Effects of preschool language on literacy development: Insights from a computational model of reading

Computational models have been vitally important in defining our understanding of reading, but these models have typically described the mature reader, rather than the reader learning to read. However, critical to an adequate model of reading is that the model can reflect the process of reading acquisition. Using the triangle model connectionist framework, we have been investigating reading development, where the model gradually learns to acquire mappings between written, spoken, and meaning representations of words. However, children already know a lot about their language before they learn to read, and so we have also been varying the model's pre-literacy language skills before the onset of learning from the written forms of words. This modelling work demonstrates: (1) the nature of gradual, unfolding experience on learning to read, and the changing role of alternative neural pathways in reading across the lifespan; (2) the role of quantity and quality of pre-literacy language experience on later literacy development; (3) the implications of different training regimes for literacy acquisition; and (4) the influence of different orthographies on learning to read in different cultures.