Predicting Individual Differences in Language Learning Across Populations

Patrick C. M. Wong, *The Chinese University of Hong Kong*

Abstract

Children's rank-order language developmental stability provides an opportunity to predict future language development with data collected in earlier years of life. In our research, we capitalize on this opportunity to evaluate hypotheses concerning language development across different typical and atypical populations. Direct biological measurements from young children as well as their health and family information are used to construct predictive models for individual-child predictions. These models provide the basis to address different questions about neural processing and language. For example, in typically developing children, we ask whether cortical and subcortical development interacts with native and non-native speech processing in infancy, and whether this interaction provides a basis for prediction of future development. In children who are hearing impaired, we examine whether brain regions that are most resilient to reduced auditory/spoken language input, measured via MRI before cochlear implantation (CI), enable a compensatory pathway to support better language development after CI. In both typical and atypical populations, we are in the process of testing whether individual-child predictions can inform the design and prescription of different types of early intervention and enhancement strategies in order to optimize language development for all children.

Bio

Patrick C.M. Wong is Professor of Linguistics and Cognitive Neuroscience and Founding Director of the Brain and Mind Institute at The Chinese University of Hong Kong (CUHK). Before moving to Hong Kong, he served on the faculty of Northwestern University for close to a decade. Wong's research covers a wide range of basic and translational issues concerning the neural basis and disorders of language and music. Findings from this research have appeared in a broad array of interdisciplinary scholarly venues such as Nature Neuroscience, PNAS, and Science Advances. In 2021, he was named a Guggenheim Fellow for Humanities. Wong's research has received public attention from media outlets such as The New York Times and the British Broadcasting Corporation/Public Radio International. A versatile and effective teacher, research mentor, and clinical educator, Wong is a three-time recipient of the Faculty Outstanding Teaching Award at CUHK.