Stress assignment in English pseudo-words: On the role of weight, prefixation and syntactic category

Current mainstream work on English stress assignment is set within the generative tradition (see Alber 2020 for a recent summary for Germanic), in which stress assignment is largely determined by an interaction of morphological factors with syllable weight and syntactic category. Following Chomsky and Halle (1968), heavy syllables are assumed to attract stress, and rimes are usually assumed to be the only syllable constituents contributing weight, although there are proposals that onsets contribute weight too (Ryan 2014). Verbs are known to differ in stress from nouns, in that they are predicted to have final stress if the final syllable is heavy. However, the final syllable of nouns is usually assumed to be extrametrical (Hayes 1982) and so is not predicted to affect stress assignment. While the effects of syllabic weight on the computation of stress are quite widely accepted, there is more disagreement regarding the effects of opaque morphological structure, specifically prefixation. Opaque prefixed words are defined as containing recurring forms with no clearly identifiable meaning (e.g. *con-tain*, *sub-mit*, *re-fuse*). Most studies focus on the phonological manifestations of productive morphology, while words with opaque prefixes are assumed to have monomorphemic stress. However, there is accumulating evidence in recent work that this is misleading (cf. e.g. Dabouis and Fournier 2023, who provide evidence for a direct link between stress and the presence of opaque, non-productive prefixes in English disyllabic verbs). The aim of the present paper is to address these controversies on a broader empirical basis, and to find out how proposed generalisations fare with novel items. We present the results of a judgement task experiment (Experiment 1) and a reading experiment with pseudo-words (Experiment 2). Both types of data provide clear evidence for the importance of opaque morphological structure in English stress assignment. Our results thus pose a serious challenge for approaches that restrict the triggering of morphological effects to semantically transparent structures.

Experiment 1 is a judgement task about stress in disyllabic words presented in verbal or nominal contexts, and explores the role of semantically opaque prefixation, syllable weight and syntactic categories. In our experiment, the 48 stimuli were constructed so as to contain only short vowels and varied in the number of initial (0 to 2) and final consonants (1 or 2) and could begin with a letter string that may be interpreted as a prefix (e.g. <pro->, <a->, <re->) or not (e.g. <pra->, <i->, <ro->). Forty native speakers of English were presented with written sentences containing the target words in verbal or nominal contexts. A native speaker of Canadian English recorded two versions of each word: one with stress on the first syllable, another one with stress on the second syllable. Speakers had to choose the version that they preferred among the two choices that they were presented with. Our results show an overall tendency for final stress in both prefixed verbs and nouns that is higher than what is found in existing dictionary studies (e.g. Guierre 1979). Statistical analysis shows significant effects of all investigated factors, with more final stress in pseudo-words with prefixes, that are in verbal contexts, with fewer initial consonants and more final consonants.

Experiment 2. The aim of this experiment was to investigate in more detail the effects of two factors on main stress placement in English trisyllabic verbs: syllable structure and opaque prefixation. Fifty native speakers of English took part in a production experiment requiring them to read out pseudo-verbs that varied in both their syllabic structure and the morphemic

status of the first syllable. With regard to the latter, a distinction was made between letter strings that correspond to productive prefixes (e.g. *pre*-), those that correspond to unproductive prefixes (e.g. *ob*-), and those that do not correspond to a prefix (e.g. *lep*-). Items were presented in carrier sentences. In this study, heavy syllables were defined as closed syllables containing a short vowel followed by a single consonant (i.e. CVC), with heavy word-final syllables being closed by a consonant cluster, under the assumption of final consonant extrametricality (CVCC; Hayes 1982). Light syllables, on the other hand, were operationalised as open syllables containing a short vowel (i.e. CV and CVC in word-final position). All three syllables in the test words were manipulated for weight. Statistical analysis shows that stress assignment in English verbs is sensitive to opaque prefixation, as the rate of antepenultimate stress was generally lower among prefixed pseudo-verbs than on non-prefixed controls of otherwise comparable syllable structure. Moreover, this effect was stronger for productive compared to non-productive prefixes. However, no evidence was found for stress attraction to heavy CVC/CVCC syllables.

Summary and discussion. Our empirical results challenge some widely-held assumptions in the theoretical literature about the kinds of mechanisms assumed to regulate stress assignment in English. In particular, proposed generalisations have been shown to be far too restrictive. Our experiments provide corroborating evidence for the role played by opaque prefixes in English primary stress placement, which acted as a predictor of stress independently of the predictions made by syntactic category and syllable structure. This is in line with existing findings from phonology, morphology and psycholinguistics that show that opaque prefixed words behave differently from simplex words. Our results also confirm the greater tendency for verbs to have more final stress than nouns, but they provide only limited support for quantity effects in English. One strategy to account for our findings in a morpheme-based model of the morphology-phonology interface would be to adopt a definition of the morpheme that includes semantically underspecified units such as the prefixes and roots found in words like *com-mit, de-duce* or *re-ceive*. In that way, the phonology would be able to refer to those units, e.g. through alignment constraints in Optimality Theory. Our results show clearly non-categorical distributions, and so probabilistic models of phonological computations such as MaxEnt grammars (Goldwater and Johnson 2003) would be needed to capture them.

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