Extending communication games to more players

Veronica Boyce

May 10, 2021

THIS IS WHERE WE THANK COLLABORATORS AND FUNDING!

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Some of this is conventionalized, but some is dynamic.

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- Audience Design (Yoon & Brown Schmidt 2019)

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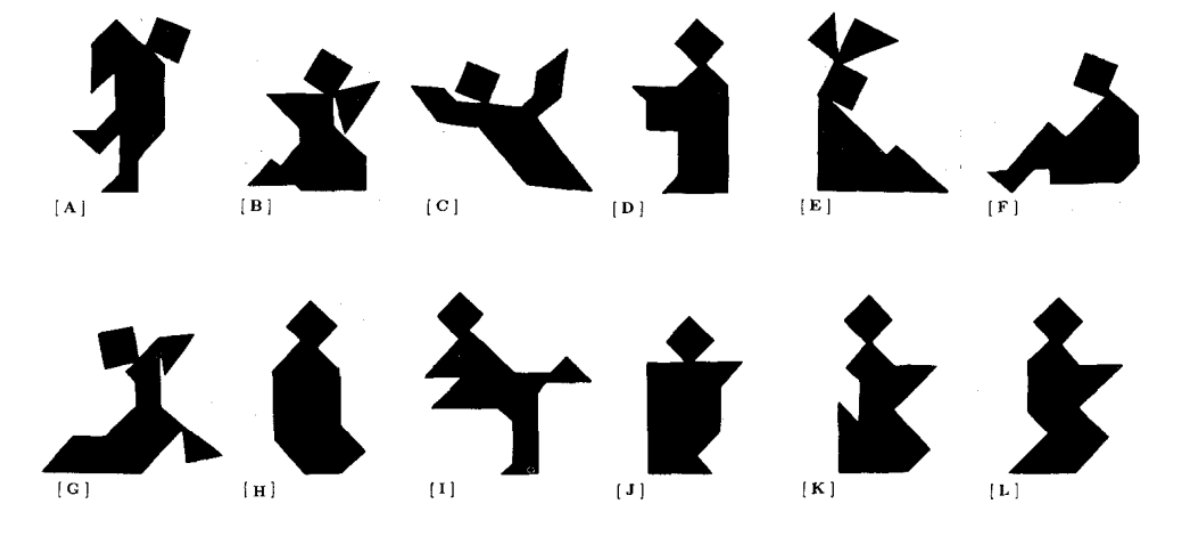

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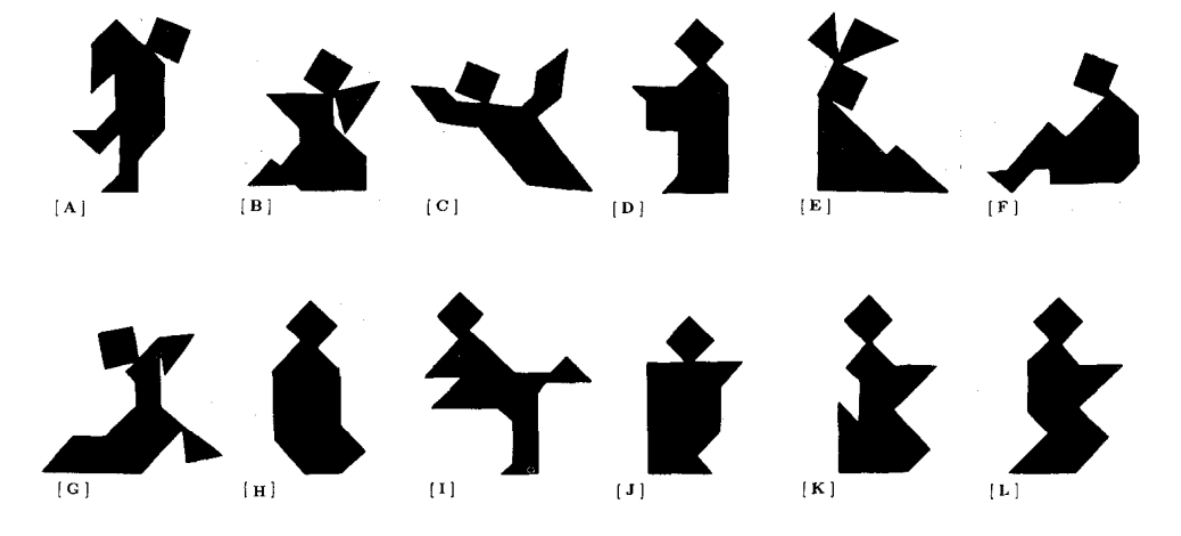

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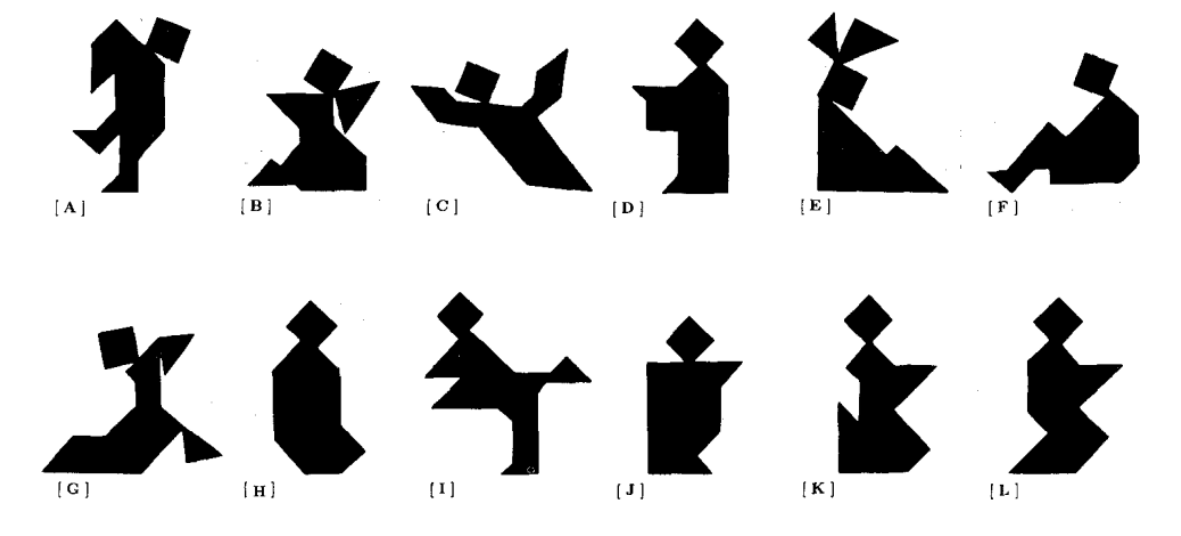

