



Seeing the world through a visual language: Visual world paradigm in BSL

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Lexical Access in spoken languages

- Listeners evaluate unfolding speech input against an activated set of lexical candidates which compete for recognition.
- As a spoken word unfolds:
Words sharing the same initial sounds become partially active
Semantically similar words become partially active
- For signed languages, very little is known about the time course of lexical processing

The time course of sign recognition

Previous gating studies:

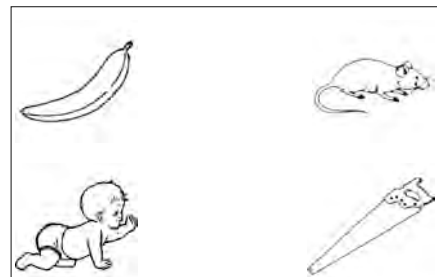
- Location and handshape are recognized first and together
- Movement is last and coincides with sign recognition
- Structural differences between signed and spoken languages may mean differences in recognition processes

Grosjean, 1981; Emmorey & Corina, 1990

Visual World

Visual World paradigm is used as a tool to track
real time lexical access

(Tanenhaus, Spivey-Knowlton, Eberhard, Sedivy, 1995)



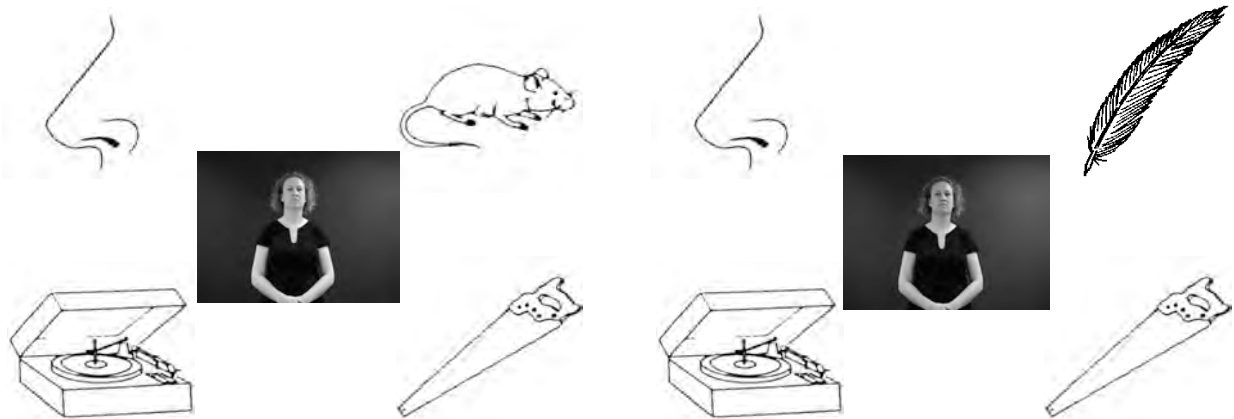


Where do sign perceivers look?

- In one-on-one interactions, sign perceivers look at the signer's face over 90% of the time
(Emmorey, Thompson, Colvin, 2009)
- Also holds when sign perceivers watch a video of someone signing
Participants fixated signer's face 61% - 99%
across three video clips
(Muir & Richardson, 2005)

Questions:

- Can a Visual World paradigm be used with signed languages?
- How do sign perceivers divide visual attention between language and contextual input?
- Are there any differences between Handshape and Location parameters for sign recognition?
- Are signs that share Handshape and Location parameters even stronger competitors?
- Are there any differences in sign recognition between deaf native signers and deaf signers who learn British Sign Language (BSL) later?





