Can listeners modulate rapid pragmatic inferences based on knowledge about the speaker?

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Background
Disfluency…ummm…uhhhh…

• Disfluencies produced more when words are tougher to retrieve e.g. low frequency (Goldman-Eisler, 1968)
• Listeners rapidly infer reference to hard-to-name objects from disfluency (Arnold, Hudson-Kam, & Tanenhaus, 2007)
  • Canceled if speaker has object agnosia

Pragmatic inferences: Three hypotheses
1. No speaker modeling; only use of conventionalized cues
   -ruled out by Arnold, et al. (2007), Grodner & Sedivy (in press)
2. Modeling is specific to particular speakers/situations; thus is highly flexible
3. Speaker models develop gradually, they can be suspended but not rapidly altered based on top down cues
To tease apart 2 and 3, we introduce a speaker who is only impaired for one category of items

Design
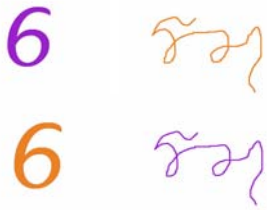
Click on thee…umm…purple number 6.

• Fluent or disfluent instructions
• Instructions referred equally often to numbers, letters and the hard-to-name squiggles
• Speaker: typical, number-impaired, or letter-impaired

Predictions
Following a disfluency…

• Unimpaired speaker condition: look longer at the squiggle than the letter or number
• Impaired speaker condition:
  • *Flexible speaker modeling:* look longer at the squiggle vs. unimpaired category, but not with the impaired category
  • *Suspended speaker modeling*: no difference between the two impairment conditions

Experiment 1

• Goal: Replicate disfluency effect from Arnold et al. (2007)
• Ss told that the speaker was a "female professional" (no impairments)
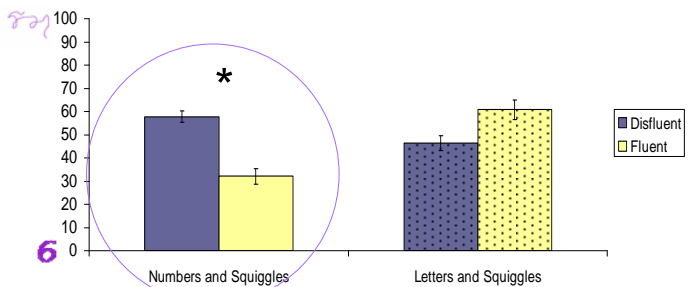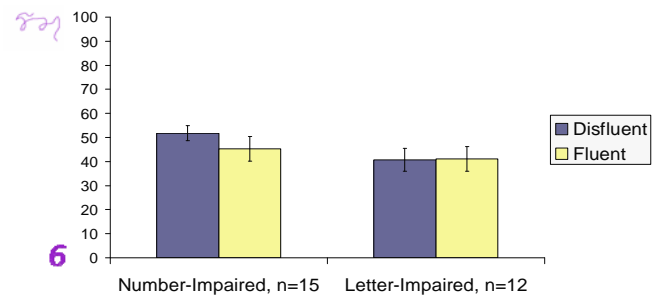

Percentage of gaze time spent on correct color squiggle compared to the number or letter during the color word, unimpaired speaker, n=12

• Disfluency led to increased looks to the squiggle when pitted against numbers, *p* < .01
• No effect for Letter vs. Squiggle displays, *p* > .2
• Experiment 2 focuses on Numbers vs. Squiggles

Experiment 2
Is the effect modulated by knowledge about the speaker?

• Number- or Letter-impaired
• Looked only at Number and Squiggle displays
• Catch trials: speaker fails to remember the referent's name
  • Ss clicked on the number 90% in the number-impaired condition, and 4% for letter-impaired, *p* < .01

Percentage of gaze time spent on correct color squiggle compared to the number during the color word, number- and letter-impaired

• No disfluency effect for either impairment group, *p*'s > .4
  • No significant impairment type x disfluency interaction, *p* > .6
  • Significant interaction with unimpaired speaker condition (Exp. 1), *p* < .05

Summary
• Listeners can cancel pragmatic inferences when they believe the speaker is unusual
• No evidence that specific speaker characteristics are modeled during on-line processing

References
Goldman-Eisler, F. (1968). *Psycholinguistics: Experiments in spontaneous speech*. Academic Press: London and New York.
Grodner, D. & Sedivy, J. (In press). The effects of speaker-specific information on pragmatic inferences. In N. Pearlmutter & E. Gibson (eds). The Processing and Acquisition of Reference. MIT Press: Cambridge, MA.
Arnold, J., Hudson-Kam, C., & Tanenhaus, M.K., (2007). If you say thee… uh… you are describing something hard: The on-line attribution of disfluency during reference comprehension. *Journal of Experimental Psychology: Learning, Memory and Cognition, 33,* 914-930.