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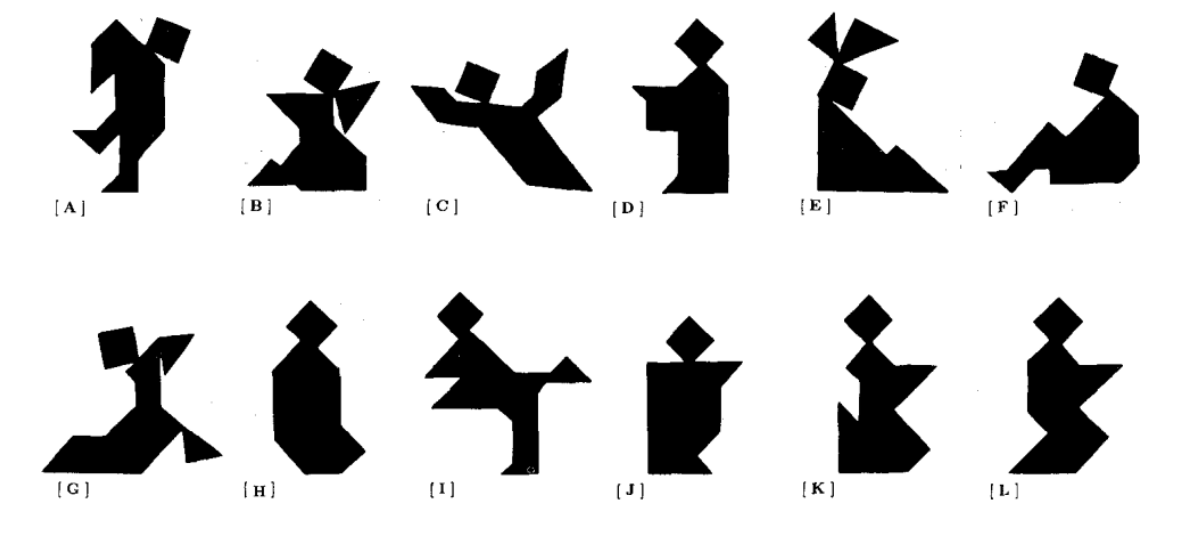

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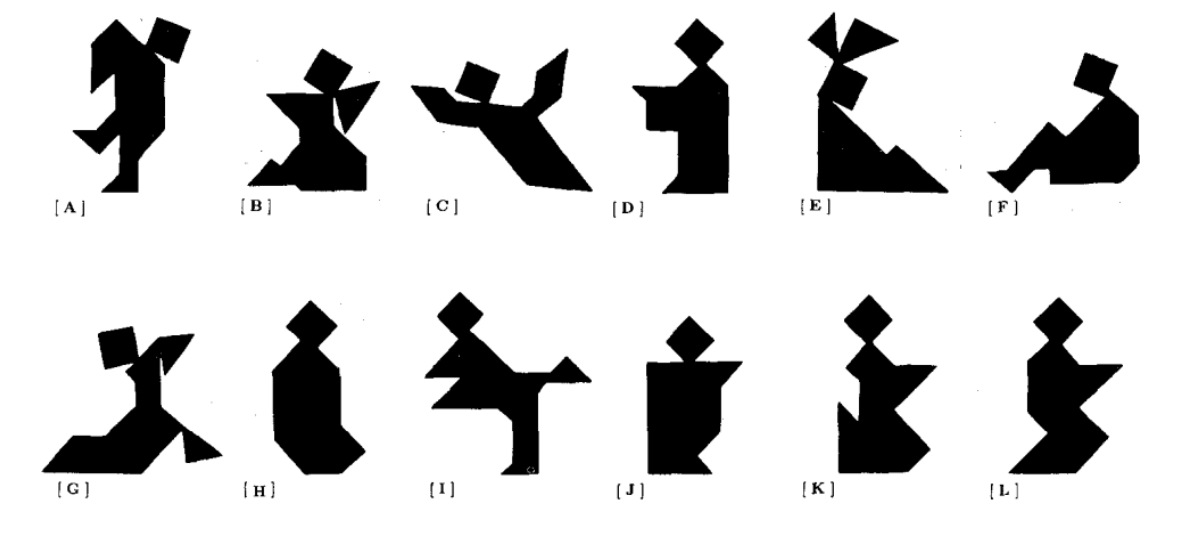

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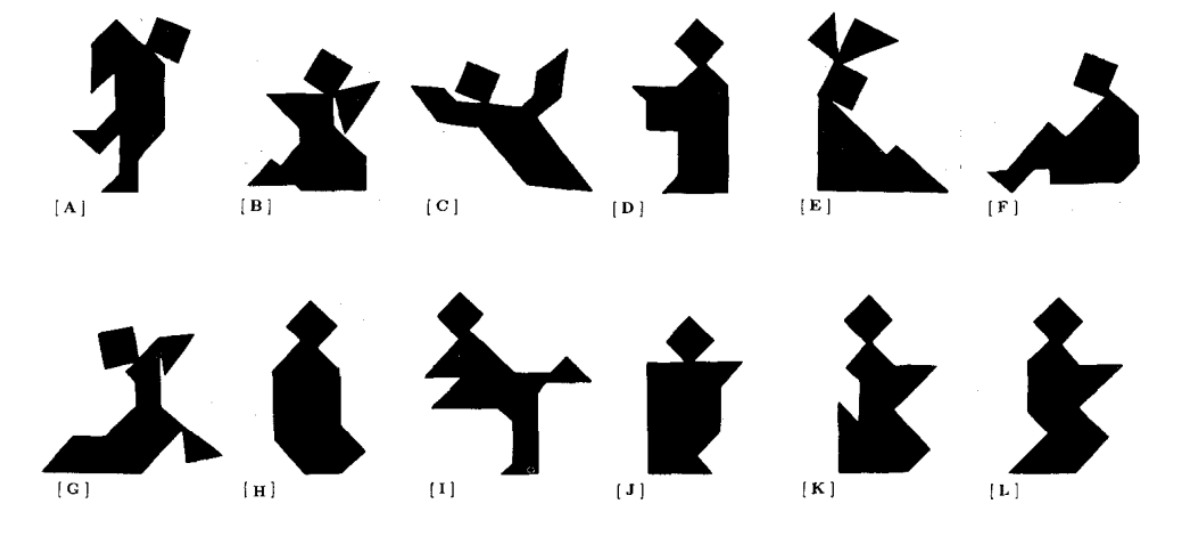

