BACKGROUND INFORMATION

What can investigations in semantic ambiguity reveal about underlying language processing mechanisms?

• Examine Quantifier Scope Ambiguity
• Every N1 Verbed a N2

Two possible meanings; meaning determined by the order of interpretation of quantifiers (i.e. scope interpretation)

Every kid climbed a tree
Surface scope interpretation: Inverse scope interpretation:

Disambiguation of QSA sentences
• Relies on number interpretation

• Previous work, e.g., Kurtzman and MacDonald (1993) showed that plural interpretation was preferred. However, Dwivedi (2013; see also Dwivedi et al., 2010) showed that sentences are processed using a Heuristic first, algorithmic second strategy, such that QSA is not computed at all. Instead, readers rely on lexico-pragmatic biases (i.e., heuristics) associated with sentences for interpretation.

• Perhaps findings differed because participants were paying less attention due to: lack of time; also no task on critical stimuli (cf. Kaan & Swaab, 2003).

INTRODUCTION

• Build on recent work by Patson and Warren (2010) who conducted (dual task) self-paced reading study

• Participants responded to one- or two-word chunks to indicate whether one or two words were on the screen.

• RTs were longer for number judgments for single plural words (e.g., crayons) than for single singular words (e.g., crayon) in unambiguous sentences

• e.g. The child | coloured with the | crayon/crayons.

• This finding supports that morphological plurality can interfere with number judgments (see also Benet et al., 2005)

What about conceptual plurality, as in Quantifier Scope Ambiguity?

(I) Each of the men carried a box.

(II) The kid climbed a tree in the | autumn.

• Ambiguous interpretation; preference for plural interpretation of “box” (due to distributive property of Each).

• Unambiguous interpretation: one box.

• For Each sentences, RTs were longer for single singular words (e.g., box) vs. together sentences (note that accuracy was at ceiling).

• This finding supports that conceptual plurality can interfere with number judgments

PRESENT STUDY: Dual Task ERP Language

If 2^* task of counting words is included in 1^* task of reading QSA sentences, will this facilitate algorithmic computation?

Predictions

• Morphological and conceptual plurality will interfere with number judgments

• If 2^* task and time make a difference, then participants will compute (algorithmic) scope.

• Responses to Every kid climbed a tree should differ empirically from The kid climbed a tree (no empirical difference predicted among other conditions)

• On the other hand, the addition of this task might not affect sentence processing strategy.

• Participants might process in shallow manner again, due to the presence of the Quantifier Every. If so, less attention will be paid to Every sentences, leaving more resources available for 2^* task of counting number of words on the screen (Donchin, 1981) for quantificational vs. non-quantificational sentences.

• Predict P300 effect, with amplitude difference between sentences containing quantifiers vs. those that do not; greater P300 amplitude for quantificational sentences.