

Interfering causes in acquisition

GALA workshop: Acquisition of causation:
Culmination entailments and agency
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Loes Koring, Pim Mak, Iris Mulders, Eric Reuland
Contact: loes.koring@mq.edu.au

MACQUARIE University UNSW THE UNIVERSITY OF WESTERN AUSTRALIA

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 distinction between **unaccusative** and **unergative** verbs is reflected in processing (Bever and Sanz 1997, Friedmann et al. 2008, Poirier et al. 2011, Koring et al. 2012, Agnew et al. 2014, Shetreet & Friedmann 2012)
- 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, t_i [V_P danced]
(5b) The pirate, [V_P disappeared t_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

(Reinhart 2000/to appear, cf. van Hout 1996/2012 a.o.)



- 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



- Incremental nature of the parser (Fernald et al. 2001, Huang & Snedeker 2011, Sedivy et al. 2000, Sekerina & Brooks 2007)
- Difficulty reanalysing previous commitments (Trueswell et al. 1999, Meroni & Crain 2003, Orfitelli & 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 (cf. 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

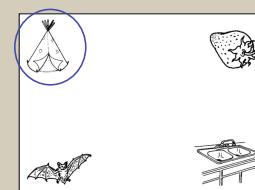


Hypothesis at work

- 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

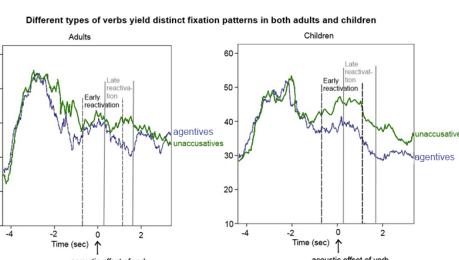


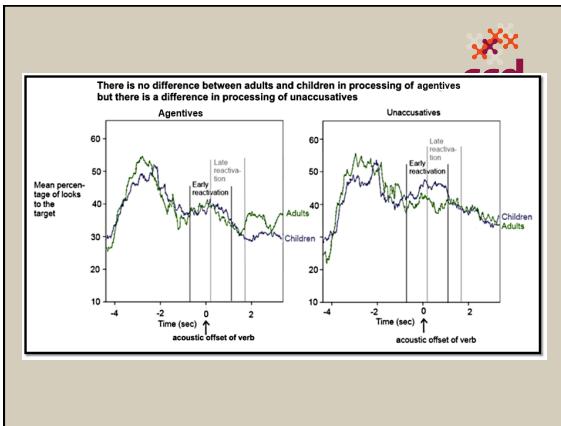
Test sentence:

(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)