COMMUNITY SIZE INFLUENCES WORD ORDER

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There are six possible ways to order Subject, Verb, and Object in a sentence, but the distribution of these orders across the world's languages is highly skewed: SVO and SOV are more than 100 times more common than OSV (Dryer, 2005). It is often hypothesized that the preferred word orders reflect cognitive biases in event perception and optimization for communication (e.g., Gibson et al., 2013; Hahn et al., 2020; Schouwstra & de Swart, 2014). Then why do not all languages use these orders? This study tests whether languages are more likely to manifest universal tendencies if they face more communicative challenges. It specifically tests whether larger communities are more likely to use preferred word orders as a way to overcome the greater communicative challenges they encounter.

Larger communities face greater communicative challenges: they have greater input variability, less shared history, and information takes longer to travel. Larger communities overcome these challenges by creating more robust languages, including languages with more systematic grammar (Lupyan & Dale, 2010; Raviv et al., 2019) and greater sound symbolism (Lev-Ari et al., 2021). These languages thus align with prior cognitive biases (e.g., sound-meaning associations) to facilitate communication. Reliance on word orders that fit cognitive biases can similarly facilitate communication.

To test this hypothesis, 15 groups of 8 participants (large groups) and 15 groups of 4 participants (small groups) played a communication game in dyads for 14 rounds, changing partner every round. Participants described videos from Hall et al. (2013) to their partner by ordering pictures of the subject, object, and action. The partner guessed which video they saw and both received feedback. Then they switched roles. Thirty additional participants played the game alone (solo).

To test whether group size influences reliance on universally favored word orders, word order on each trial was coded as 1 if it was SVO or SOV, or 0 otherwise. A logistic mixed effects model was conducted with Group Size (solo, small, large; ref level=large), Round (scaled), their interaction, as well as Participant's Native Word Order as fixed effects, and Participant nested within Session, Session, and Items as random variables. It revealed that reliance on a common word order increased with time for large groups ($\beta=0.57$, $p<0.001$) but that it did not increase as much among the small groups ($\beta=-0.18$, $p<0.01$) and solo individuals ($\beta=-0.24$, $p<0.001$). The plot suggests that this is driven by SVO order dominance. These results indicate that common word orders, especially SVO, are driven by communicative pressures. The fact that the use of common word orders increases with round, that it is significant even after controlling for the word order in participants' native language, and that it depends on group size, indicates that performance was not driven by knowledge of native language but by the properties of the interaction.
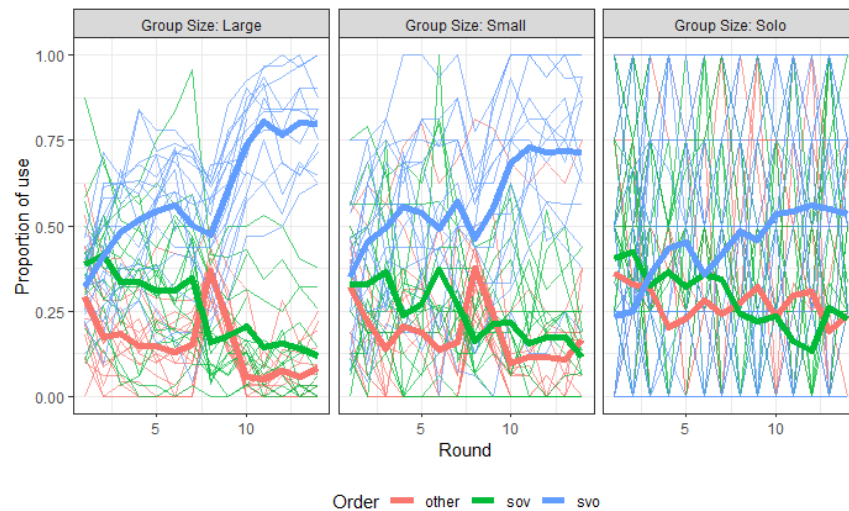

Figure 1. Word Order as dependent on Round and Group Size. Thin lines show each session, thick lines show condition averages.

The results of the study suggest that cross-linguistic variability in word order might reflect differences in communicative pressures, with less common word orders being more common in smaller communities. A preliminary survey of 1047 languages from WALS (Haspelmath et al., 2005) crossed with population data from Ethnologue (Eberhard et al., 2020) supports this prediction, especially for SVO order vs others (in line with experimental results; see figure 1). Future research should further examine how cross-cultural differences in communicative pressure influence exhibition of universally-favored patterns.

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