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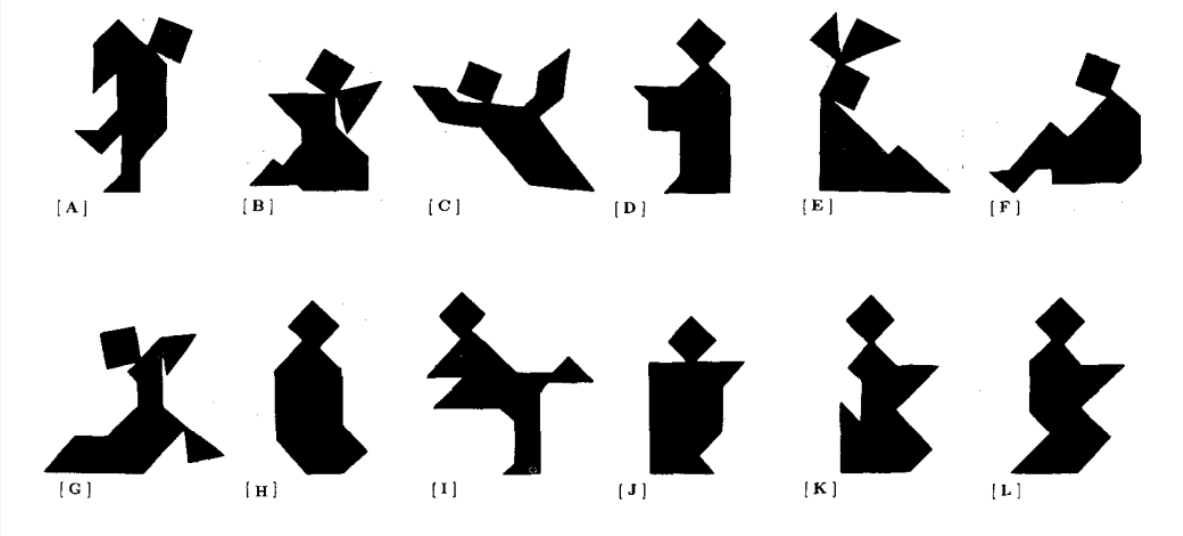

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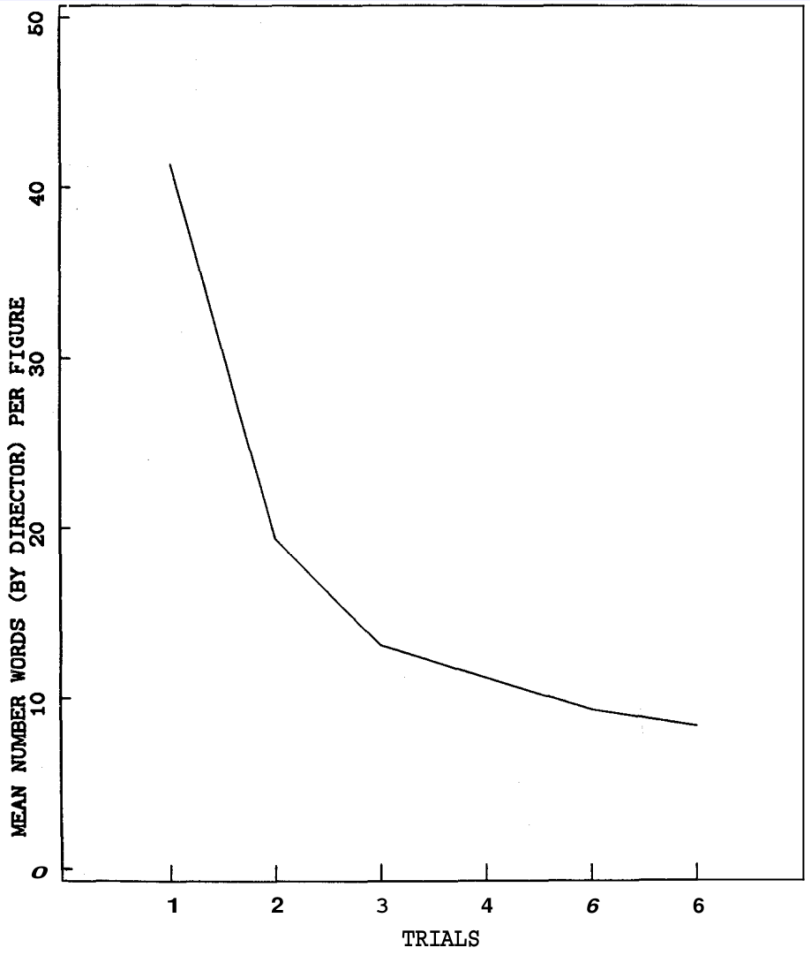

