
Investigating the relation between morphophonology and phonetics in Javanese verb prefixes

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One mechanism through which morphological constituency may interact with phonetic realization involves the co-activation of morphologically-related wordforms. For example, if both English *frees* and its morphological relative *free* are co-activated during the production of the target word *frees*, the resulting phonological plans may be blended together to some extent, either during planning or during articulation. The result is predicted to be interference in the coordination of articulatory gestures for the target word, which can lead to measurable effects on acoustic realization.

In this study, we test for such inter-paradigmatic interference in a morphological alternation in Javanese. In Javanese, active transitive verbs usually take a nasal prefix: *godhog* [gɔdɔk] ‘to boil’ is realized with the nasal prefix as *ng-godhog* [ŋgɔdɔk]. However, stems beginning with voiceless tense obstruents are realized in the active voice not with a nasal prefix, but with substitution of the onset consonant: *padal* ‘to press against’ becomes *madal* with the verbal prefix. Moreover, monosyllabic stems are prefixed in the active voice with the syllabic *nge-* [ŋə-]: *pèl* ‘to mop’ becomes *ngepèl* with the verbal prefix. Finally, disyllabic stems beginning with nasals are homophonous with or without the verbal prefix: the stem *masak* ‘to cook’ has the active counterpart *masak*.

If the phonological plan of a morphological relative influences gestural coordination for the target word, we hypothesize that verb forms like *madal*, which alternates with *padal*, should be realized with less nasality than verbs like *masak*, which does not phonologically alternate. In addition, nasal-substituted forms like *ngepèh* (stem *kepèh*) should also be realized with less onset nasality than forms with a full syllabic prefix like *ngepèl* (stem *pèl*). These differences should be measurable in acoustic indices such as stop closure duration and A1-P0. Further, since the voiceless obstruents in forms like *padal* are tense, we hypothesize that nasal-substituted related forms like *madal* should have voice quality associated with tenseness to some extent.

To test this hypothesis, we recorded 28 native speakers of Semarang Javanese producing 98 prefixed words, with equal numbers from each of the alternation classes. This study extends previous work on Germanic languages, and avoids the potential orthographic confounds in such languages. More generally, it tests the broad predictions of the co-activation account on a new phonetic dimension.