An Eye Tracking Study of Swedish Filler-Gap Dependencies: Processing Relative Clause Extractions

Tutunjian, Damon; Heinat, Fredrik; Klingvall, Eva; Wiklund, Anna-Lena

Unpublished: 2015-01-01

Link to publication

Citation for published version (APA):
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Damon Tutunjian*, Fredrik Heimat**, Eva Klingvall*, and Anna-LenaWiklund*
Lund University* and Linnaeus University**
damon.tutunjian@englund.lu.se, fredrik.heimat@lnu.se, eva.klingvall@englund.lu.se, anna-lena.wiklund@lundunl.se

Introduction
Complex noun phrases involving relative clauses (1) are standardly treated as instances of “strong islands” structural configurations into which a filler-gap dependency (FGD) cannot be formed between the filler (those kinds of flowers) and the gap (3) (Ross, 1967, den Dikken & Szabolcsi, 2002). This constraint is widely assumed to be universal.

Unexpectedly, Swedish and other Mainland Scandinavian languages allow relative clause extractions (RCEs) (2) (Engdahl & Ephrath, 1982; Eretz-Sher, 1973), thus presenting a challenge to the universality of island constraints.

Possible interpretations:
- Intuitive acceptability. Such a finding would leave us with at least two possible outcomes:
  - Swedish RCEs will pattern more like non-islands, in line with their felicity of Swedish RCEs remains undetermined.
  - Unfortunately, none of these accounts stands up under closer scrutiny.

Approaching the question via processing
- No on-line processing data exists for Swedish.
- Discourse-organizational factors (Eretz-Sher & Lapin, 1979)
- Island obviation by way of covert resolution (Cirque, 1986)
- Structural reanalysis during parsing (Kush et al., 2013)

Unfortunately, none of these accounts stands up under closer scrutiny (see Christensen & Nyvad, 2014; Engdahl, 1997; Heinat & Wiklund, 2015; Lindahl, 2015; Müller, 2015). Thus, what drives the apparent felicity of Swedish RCEs remains undetermined.

Eyetracking while reading experiment
- Method
  - Eyetracking While Reading (EyeLink 1000 tower mount)
  - Reverse Digit Span (DS) (adapted into Swedish from MacWhinney et al., 2001).
    - Participants hear a series of digits (3-5 infinite set size) and then enter them on a computer keyboard in reverse.
  - Automated O-span task (OS) (adapted into Swedish from Unsworth et al., 2010).
    - Mouse-driven recall task.
    - Participants complete three interrelated sets: math operation and letter recall, each set size (3-7 count).
    - Total of 75 letters and 75 math problems.

- Participants
  - 48 native Swedish speakers

- Materials
  - Eighty-long-distance FGD sentence items (constructed using the Korp corpus), each appearing in four structural variants (Structure) (3-6) and six distractor items rotated over four lists.

- Results
  - (3) That-clause extraction (TCE) (non-island)
  - Såna där gamla skottkärror såg jag en man alltid sådant: such old wheelbarrows I saw a man always washed at gas-station-the when...