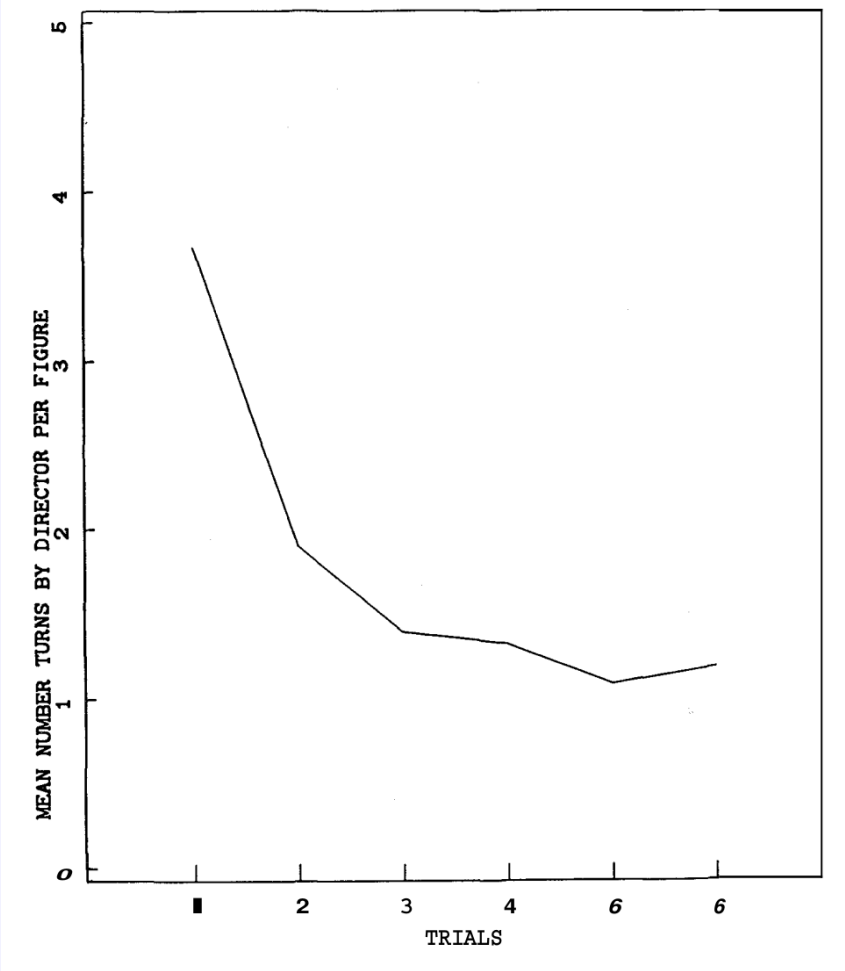

Hawkins, Frank, & Goodman 2020

Scaling up with web-based experiments

- Cued version with feedback on each trial

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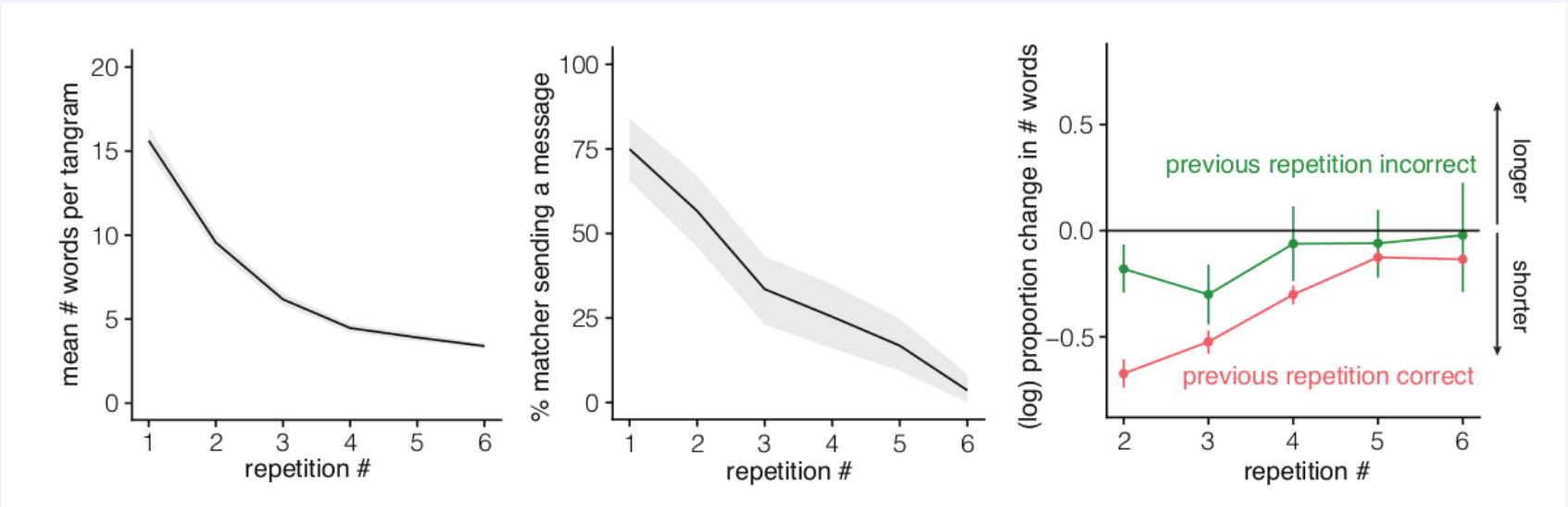

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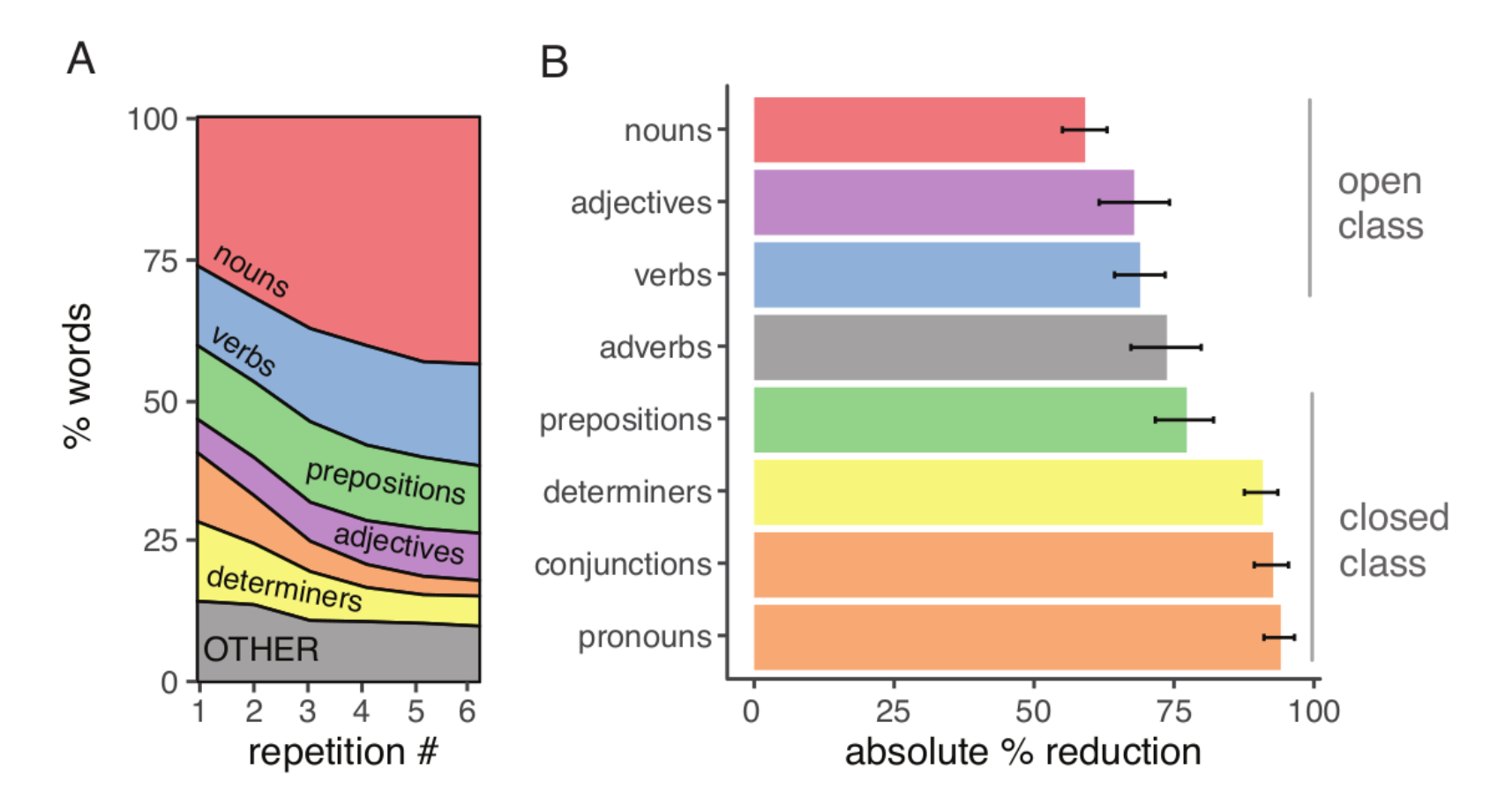

