A corpus phonetics study of nominal prominence marking in two Australian languages

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Prosodic typology is a growing research field that has benefitted considerably from the technological advances of the last decades. Laboratory phonology studies have used experimental paradigms resulting in detailed phonetic studies of prominence effects of some Australian languages (Tabain et al., 2014; Fletcher et al., 2015; Jepson et al., 2021). Investigations of prosodic structure of a single language are complex since several acoustic features are usually examined and there is cross-linguistic divergence in how these features do or do not play a role. Traditionally, Australian languages have been described as having word initial fixed stress (Dixon, 2002), but more recent accounts have added nuance to this view (Fletcher & Butcher, 2014; Tabain et al., 2014; Jepson & Ennever, 2023). Australian languages are known for their complex morphology and polysynthetic structure, leading to large and complex word forms. For many Australian languages there is no clear-cut answer to what distinguishes a word from a small phrase. Thus, the definition of a word represents a challenge when comparing across languages in the Australian region. In this study, we examine prominence marking with a focus on nouns, leaving the examination of larger units for future work.

Dalabon is a non-Pama-Nyungan language that is spoken in the Northern Territory and is severely endangered (Ponsonnet, 2018). The language's intonational phonology has been described as a head-edge marking type (Fletcher, 2014). Dalabon is uncommon among Australian languages in that the position of lexical stress has not been described as consistently word initial. Instead, lexical stress is generally described as falling on the penultimate syllables of words, with a few exceptions. Warlpiri is a Pama-Nyungan language spoken in the Tanami Desert region of Central Australia and is spoken by around 3000 people (O'Shannessy et al., 2023). Typical of Pama-Nyungan languages, Warlpiri stress has been described as fixed and word initial, with previous studies finding stressed vowels to have increased duration, and post-tonic consonants to be somewhat lengthened (Pentland, 2004; Bundgaard-Nielsen & O'Shannessy, 2021).

In this preliminary study, we investigate a set of acoustic correlates commonly associated with stress marking cross-linguistically to examine their potential role in Dalabon and Warlpiri. For this purpose, we use corpus data of spontaneous speech taken from personal narratives, elicited storytelling, and stimulus retelling. The data from the DoReCo corpus (Seifart et al., 2022) is transcribed, translated into English, time-aligned at the level of discourse units, and forced aligned at the segmental level. We further process the corpus to obtain a word list of nouns, a syllable level, and predicted stress marking. In our acoustic analysis, we examine fundamental frequency peaks, vowel duration, the first and second formants, as well as relative intensity measured in vowels. A statistical investigation is conducted to examine prominence marking effects on selected acoustic parameters in nouns in Dalabon and Warlpiri. We find compelling evidence for prosodic effects which can be explained when accounting for Dalabon's intonational phonology. Results for Warlpiri mostly show congruent prominence marking as predicted by the position of the syllable.

Taking into account previous work on corpus phonetics (Becker-Kristal, 2010; Salesky et al., 2020; Babinski 2022) and typology (Bickel, 2014), this study discusses the benefits and challenges of using the DoReCo corpus. We discuss the relevance of accounting for grammatical information which in DoReCo is provided as detailed annotation at the syntactic as well as the segment level. This includes the question of selecting a grammatical unit of analysis and its definition. Additionally, we discuss challenges faced in this study, such as limitations arising from the genres in the corpus, or the variability of methods used during recording. Finally, we provide an outlook on next steps for future investigation of prominence marking in under-resourced languages.

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