Educational Linguistics 2024:
Language(s) from Childhood to Adult Age
September 11–13, 2024, Linnaeus University, Kalmar

Verbal and Pictorial Semantic Processing in 9-12-Year-Olds with Diverse Language Proficiencies

Hanna Lindfors, Linnéuniversitetet

Kristina Hansson[1] and Annika Andersson[2]

[1]Lunds universitet
[2]Linnéuniversitetet

Pictures are frequently used in pedagogical practices to facilitate equal participation across students with diverse language proficiencies, based on an assumption that pictures are easier to comprehend than verbal language. However, the compensatory function of pictures should be problematized if atypical semantic processing in the verbal domain cooccurs with atypical semantic processing in the pictorial domain. The purpose of the present study is therefore to increase the knowledge of semantic processing in the verbal and pictorial domains in primary school children with typical language proficiency and peers with developmental language disorder (DLD). Our research questions are: do semantic processing differ 1) between children with typical language proficiency and with DLD, and 2) between the verbal and the pictorial domains?

We measured 9-12-year-olds' brain activity by recording event-related potentials (ERPs) to verbal narratives and pictorial narratives (wordless comic strips). We specifically measured the N400 ERP-response to words and pictures that were predictable and unpredictable in the narratives (e.g., *The daddy penguin continues to bake cake/nose in the kitchen*). The dependent variable was the magnitude of the N400-effect; the N400 for predictable stimuli subtracted from the N400 for unpredictable stimuli, in a 2x2 ANOVA.

Preliminary results ($N = 32$) showed no statistically significant main effect of either language proficiency or domain on the magnitude of the N400-effect. However, explorative analyses revealed a group difference in presence or absence of the N400-effect. Specifically, the N400-effect was present in a larger proportion of children with typical language (TL) proficiency than in children with DLD. This difference was statistically significant for the verbal domain (TL 91%, DLD 60%, $z = 2.08$, $p = .02$), though not for the pictorial domain (TL 73%, DLD 50%, $z = 1.26$, $p = .11$). Differences between domains within each group (TL: verbal 91% vs. pictorial 73%, DLD: verbal 60% vs. pictorial 50%) were not statistically significant.

Despite the lack of significant differences in N400-effect magnitude, the significant group difference in the presence of the N400-effect suggests that this study will have the potential to enhance understanding of verbal and pictorial semantic processing across language proficiencies.

ISBN: 978-91-8082-107-0