Words tend to drop out in syntactic units

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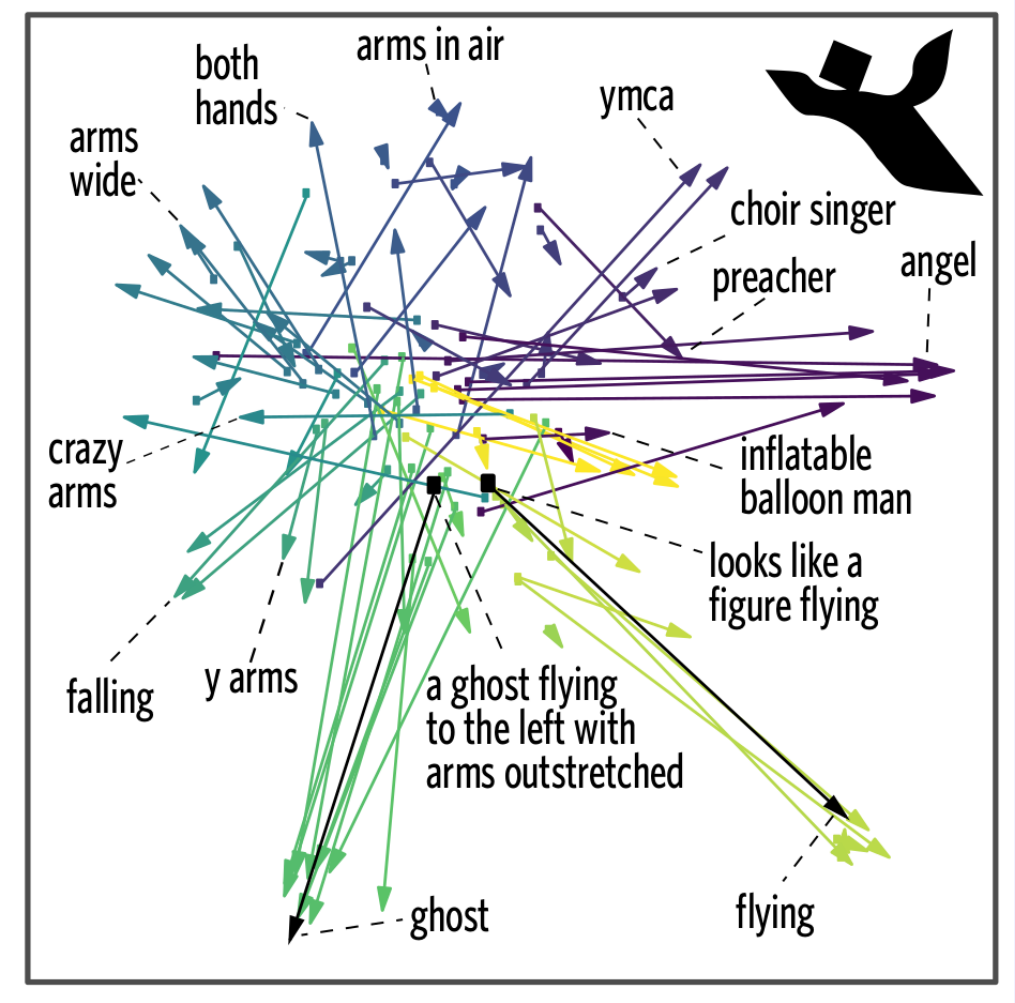

Semantics converge within and diverge between groups

FYP

What are the dynamics of pact formation between groups?

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What are the dynamics of pact formation between groups? Replicate Hawkins et al to compare groups of 2/3/4 communicators

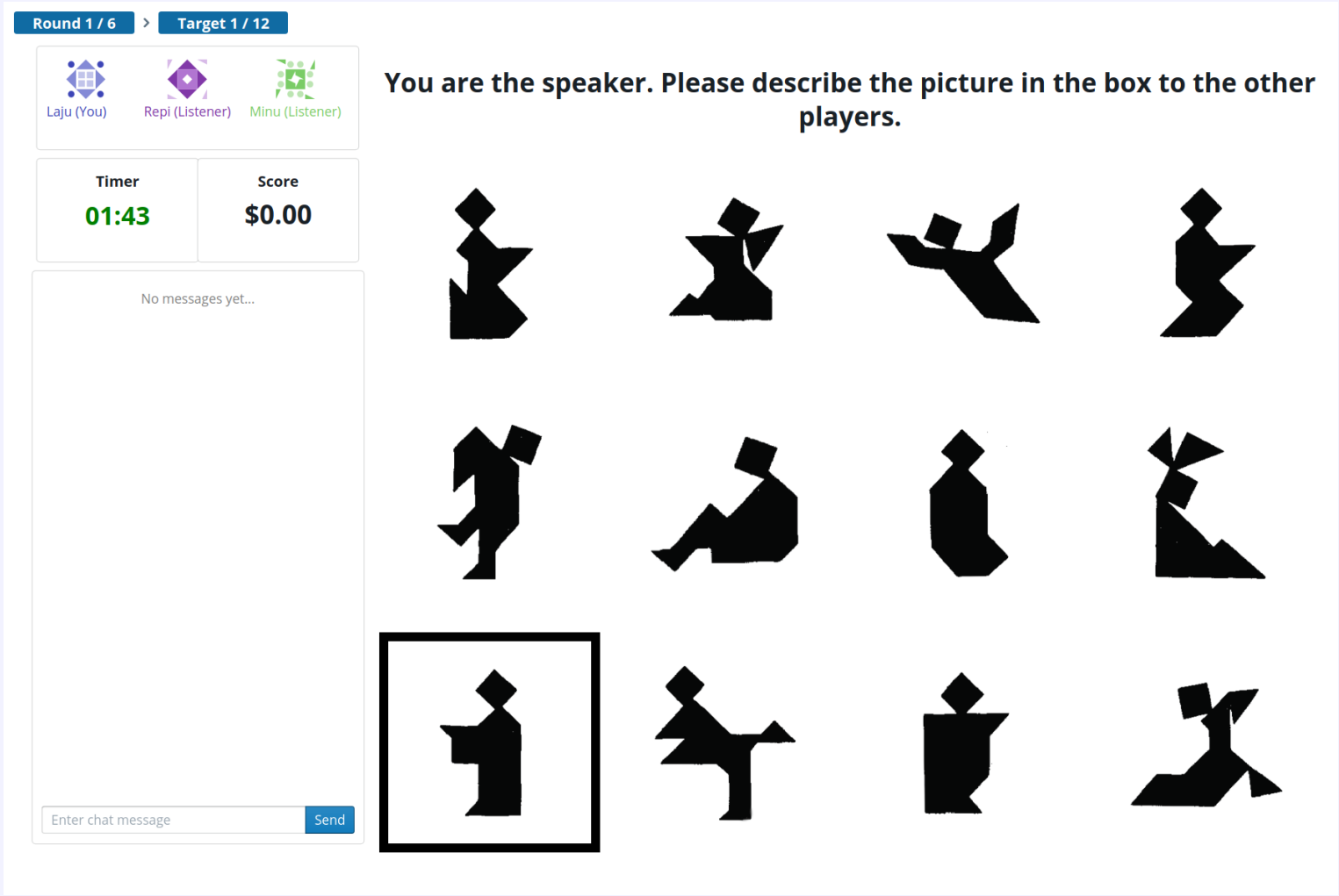
- Look for differential reduction
-

Rotate who is the knowledgeable speaker

- Chosen for participant experience
- Stronger measure of convergence

Experiment Framework

Implemented in Empirica (Almaatouq et al 2020)



