

## The role of morphology in the learning of words: A Registered Report

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**Introduction:** *The majority of the new words that we learn everyday as adults are morphologically complex; yet, we don't know much about the role of morphology in novel word learning. A recent study by Ginestet et al. (2020) showed that morphological structure: (i) facilitates processing of complex nonwords (RElerbER) compared to simple ones (pelerble) in early stages of processing; (ii) shows mixed effects when it comes to orthographic learning. Here we extend this work by focusing on learning of semantics, and additionally on how the presence of a suffix induces the attribution of meaning to the rest of the word (stem learning): if pifer is someone who writes children's songs, then pife is a children song.*

**Methods:** *We will track eye movements in participants exposed to 18 novel words, each embedded in 10 different sentences. Novel words differ in morphological complexity: (i) complex, with a real suffix (rugobENZA); (ii) simple, with a non-morphological ending of the same frequency as a suffix (rugobONDO); (iii) simple, with a non-morphological ending of lower frequency than a suffix (rugobESPA).*

*Recognition memory task will explicitly measure the learning of whole items. Crucially, we will test the learning of the novel stems (i) implicitly in a sentence congruency task that compares how novel stems behave in sentences that are congruent vs. incongruent with their meaning; and (ii) explicitly, with a definition selection task.*

*Data will be analyzed with (generalized) linear mixed-effects modelling.*

**Results:** *We piloted the experiment with 14 subjects. The results showed that the learning paradigm works nicely, as indicated by reduced fixation durations in all eye tracking measures in successive encounters with the novel words. We also found that suffixed items required less time to be processed compared to items in the low frequency ending condition. Moreover, novel words were recognized quite successfully (mean accuracy = 0.81 (SD=0.37)), with an advantage for the suffixed items.*

*The sentence congruency task suggests that meaning of the stems was acquired as well, which was also confirmed by the definition selection task (mean accuracy = 0.69 (SD= 0.46)). However, no influence of morphology was found.*

**Discussion:** *These are descriptive results, as hypothesis testing is not feasible with such a small sample. Power analysis suggests that we need 50 participants in the full experiment.*

*We conclude that the paradigm is effective, and that gives encouraging results in terms of direction of effects and sanity checks. Clearly, we expect to see statistically solid effects in an adequately powered experiment following the Registered Report revision.*

*We can envisage an overall scenario where suffixes behave clearly differently from low frequency endings. The final results will clarify (i) where the high frequency endings stand; (ii) if stem learning is promoted only by existing suffixes, or also by mere frequent letter chunks; (iii) if the learning proceeds only implicitly, or it surfaces to full awareness.*

**References:** Ginestet et al. *J Res Read.* (2020) 00:2-20

**Keywords:** Language; normal population; not relevant; behavioural, eye tracking.