Spatial language in dialogue: The role of modality in creating shape-based referring expressions

Jennifer Petrich[1], Brenda Nicodemus[2], and Lucinda O'Grady[1]

[1]*Laboratory for Language and Cognitive Neuroscience, San Diego State University*
[2]*Department of Interpretation, Gallaudet University*

INTRODUCTION

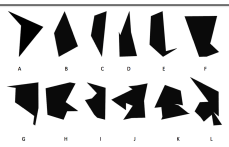
American Sign Language (ASL) and English differ in the linguistic resources available to express visual-spatial information. We used a referential communication task (based on Clark & Wilkes-Gibbs, 1986) to examine how signers vs. speakers create referring expressions for novel complex objects that differ in shape.

RESEARCH QUESTIONS

- How do different resources for expressing shape impact communication efficiency?
- How do shape-based referring expressions emerge and evolve across a dialogue for signed vs. spoken language (ASL vs. English)?

METHODS

Participants
- 10 pairs deaf native ASL signers
- 10 pairs native English speakers



Task
- The Director must describe each shape in turn to the Matcher from 1-12.
- The Matcher's goal is to arrange the shapes to match target order.
- Task is repeated 6 times, and each round had a new target order.

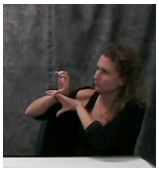
- Director's set of 12 shapes was laid out in a pre-determined sequence (target order).
- Matcher's set is identical, but laid out on a different sequence.

Matcher Director

Coding: Initial descriptions for each round were coded as:

a) Shape-Specific

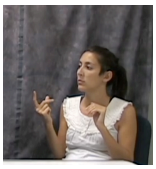
ASL



English "narrow quadrilateral" "lumpy diamond"

b) Lexical Labels

ASL

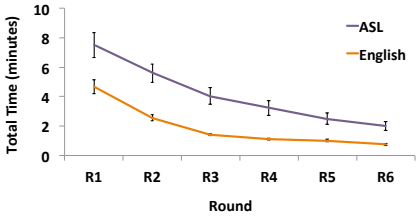


DOG

CHURCH

English "boot" "mountain"

RESULTS



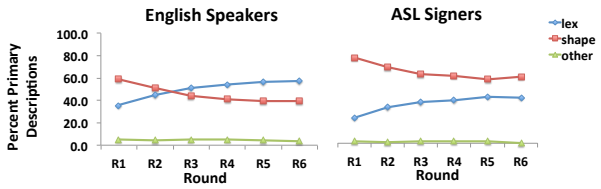
- Description times dramatically reduced over time as participants mutually accepted referring expressions.
- Description times were longer for ASL than for English, in contrast to previous results with spatial location descriptions (Emmorey, 1996; Lane, 1992). Gaze shifting between the shape stimuli and the Director may have contributed to longer rounds for signers.

English Example

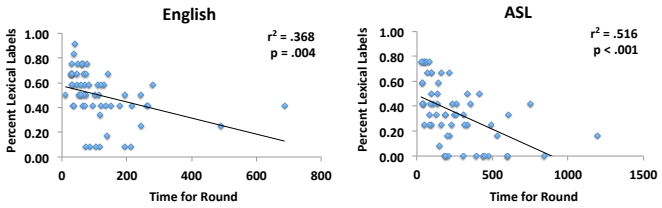
Round 1: Okay um… the next one there's a white shape cut out of the middle um… almost like a white triangle in the center, the rest seems more black like um… but this one um… if I looked at the top, if I looked at it like this [gestures] it's a little bit like a Christmas tree and then there's a white triangular shape cut out of kind of the middle of the shape.

Round 2: Um… the next one um… if you cover up the bottom half it looks a little bit like a Christmas tree, so it goes like this [gestures] on the top like a z, but lightnening bolt shape on the top.

Round 6: Lightening bolt - Christmas tree.



- English speakers began with shape-based labels and switched to lexical labels.
- ASL signers preferred shape-based labels throughout, but use of lexical labels increased over time.



- Use of lexical labels correlated with time to complete each round.
- Lexical labels for identifying objects is advantageous to communication efficiency.

CONCLUSIONS

- This communication task provides a novel way to investigate the creation, stabilization, and evolution of referring expressions over a short time span.
- Lexical labels improved communication efficiency over shape-based descriptions for both ASL and English.
- For ASL, classifier constructions may be less efficient for creating labels for complex objects than for expressing spatial locations.

References

Clark, H. & Wilkes-Gibbs, D. (1986). Referring as a collaborative process. *Cognition, 22,* 1-31.
Emmorey, K. (1996). The confluence of space and language in signed languages. In P. Bloom, M. Peterson, L. Nadel, & M. Garrett (Eds). *Language and Space,* pp. 171- 209, Cambridge, MA: MIT Press.
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For more information: kemmorey@mail.sdsu.edu.
Website: www.emmoreylab.sdsu.edu