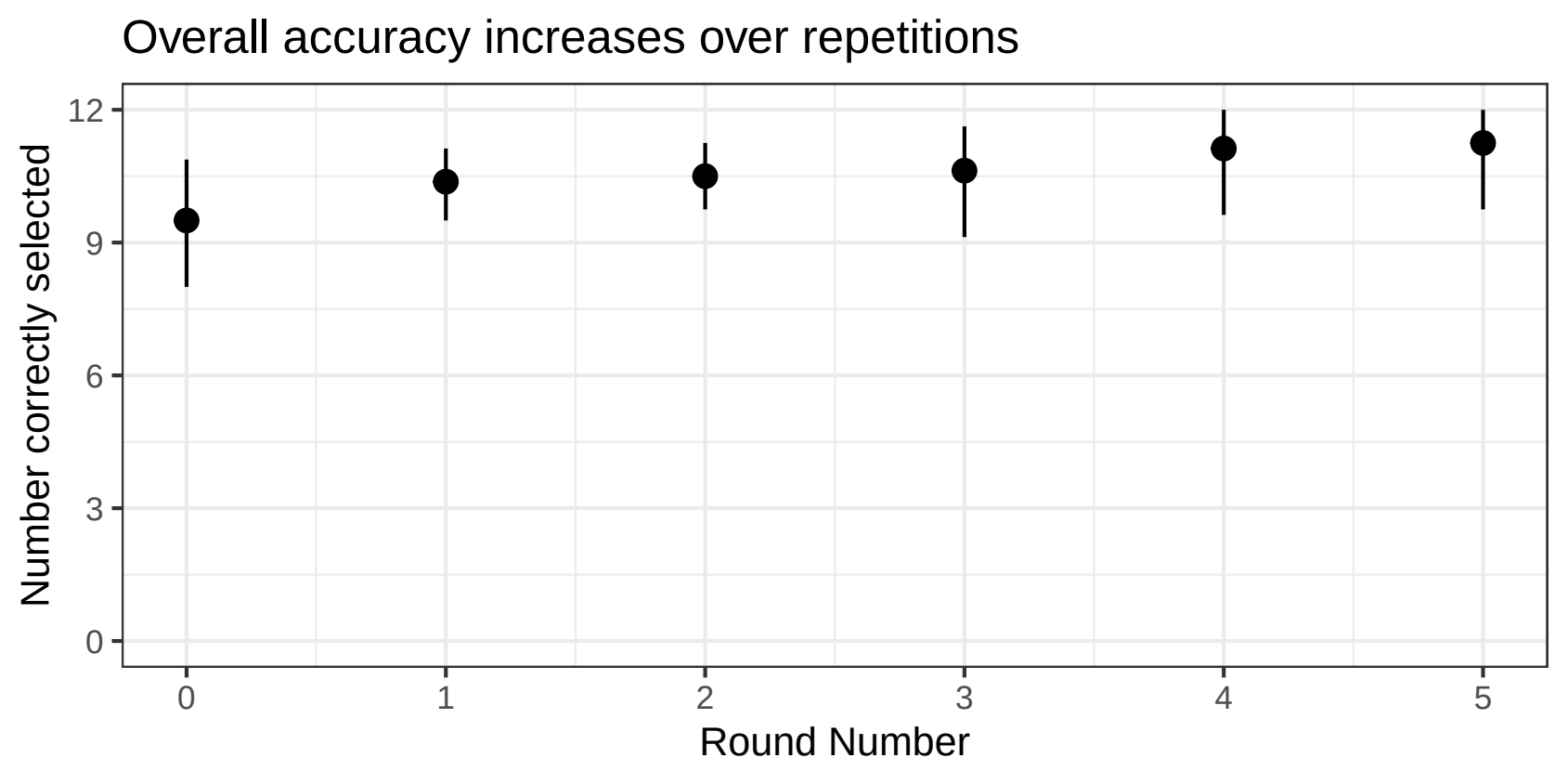
Recruitment

Goal of 20 complete games in each of 2/3/4 player (60 games, 180 participants) Each game has 6 blocks of 12 tangrams Actual population:

- YY 4-player games (+ XX partial)
- YY 3-player games (+ ZZ partial)
- ZZ 2-player games (+ CC partial)

