

## Position

### Affiliated Scientist

Haskins Laboratories

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## Research Interests

- Speech Perception, Auditory Scene Analysis, Neuroimaging Techniques, Lexical Tone, Lateralization, L2 Speech Learning, Dyslexia and Language Disorder, Music perception

## Education

- Ph.D. Language Engineering Laboratory, Chinese University of Hong Kong, Hong Kong, 2009/12.
- M.Phil. Pattern Recognition and Artificial Intelligence Laboratory, Nanjing University of Science & Technology, China, 2004/04.
- B.S. Department of Computer Science, Nanjing University of Science & Technology, China, 2001/07.

## Professional Experiences

- 2014— Affiliated Scientist, Haskins Laboratories, New Haven, CT, USA
- 2012—2014 Postdoctoral Fellow, Department of Electrical and Computer Engineering, Johns Hopkins University, Baltimore, MD, USA.
- 2011—2012 Senior Research Associate, Department of Chinese, Translation and Linguistics, City University of Hong Kong, Hong Kong.
- 2010—2011 Senior Research Assistant, Department of Chinese, Translation and Linguistics, City University of Hong Kong, Hong Kong.
- 2009—2010 Assistant Researcher, Division of Speech and Hearing Sciences, Faculty of Education, University of Hong Kong, Hong Kong.

## Teaching

- 2011/11 Guest lecturer: *Language Evolution (LING2057)* (B.A. course). Department of Linguistics, University of Hong Kong, Hong Kong.
- 2011/10 Guest lecturer: *Linguistics I (CTL 2229), and Linguistics II (CTL2230)* (B.A. courses). Department of Chinese, Translation and Linguistic, City University of Hong Kong, Hong Kong.
- 2011/03 Guest lecturer: *Contrastive Studies of Chinese and English Grammar (CTL5510)* (M.A. course). Department of Chinese, Translation and Linguistic, City University of Hong Kong, Hong Kong
- 2010/10 Guest lecturer: *Language Evolution (LING6030)* (M.A. course). Department of Linguistics, University of Hong Kong, Hong Kong
- 2005—2008 Teaching Assistant: *Advanced Engineering Mathematics (Syllabus A) (ENGG2011), Advanced Engineering Mathematics (Syllabus B) (ENGG2012), and Signals and Systems (ENGG2030)* (B.A. courses). Department of Electronic Engineering, Chinese University of Hong Kong, Hong Kong.

## Research Skills:

- Design, conduct, and analyze behavioral, EEG, and fMRI experiments
- Data analysis, programming, and acoustic analysis using Praat, MATLAB, SPSS, C++, R, SPM, and AFNI

## Research Duties

- Journal Reviewer: *Journal of Pragmatics*; *Reading and Writing: An Interdisciplinary Journal*; *Bilingualism: Language and Cognition*; *Language Sciences*

## Certificates

- Teaching Assistant, Chinese University of Hong Kong (2005/08).

## Lists of Publications

### International Journals

1. **Shuai, L.** & Malins, J. G. Encoding lexical tones in jTRACE: A simulation of monosyllabic spoken word recognition in Mandarin Chinese. *Behavior Research Methods*. Minor revision.
2. Gong, T. & **Shuai, L.** Modeling the coevolution between language and memory capacity during language origin. *PLoS ONE*. In press.
3. **Shuai, L.** & Elhilali, M. (2014). Task-dependent neural representations of salient events in dynamic auditory scenes. *Frontiers in Neuroscience*, 8: article 203.
4. **Shuai, L.** & Gong, T. (2014). Temporal relation between top-down and bottom-up processing in lexical tone perception. *Frontiers in Behavioral Neuroscience*, 8: article 97.
5. Tong, X., McBride, C., Lee, C.-Y., Zhang, J., **Shuai, L.**, Maurer, U., & Chung, K.K.H. (2014). Segmental and suprasegmental features in speech perception in Cantonese-speaking second graders: An ERP study. *Psychophysiology*, 51: 1158–1168.
6. Tong, X., McBride, C., Zhang, J., Chung, K.K.H., Lee, C.-Y., **Shuai, L.**, & Tong, X. (2014). Neural correlates of acoustic cues of English lexical stress in Cantonese-speaking children. *Brain and Language*, 138: 61–70.
7. Gong, T., **Shuai, L.** & Wu, Y. (2014). Extending network approach to language dynamics and human cognition: Comment on “Approaching human language with complex networks” by Cong and Liu. *Physics of Life Reviews*, 11(4): 639-640.
8. Gong, T., **Shuai, L.**, & Zhang, M. (2014). Modeling language evolution: Examples and predictions (target article). *Physics of Life Reviews*, 11: 280-302.
9. Gong, T., **Shuai, L.**, & Zhang, M. (2014). Key issues for the prosperity of modelling research of language evolution (reply to commentaries). *Physics of Life Reviews*, 11: 324–328.
10. **Shuai, L.** & Gong, T. (2014). Language as an emergent group-level trait -- Commentary on Paul E. Smaldino, The cultural evolution of emergent group-level traits. *Behavioral and Brain Sciences*, 37(3): 274-275.
11. Gong, T. & **Shuai, L.** (2014). Exploring the effect of power-law social popularity on language evolution. *Artificial Life*, 20(3-4): 421-444.
12. Gong, T., **Shuai, L.**, & Comrie, B. (2014). Evolutionary linguistics: Theory of language in an interdisciplinary space. *Language Sciences*, 41(B): 243–253.
13. **Shuai, L.**, Gong, T., & Wu, Y. (2013). Who is who? Interpretation of multiple occurrence of the Chinese reflexive: Evidence from real-time sentence processing. *PLoS ONE*, 8(9): e73226.
14. Gong, T., **Shuai, L.**, & Liu, J. (2013). Construction of cross-cultural identity by language choice and linguistic practice: A case-study of mixed Hong Kong-Mainland identity in university contexts. *Open Journal of Modern Linguistics*, 3: 208–215.
15. **Shuai, L.** & Gong, T. (2013). Missing lampposts for language evolution – Review of *How the Brain Got Language: The Mirror System Hypothesis*. *Lingua*, 134: 27–31.

