of universally-dispreferred onsets reflects their grammatical ill-formedness: These onsets are repaired by the grammar to abide by the phonotactics of the language. The sensitivity of English speakers to the structure of onsets that are unattested in their lexicon suggests that the preferences concerning onset-structure might be found in the grammars of all speakers, irrespective of linguistic experience.