Syntactic complexity and word prediction: Can 4- and 5-year-olds keep up with adults?

It is known that predicting which words will follow in a sentence is an important part of sentence processing. Previous studies have shown that vocabulary size (Borovsky et al., 2012; Mani & Huettig, 2012) and language production skills (Van Alphen et al., 2021) influence the speed of word prediction at sentence level for both children and adults. In this study, eye-tracking in a picture-selection task is used to determine whether syntactic complexity also influences the speed at which words in a sentence can be predicted. Two pictures were presented, one target picture displaying the last word in the sentence and one distractor picture of an unrelated object. The experiment contained three conditions: 1) baseline sentences like 'Dit is een olifant' (This is an elephant) to measure the speed of word recognition without prediction, 2) active sentences like 'Het paard eet gewoon een appel' (The horse just eats an apple) that are syntactically simple, 3) passive sentences like 'De appel wordt gegeten door een paard' (The apple is being eaten by a horse) that are syntactically complex. Data on prediction speed was collected for 29 Dutch children (mean age 5;2 years) and 10 Dutch adults (mean age 22;1 years). Expectations were that adults would be able to quickly and accurately predict the continuation of the sentence based on the finite lexical verb in active sentences and the participle of the lexical verb in passive sentences. On the other hand, children were expected to perform adultlike in the active condition, but be slower in the passive condition because their syntactic knowledge is not yet fully developed. The eye movements seem to follow our expectations showing that children make less use of prediction in syntactically more complex sentences. At the moment the gaze data are statistically analyzed.

Word count: 295

Key words: word prediction, eye-tracking, syntactic complexity, language development

References

Borovsky, A., Elman, J. L., & Fernald, A. (2012). Knowing a lot for one's age: Vocabulary skill and not age is associated with anticipatory incremental sentence interpretation in children and adults. Journal of Experimental Child Psychology, 112, 417-436. https://doi.org/10.1016/j.jecp.2012.01.005

Mani, N., & Huettig, F. (2012). Prediction During Language Processing is a Piece of Cake - But Only for Skilled Producers. Journal of Experimental Psychology, 38(4), 843-847. https://doi/10.1037/a0029284

van Alphen, P., Brouwer, S., Davids, N., Dijkstra, E., & Fikkert, P. (2021). Word Recognition and Word Prediction in Preschoolers With (a Suspicion of) a Developmental Language Disorder: Evidence From Eye Tracking. Journal of Speech, Language, and Hearing Research, 64(6), 2005-2021. https://doi.org/10.1044/2021_JSLHR-20-00227