Madeline Meyers (AB ’19, Psychology & Comparative Human Development)

“Caregiver reconstruction of children’s errors: the preservation of complexity in language”

Madeline is a fourth-year student in the college pursuing an Honors degree in Psychology and Comparative Human Development. Her work in the Communication & Learning Lab with Dan Yurovsky explores how both children and their parents contribute to language evolution.

Why do languages change? One possibility is they evolve due to two competing pressures: one, for the language to be easily transmitted to new generations—and hence simple—and another, for the language to be a useful, descriptive form of communication—and hence more complex. However, few studies have explored these pressures in the most skilled language learners: children. Adults and children may differ in their language-learning biases due to differences in their cognitive skills and social groups. We explore how these biases complexity operate in the evolution of a novel language in adults and children.

In the first condition, adults participated in a baseline iterated learning experiment where they were told to re-create dot-grid patterns. Each user’s responses became the training input for the subsequent user, representing generational transmission. Results show a simplification in the complexity of the patterns over generations.

However, we do not learn languages in isolation, instead, we learn and receive feedback from those who are more competent than ourselves (e.g. parents, teachers). In a second condition, adults were assigned to be “learners” or “fixers” within a generation. Learners completed the task described above. Fixers were instructed to correct the errors on the learner’s produced pattern to match a target—the same target previously seen by the learner. Results show that fixers allow a greater level of complexity to be retained in the patterns while achieving stable reproduction accuracies.

Data collection is ongoing with children ages 6-8 in the baseline and dyad tasks, where children are “learners” and adults are “fixers”. We hypothesize that adults will allow a higher level of complexity to be retained than children alone by protecting against simplicity errors in the language’s evolution. Caregivers’ correction of their children’s errors, then, may serve a dual purpose: to aid the child, and to protect the language system.