Method

Trials: (n= 107) Target picture present, or absent

Conditions (Shared Features):

Semantic	(ex: box, barrel)
Handshape + Movement	(ex: saxophone, computer)
Location + Movement	(ex: Africa, moon)
Handshape + Location	(ex: mouse, nose)

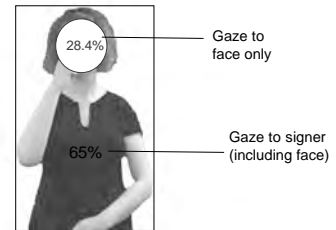
Subjects:

- 24 deaf BSL signers (13 women; mean age = 34)
- 11 'Native signers,' BSL exposure from birth
- 4 'Early signers,' signing before age 5
- 9 'Late signers,' signing after age 5

Task:

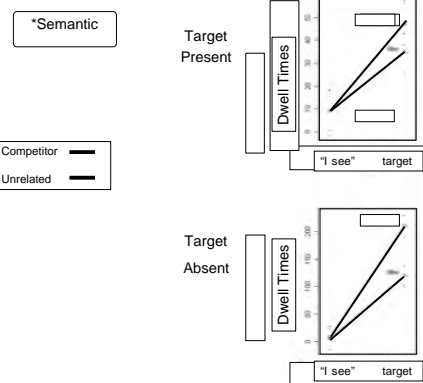
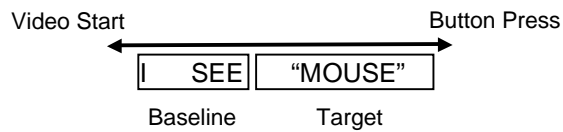
Using a joystick, press a button to indicate whether the sign matches one of the pictures on the screen

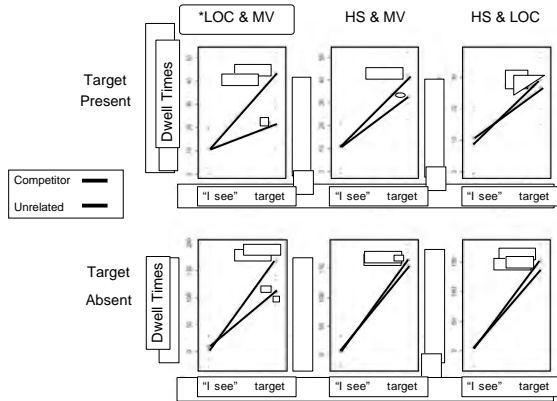
Eye gaze to signer



35% of gaze fixations not toward signer during sign video

Time course of trial for analysis

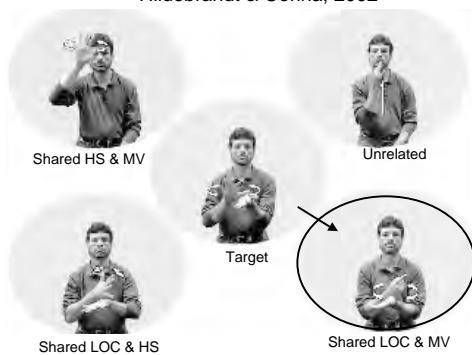




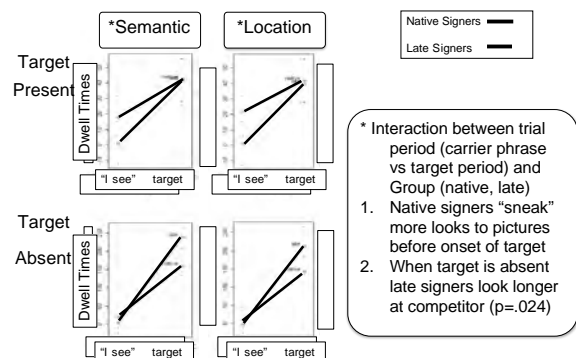
Summary

- More looks to competitors that:
 - share **Location and Movement**
 - But *not* Handshape and Movement
 - or Location and Handshape
- Features available at onset not the most compelling competitors – so what is?

Findings Match Non-Sign Similarity Judgment Experiment Hildebrandt & Corina, 2002



Group Comparisons





Conclusions

- Visual world paradigm works with signed languages despite mandatory presence of visual linguistic stimulus
- Sign perceivers adjust gaze to take in contextual information
- Strongest competitor may not be from shared onset, but from most salient sign unit
- Time course and nature of phonological activation may be different for signed languages
- The nature of looking is different for native and non-native signers



ESRC Deafness Cognition and Language Research Centre



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