New Solution to an Old Puzzle:
Syntactic Approach to Manner/Result Complementarity
Explains the Structural Effects in Novel Verb Learning

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Following the spirits of Roots V 2017!

- But from an experimental perspective
- $vP$ is……
  - the “lexical” domain where verb stems are constructed
  - the “event” domain where event situations are structured and classified
- Relevance to manner/result complementarity (MRC):
  - Manner can be read off the adjunction relation to $v$
  - Result can be read off a SCR($Small Clause Result$)-like predicate
Overview

- Thesis: Structural effects in novel verb learning can be explained by taking a syntactic approach to MRC

- A Lexical Approach: Levin & Rappaport Hovav

- Processing MRC: Naigles & Terrazas

- A Syntactic Approach: Mateu & Acedo-Matellán

- New Explanations

- Conclusion, Implication, & Future Direction
Manner/Result Complementarity


- Seconded by Berrebi & Bassel at Roots V (“Manner Islands”, 17 June 2017, QMUL)

- (1) a. Mary waltzed.
  
  b. Mary waltzed her feet sore.

- (2) a. John broke his leg.
  
  b. #John broke his leg bloody.
L & R-H’s Proposal: a Lexical Constraint

“...root can only be associated with one primitive predicate in an event schema, as either an argument or a modifier.” (R-H & L, 2010, p. 25)

There is a limited inventory of event structures that verbal roots associate with:

(3) a. Manner schema: \[ \lambda x \lambda e_1 \ [ \text{DO}(e_1, x) \& \text{root}(e_1) ] \]

b. Result schema: \[ \lambda x \lambda e_1 \ [ \exists e_2 \ [ \text{BECOME}(e_1, e_2) \& \text{root}(e_2, x) ] \]
Prediction for Processing

- Result verbs represent a more complex schema than manner verbs
  - e.g. McKoon and Love (2011)

- Due to this additional complexity of the result schema, manner meanings are expected to be the default interpretation during processing
A Novel Verb Learning Study

- Naigles and Terrazas (1998) examined the hypothesis that manner meanings are the default by using a novel verb learning paradigm.

- Today’s focus: English-speaking adult participants.
Training Phase

- Three training videos showing a motion event (e.g. A woman moving *towards* a tree while *skipping*) paired with a novel verb (e.g. *kradding*) that appeared in one of following sentence frames:

- (4) a. She’s kradding  
    b. She’s kradding towards the tree  
    c. She’s kradding the tree
Test Phase

- Participants were shown two more videos
  - ‘manner preserving’: a woman moving away from a tree while skipping
  - ‘result preserving’: a woman moving towards a tree while marching
Test Phase

- Participants were asked to choose which of the two videos was consistent with their interpretation of ‘kradding’
- Answers were taken to indicate whether the participants had assigned the novel verb a manner or result interpretation
Results

- She’s kradding

- In the neutral context, English speakers showed a preference for manner interpretations
Results

- *She’s kradding towards the tree*

- When presented with verbs in manner-biased sentence frames, English speakers showed a strong preference for manner preserving videos, suggesting that they had interpreted the novel verb as a manner verb.
Results

- She’s kradding the tree

- However, when the verb was in the result-biased frame, English speakers showed no preference for manner or result preserving videos

- Not predicted by the lexical constraint account.
Explanation (or the lack thereof......)

- Naigles and Terrazas (1998):
  - “When the semantic implications of the (syntactic) frame were at odds with a language’s conflation pattern, speakers were ambivalent and less consistent in their choices.”
  - “Adults’ lexical generalisations can be influenced by the perspective given by the frame.”

- But...... how?
A Syntactic Approach

- Processing work suggests that more than just lexical complexity is involved during processing; structural cues are also at play.

- How exactly does syntax influence the acquisition and interpretation of a novel verb?

- Mateu and Acedo-Matellán (2012) approached MRC as a constraint not on the lexicon but rather one that arises from general syntactic principles.

- See also Alexiadou & Anagnostopoulou (2012)
M & A-M’s Proposal

- A verbal root can either adjoin to $v$ as in (5a), or initially form a small clause followed by incorporation with $v$ as in (5b):

  (5) a. Manner construction: $[\nu P \nu \sqrt{V} \nu]$  
  
  b. Result construction: $[\nu P \nu+\sqrt{V} [SC \text{ DP } \sqrt{V}]]$

- Interpretation is derived from the position that the root occupies in the structure
Consequences

- According to this analysis, MRC arises as a simple syntactic fact: a verbal root cannot occupy both positions simultaneously in a single structure.

