Learning to Talk about Events
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 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 (Clark, 2004; Bowerman, 1989).

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 on event representations (Tversky & Zacks, 2013). There has likewise been explosive growth in the "intuitive theory" or "Theory Theory" approach to conceptual organization (Gopnik & Wellman, in press; Hartshorne, O'Donnell, & Tenenbaum, 2015; Goodman, Ullman, & Tenenbaum, 2011; Battaglia, Hamrick, & Tenenbaum, 2013). On such accounts, concepts are embedded in robust theories – much like those 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 (Gopnik & Wellman, in press; Jara-Ettinger, Gweon, Tenenbaum, & Schulz, in press; Hernik & Csibra, 2015).

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 (Levin & Hovav, 2011, 2005). Importantly, there is now increasingly strong evidence for their psychological reality and role in language acquisition (Ambridge, Pine, Rowland, Chang, & Bidgood, 2013; Hartshorne et al., in press). While these theories bear certain similarities to the infant cognition work (e.g., representations of agency, intentionality, and causation play key roles), in other ways they diverge (e.g., they have no clear analog to an intuitive theory).

This workshop brings linguists and language acquisition researchers together with experts in event cognition, intuitive theories, and cognitive development in order to understand how developments in these independent but linked fields inform one another. Because language makes direct contact with thought (and vice versa) it is likely that the achievements of one field will inform the others, and discrepancies between fields must ultimately be resolved to adequately explain phenomena in both areas. 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, and many have contributed to multiple of these literatures.

Beth Levin, Joshua Hartshorne, and Eva Wittenberg will discuss insights into event representations that stem from in-

vestigation of **linguistic structure**. Cynthia Fisher, Joshua Hartshorne, and Melissa Kline will discuss the grounding of **verb acquisition** in event representations, and Noah Goodman will discuss his work grounding language processing more generally in conceptual representations. Beyond this, many of the talks will focus squarely on conceptual and event representations. Many speakers will discuss recent work on **infant and child cognition**, especially Dare Baldwin and Gergely Csibra. Barbara Tversky and Jeffrey Zacks will discuss event perception and segmentation, and the potential role of **intuitive theories** will be discussed by Noah Goodman and Joshua Tenenbaum.

All speakers will endeavor to draw out connections between the different lines of research. Question periods and discussion during coffee breaks will allow participants and attendees to synthesize 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. Presentations will be geared towards an interdisciplinary audience and should be approachable by a broad cognitive science audience.

Workshop Organizers

Eva Wittenberg is a postdoctoral researcher in the Departments of Linguistics and Psychology at UCSD. Her research focuses on how the mind assembles meaning and how that capacity came to be. **Melissa Kline** is a postdoctoral researcher in the Harvard Psychology department studying how babies' and young children's cognitive representations of events relate to verb meaning and argument structure. **Joshua K. Hartshorne** is an assistant professor of Psychology at Boston College. His work focuses on the interaction between conceptual and linguistic representations.

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) are central concerns of the Society and are typically well-represented at its meetings. The multidisciplinary nature of the work is particularly appropriate for a multidisciplinary conference like CogSci. Finally, our specific focus dovetails this year's overall conference theme: "Recognizing and representing events: Integrating psychological, linguistic, computational and neural perspectives."

Confirmed Speakers

Dare Baldwin, University of Oregon
Gergely Csibra, Central European University
Cynthia Fisher, University of Illinois, Urbana-Champaign
Noah Goodman, Stanford University
Joshua Hartshorne, Boston College
Melissa Kline, Harvard University
Beth Levin, Stanford University
Josh Tenenbaum, Massachusetts Institute of Technology
Barbara Tversky, Stanford University
Eva Wittenberg, University of California, San Diego
Jeff Zacks, 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.

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.

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*.

Levin, B., & Hovav, M. R. (2005). *Argument realization*. Cambridge, UK: Cambridge University Press.

Levin, B., & Hovav, M. R. (2011). Lexical conceptual structure. In K. von Heusinger, C. Maienborn, & P. Portner (Eds.), *Semantics: An international handbook of natural language meaning i.* Berlin: Mouton de Gruyter.

Tversky, B., & Zacks, J. M. (2013). Event perception. In D. Riesberg (Ed.), *Oxford handbook of cognitive psychology.* Oxford, UK: Oxford University Press.