

Competition and prediction in the auditory processing of morphologically complex words

Introduction

- Words are often made up of morphemes, e.g. stem + suffix (*ageless*)
- A high number of potential suffixes (*ageless, aging*) leads to slower RTs in spoken word recognition (Wurm et al., 2006), suggesting that continuations are predicted and compete with each other
- Is there neural evidence for competition after the stem?
- Recent studies have found that predictability affects neural responses at the phoneme level (Gagnepain, Henson, & Davis, 2012) and at the morpheme level (Ettinger, Linzen, & Marantz, 2014)
- Does the range of possible continuations affect the predictions made at the stem? (More options = weaker predictions?)



Tal Linzen¹, Phoebe Gaston¹, Laura Gwilliams² and Alec Marantz^{1,2} ¹New York University, ²NYUAD Institute, New York University, Abu Dhabi



Competition main effect at morpheme boundary:



MEG methods

- 208 channel axial gradiometer system (KIT/Eagle)
- 24 participants
- Distributed minimum-norm solutions (dSPM) using MNE (based on FreeSurfer average brain)
- Spatiotemporal cluster test in left hemisphere language areas (based on Hickok & Poeppel, 2007)







Conclusions

- lobe (mostly in the superior temporal gyrus)
- unpredictable

This work was supported by NYU Abu Dhabi Research Council under Grant G1001 from the NYUAD Institute, New York University Abu Dhabi.





• Morphological competition causes increased activity in the left temporal

• No evidence that stems that are more strongly constraining (less competition) lead to a stronger surprise effect when the suffix is

