Extending communication games to more players
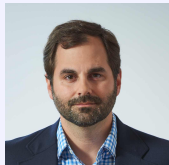
Veronica Boyce

LangCog Lab Meeting

Extending communication games to more players

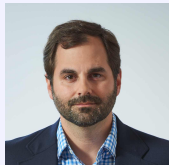Veronica Boyce

LangCog Lab Meeting

Extending communication games to more players

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Why study communication?

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We communicate and understand more than surface meaning.

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Some of this is conventionalized, but some is dynamic.

Partner-specific adaptation

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Partner-specific adaptation

How do referring expressions develop?

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- Interactive Alignment Account – bottom up priming (Garrod & Pickering 2009)

What are the speaker's strategies?

- Audience design
- Common ground
- "Aim Low" (ex. Yoon & Brown-Schmidt 2019)

Clark & Wilkes-Gibbs 1986
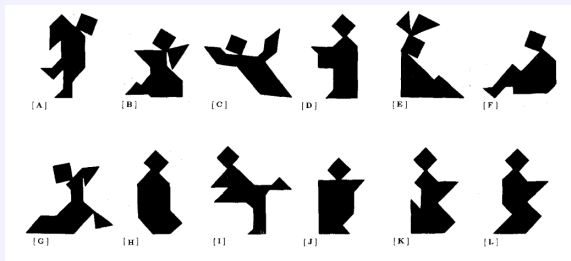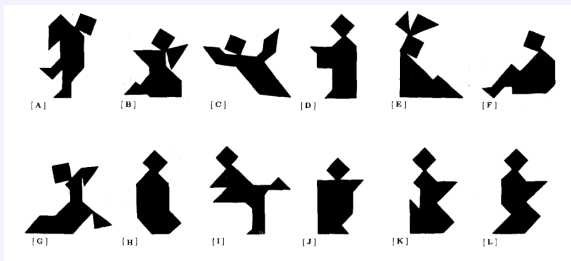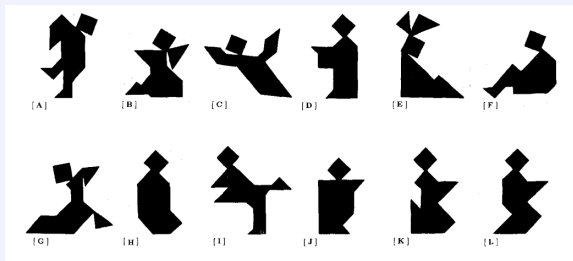
Clark & Wilkes-Gibbs 1986
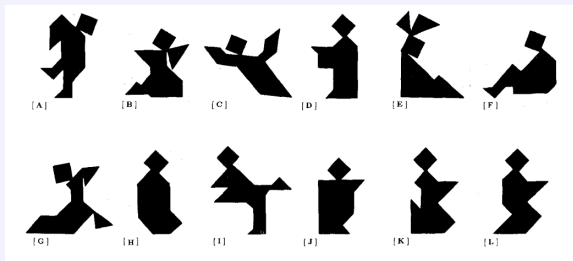
Clark & Wilkes-Gibbs 1986

1. All right, the next one looks like a person who's ice skating, except, they're sticking two arms out in front.
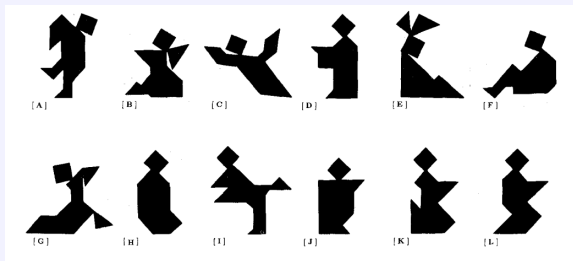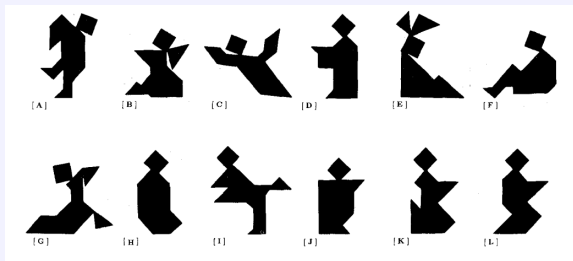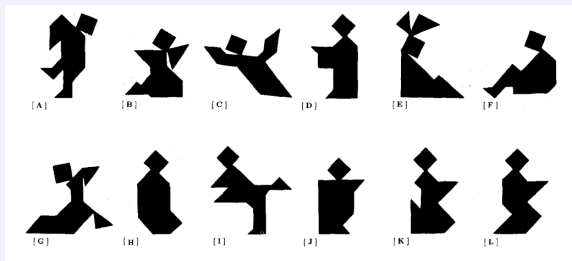
Clark & Wilkes-Gibbs 1986

