Surprise! – Young Children's Sensitivity to Word (Un)predictability while Listening to Child-directed Stories. An EEG Study.

Jule Hafermann
Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands

Sabine Hunnius
Donders Institute for Cognition, Radboud University, Nijmegen, The Netherlands

Caroline Rowland
Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands
Donders Institute for Cognition, Radboud University, Nijmegen, The Netherlands

Tineke Snijders
Department of Cognitive Neuropsychology, Tilburg University, Tilburg, The Netherlands
Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands

Katharina Menn
Department of Cognitive Neuropsychology, Tilburg University, Tilburg, The Netherlands

Marlene Meyer
Donders Institute for Cognition, Radboud University, Nijmegen, The Netherlands

Abstract

Adults' speech processing follows predictive processing principles, with predictions being made continuously, in parallel across language levels, and hierarchically. Our study investigates predictive processing in children, asking whether five- to six-year-olds predict words continuously during naturalistic speech processing. This is relevant since research with children has been limited to predictions in artificial, isolated contexts. Here, we adapt the regression ERP method used with adults to an EEG dataset of children listening to child-directed stories. Using a model of contextual word-level predictability, semantic distance, frequency-based predictability and phoneme-level acoustic control variables, we find that children's neural responses are modulated by contextual and frequency-based word predictability. Our results show that, in line with the predictive processing framework, children generate continuous word predictions during natural listening conditions. We discuss implications for the role of predictive processing in language acquisition and possibilities of using the adapted regression ERP method to further investigate them.

In G. Boleda, I. Dautriche, M. Maldonado, C. Saldana and T. Torrent (Eds.), *Proceedings of the 48th Annual Conference of the Cognitive Science Society*