16. Gong, T. & **Shuai, L.** (2013). Computer simulation as a scientific approach in evolutionary linguistics. *Language Sciences*, 40: 12–23.
17. Coupé, C., **Shuai, L.**, & Gong, T. (2013). Review of the 9th international conference on the evolution of language (Evolang9). *Biolinguistics*, 7: 112–131.
18. Gong, T., **Shuai, L.**, & Wu, Y. (2013). Multidisciplinary approaches in evolutionary linguistics. *Language Sciences*, 37: 1–13.
19. Gong, T. & **Shuai, L.** (2012). Modeling the coevolution of language and joint attention. *Proceedings of the Royal Society B: Biological Sciences*, 279(1747): 4644–4652.
20. Gong, T., **Shuai, L.**, Tamariz, M., & Jäger, G. (2012). Studying language change using Price equation and Pólya-urn dynamics. *PLoS ONE*, 7(3): e33171.
21. Li, S-Q., **Shuai, L.**, Cheng, X-Y., Tang, Z-M., & Yang, J-Y. (2005). A descriptive model of robot team and the dynamic evolution of robot team cooperation. *International Journal of Advanced Robotic Systems*, 2(2): 139–143.

#### Book chapters

22. **Shuai, L.**, Frost, S. J., Landi, N., Mencl, W. E., & Pugh, K. R. (2016 in press). Neurocognitive Models of Skilled and Impaired Reading From a Cross-Language Perspective. In: Verhoeven, L., Perfetti, C. A., Pugh, K. R. (Eds.), *Dyslexia across languages*. Cambridge: Cambridge University Press.
23. **Shuai, L.**, Gong, T., Ho, J. P.-K., & Wang, W. S-Y. (2015 in press). Hemispheric lateralization of perceiving Cantonese contour and level tones: An ERP study. In: Gu, W. (Ed.), *Studies on Tonal Aspect of Languages* (Journal of Chinese Linguistics Monograph Series, No. 25). Hong Kong: Journal of Chinese Linguistics.
24. Gong, T. & **Shuai, L.** (2015). Simulating the effects of cross-generational cultural transmission on language change. In: Mehler, A., Lücking, A., Banisch, S., Blanchard, P., Frank-Job, B. (Eds.), *Towards a Theoretical Framework for Analyzing Complex Linguistic Networks* (pp. 237-256). London: Springer.
25. Gong, T., **Shuai, L.**, & Ansaldo, U. (2013). Computer simulation of language convergence. In: Peng, G. & Shi, F. (Eds.), *Eastward Flows the Great River: Festschrift in Honor of Prof. William S-Y. Wang on His 80th Birthday* (pp. 375–392). Tianjin, China: Nankai University Press.

