



### Yasuyo Minagawa

- Professor, Department of Psychology, Keio University, Kanagawa, Japan

### Biography

Yasuyo Minagawa is a professor of the Department of Psychology, Faculty of Letters at Keio University. She directs the Keio Baby Lab, where behavioral and neurocognitive studies are conducted on both typically and atypically developing infants and children are carried out. She received her Ph.D. in medicine from the University of Tokyo in 2000, after which she has engaged in various research projects as a postdoctoral fellow at LSCP, Ecole Normale Supérieure-CNRS, University College London, and the National Institute for Japanese Language and Linguistics. Her research has examined the development of perception and cognition with a particular emphasis on language acquisition and social cognition. One of her current research programs with fNIRS (functional Near Infrared Spectroscopy) explores early neuronal predictors of developmental disabilities by examining infants with elevated likelihood of autism spectrum disorders and preterm infants. Another project investigates mechanisms and the development of human social interaction through the assessment of behavioral and neurophysiological measures. Her extensive academic journey and diverse research projects underscore her commitment to advancing our understanding of developmental psychology.

### Title and abstract

**Neurodiversity in relation to mother-infant interaction and language acquisition: Evidence from a 1000-day longitudinal study**

This talk discusses a longitudinal project focusing on the cognitive development of infants aged 0 to 36 months, classified as having typically likelihood (TL) or elevated

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likelihood (EL) of neurodevelopmental disorders, including autistic spectrum disorder (ASD). The study aims to explore early neurodevelopmental foundations related to social and language communication skills, utilizing functional near-infrared spectroscopy (fNIRS) and behavioral measures. The speaker presents current findings, with a specific emphasis on the impact of various aspects of mother-infant interaction on language acquisition. The first part of the talk covers behavioral results from the still-face paradigm involving 6-month-old infants and mothers. Our analysis indicated dissonant results between TL and EL infants, revealing steady positive correlations between contingent maternal responsiveness and later language development exclusively for the TL group. The second part explores infants' brain responses and networks while listening to maternal and stranger speech. Hemodynamic brain activity and connectivity differed between TL and EL groups, with TL infants exhibiting a pattern similar to TL neonates. Notably, TL infants' voice processing of the maternal familiar voice involved the reward-network. The talk concludes with fNIRS hyperscanning studies on mother-infant interaction in 3- and 4-month-olds (TL and EL). Minimal group differences were observed during breastfeeding, with strong inter-brain coupling in both groups. These synchronizations correlated significantly with behavioral measures, including subsequent language development. The maternal reward-motivational system and the infant's elementary mentalisation system appear crucial in mother-infant coupling during breastfeeding. Overall, the studies highlight neurodiversity and neural uniformity in the context of social and language functions.





### Dr. Sonya Troller-Renfree

➤ Assistant Professor, Teachers College, Columbia University, New York, U.S.A.

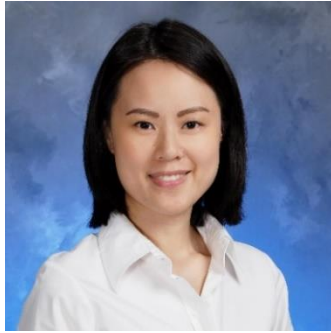
### Biography

Dr. Sonya Troller-Renfree is an Assistant Professor and Director of the Stroller Laboratory at Teachers College, Columbia University. Her research examines how early experiences, such as stress and adversity, shape neurocognitive and socioemotional development. Dr. Troller-Renfree is also an expert in EEG data collection and analysis and has expertise in mobile and in-home EEG data collection and analysis. Her scientific contributions have been recognized by a K99/R00 Pathways to Independence award from NICHD, a National Science Foundation Graduate Research Fellowship, and she has been named a Rising Star by the Association for Psychological Science.

### Title and abstract

#### **How early experiences shape the developing infant: Insights from developmental neuroscience**

The first 1000 days of life are a time of incredibly rapid brain development. Brain development during this period sets the foundation for cognitive, social, and academic skills. We have learned that early environments and experiences can have lasting impacts on children's brains and later behavior. Neuroscientific research has allowed us to begin to understand how early experiences shape the developing brain. In turn, understanding how the brain is functioning during infancy allows researchers to get a glimpse at a child's development before they can reliably talk or perform behavioral assessments. This talk will review some of the early experiences that have the largest impacts on the developing brain such as family resources, caregiving, and stress. However, the impact of early experiences on the brain is far from destiny, particularly because the brain is plastic and open to change. As such, we will also discuss the promise and pitfalls of interventions aiming to change early brain development. We will conclude by discussing avenues for future research and some of the challenges facing developmental neuroscience research.



### Dr. Chan Ying Ting, Purdy

➤ Specialist in Developmental-Behavioural Paediatrics, Department of Health HKSAR Government, Hong Kong

### Biography

Dr. Purdy Chan graduated from the University of Hong Kong with a distinction in Paediatrics. She received her paediatric training at the Queen Mary Hospital in Hong Kong. She subspecialized in Developmental and Behavioral Paediatrics. She was awarded the Ho Hung Chiu Medical Foundation Fellowship in 2016 and was sent to The Royal Children's Hospital in Melbourne to receive training in Infant Mental Health. She has served the public sector for nearly two decades. She received the 2020 Department of Health Staff Suggestions Scheme Silver Award for her project on intellectual disability and genetic investigations. Dr. Chan's core interests include infant mental health, ADHD and other disruptive development, and child protection. She is particularly interested in the behavioral and emotional development of very young children 0-5years. She is an advocate for vulnerable populations such as children born to substance-using mothers and those living in out-of-home-care settings. Issues of how to nurture the young minds, how to facilitate better opportunities thus better developmental trajectories for children at-risk are Dr. Chan's focus of work. She is the secretary of the Developmental-behavioral paediatrics Board of the Hong Kong College of Paediatricians; an accredited trainer for Developmental -behavioral Paediatrics training in Hong Kong; a committee member of the Hong Kong Paediatric Society; an executive committee member of the Pathway Foundations Hong Kong, and a core member of the multi-sectoral Task Group on Parenting Capacity Assessment Framework for 0-6years old children in Hong Kong. She is passionately involved in professional and public education. She was invited as speaker by many organizations, e.g. the Hong Kong Society of Child Neurology and Developmental Paediatrics and media like Radio Television Hong Kong (RTHK).



### **Title and abstract**

#### **Early relationships and experiences in the first 1000 days matter for a lifetime—why, how and what?**

The ‘first thousand days’ refers to the period of development from conception to age 2. While early years experts have long been aware that this is an important period of development, researchers have only recently started to unlock some of the mysteries surrounding the processes by which genes, experiences and environments interact to influence development. The earliest experiences shape a baby’s brain development and have a lifelong impact on the baby’s mental health. The human brain and our bodily systems operate as an integrated system, not as separate systems. This means that what happens in the first thousand days affects the whole body, with potentially profound consequences over the life course. Disadvantage can be passed down through the generations at a cellular level. Our biology changes in response to stress and other prolonged adverse experiences, and these changes can be passed on to children from their parents and grandparents. Not all changes that occur within the first thousand days are permanent. But as children grow, their ability to alter and change to make up for negative experiences and environments in the first thousand days becomes more difficult. The period of infancy and early childhood is a crucial time for interventions to prevent future mental health problems.

