

Dr Victoria Leong

¹ **Assistant Professor of Psychology, Nanyang Technological University (Singapore)**

² **Affiliated Lecturer, Department of Psychology, University of Cambridge**

My core interest is in neuro-social mechanisms of early learning. For example, how do infants use social cues like eye contact and infant-directed speech to constrain learning? When infants interact with adults, does their interpersonal neural connectivity predict successful social learning?

These questions are addressed through concurrent brain imaging of infant and adults using dual-EEG, and my group has a strong focus on hyperscanning methods development and innovation.

I also have an active research programme on the neuro-genetics of auditory processing of speech in relation to early (neonatal) language learning and dyslexia.

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Citizenship : Singaporean (UK Permanent Resident)

1 Employment

- 2016-cur Assistant Professor of Psychology (Tenure-Track)
Nanyang Technological University¹, Singapore
- 2015-cur Affiliated Lecturer & Research Group Leader
Department of Psychology, University of Cambridge, UK
- 2015 Parke-Davis Research Fellow (Mentor : Prof Charles Nelson)
Laboratories of Cognitive Neuroscience, Harvard University, US
- 2013-2015 Junior Research Fellow (Mentor : Prof Usha Goswami)
Department of Psychology, University of Cambridge, UK
Lucy Cavendish College, University of Cambridge, UK
- 2012-2013 Research Associate (Developmental Dyslexia MRC Project, PI : Prof Usha Goswami)
CNE, Department of Psychology, University of Cambridge, UK
- 2007-2010 Research Assistant (Humans as Analogy Makers EU Project, PI : Prof Usha Goswami)
CNE, Faculty of Education, University of Cambridge, UK
- 2004-2005 Policy Executive for Special Schools & Early Intervention Programmes
National Council of Social Service, Singapore
- 2002-2003 Special Education Teacher
Movement for the Intellectually Disabled of Singapore

2 Education

- May 2013 PhD in Psychology, University of Cambridge (Supervisor : Prof Usha Goswami)
"Prosodic Rhythm in the Speech Amplitude Envelope : Amplitude Modulation Phase Hierarchies (AMPHs) and AMPH Models"
Awards : [Harold Hyam Wingate Foundation Research Grant](#)
[Funds for Women Graduates Main Grant](#)
[Homerton College Research Grant](#)
[Robert J. Glushko Dissertation Prize \(USD \\$10,000\)](#)
- July 2006 MPhil in Psychology & Education, University of Cambridge (Supervisor : Dr Denes Szucs)
"Numerical Syntax and Semantics - An ERP Study on the N400 and P600" (Grade : A)
Awards : [Cambridge Commonwealth Trust Bursary](#)
- June 2001 BA(Hons), Medical & Veterinary Sciences, University of Cambridge
Awards : [Cambridge Commonwealth Trust Bursary](#)
[Szeming Sze Prize in Medicine \(1999\)](#)
[Christ's College Scholar \(award twice in 1999 & 2000\)](#)

¹ NTU is currently globally ranked #11 in the 2018 QS World University Rankings, making it the highest-ranked Asian University. Yale University was ranked #16 and KCL was ranked #23 in the same year.

