

The Hands Are Part of the Package: Gesture, Common Ground and Information Packaging

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The relationship between speech & gesture

- Gesture & speech tightly linked at level of timing
 - Disrupting gesture disrupts speech, disrupting speech disrupts gesture (McNeill 1992, Mayberry & Jaques 2000)
- Cross-linguistic differences indicate meaning of gesture is linked to meaning of speech (McNeill 1992)
 - Motion events

Information packaging

- How a speaker shapes an utterance to meet the expected needs of an interlocutor (Chafe 1976)
- Some constructs:
 - Discourse-old vs. discourse-new (assumed familiarity –given/ new, activation cost, etc.)
 - Focus (of contrast)
 - Topic
 - Identifiability

Linguistic Indices of IP Constructs

- Discourse-old vs. discourse-new
 - Pronoun vs. full NP: it (old) vs. a mouse (new)
- Identifiability: entity must be shared, sufficiently encoded, contextually salient
 - Definite article: the mouse vs. a mouse
- Identifiability = a linguistic term. Psychologically, parallel to common ground (Clark 1992)
Common Ground is information assumed to be available to speaker and hearer.

Information packaging in gesture

- Gesture reflects information packaging (Levy & McNeill 1992)
 - More complex gestures occur with newer, less identifiable elements.

Information packaging in gesture

- Complexity = greater number of semiotic features
 - E.g. motion events: Path, Manner, Ground, etc.



Research question

- How does information packaging in speech and gesture change as a function of shared knowledge?
- Investigate this question via manipulation of:
 1. Grammatical constructions which change discourse status of elements of an event
 2. Shared knowledge

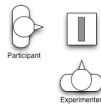
Procedure

Participants describe a short cartoon they've just watched.



Experiment 1

Experimenter condition: experimenter sits with participant while she watches, participant describes to experimenter.



•Participants receive one of 2 prompts:

Can you tell me about...

1. How the cat melts
2. How the cat melts down the stairs

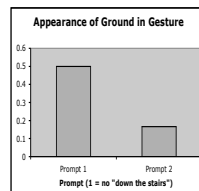
•Speech and gesture for target event compared across conditions.

Predictions

- Mention of ground (down the stairs) in prompt should increase identifiability of ground.
 - Ground should be less likely to appear in speech and gesture.

Results:

- Ground shows up in speech regardless, but significantly more likely to appear in gesture when not mentioned by the prompt (prompt 1)



- Structural constraints may make it unlikely that ground will be omitted in speech
 - Speech may reflect structural constraints while gesture reflects degree to which ground is salient for speaker
- But...experimenter was present during viewing: effects may be dependent on shared knowledge
 - Investigate shared knowledge independent of salience

Experiment 2: common ground

- Apart condition: participant describes to friend who was not present during viewing.
- Together condition: participant describes to friend who was present during viewing.

Experiment 2: common ground

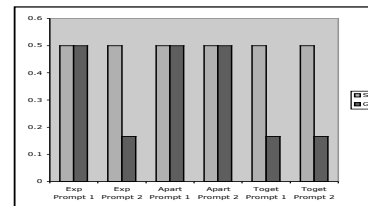
- Participants receive one of 2 prompts:
 1. Can you tell your friend about...
 1. How the cat melts
 2. How the cat melts down the stairs
- Speech and gesture for target event compared across conditions.
 - Presence of ground in speech and gesture
 - Cues to identifiability --treatment of stairs as identifiable

Question of interest:

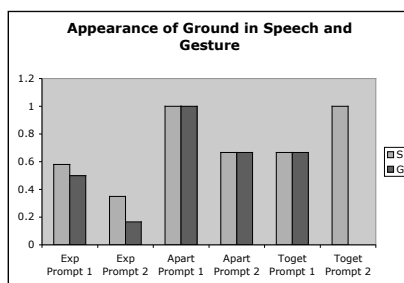
- Will difference in gesture as a function of prompt disappear?
 - In Apart condition, will ground show up in gesture even when mentioned by prompt?
 - In Together condition, will ground not show up in gesture even when not mentioned by prompt?

Predictions --idealized data

- 1. How the cat melts
- 2. How the cat melts down the stairs



Results...the real data



Why ground in gesture in Together condition with prompt 1 (no *down the stairs*)?

- Scene setting
 - People in Together condition who set the scene produced ground
 - People in the Apart condition also set the scene, and produced ground
- Discounting of shared knowledge (treating the Together task like an Apart task)?

Use of referring expressions

- Participants treat “the stairs” as identifiable regardless of condition
 - Violation of expectations about shared knowledge...but not unusual (Du Bois 1980)
 - Formal identifiability can't be used to assess influence of prompt

Conclusions:

- Inclusion of ground in speech was invariant
 - May reflect structural constraints of English
- Ground in gesture varies as a function of shared knowledge
 - May reflect discourse status of element

Conclusions

- Gesture may provide information about speaker's conceptual representation which is obscured by linguistic constraints
 - Focus on formal properties alone can be misleading

References

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