Veronica's Research Roadmap

My target phenomena is the well-attested reduction to partner-specific abbreviated conventional names that occurs in iterated reference games for initially difficult to name targets. I propose a set of chapters exploring reduction phenomena across varying contexts as well as looking more closely at the dynamics and whether the pattern of partner-specificity and reduction enhances comprehension.

1 Interaction structure constrains the emergence of conventions in group communication

We ask which properties of the group's interaction structure facilitate successful communication. We used a repeated reference game paradigm in which directors instructed between one and five matchers to choose specific targets out of a set of abstract figures. Across 313 games (N = 1,319 participants), we manipulated several key constraints on the group's interaction, including the amount of feedback that matchers could give to directors and the availability of peer interaction between matchers. Across groups of different sizes and interaction constraints, describers produced increasingly efficient utterances and matchers made increasingly accurate selections. Critically, however, we found that smaller groups and groups with less-constrained interaction structures ("thick channels") showed stronger convergence to group-specific conventions than large groups with constrained interaction structures ("thin channels"), which struggled with convention formation.

Status: Preprint

2 Comprehension side of reducing utterances

There's a couple related threads here. One is testing the partner-specificity and efficiency claims that are made by seeing whether naive listeners can understand utterances from different time points in a reference game (possibly x game condition).

Secondly, I'm curious for the multi-part descriptions, how early the target is identifiable using incremental methods (web-eye-tracking, or a self-paced-reading/gating paradigm).

I think there's a rich area to explore here, but it's not clear how much I'll get to. I think the right start point for a pilot/experiment 1 is looking at accuracy of naive listeners on final round utterances (from varying games where the in-game listeners were successful).

Status: Not started. Hoping to set up and pilot this winter, run more in spring, and eventually shift to incremental paradigm.

3 4-5 year old children can successfully communicate using ad-hoc referential expressions

Iterated reference games are commonly used with adults, but the consensus has been that tracking ad-hoc references in this way is too difficult for young children (in part due to notable failures in the literature; Glucksberg et al., 1966). We revisit this question, using a simplified method adapted from Leung et al. 2020. 20 pairs of children played a matching game on tablets. Children use a variety of different referential expressions to successfully convey the target to their partner. Children were 84% accurate at selecting the target image. Children generally produced short descriptions,

and the length of descriptions tended to slightly increase over time. Children's descriptions for an image are more similar to their partner's descriptions than the descriptions of children in other games, indicating some level of partner specificity. This preliminary study suggests that (contra Glucksberg et al.) 4-5 year old children can describe and select novel figures with each other at above chance accuracy.

Status: Expt 1 (20 dyads) completed (CAMP abstract). Expt 2 is a replication of expt 1 with 30 dyads and minor engineering tweaks is piloting now, hopefully collecting data winter-spring (and into summer if needed). Expt 3 (some tbd minor extension) expected over summer. Aim to write up the 3 expts for journal/cogsci summer-fall.

Not appearing in thesis

Research isn't just about the thesis!

Vaguely related

I'd prefer a streamlined thesis (since no one will read it either way), so I'm not planning on including these related pieces of work.

Coordination and convention formation across settings There were previous attempts to look at the generality of reduction/convention formation in strategic games. Results from a 3 player coordination/negotiation game are written up in joint workshop paper (game results) and cogsci (language analyses).

Game theory I did some experiments on reference in more traditional game-theory games, which may resume (slides).

Dynamics of language use in reduction I attempted to look harder at the *language* used in iterated reference games (progress thus far), but it wasn't looking great, and isn't my area of expertise. Current pitfalls are figuring out how to frame/analyze is a way that generalized beyond humanoid-tangrams, and how to automate well (GPT was doing worse than regex at some category labels). May or may not be resumed.

Meta (Analysis|Science): the side project

[included only so you know that I have been doing more work]

- (joint work) Conducting developmental research online vs. in-person: A meta-analysis (preprint)
- Eleven years of student replication projects provide evidence on the correlates of replicability in psychology (published at Royal Society Open Science)
- Ongoing 251 "Rescue" project: Data collected, analysis and writing ongoing
- Possible future project: formal modeling expected replication outcomes in terms of heterogeneity and QRPs