It’s all about the base: Age effects on morphological processing

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Recent large-scale studies show that language processing is strongly influenced by accumulated linguistic experience of an individual (see Keuleers, Stevens, Mandera, & Brysbaert, 2015; Kuperman & Van Dyke, 2013, for example). In this study, we demonstrate that prior linguistic experience, as measured by both frequency of use and age of the participant, modulates lexical knowledge, as indexed by accuracy in a lexical decision task, (see Ramscar, Hendrix, Shaoul, Milin, & Baayen, 2014, for discussion). Using a large dataset by Keuleers et al. (2015), we focused on suffixed bimorphemic English words. Lexical decision accuracies to over 8,000 such words were averaged over participants across seven age groups, from 10 to 60 years. A central measure of interest was the log ratio of the base and the derived word frequency (e.g., frequency of boy over frequency of boyhood, see Hay, 2001), interpreted as an index of the relative importance of the whole derived word and its base as cues towards that word’s meaning. Results of the generalized linear mixed-effects model showed a statistically significant non-linear interaction between age group and our frequency measure, after controlling for length and orthographic similarity. Specifically, the functional shape of the effect suggested that the base becomes an increasingly less influential cue over lifespan, and older readers are more resilient towards morphological cues when recognizing derived words. This is the first study to demonstrate that accumulation of linguistic knowledge leads to a gradual emergence of resilience to morphology as a processing strategy.


**Keywords:** morphological complexity, language processing, linguistic experience.