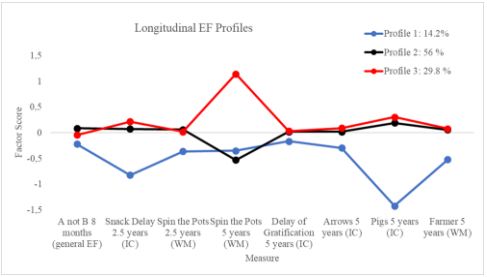
Unpredictable maternal signals and developmental profiles of child executive function from infancy to early childhood

UNIVERSITY OF TURKU
Takio et al., 2026

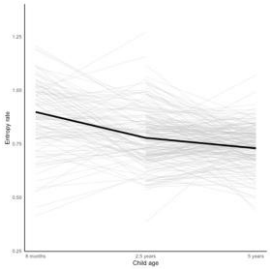
Longitudinal birth cohort study. n=3.808 families

Executive functions (EF) measured at 8 months, 2.5 and 5 years. N=830

Unpredictability of maternal sensory signals (entropy rate) observed at 8 months, 2.5 and 5 years. N=659



Longitudinal modelling of EF and entropy rate.



AIMS
To investigate the associations between the unpredictability of maternal sensory signals and the development of children's executive functions.

PARTICIPANTS
Longitudinal birth cohort study from infancy to preschool age.

RESULTS

Lower maternal unpredictability → Better child EF development

Higher maternal unpredictability → Poorer child EF development

CONCLUSIONS: Unpredictability in maternal sensory signals influences the development of children's executive functions (EF) from infancy through preschool age. In this longitudinal study, greater predictability in caregiving was associated with more favorable EF outcomes, and maternal signals tended to become increasingly predictable as children grew older. These findings underscore the significance of caregiving predictability and highlight the need for further research into its stability over time and its bidirectional relationship with child development.