

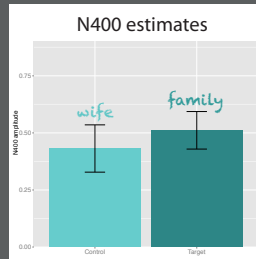
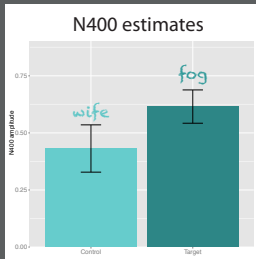
The Electrophysiology of Language Comprehension A Neurocomputational Model

Harm Brouwer (brouwer@coli.uni-sb.de), Noortje J. Venhuizen, and Matthew W. Crocker

Saarland University

Semantic Anomaly and Expectancy

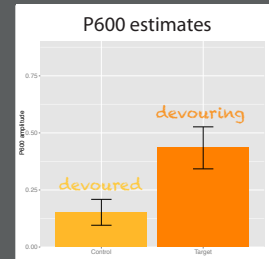
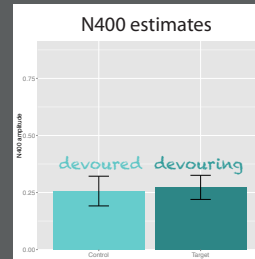
George had been fired,
but he couldn't tell his fog/family/wife



Kutas et al. (1984)

"Semantic P600"-effects

The hearty meal was devouring/devoured [...]



Kim & Osterhout (2005)

Retrieval-Integration account

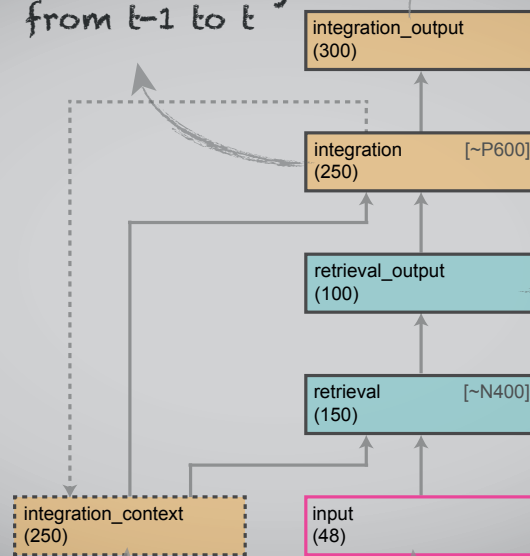
P600 is semantic integration

N400 is lexical retrieval

incoming word

Brouwer et al. (2012)

$P600 = \Delta$ activity from $t-1$ to t



utterance interpretation

feature-based word meaning representation

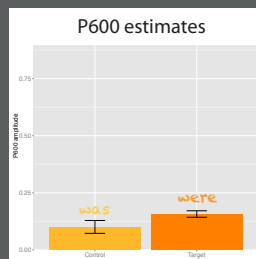
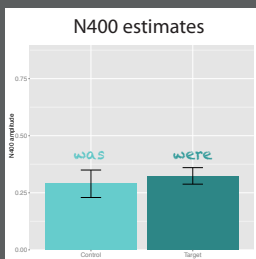
$N400 = \Delta$ activity from $t-1$ to t

context established at timestep $t-1$

word perceived at timestep t

Syntactic Violations

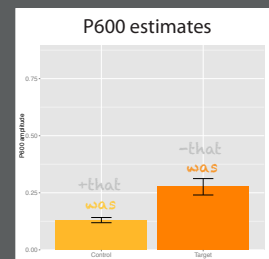
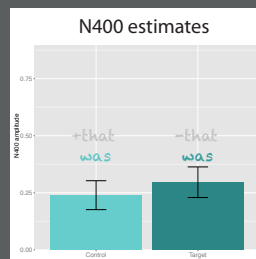
The famous dancer were/was [...]



Molinaro et al. (2008)

Garden-paths

The lawyer charged [that] the defendant was [...]



Osterhout et al. (1994)

References: Brouwer et al. (2012), *Brain Res*; Kutas et al. (1984), *Prep. States & Proc.*; Kim & Osterhout (2005), *JML*; Molinaro et al. (2008), *Cognition*; Osterhout et al. (1994), *JEP: Learning, Mem. and Cogn.*