3 Publications

-- Published Journal Articles --

- Leong, V.**, Byrne, E., Clackson, K., Harte, N., Lam, S., & Wass, S. (in press). Speaker gaze changes information coupling between infant and adult brains. *Proceedings of the National Academy of Sciences of the USA (PNAS, IF = 9.6)*. doi: 10.1073/pnas.1702493114
(Media coverage by 40+ international news agencies including *The Telegraph, The Washington Post, MSN, Canadian Broadcasting Corporation, etc*)
- Wass, S.V., de Barbara, K., Clackson, K. & **Leong, V.** (in press). New meanings of thin-skinned: the contrasting attentional profiles of typical 12-month-olds who show high, and low, stress reactivity. *Developmental Psychology*.
- Leong, V.**, & Goswami, U. (2017). Auditory organization as a cause of reading backwardness. *Developmental Science*. doi: 10.1111/desc.12457
- Leong, V.**, Kalashnikova, M., Burnham, D., & Goswami, U. (2017). The temporal modulation structure of infant-directed speech. *OPEN MIND*. doi:10.1162/opmi_a_00008
- Goswami, U., Barnes, L., Mead, N., Power, A., & **Leong, V.** (2016). Prosodic similarity effects in short-term memory in children with developmental dyslexia. *Dyslexia, 22(4), 287-304*
- Wass, S., & **Leong, V.** (2016). Developmental Psychology: How social context influences infants' attention. *Current Biology, 26, R355–R376*.
- Leong, V.**, & Goswami, U. (2015). Acoustic-Emergent Phonology in the amplitude envelope of child-directed speech. *PLoS ONE, 10(12):e0144411*
- Cumming, R., Wilson, A., **Leong, V.**, & Goswami, U. (2015). Awareness of rhythm patterns in speech and music in children with specific language impairments. *Frontiers in Language Sciences, 9:672*. doi: 10.3389/fnhum.2015.00672
- Leong, V.**, Kalashnikova, M., Burnham, D., & Goswami, U. (2014). Infant-directed speech enhances temporal rhythmic structure in the envelope. *INTERSPEECH-2014, 2563-2567*.
- Leong, V.**, Stone, M., Turner, R. & Goswami, U. (2014). A role for amplitude modulation phase relationships in speech rhythm perception. *Journal of the Acoustical Society of America, 136, 366-381*.
- Leong, V.**, & Goswami, U. (2014). Impaired extraction of speech rhythm from temporal modulation patterns in speech in developmental dyslexia. *Frontiers in Human Neuroscience, 8:96*
- Leong, V.**, & Goswami, U. (2014). Assessment of rhythmic entrainment at multiple timescales in dyslexia : Evidence for disruption to syllable timing. *Hearing Research, 308, 141-161*.
- Soltesz, F., Szucs, D., **Leong, V.**, White, S., & Goswami, U. (2013). Atypical entrainment of Delta oscillations to rhythmic stimulus streams in developmental dyslexia, *PLOS One, 8(10): e76608*.
- Goswami, U., Mead, N., Fosker, T., Huss, M., Barnes, L., & **Leong, V.** (2013). Impaired perception of syllable stress in children with dyslexia: A longitudinal study. *Journal of Memory & Language, 69, 1-17*.
- Goswami, U. & **Leong, V.** (2013). Speech rhythm and temporal structure: Converging perspectives? *Laboratory Phonology, 4, 67-92*.
- Thomson, J., **Leong, V.** & Goswami, U. (2013). Auditory processing interventions and developmental dyslexia: a comparison of phonemic and rhythmic approaches. *Reading and Writing, 26, 139-161*.
- Leong, V.**, Hamalainen, J., Soltesz, F., & Goswami, U. (2011). Rise time perception and detection of syllable stress in adults with developmental dyslexia. *Journal of Memory and Language, 64, 59–73*.
- *Szucs, D., & Soltesz, F. (2010). Event-related brain potentials to violations of arithmetic syntax represented by place value structure. *Biological Psychology, 84(2), 354-367*. (*Data from my MPhil thesis)

Ang, R. P., Neubronner, M., Oh, S. & **Leong, V.** (2006) Dimensionality of Rosenberg's self-esteem scale among normal-technical stream students in Singapore. *Current Psychology*, 25(2), 120-131.

-- Journal Articles in Revision/Under Review --

Wass, S.V., Clackson, K. & **Leong, V.** (in revision). Positive arousal episodes are more long-lasting than negative arousal episodes: possible evidence for self-sustaining arousal states in typically developing infants. *Infancy*.

Wass, S.V., Clackson, K., Georgieva, S.D., Brightman, L., Nutbrown, R., & **Leong, V.** (in revision). Infants' visual sustained attention is higher during joint play than solo play: is this due to increased endogenous attention control or exogenous stimulus capture? *Developmental Science*

Neale, D., Clackson, K., Georgieva, S., Wass, S., & **Leong, V.** (in revision). Towards a neuroscientific understanding of play: A multi-dimensional methodological framework for analysing adult-infant neurobehavioural play patterns. *Frontiers in Human Neuroscience*

Georgieva, S., Lester, S., Yilmaz, M.N., Wass, S., & **Leong, V.** (under review). Topographical and spectral signatures of infant and adult movement artifacts in naturalistic EEG. *NeuroImage*.

Leong, V., Byrne, E., Clackson, K., Harte, N., Lam, S., de Barbaro, K., & Wass, S. (submitted). Infants' neural oscillatory processing of theta-rate speech patterns exceeds adults'.