1. All right, the next one looks like a person who's ice skating, except, they're sticking two arms out in front.
2. Um, the next one's the person ice skating that has two arms?

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Clark & Wilkes-Gibbs 1986

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3. The fourth one is the person ice skating, with two arms.
4. The next one's the ice skater.

Clark & Wilkes-Gibbs 1986

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2. Um, the next one's the person ice skating that has two arms?
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5. The fourth one's the ice skater.

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3. The fourth one is the person ice skating, with two arms.
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5. The fourth one's the ice skater.
6. The ice skater.

Clark & Wilkes-Gibbs 1986
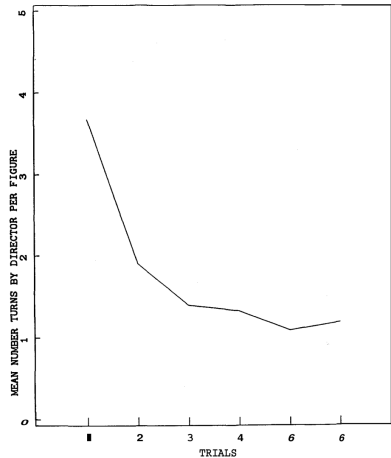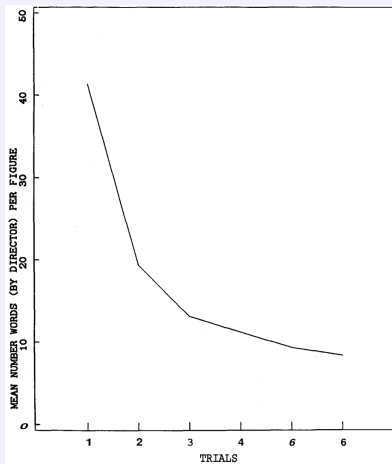
Hawkins, Frank, & Goodman 2020

Scaling up with web-based experiments
- Cued version with feedback on each trial

Hawkins, Frank, & Goodman 2020

Scaling up with web-based experiments
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- After all exclusions, 83 dyads

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Scaling up with web-based experiments

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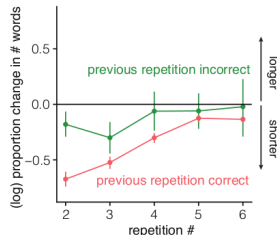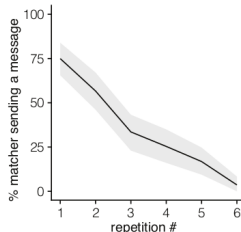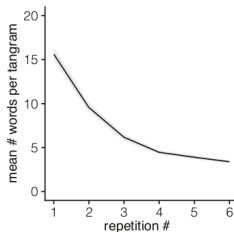
Hawkins, Frank, & Goodman 2020
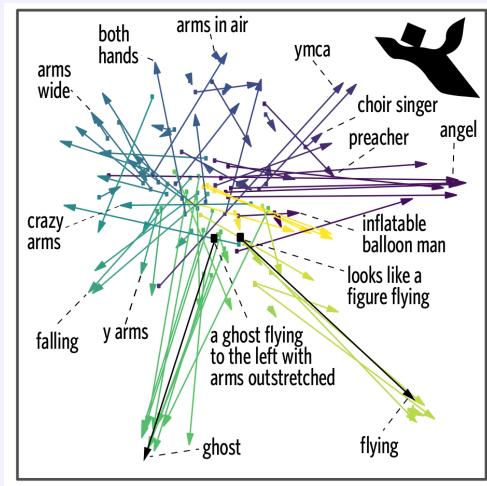
Semantics converge within and diverge between groups

