

# **The acquisition of verb morphology in Polish and Finnish: Model and experiment**

**Felix Engelmann**

University of Manchester, Manchester, United Kingdom

**Joanna Kolak**

University of Manchester, Manchester, United Kingdom

**Sonia Granlund**

University of Liverpool, Liverpool, United Kingdom

**Ben Ambridge**

University of Liverpool, Liverpool, United Kingdom

**Julian Pine**

University of Liverpool, Liverpool, United Kingdom

**Anna Theakston**

University of Manchester, Manchester, United Kingdom

**Elena Lieven**

University of Manchester, Manchester, United Kingdom

**Abstract:** Usage-based approaches suggest that language acquisition is a function of the statistical properties of the input. We compare predictions from neural network models with results of two elicited-production experiments on verb inflection with children in the morphologically complex languages Polish and Finnish. Three-layer neural networks were trained to produce person/number-inflected present-tense verb forms in Polish and Finnish from phoneme representations of verb stems using frequency information from child-directed speech corpora. Simulated acquisition in both languages was affected by token frequency and phonological neighbourhood density (PND) as well as an interaction such that low-frequency forms benefited more from PND than high-frequency forms. Suffix errors showed overgeneralisation and substitutions of low-frequency forms with higher-frequency forms. The model predictions are consistent with our empirical findings, except for the frequency X PND interaction. We discuss the experimental and simulated data and their implications.