-- Journal Articles in Preparation --

Clackson, K., Georgieva, S., Brightman, L., Nutbrown, R., Wass, S., & **Leong, V.** (in preparation). Mother-infant gaze synchrony during joint attention moderates infant performance on A-not-B task.

Leong, V., Darby, N., Valsdottir, V., Clackson, K., Georgieva, S., & Wass, S. (in preparation). Speaker gaze gates statistical learning in 8-10 month old infants.

Leong, V., Clackson, K., Georgieva, S., Brightman, L., Nutbrown, R., & Wass, S. (in preparation). Mother-infant joint brain states for social learning.

Leong, V., Cyr, P., Brightman, L., Amunts, L., Martini, S., & Austin, T. (in preparation). ROBO1 genotype predicts differences in neural tracking of speech rhythm patterns in neonates at high- or low-risk for dyslexia.

-- Book Chapters --

Goswami, U., & **Leong, V.** (2016). Speech rhythm and temporal structure : Converging perspectives? In Thomson, J. and Jarmulowicz, L. (Eds.), *Linguistic Rhythm and Literacy*. pp. 111-131. John Benjamins : Amsterdam/Philadelphia.

Goswami, U., **Leong, V.**, & Power, A. (2015). Neurocognitive basis of auditory processing and phonology in dyslexia. In Eden, G. (Ed.), *Wiley Handbook on the Cognitive Neuroscience of Developmental Dyslexia*.

4 Research Grants & Personal Awards

-- Research Grants --

- 2017-2018 Isaac Newton Trust Research Grant
Development of a new dual-EEG paradigm to investigate the neurobiological basis of interpersonal trust between infants and adults
 Principal Investigator : £23,423
- 2017-2020 Rosetrees Trust Grant for Funded PhD Studentship
Understanding gene-environment interactions in the etiology of dyslexia during infancy
 Principal Investigator/Supervisor : £73,371
- 2016-2018 Nanyang Technological University Start-Up Grant
Mother-infant brain-to-brain synchrony
 Principal Investigator : SGD \$166,600
- 2016-2018 ESRC Transforming Social Sciences Research Grant
Using "naturalistic dual-EEG" to measure mother-infant brain-to-brain synchrony in socially-mediated learning
 Principal Investigator : £244,413
- 2015-2016 Rosetrees Trust Grant for Medical Research
Study on neural and genetic biomarkers for dyslexia
 Principal Investigator : £11,126
- 2015-2017 Wellcome Trust-Education Endowment Foundation Grant
Computer-based intervention to improve literacy in disadvantaged children
 Co-investigator (with Goswami, Wolpert & Phelan) : £362,417
- 2014-2015 British Academy/Leverhulme Small Research Grant
Motherese perception in children with dyslexia
 Principal Investigator: £9,972
- 2014-2015 ESRC Transforming Social Sciences Small Grant
Live EEG' of mother-infant language interactions
 Principal Investigator : £3,995

-- Prizes & Fellowships (PhD onwards) --

- 2015 UK-US Parke-Davis Exchange Fellowship
6-month visiting fellowship to Prof Charles Nelson's lab in Harvard University
 £10,619
- 2014 Robert J. Glushko Dissertation Prize
Awarded by the Cognitive Science Society to recognise an outstanding PhD dissertation in cognitive science
 USD \$10,000
- 2013-2016 Junior Research Fellowship
 Lucy Cavendish College, Cambridge
 £51,000 over 3 years + privileges

- 2013-2016 Isaac Newton Trust Matching Funding for Leverhulme Early Career Fellowship (declined)
Isaac Newton Trust, Cambridge
£69,000 over 3 years
- 2011-2012 Funds for Women Graduates Foundation Main Grant (for PhD study)
£5,000 over 1 year
- 2009-2011 Harold Hyam Wingate Foundation PhD Studentship
£12,022 over 2 years
- 2009-2012 Homerton College Research Grant, University of Cambridge (PhD)
£1,050 over 3 years

-- Travel Grants (2014 onwards) --

- 2017 Charles Slater Travel Grant
£925
- 2016 PLoS Early Career Researcher Travel Award
USD\$500
- 2014 New York Academy of Sciences Travel Fellowship
USD\$850
- 2014 Experimental Psychology Society Study Visit (MARCS Institute, Sydney)
£1,713
- 2014 Rumelhart Memorial Travel Award (for an outstanding conference abstract)
USD\$250
- 2014 Guarantors of Brain Travel Grant
£800
- 2014 Experimental Psychology Society (Grindley Grant)
£500

5 Presentations

-- Invited Talks (2014 onwards) --

Leong, V. (Mar, 2018). Neural and social synchrony in infants' communication and learning. Keynote speaker, Talk to Your Baby Conference, National Literacy Trust. London, UK.

