



Seminar Series for Joint East-West Early Language Project

アジア欧米言語獲得研究プロジェクト セミナーシリーズ

Seminar Series #7

*Exploring neurodiversity in
cognitive development: mother-
infant interaction and language
acquisition*



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Registration site ↓



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JEWEL Seminar Series #7

Exploring neurodiversity in cognitive development: mother-infant interaction and language acquisition

Yasuyo Minagawa (Department of Psychology, Keio University)

We have been carrying out a longitudinal project examining the cognitive development of infants (0 to 36 months old) who are at low-risk (LR) and high-risk (HR) for neurodevelopmental disorders such as the autistic spectrum disorder (ASD). One of the purposes of this study is to investigate early neurodevelopmental basis associated with social and language communication skills by employing functional near-infrared spectroscopy (fNIRS) and analyzing some behavioral measures. In this talk, I will report some current findings obtained so far from this project. I will particularly focus on various aspects of the mother-infant interaction and how they impact an infant's language acquisition. In the first part of the talk, I will mainly discuss the behavioral results obtained from the still-face paradigm of 6-month-old infants and their mothers. We compared the results of covariance correlation analysis between or among social signals, including eye-contact, touch, vocalization, and contingency during still face paradigm and later language and social development. In principle, results were dissonant between LR and HR infants, and the contingent responsiveness of the mothers showed steady positive correlations with later language development (9-, 12-, 18-, and 24-month-olds) exclusively for the LR group. Furthermore, rhythmic touch (movement) and vocalization by the mother were powerful factors that had an impact on later language development, again only for the LR infants. The results of these infants' brain responses and network while listening to the speech of the mother and a stranger were also analyzed. Consistent with the behavioral results, hemodynamic brain activity and connectivity in response to maternal speech were diverse between the LR and HR groups, while the LR group showed a very similar pattern to that of an LR neonate's brain. I will also present two more fNIRS studies on the (1) hyperscanning of the mother-infant interaction of 3- and 4-month-olds (LR and HR) and (2) learning of non-adjacent dependency grammar in neonates and 6-month-olds (LR). These studies show neurodiversity and neural uniformity in relation to social and language functions.