Weber & Camerer 2003

Weber & Camerer 2003

Two speaker/listener pairs train separately
Then 'merger': speaker talks with *both* listeners

Weber & Camerer 2003

Two speaker/listener pairs train separately
Then 'merger': speaker talks with *both* listeners

Figure 2   Average Completion Times (11 Merger Sessions)
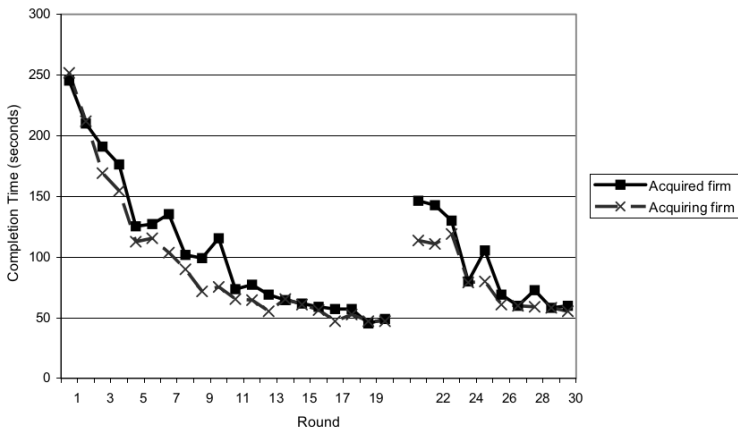
Yoon & Brown-Schmidt 2019

Speaker talks to multiple matchers
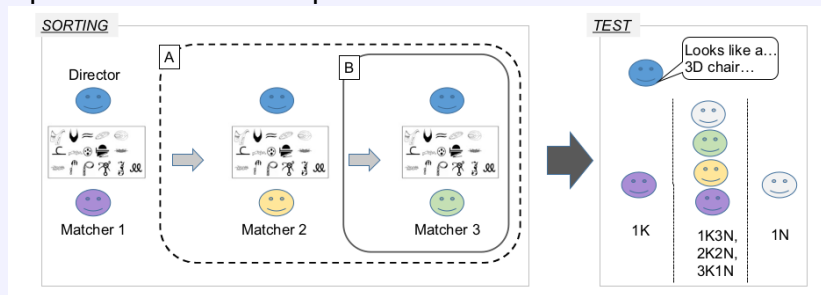
Examine speaker's utterance length, elaborations, disfluencies

First Year Project

Dynamics of alignment in larger groups

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Compare groups of 2/3/4 communicators

- Look for differential reduction

First Year Project

Dynamics of alignment in larger groups
Compare groups of 2/3/4 communicators

- Look for differential reduction

Rotate who is the knowledgeable speaker

- Chosen for participant experience
- Stronger measure of alignment

Experiment Framework

Implemented in Empirica (Almaatouq et al 2020)