Leong, V. (Feb, 2018). Synchrony through gaze : Mapping the neural social network of infants. Invited speaker, Interactive Eye Gaze Conference and Methods Workshop. UCL, UK.

Leong, V. (May, 2017). Mother-infant brain synchronicity : Implications for early learning. Invited talk, Centre for Music and Science. Cambridge, UK.

Leong, V. (May, 2017). Mother-infant EEG hyperscanning : Challenges and developments. Invited speaker. Symposium on Hyperscanning and Neurobehavioral Synchronization, Max Planck Institute of Human Cognitive and Brain Sciences, Leipzig, Germany.

Leong, V. (March, 2017). The role of mother-infant synchrony in development (Keynote Speaker). Royal Society of Medicine, Maternity and Newborn Forum Spring Event. London, UK.

Leong, V. (Feb, 2017). The role of speech rhythm and neuronal oscillations in infant language learning. Speech Science Forum. UCL, UK.

Leong, V. (Apr, 2016). How infants discover the building blocks of language. Invited speaker, The Education Brain ESRC Seminar Series, Cambridge University, UK.

Leong, V. (Feb, 2016). How infants learn language using speech rhythm and neuronal oscillations. Invited talk, Centre for Music and Science, Cambridge University, UK.

Leong, V. (Nov, 2015). Brain-to-brain coupling between infants and mothers as a potential neural mechanism for joint attention. Invited talk, Hasson Lab, Princeton University, US .

Leong, V. (Sept, 2015). Brain-to-brain coupling during joint attention : A learning-privileged neural state? 10th International School on Mind, Brain & Education. Erice, Italy.

Leong, V. (May, 2015). Acoustic-emergent phonology : Booting up language from the speech signal. Invited colloquium, Centre for Brain and Cognitive Development, Birkbeck University, UK.

Leong, V. (Dec, 2014). Booting-up language in the naive brain : Mapping oscillations in speech to oscillations in the brain. Invited seminar, Cognitive Science Seminar Programme, Department of Psychological Sciences, Birkbeck University, UK.

Leong, V. (Sept, 2014). Acoustic-emergent phonology. Invited colloquium, MARCS Institute, University of Western Sydney (Prof Denis Burham, collaborator). Sydney, Australia.

Leong, V. (Sept, 2014). Acoustic-emergent phonology. Invited talk, National Acoustic Laboratories, Macquarie University. Sydney, Australia.

Leong, V. (August, 2014). Acoustic-emergent phonology : Booting up language from the speech signal. Invited talk, Haskins Laboratories, Yale University. New Haven, US.

Leong, V. (July, 2014). Booting-up language in the naive brain : Mapping temporal structure from speech modulations to neuronal oscillations. Invited talk, Nelson lab, Harvard University. US.

Leong, V. (June, 2014). The child as a 'naive engineer' : How the brain extracts phonology from the speech signal and implications for dyslexia. Invited talk, Evelyn Perinatal Imaging Centre, Addenbrooke's Hospital. Cambridge, UK.

Leong, V. (May, 2014). Language learning and the infant brain. Invited talk, Anna Bidder research evening, Lucy Cavendish College, Cambridge, UK.

Leong, V. (May, 2014). The child as a 'naive engineer' : How the brain extracts phonology from the speech signal and implications for dyslexia. International Symposium on Early Childhood Development. Convened by the Nanjing Education Bureau and the Chinese Ministry of Education. Nanjing, China.

Leong, V. (Feb, 2014). Language and the learning brain. Invited lecture, 11th annual Oxford Brain Day. Public event organised by the Oxford University Department for Continuing Education. Oxford, UK.

-- Peer-Reviewed Conference Talks (2013 onwards) --

Leong, V. (July, 2017). Nine-month-old infants' neural oscillatory entrainment to sung nursery rhymes exceeds their parents', IASCL, Lyon, France.

