Language production is a complex phenomenon, and differences between adults and children (or between more and less proficient speakers) are multiply determined. Basic research on children’s linguistic competence often relies on spontaneous utterances and naturalistic observations. Such data represent competence through a production filter. Competence claims per se need principled ways to subtract effects of that filter. With all speakers, we need to understand the relation of performance measures to components of speaking that are language-internal, such as syntactic and phonological complexity. We also need to understand their relation to components of speaking that may overlap with non-linguistic cognition, such as working memory.

We have compared sentence planning in children and adults by manipulating syntactic variables and measuring dysfluencies that respond to those manipulations (e.g., hesitations, restarts). After reviewing aspects of our earlier research, we turn to our current work on articulation rate that excludes dysfluencies. Our initial analyses of rate in structurally-controlled materials address the following:

- **Developmental effects**: Previous research indicates that articulation rate increases with age. Our results based on experimentally-elicited utterances equate for length and syntactic complexity of target utterances to control for such differences in child and adult speech. We are exploring a significant age range (3-10 years vs. adults) with these methods. Initial results suggest differences in the evolution of rate effects as they interact with structure.

- **Fluency context effects**: We ask whether the presence of overt dysfluency in an utterance is associated with a change in rate. To determine whether articulation rate differs in fluent and dysfluent utterances requires control of the structure. We spliced sequences from fluent and dysfluent host utterances, keeping speaker and structural target constant. Initial measures find similar rates in both contexts, suggesting that late stage integration for articulatory control operates over domains that are **not** interrupted by the higher order planning delays that produce dysfluency.

- **Structural effects**: Our experiments varied syntactic details to allow the following comparisons.
  - **Relatives and coordinates**: Coordinates represent a simpler structure than relatives. For items matched on length and lexical content, coordinate articulation rates were generally faster than those for relatives in children and adults.
  - **Attachment site**: For matched relative clause structures, rates differed. Rate for subject-attached relatives was significantly faster than for object-attached relatives. The patterns were similar for children and adults. We interpret the rate increase for subject-attached relatives as a reflection of system preparation for an upcoming planning load. Reduction in the time taken for output of the current structure reduces memory load for that and the upcoming contingent planning sequence.
  - **Gap site**: For children and adults, preliminary analysis finds that relative clauses with subject gaps were faster than those with object gaps. This corresponds to other findings suggesting that the distance between filler and gap taxes the sentence planning process.