Experiment Framework

Bonus: 4 points

Experiment Framework
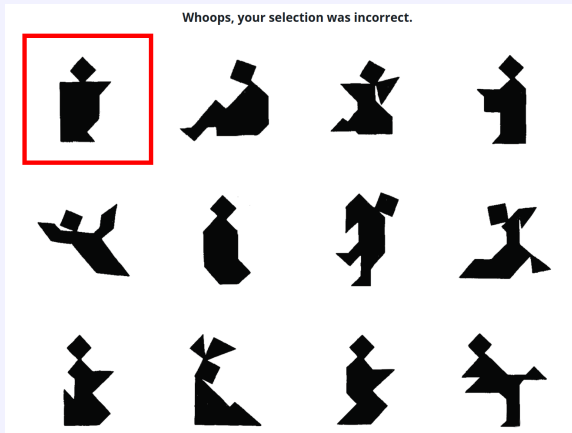
Bonus: 0 points

Experiment Framework

2/3 listeners selected correctly!
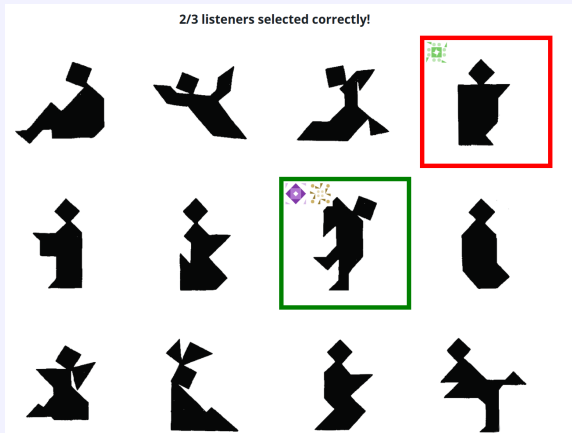
Bonus: Average of listeners = (2/3) * 4 points

Recruitment

Goal: 20 games in each of 2/3/4-player conditions
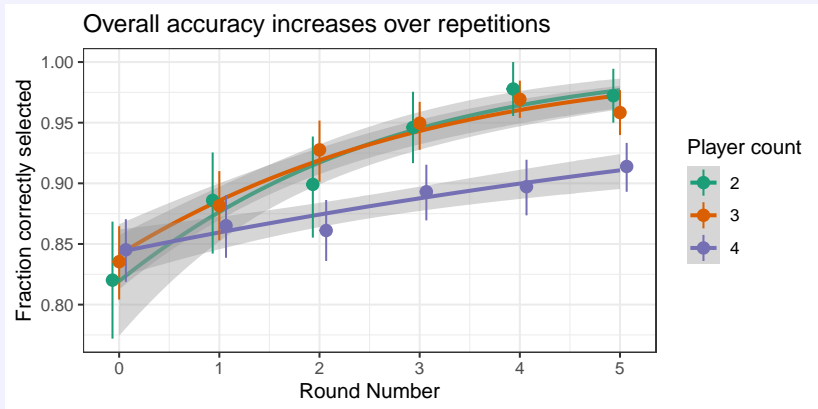Each game has 6 blocks of 12 tangrams

Recruitment

Goal: 20 games in each of 2/3/4-player conditions
Each game has 6 blocks of 12 tangrams

Actual recruitment:

- 15 2-player games (+ 4 partial)
- 18 3-player games (+ 2 partial)
- 20 4-player games (+ 1 partial)

Include all complete blocks

Results – Accuracy

Overall accuracy increases over repetitions
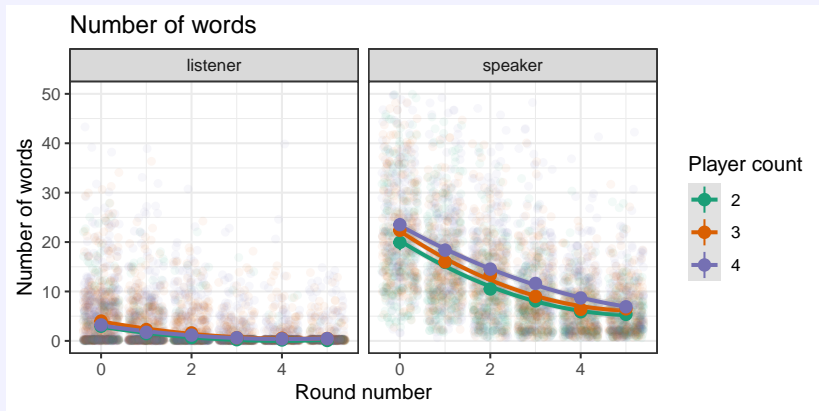
Accuracy is high and increasing