Leong, V., Clackson, K., Georgieva, S., & Wass, S.. (Nov, 2016). Nine-month-old infants' neural oscillatory entrainment to sung nursery rhymes exceeds their parents', BUCLD, Boston, US.

Leong, V., Amunts, L, & Goswami, U. (May, 2016). Perception of IDS by children with dyslexia. International Meeting of the Psychonomic Society, Granada, Spain.

Leong, V., Kalashnikova, M., Burnham, D., Goswami, U. (Sept, 2014). Infant-directed speech enhances temporal rhythmic structure in the envelope. 15th Annual Conference of the International Speech Communication Association (Interspeech), Singapore.

Leong, V. (Aug, 2014). The child as a 'naive engineer' : Computing phonology from the emergent temporal structure of the speech signal and implications for dyslexia. 14th Neural Computation and Psychology Workshop, Lancaster, UK.

Leong, V. (July, 2014). Finding the rhythm in speech through speech-brain structure mapping. Robert J Glushko Dissertation Prize talk, 36th Annual Conference of the Cognitive Science Society. Quebec City, Canada.

Leong, V. & Goswami, U. (March, 2014). Neural processing of speech rhythm in dyslexia. British Dyslexia Association 9th International Conference. Guildford, UK.

Leong, V. (2013). Speech rhythm and learning to read: Lessons from dyslexia. Young Investigator presentation, 25th Cambridge Neuroscience Seminar. Cambridge, UK.

--- Public Engagement (Selected Examples) ---

- Scientific Expert on newly-commissioned BBC Documentary on "Early life and development", filming scheduled for Jan-Apr 2018
- Organised "Frontiers in Brain Imaging in the Real World" Seminar, Sept 2017, Cambridge, UK
<http://www.educ.cam.ac.uk/events/conferences/2017biosocial/>
- Baby-LINC @Cambridge Science Festival (Lab Open House and Public Lecture), 2016-2017.
<https://www.thememo.com/2017/03/14/babylinc-cambridge-science-festival-how-to-help-your-baby-learn-new-skills/>
- BBC TV Interview and news feature with Pallab Ghosh, Nov 2016
<http://www.bbc.co.uk/news/science-environment-38002105>
- Invited guest on BBC Radio Cambridgeshire, Drivetime with Chris Mann, March 2016
- Invited guest on BBC Radio 4, Woman's Hour (March 2016), "Mother and Baby Bonds"
- Invited article on ESRC Blog, "Transforming What we Know About How Babies Learn" (Rated #7 in Top 10 blogs of 2016) : <https://blog.esrc.ac.uk/2016/08/16/transforming-what-we-know-about-how-babies-learn/>

6 Teaching and Research Project Supervision (at University of Cambridge)

Undergraduate Lecturing

2015 : **Statistics** : *Exploring & Visualising Data in Matlab*

2012 & 2013 : **Language Mind & Brain** : *Language Acquisition*

Undergraduate Examination

2013 : Examiner for **Second Year Psychology** (Snr Examiner : Prof Jeff Dalley)

Undergraduate Research Project Supervision

Sole Supervisor :

Mr Nicholas Darby (2016-2017), *Awarded First Class Degree*

Co-Supervisor with Prof Goswami :

Ms Josephine Holt (2014-2015)

Ms Zhilin Jiang (2014-2015)

Ms Adannaya Igwe (2012-2013)

Ms Chloe Bentham (2011-2012)

Mr Benedict Clancy (2011-2012)

Postgraduate MPhil Research Project Supervision

2016-2017 : Ms Vaka Valsdottir, **MPhil in Basic and Translational Neuroscience**
(sole supervisor)
Awarded First Class Degree

2015-2016 : Ms Peppar Cyr, **MPhil in Clinical Neuroscience**
(co-supervisor with Dr Topun Austin, Dept of Pediatrics)
Passed with no corrections

2013-2014 : Ms Natalie Matthews, **MPhil in Psychology**
(co-supervisor with Prof Usha Goswami)
Passed with minor corrections

7 Academic Responsibilities & Leadership

2016-current Co-ordinator for Cambridge Educated Brain Network (Infancy theme)

2015-current Lead co-investigator on Cambridge-Singapore Science of Learning CREATE proposal

2015-2017 Interviewer for Undergraduate Psychology course