Aim low: Speakers design utterances for the most naïve addressee

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INTRODUCTION

- **Speakers tailor referential expressions based on joint knowledge**
  - Longer expressions for naïve listeners (Wilkes-Gibbs & Clark, 1992)
- **How does this audience design process scale up to multi-party conversation?**
  - Degree of common ground (CG) between dyads within larger group can differ

CANDIDATE HYPOTHESES: Speaker may design expressions respect to…

(1) AVERAGING: compute average knowledge state of all addressees

(2) AIM HIGH: person with whom they have the most common ground

(3) AIM LOW: person with the least common ground

(4) SWITCHING: flexibly draw on distinct representations of common ground, depending on current addressee

EXPERIMENT

- **Participants: Director, Matcher 1, Matcher 2 (a total of 60 English-speaking participants; recruited in groups of 3)**
- **Task: Entrainment trials → Test trials**
- Entrainment trials: Director sorts pictures with Matcher #1
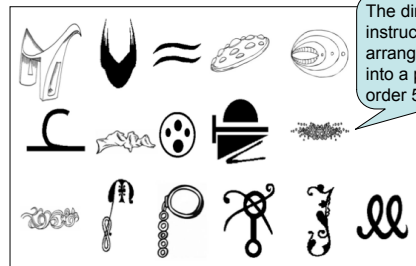- Test trials: Instruct matcher (s) to select 1 of 4 pictures (target was repeated twice)

The director gives instructions to re-arrange the images into a particular order 5 times.

Figure 1a. Example entrainment display. All items named 5 times by Director for Matcher 1.
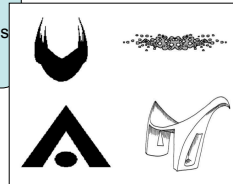
Figure 1b. Example test display. Director names 1 of 4 items on each trial.
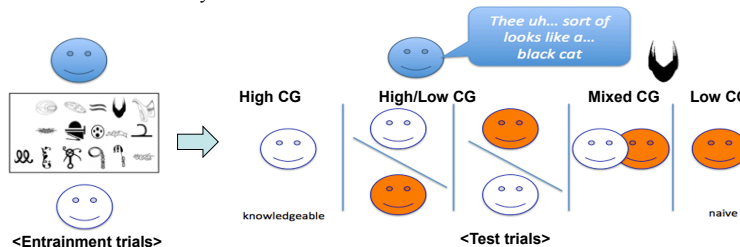
Thee uh… sort of looks like a… black cat

Figure 2. Experimental Procedure

RESULTS

We analyzed the length of the Directors' referential expressions at TEST.

Directors AIMED LOW (Hyp. # 3), and successfully SWITCHED (Hyp. #4):

1) Longer expressions in Low CG than High CG condition (t=6.0, p<.05).

2) No difference between Low CG and Mixed CG condition: Directors designed long expressions any time the naïve partner was an addressee.

3) Directors flexibly designed expressions to the knowledge of the current addressee in the High/Low alternating condition, using shorter descriptions for M1 than M2 (t=6.07, p<.05)

4) When describing the target a second time, expressions in the Low CG and Mixed CG conditions were shorter (t=4.92, p<.05): Shows rapid formation of common ground.

"Click on the Black cat."
OR
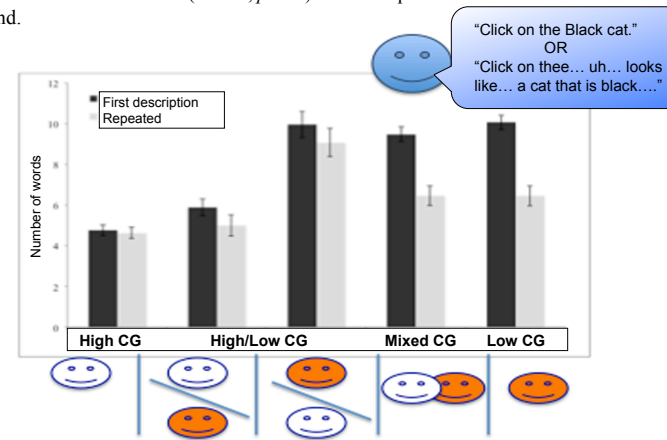"Click on thee… uh… looks like… a cat that is black…."

Figure 3. Results: Number of words used by Director at test.

CONCLUSIONS

- **Speakers keep track of the distinct knowledge states of multiple conversational partners at the same time.**
- **When speaking to multiple addressees, speakers AIM LOW -- design what they say for the most ignorant person (Hypothesis #3).**
- **Speakers can alternate representations depending on who an addressee is (Hypothesis #4).**

Our findings provide key evidence for maintenance and flexible use of multiple representations of joint knowledge. Reference does not proceed from automatically activated representations of average (Hyp. #1) or maximum (Hyp. #2) common ground. Instead, speakers recruit representations to maximize understanding. These findings are consistent with representational theories that posit a central role of declarative memory in common ground (Duff & Brown-Schmidt, 2012).

References

Wilkes-Gibbs, D., & Clark, H. H. (1992). Coordinating beliefs in conversation. *Journal of Memory and Language*, *31*, 183-194.
Duff, M. C. & Brown-Schmidt, S. (2012). The hippocampus and the flesible use and processing of language. *Frontiers in Cognitive Science, 6*, 1-9.