

Talking about Thoughts

Grounding Language Acquisition in Intuitive Theories and Event Cognition

Eva Wittenberg (ewittenberg@ucsd.edu)

Department of Linguistics, University of California, San Diego
9500 Gilman Dr., La Jolla, CA 92093-0108 USA

Melissa Kline (mekline@mit.edu)

Department of Psychology, Harvard University
33 Kirkland St., Cambridge, MA 02138 USA

Joshua K. Hartshorne (joshua.hartshorne@bc.edu)

Department of Psychology, Boston College
140 Commonwealth Ave, Chestnut Hill, MA 02467

Keywords: language; language acquisition; concepts; event cognition; cognitive development; intuitive theories; argument structure

Introduction

Language is a powerful tool for moving thoughts from the head of one person to another. Thus, any theory of language must make contact with theories of thought and conceptual representation. Any theory of language acquisition must explain how children link words to concepts, whether those concepts were pre-existing or created during the process of language acquisition. Conversely, theories of conceptual representation are constrained by the need to support language and language acquisition. Indeed, there is a rich tradition of cognitive science research that explicitly tackles these issues (?, ?, ?).

Right now is a particularly opportune time to assess our current understanding of how language acquisition might be grounded in thought – particularly focusing beyond the better-explored domains of objects and kinds to events. Recent years have seen the emergence of a robust psychological literature and event representations (?, ?). There has likewise been explosive growth in work on concepts within the “intuitive theory” or “Theory Theory” framework (?, ?, ?, ?). On such accounts, concepts are embedded in robust theories – much like the theories used by scientists – and derive their meaning from their role in those theories. Importantly, our growing understanding of concepts is not limited to mature representations: Work on infant and child conceptual representations has been particularly productive (?, ?, ?, ?).

Language research has similarly seen rapid progress. In this workshop, we focus in particular on verbs. Linguists now have well-specified, articulated theories of the semantics of verbs, which is necessarily (part of) a theory of event representation (?, ?, ?). Importantly, there is now increasingly strong evidence for their psychological reality and role in language acquisition (?, ?, ?). While these theories bear certain similarities to the infant cognition work (e.g., representations of agency, intentionality, and causation play a key role), in other ways they diverge (e.g., they have no clear analog to an

intuitive theory).

This workshop brings language acquisition researchers together with experts in event cognition, intuitive theories, and cognitive development in order to try to understand how the developments in these disparate-yet-linked fields inform one another. Because language must make contact with thought – otherwise, how do we communicate – it is likely that the achievements of one field will inform the others, and it must be the case that any discrepancies between fields can be ultimately resolved. Given the necessarily interdisciplinary nature of this discussion, the Annual Meeting of the Cognitive Science Society is an ideal venue for these conversations.

Goals and Scope

This workshop brings together leading researchers in the language and cognition of concepts and events – both as speakers and as audience members – in order to share knowledge, discuss open research questions of mutual concern, and shape the path forward. Precisely because questions about the representation of concepts and events are so broadly applicable across the cognitive sciences, they tend to be studied somewhat independently in different (sub)disciplines. Thus, gatherings like this one are crucial for ensuring efficient dissemination of ideas and findings.

The workshop is organized around language acquisition, particularly the acquisition of verbs. This will help focus discussion without necessarily sacrificing breadth: Verb acquisition presents a particularly rich set of phenomena touching upon issues of central concern to the disparate concepts and events literatures. To these ends, the workshop speakers represent diverse research traditions and topics. Many have contributed to multiple of these literatures.

JH: I don't love the following paragraph, but after 90 min. struggling with it, this is the best I got!

Thus, Cynthia Fisher, Joshua Hartshorne, and Melissa Kline in particular will discuss their work on grounding the acquisition of verbs in event representations (cf. ?, ?, ?, ?, ?), and Noah Goodman will discuss his work grounding

language processing more generally in conceptual representations (cf. ?, ?, ?). Beyond this, many of the talks will focus squarely on conceptual and event representations. Barbara Tversky and Jeffrey Zacks will discuss event perception and segmentation (cf. ?, ?, ?). Joshua Hartshorne, Beth Levin, and Eva Wittenberg will discuss insights into event representations that stem from investigation of linguistic structure (cf. ?, ?, ?, ?). The role of intuitive theories in concepts and thought will be discussed by Noah Goodman and Joshua Tenenbaum (cf. ?, ?, ?, ?, ?). Many speakers will discuss recent work on infant and child cognition, especially Dare Baldwin and Gergely Csibra (cf. ?, ?, ?).

All speakers will endeavor to draw out connections between the different lines of research. Question periods and discussion during coffee breaks will allow participants – including audience members – to discuss convergences and apparent conflicts between the different literatures, generating future directions for research.

Workshop Organization

The workshop will be organized around a set of thirty-minute presentations (including Q&A). The presentations will range from theoretical overviews to detailed discussion of specific phenomena. Interspersed coffee breaks will help spur discussion about promising avenues for future research and help build a common vocabulary and agenda.

Workshop Organizers

Eva Wittenberg is

JH: Please blurb

. Melissa Kline is

JH: please blurb

. Joshua K. Hartshorne is an assistant professor of Psychology at Boston College. His work focuses on the interaction between conceptual and linguistic representations in both processing and acquisition (?, ?, ?).

Target Audience

The target audience for this workshop overlaps significantly with the target audience of CogSci. The workshop's central themes (language acquisition and conceptual representation) have long been central concerns of the Society and are typically well-represented at its meetings. Moreover, our specific focus on event representations dovetails this year's overall conference theme: "Recognizing and representing events: Integrating psychological, linguistic, computational and neural perspectives."