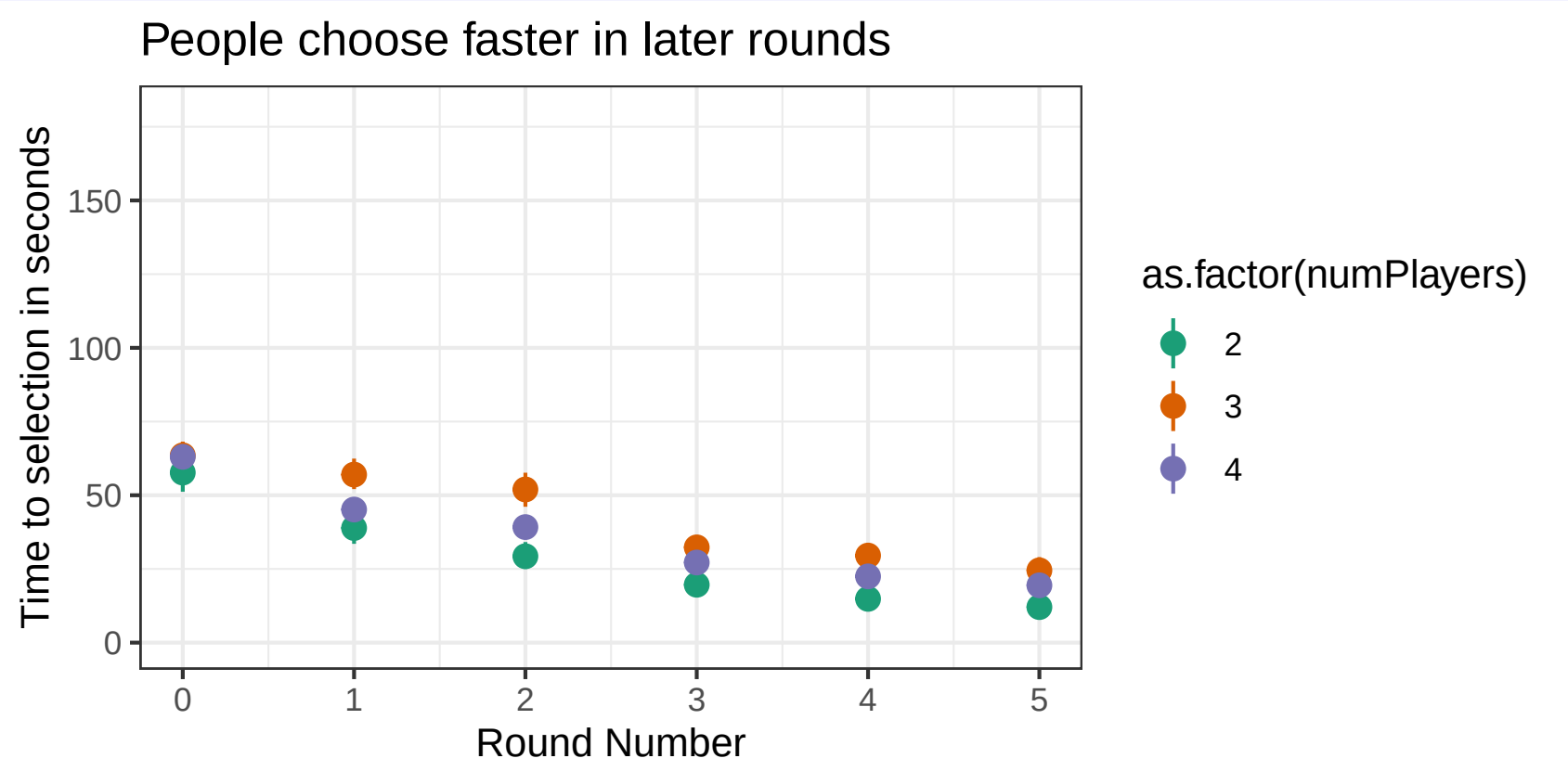
Include all complete blocks

Results – Accuracy



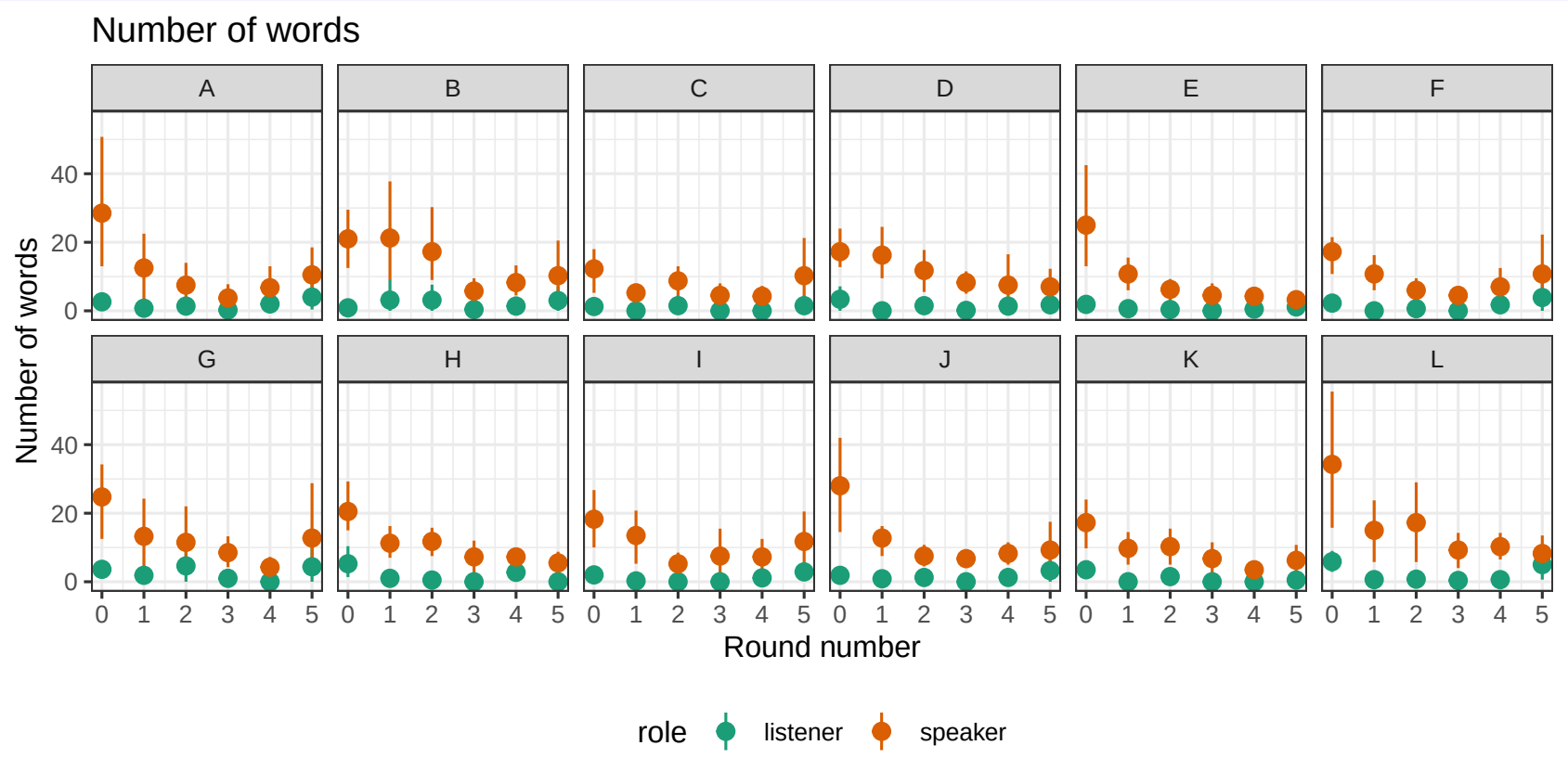
Accuracy is uniformly high, but seems to increase