Results – Speed
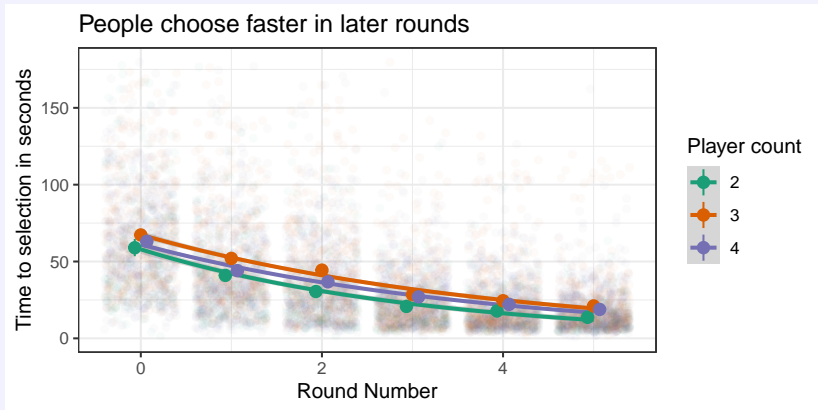
Listeners choose faster in later rounds

Reduction

Number of words

Number of words reduces over rounds
Caution: Non-referential utterances not yet removed

Reduction

Words from speaker per tangram
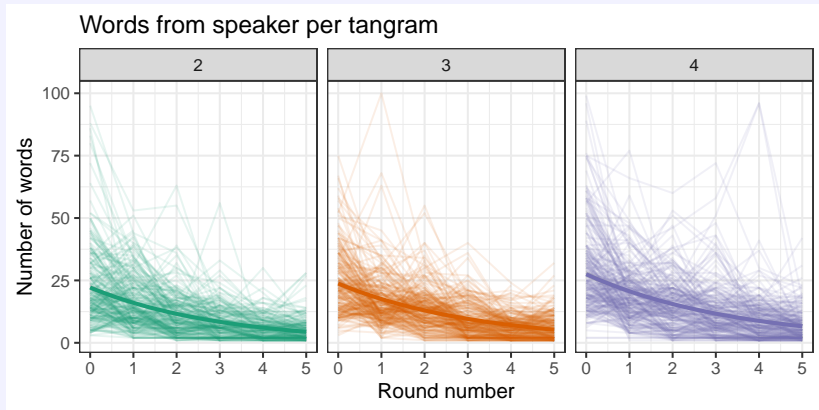
Variability

Reduction

Tangram variability
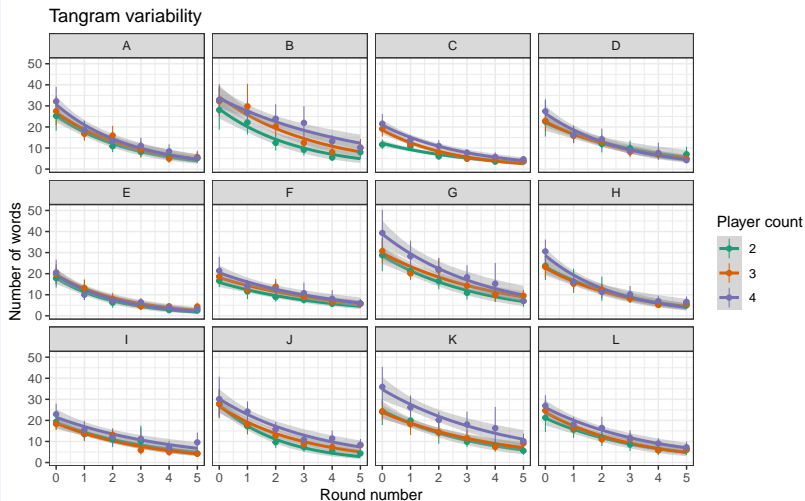
Tangrams vary in nameability

Planned Analyses

- Remove chit-chat, model reduction
- Semantic convergence in games
- Impact of speaker accuracy

Possible future directions

Understand how references are formed more generally

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Understand how references are formed more generally
Possible directions:

- Different target images
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- Larger groups

Comments, Questions?

Looking for feedback on

- What analyses would be interesting?
- What's the next study?