Sonority-related restrictions on unattested onset clusters: Evidence from nasals

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Optimality Theory (Prince & Smolensky, 1993/2004) postulates the existence of a universal set of grammatical markedness constraints. By hypothesis, these constraints form part of the grammar of all speakers, irrespective of whether the structures under consideration are attested in their language. The following research tests this hypothesis. As a case study, we examine the sonority-related restrictions on the onset.

It is widely believed that onsets with large sonority rises are unmarked compared to those of falling sonority (e.g., *bn> lb,* cf. Clements 1990*)*. Our previous research (Berent, Steriade, Lennertz, & Vaknin, 2007) suggests that English speakers manifest such preferences with respect to obstruent-sonorant clusters that are unattested in their language. Although those preferences are consistent with the hypothesis that people constrain the sonority profile of unattested onsets, the observed preference for *bn*-type onsets could reflect a narrow preference for obstruent-sonorant onsets--onsets that resemble the structural and statistical properties of attested onsets-- rather than a broad preference for sonority rises.

To adjudicate between these possibilities, here, we investigate whether the preferences for sonority rises generalize to nasal-initial onsets. As in previous research, we infer sonority preferences from the susceptibility of onset clusters to undergo perceptual repair. English is known to repair illicit onsets by epenthesis (e.g., Davidson, 2006; Pitt, 1998). Of interest is whether the use of repair is sensitive to markedness. If English speakers are equipped with broad markedness preferences that favor sonority rises to falls (e.g., *ml>md)*, and if markedness triggers repair, then universally marked onsets of falling sonority should be more likely to elicit repair (e.g., *mdif* → *medif)* compared to onsets of rising sonority. Consequently, marked monosyllabic targets of falling sonority should be misperceived as disyllabic.

The results of several experiments are consistent with the repair hypothesis. In a syllable count task, participants were presented with monosyllabic nonword targets (e.g., *mlif, mdif*) mixed with their disyllabic counterparts (e.g., *melif, medif*), and asked to determine whether a target has one syllable or two. People were less accurate responding to monosyllabic targets of falling sonority, suggesting that such onsets are susceptible to misperception as disyllabic (Figure 1). In a second experiment, participants were presented with pairs of auditory words, either identical (e.g., *mdif-mdif; medif-medif*) or epenthetically related (e.g., *mdif-medif*), and asked to determine whether the words were identical. Once again, people were more likely to misjudge monosyllabic targets of falling sonority as identical to their epenthetic counterparts (e.g., *mdif=medif*) compared to sonority rises (e.g., *mlif-melif;* Figure 2). A third experiment systematically varied the duration of the epenthetic vowel, ranging from a full epenthetic vowel (e.g., *melif*) to a cluster (e.g., *mlif*). Participants were simply asked to determine whether a target included an epenthetic vowel. As the duration of the vowel increased, participants were more likely to detect it, but crucially, they were more likely to do so for onsets of falling sonority compared to sonority rises (Figure 3). Auxiliary analyses suggest that the consistent misperception of sonority falls is not due to several statistical properties of the English lexicon. Such misperception is also not due to the failure to encode the auditory inputs--a fourth experiment showed that marked onsets of falling sonority are misperceived even with printed materials (Figure 2). The consistent misperception of onsets of falling sonority, either obstruents or nasal-initial clusters, is consistent with the hypothesis that people are equipped with broad preferences that favor sonority rises to falls, preferences that generalize to onsets unattested in their lexicon.

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References

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Figure 1. Syllable count results for monosyllabic and disyllabic onsets of rising and falling sonority

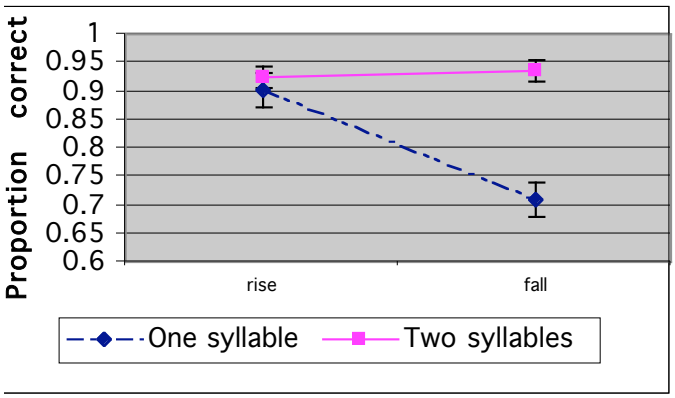
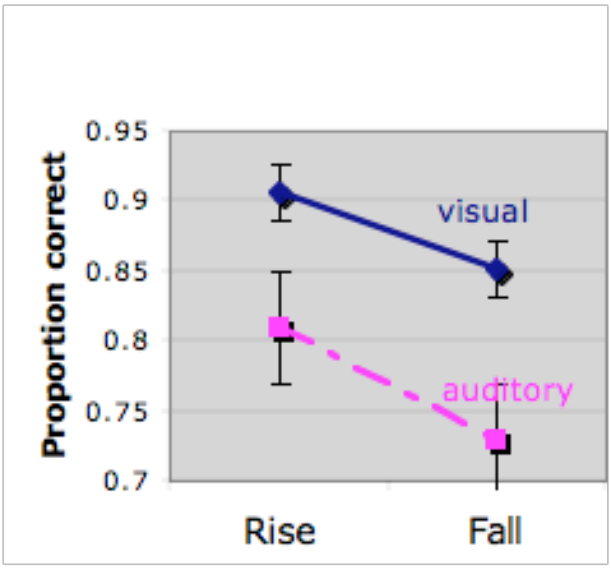


Figure 2. Response accuracy to nonidentity trials with sonority rises (e.g., *mlif-melif*) and falls (e.g., *mdif-medif*) presented either aurally or visually.



gure 3. The proportion of epenthetic responses as a function of the duration of the enthetic vowel and sonority profile