- Formally: a root cannot be incorporated (via Copy) and conflated (via Merge) at the same time (Haugen, 2009; Hale & Keyser, 1993).

- Reason: morphophonological, which is that a single null head (i.e. $v$) may be specified with only one phonological matrix.
Implication of a Syntactic Approach (1)

- Syntactic structure should affect whether a verb is interpreted as manner or as result

- For instance, verbs like *climb* have been proposed as counterexamples to manner/result complementarity because they exhibit both meanings.

  (6) a. The explorer climbed.  
    \[ [vP [DP the explorer ] [ν √climb ν ] ] \]  
    (manner)
  
  b. The prices climbed.  
    \[ [vP ν+√climb [SC [DP the prices ] √climb ] ] \]  
    (result)
But the two readings are in fact structurally conditioned.

The presence of a directional PP triggers a manner interpretation because this phrase occupies the result argument within the small clause, forcing the verb to adjoin to $v$. In (7a), the ‘upward direction’ result of $climb$ is unavailable and does not clash with the directional PP.

(7) a. The explorer climbed down the mountain. (manner) $[vP [v \sqrt{climb}\ v][SC [DP the explorer][PP down the cave]]]$
Implication (1) cont.

- Forcing a manner interpretation in (7b) results in oddity, perhaps because it is conceptually unclear how prices can ‘clamber’.

- (7) b. ?? The prices climbed down the market.
Implication of a Syntactic Approach (2)

- Transitive constructions, too, condition the availability of manner and result interpretations.

- When the direct object is unaffected by the event, no change-of-state happens to it. Therefore, the only option is for the verbal root to adjoin with \( v \).

  - “Optionally causative manner verbs”, Alexiadou et al at Roots V (18 June 2017, QMUL).

- However, if the direct object is affected by the event, the verbal root must begin its life as the result argument within the small clause and then incorporate with \( v \).
Implication (2) cont.

- *Climb* in these cases behaves like a manner verb because no change-of-state occurs to, for instance, the mountain in (8a), as compared with *break*, a result verb in (9b).

- (8) a. The explorer climbed the mountain.  
  \[ [vP [DP the explorer ] [v' [v √climb v ] [DP the mountain ] ] ] ]
  b. ?? The prices climbed the market.

- (9) a. ?? The explorer broke the mountain.
  b. The prices broke the market.  
  \[ [vP [DP the prices ] [v' [v v+√break ] [SC [DP the market ] √break ] ] ] ]
New Solution to an Old Puzzle

- Back to Naigles and Terrazas (1998)…….

- Recall that there are three types of sentence frames:

  (10) a. She’s *kradding* (neutral)

  b. She’s *kradding* towards the tree (manner-biased)

  c. She’s *kradding* the tree (result-biased)
New Solution to an Old Puzzle

- *She’s kradding*

- In the neutral frame, the subject is clearly acting as an Agent. From an event structure perspective, Agents are arguments of DO and begin their syntactic lives in the specifier of $\nu$

- Having no need for a small clause, a manner interpretation emerges as the preferred interpretative choice
New Solution to an Old Puzzle

- *She’s kradding towards the tree*
- In English, the result-denoting prepositional phrase in the manner-biased frames occupied the result argument within the small clause, thus requiring the verb to adjoin to \( v \) and be interpreted as manner
New Solution to an Old Puzzle

- *She’s kradding the tree*

- For the **transitives** in the **result-biased** frames, however, manner or result depended on whether participants considered the action to have a change-of-state, leading to a **mixed** result.
Conclusion & Implication

- The mixed results from Naigles and Terrazas (1998) can be captured by a syntactic approach to manner/result complementarity as proposed by Mateu and Acedo-Matellán (2012)

- The complexity of manner/result meanings is structurally determined, and guides the acquisition of new verbal concepts
Follow-up Studies

- How do English (and Dutch) children interpret manner/result meanings of a novel motion verb?

- Joint work with Annelot de Rechteren van Hemert (Department of Experimental Psychology, University of Oxford)
  - Novel verb learning paradigm
  - CHILDES corpus analysis
Selected References


Related materials

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