Moreover, the workshop approaches these themes from a multidisciplinary perspective, as seen in the disciplinary diversity of the participants. Because the presentations will be geared towards an interdisciplinary audience, they should be approachable by a broad cognitive science audience.

Confirmed Speakers

Dare Baldwin, Department of Psychology, University of Oregon Gergely Csibra, Department of Cognitive Science, Cognitive Development Center Director, Central European University Cynthia Fisher, Department of Psychology, University of Illinois, Urbana-Champaign

Allison Gopnik XYZ not confirmed yet, included for spacing reasons

Noah Goodman, Department of Psychology, Stanford University Joshua Hartshorne, Department of Psychology, Boston College Melissa Kline, Department of Psychology, Harvard University Beth Levin, Department of Linguistics, Stanford University* Josh Tenenbaum, Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology* Barbara Tversky, Department of Psychology, Stanford University Eva Wittenberg, Departments of Linguistics and Psychology, University of California, San Diego Jeff Zacks, Department of Psychological and Brain Sciences, Washington University in St. Louis

References

- Ambridge, B., Pine, J. M., Rowland, C. F., Chang, F., & Bidgood, A. (2013). The retreat from overgeneralization in child language acquisition: Word learning, morphology, and verb argument structure. *Wiley Interdisciplinary Reviews Cognitive Science*, 4, 47-62.
- Baldwin, D., & Sage, K. (2013). Dwelling on action. In M. Rutherford & V. Kuhlmeier (Eds.), *Social perception: Detection and interpretation of animacy, agency, and intention*. Cambridge, MA: MIT Press.
- Battaglia, P., Hamrick, J., & Tenenbaum, J. B. (2013). Simulation as an engine of physical scene understanding. *Proceedings of the National Academy of Sciences*, 110, 18327-18332.
- Bowerman, M. (1989). Learning a semantic system: What role do cognitive predispositions play? In M. L. Rice & R. L. Schiefelbusch (Eds.), *The teachability of language*. Baltimore: Brooks.
- Clark, E. V. (2004). How language acquisition builds on cognitive development. *Trends in Cognitive Sciences*, 8, 472-478.
- Connor, M., Fisher, C., & Roth, D. (2013). Starting from scratch in semantic role labeling: Early indirect supervision. In T. Poibeau, A. Villavicencio, A. Korhonen, & A. Alishahi (Eds.), *Cognitive aspects of computational language acquisition*. Berlin: Springer.
- Fisher, C., Gertner, Y., Scott, R., & Yuan, S. (2010). Syntactic bootstrapping. *Wiley Interdisciplinary Reviews: Cognitive Science*, 1, 143-149.
- Goodman, N. D., Ullman, T., & Tenenbaum, J. B. (2011). Learning a theory of causality. *Psychological Review*, 118, 110-110.
- Gopnik, A., & Wellman, H. M. (in press). Reconstructing constructivism: Causal models, bayesian learning mechanisms, and theory theory. *Psychological Bulletin*.

- Hartshorne, J. K., O'Donnell, T. J., Sudo, Y., Uruwashi, M., Lee, M., & Snedeker, J. (in press). Psych verbs, the linking problem, and the acquisition of language. *Cognition*.
- Hartshorne, J. K., O'Donnell, T. J., & Tenenbaum, J. B. (2015). The causes and consequences explicit in verbs. *Language, Cognition, & Neuroscience*, 30, 716-734.
- Hernik, M., & Csibra, G. (2015). Infants learn enduring functions of novel tools from action demonstrations. *Journal of Experimental Child Psychology*, 130, 176-192.
- Jara-Ettinger, J., Gweon, H., Tenenbaum, J. B., & Schulz, L. E. (in press). Children's understanding of the costs and rewards underlying rational action. *Cognition*.
- Kao, J. T., Wu, J., Bergen, L., & Goodman, N. D. (2014). Nonliteral understanding of number words. *Proceedings of the National Academy of Sciences*, 111, 12002-12007.
- Kline, M., Snedeker, J., & Schulz, L. E. (submitted). Children's expectations about the meanings of transitive verbs are sensitive to spatiotemporal properties of causal scenes.
- Levin, B., & Hovav, M. R. (Eds.). (2005). *Argument realization*. Cambridge, UK: Cambridge University Press.
- Levin, B., & Hovav, M. R. (2011). Lexical conceptual structure. In K. von Stechow, C. Maienborn, & P. Portner (Eds.), *Semantics: An international handbook of natural language meaning i*. Berlin: Mouton de Gruyter.
- Piantadosi, S. T., Tenenbaum, J. B., & Goodman, N. D. (in press). The logical primitives of thought: Empirical foundations for compositional cognitive models. *Psychological Review*.
- Pinker, S. (Ed.). (1989). *Language and cognition: The acquisition of argument structure*. Cambridge, MA: MIT Press.
- Radvansky, G. A., & Zacks, J. M. (Eds.). (2014). *Event cognition*. New York: Oxford University Press.
- Tversky, B., & Zacks, J. M. (2013). Event perception. In D. Riesberg (Ed.), *Oxford handbook of cognitive psychology*. Oxford, UK: Oxford University Press.
- Wittenberg, E., & Snedeker, J. (2014). It takes two to kiss, but does it take three to give a kiss? *Language, Cognition, and Neuroscience*, 29, 635-641.