Interfering causes in acquisition

GALA workshop: Acquisition of causation: Culmination entailments and agency
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Acquiring verb meanings

• What is encoded and what is implied/dependent on the interplay of the verb and external factors?
• Argument structure lexically encoded
• Claim: Five- to seven-year-old children know the argument structure and relevant operations (decausativization), yet the verb’s base entry influences processing (resulting in non-adult-like behaviour)

Intransitive verbs

1) the pirate danced

Pirate: agentive cause of dancing Unergative verb

2) the pirate fell

Pirate: undergoer of falling Unaccusative verb

Structural differences

• Auxiliary Selection:
  • Unergative verbs select have:
    (3a) De clown heeft gedanst (the clown has danced)
  • Unaccusative verbs select be:
    (3b) De clown is gevallen (the clown is fallen)

• Impersonal passive construction:
  • Unergative verbs do passivize
    (4a) Er werd gedanst (There was being danced)
  • Unaccusative verbs do not passivize
    (4b) *Er werd gevallen (*There was being fallen)

Processing intransitive verbs


• The argument of unaccusative verbs is reactivated 750 ms. after verb offset, whereas the argument of unergative verbs gives rise to an early reactivation

Delay in reactivation

• Reactivation = Semantic integration of argument and verb
• Incremental nature of the parser
• Delay as a result of a structural reanalysis

[5a] The pirate, i_{av} danced
[5b] The pirate, i_{av} disappeared i
Inchoative/causative alternation

(6a) The sword broke
(6b) The pirate broke the sword

(7a) The pirate disappeared
(7b) *The captain disappeared the pirate

Bowerman (1996: 454)

(8) I saw a witch and she disappeared them

Transitive intransitives

• If forced to provide a meaning for an unaccusative verb in a transitive structure, participants are more likely to provide a causative meaning for unaccusatives than for unergatives

(9a) The zum will arrive the nuk
(9b) The zum will laugh the nuk

(Deal 2007)

Cause

(Levin & Rappaport Hovav 1995, Reinhart 2000/to appear)

• By itself

(8a) De sleutel verdween vanzelf
The key disappeared by-itself
(8b) #De piraat danste vanzelf
#The pirate danced by-itself
(8c) De piraat danste uit zichzelf
The pirate danced out himself

Defining the set of unaccusatives


• Causative verbs as the source of unaccusatives
• Transitive alternate possible in some language
  ➢ Inhibition of the causative alternate in processing

Research Question

How do children process unaccusative and unergative verbs?

Children’s processing

• Difficulty reanalysing previous commitments (Trueswell et al. 1999, Meroni & Crain 2003, Ortutay & Hyams 2012)
• Also observed in saccade latencies (Ross et al. 1994, Salman et al. 2006)
  ➢ Harder to discard the causative alternate
Predictions

• How is this reflected in processing?
  1. No distinction between unergative and unaccusative
  2. Adult-like (delay in reactivation)
  3. A bigger delay
  4. Early, long lasting reactivation

Visual World Paradigm
(c.f. Tanenhaus et al., 1995)

• No-task task: sit back, relax and watch pictures
• People look to a visual object (key) upon hearing a related word (lock) (Yee and Sedivy, 2006; Huettig and Altmann, 2005)
• “eye movements do not reflect the unfolding language; they reflect an unfolding (mental) world” (Altmann and Kamide, 2007)
• One of the visual objects is semantically related to the argument of the intransitive verb

Hypothesis at work

• People will look to a visual object upon hearing a semantically related word
• People will look back to this visual object upon hearing the verb because the argument gets reactivated
• Hence, reactivation will result in an increase in looks to the related visual object in the region around the verb

Visual display

Test sentence:
(10) Captain Willem said that the Indian (argument) with the tanned skin quietly cried (V) when the pirates had sneakily pooped on the grass

Testing children

• 79 five to seven-year-old children
• 30 adults as a control group
• Test sentences embedded in a pirate story
• A fixation dot (actually a compass) appeared in the middle of the screen during the test sentences to force children to look away from the target
• Total of 12:58 minutes
Recapitulate

- Argument reactivation with unaccusative vs. unergative verbs
- Suppression of causative entry
- Delay as the result of a structural reanalysis
- More interference of causative alternate?

Discussion

- Children do distinguish between unaccusative and unergative verbs
- No delay: Early and long-lasting (not adult-like)
- Inhibition difficulty
- Which unaccusatives do not have a causative counterpart in my language?

Grammar and processing

- Match between computation and processing
- No need to stipulate “simple” processing heuristics
  (e.g. Ferreira 2003, Dabrowska 2010)