Results – Speed



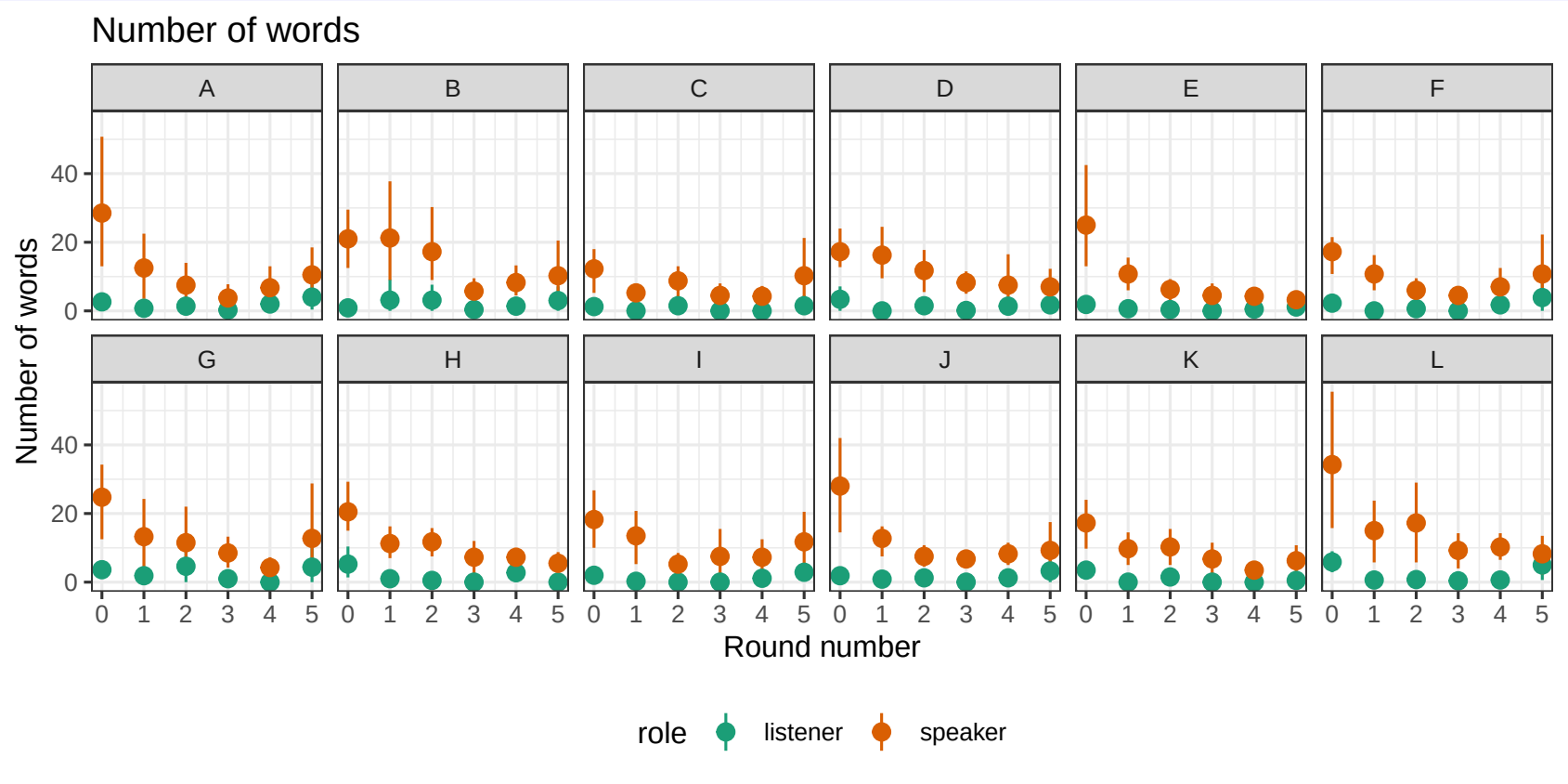
Listeners choose faster in later rounds

Reduction



OVERALL PICTURE HERE Plan to remove chit-chat

Reduction



Broken out by tangram

TODO wacky when to reduce charts here

Future steps: - clean up analyses and run models to confirm what we already see –> reduce less for more players Why? and How? –> what are the differences in language Semantic analyses – how do statements change across rounds (and as a product of if they got it right?) How do these trajectories change for number of players? Check for Listener-Listener interactions

Possible future directions

Want to understand how references are formed more generally

- Very flexible framework

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- Curriculum learning

Bigger picture

- Connections to teaching

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- Dataset for training AI agents for conversation

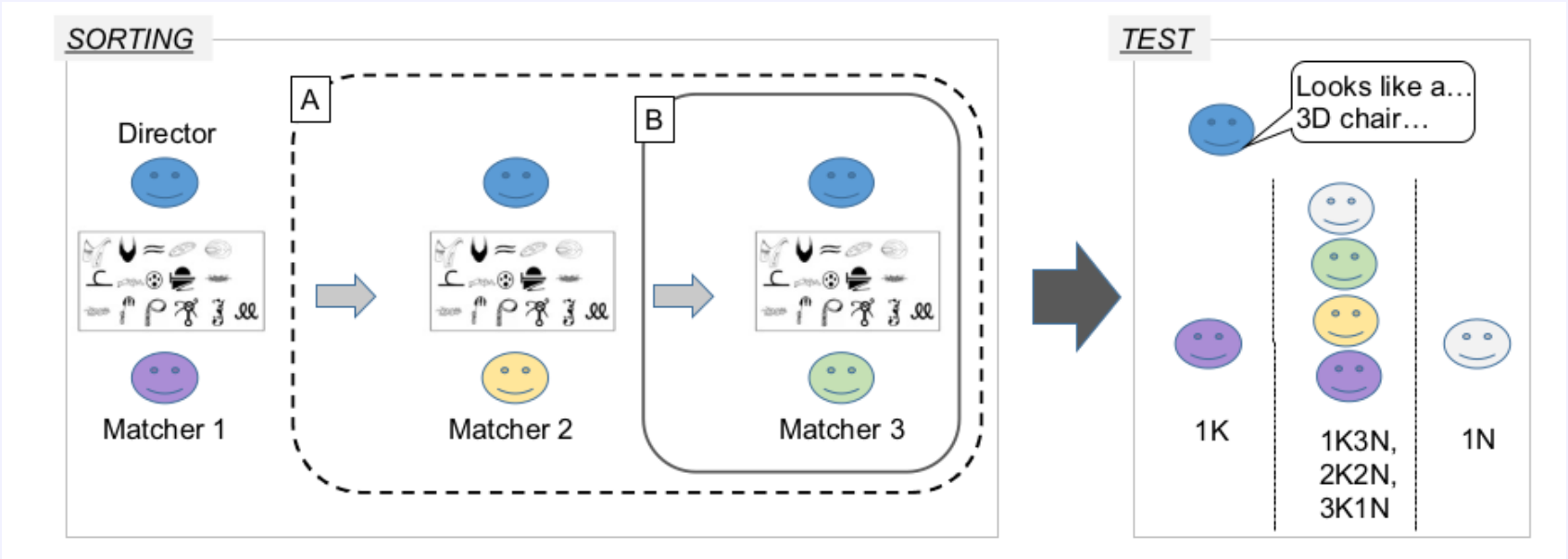
Comments, Questions?

Looking for feedback on

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

Yoon & Brown-Schmidt 2019

Speaker talks to multiple matchers of different knowledge levels



Examine speaker's utterances for length, elaborations, disfluencies