The generalization of abstract verb meaning: Adults and 4-5 year old children show plasticity in verb biases that extend across semantic fields

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Author Note

These would be my acknowledgements when the paper was finished.

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Abstract

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How do we break down representations of events to encode them in language? Across languages, most verbs encode either Ends (e.g. what happens, crossing the floor) or Means (e.g. how it happens, by dancing) of an event, but not both (cf. Talmy, 1985). Havasi et al. (2014) showed these biases are not fixed but malleable – when adults and 4-6yos learn several verbs in a row with path meanings (rise, cross), they begin to guess subsequent novel verbs will refer to path as well. For adults, these biases are very abstract: after adults learned a path bias for motion events, they preferred Ends verbs for change-of-state scenes as well (Geojo 2015). Accomplishing this requires some kind of very general representation of events that can account for hitting (manner-of-action) being more like running (manner-of-motion) than like entering (path).

Pre-linguistic infants are sensitive to a non-linguistic means/ends distinction (Phillips & Wellman, 2005; Woodward, 1998, Gergely et al. 2002), but we do not know whether this early conceptual framework provides a foundation for learning verb semantics. Are parallels between means/end structure across domains a late-learned cognitive skill, or do they emerge early in development? 4-6-yo children (N=58) were presented with a repeating learning sequence (Figure 1):

Bias/new verb test: A word/event pairing is presented (e.g. comb-rip, gorping); children choose whether gorping means an event maintaining either action (comb-flatten) or effect (hammer-rip).

Training: 3 additional events provide evidence for one interpretation (e.g. effect, rip)

Same-verb Test: 2 new events matching either action (comb-open) or effect (plier-rip)

Children saw 8 trials in the same domain (change-of-state) and then 8 in a new domain, directed motion. Our key interest is ***not in the learning of individual verbs*** (measured at 3), but in the biases that children develop between verbs (measured at step 1 of each subsequent trial). We ask (a) if children's verb biases update with evidence within the

change-of-state domain and (b) whether these biases extend between domains, relying on an abstract means/end distinction.

We are just beginning to understand how the cognitive abilities children show in the first year of life help to organize language learning, and in particular how children conceptualize and break down their representations of events into verb and sentence meaning. These results suggest that children's verb meanings draw on very abstract lexical semantics from childhood, and that these have parallel structure – and may be related to – the fundamental cognitive representations available to infants.

Keywords: keywords

Word count: X

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This is the introduction to the paper.

Experiment 1: Adults

–>For this experiment, I'm allowed to grab text from Amy's paper! yeyyyyy.

Robust and reliable practices. Nope!

We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study. This data was previously reported as part of the second author's dissertation.

- Data is available at TOADD (Need to strip MTurk IDs and birthdays if present)
- Analysis pipeline from processing, post exclusions (based on record)

Methods

Data Cleaning (to be suppressed in submission). Data is loaded from cleaned scripts, post exclusion of subjects. Thus, we'll need to get the info on data exclusion from the text of Amy's dissertation

Participants.

Material.

Procedure.

Data analysis. We used R (3.4.1, R Core Team, 2017) for all our analyses. ## Results ## Experiment 1 - Discussion

Experiment 2: 4-5 year olds

Now we do it with kids!

Robust and reliable practices. Way better! We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study.

Methods

Data Cleaning (to be suppressed in submission). Note that I need to account for the inclusion of Ss 75 and 76 (BOTH of whom's data has to be manually entered - 1.3.17 note need to code *from video*)

```
## Caught an error during read.table.
## MannerPathPriming_10.datCaught an error during read.table.
## MannerPathPriming_75.datCaught an error during read.table.
## MannerPathPriming_76.datCaught an error during read.table.
## MannerPathPriming_77.dat
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## [1] 182
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## [1] 2493
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## [1] 182
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## [1] 182
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## [1] 2779
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## [1] 125
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Participants. All told, the following number of participants included in each cell of the experiment(s) are:

```
## , ,  = Action
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##         F  M
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##   3  0  1  0
##   4  0  7  6
##   5  0  6 10
##   6  0  0  1
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## , ,  = Effect
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##         F  M
##   3  0  0  0
##   4  0  6  9
##   5  0  7  8
##   6  0  1  0
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## , ,  = Manner
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##
##         F  M
##   3  0  0  0
##   4  0  7  9
##   5  0  7  7
##   6  0  1  0
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##         F  M
##   3  0  0  0
##   4  0  0  0
##   5  0  0  0
##   6  0  0  0

##
## Action Effect Manner   Path    Unk
##     31     31     31     32      0
```

included in the study.

Materials.

Procedure.

Data analysis. We used R (3.4.1, R Core Team, 2017) for all our analyses.

Results

Experiment 2 - Discussion

General Discussion

References

R Core Team. (2017). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from https://www.R-project.org/