#### International Conference Proceedings

26. **Shuai, L.**, Wang, Z., & Gong, T. (2014). Simulating the coevolution of language and long-term memory. *2014 IEEE World Congress on Computational Intelligence (WCCI 2014)*. Beijing, China. pp. 1374–1381.
27. **Shuai, L.** & Gong, T. (2012). Language evolution and hemispheric specialization. *Conference in Evolutionary Linguistics 2012*. Beijing, China, pp. 49–50. (abstract)
28. Gong, T. & **Shuai, L.** (2012). Studying socio-cultural effects on language evolution using computer simulation. *Conference in Evolutionary Linguistics 2012*. Beijing, China, pp. 43–48. (abstract)
29. **Shuai, L.** & Gong, T. (2012). Top-down effect of linguistic factors in auditory processing of lexical tones. *The 11st Chinese Psychophysiology Conference*. Nanjing, China, pp. 17–18. (abstract)
30. Gong, T. & **Shuai, L.** (2012). A cross-model study on the effect of power-laws on language evolution. *2012 IEEE World Congress on Computational Intelligence (WCCI 2012)*. Brisbane, Australia, pp. 3237–3244.
31. **Shuai, L.** & Gong, T. (2012). Temporal relationship of top-down and bottom-up processing during tone perception. *TAL 2012: 3rd International Symposium on Tonal Aspects of Languages*. Nanjing, China.
32. **Shuai, L.**, Li, B., & Gong, T. (2012). [Priming effects of tones and segments in lexical processing in Mandarin](#). *Speech Prosody: 6th International Conference*. Shanghai, China.
33. **Shuai, L.** & Gong, T. (2012). Reconfiguration of the perceptual space during second language speech. *International Conference on Bilingualism and Comparative Linguistics*. Hong Kong. (abstract)

34. **Shuai, L.** & Gong, T. (2012). Voice onset time as a cue for perceiving place of articulation in stop consonants. *ACOUSTICS 2012*. Hong Kong.
35. **Shuai, L.** & Gong, T. (2012). Language lateralization, categorical perception and language evolution. In: T. C. Scott-Phillips, M. Tamariz, E. A. Cartmill, & J. R. Hurford (eds.), *The Evolution of Language: Proceedings of the 9th International Conference (Evolang9)*, Singapore: World Scientific, pp. 320–327.
36. Gong, T. & **Shuai, L.** (2012). Simulating the coevolution of language and joint attention. In: T. C. Scott-Phillips, M. Tamariz, E. A. Cartmill, & J. R. Hurford (eds.), *The Evolution of Language: Proceedings of the 9th International Conference (Evolang9)*, Singapore: World Scientific, pp. 444–445. (abstract) (**Invited Talk**)
37. **Shuai, L.**, Gong, T., & Ansaldo, U. (2012). Simulating language convergence. In: T. C. Scott-Phillips, M. Tamariz, E. A. Cartmill, & J. R. Hurford (eds.), *The Evolution of Language: Proceedings of the 9th International Conference (Evolang9)*, Singapore: World Scientific, pp. 539–540. (abstract)
38. Gong, T., **Shuai, L.**, & Ansaldo, U. (2011). A brief survey of multidisciplinary approaches in evolutionary linguistics. *The 2nd Meeting of Linguistic Evolution and Genetic Evolution*. Shanghai, China. (abstract)
39. Li, B. & **Shuai, L.** (2011). Relationship between Tone and Tune in Chinese Songs. *Psycholinguistic Representation of Tone (PLRT)*. Hong Kong.
40. Li, B. & **Shuai, L.** (2011). Effects of Native Language on Perception of Level and Falling Tones. *Proceedings of the 17th International Congress of Phonetic Sciences (ICPhS)*, 1202-1205. Hong Kong.
41. Li, B. & **Shuai, L.** (2011). A Phonetic Analysis to Hong Kong - Accented English. *The Fourth International Conference of English as a Lingua Franca (ELF4)*. Hong Kong.
42. Li, B. & **Shuai, L.** (2011). Suprasegmental features of Chinese-accented English. *The 161st Meeting of the Acoustical Society of America*. Seattle, USA.
43. Gong, T. & **Shuai, L.** (2011). Simulating the emergence of biased word orders in isolating languages. *The 19th Annual Conference of the International Association of Chinese Linguistics (IACL19)*. Tianjin, China.
44. **Shuai, L.** & Gong, T. (2011). Neural Processing of Mandarin Tones. *The 19th Annual Conference of the International Association of Chinese Linguistics (IACL19)*. Tianjin, China.
45. **Shuai, L.** (2011). Hemispheric lateralization is modulated by tone features: An ERP study on Cantonese tones. *The 19th Annual Conference of the International Association of Chinese Linguistics (IACL19)*. June, 2011, Tianjin, China. (full paper) **Nominee for Young Scholar Award.**
46. **Shuai, L.** (2010). Is Broca's area essential in speech perception: evidence from an ERP study of dichotic listening of Mandarin lexical tones and stop consonants. *The Second Annual Neurobiology of Language Conference*. San Diego, USA.
47. **Shuai, L.** (2009). ERP Studies of Tone Lateralization. *The International Conference on the Processing of East Asian Languages*. Beijing, China.
48. **Shuai, L.** (2009). Tone lateralization is affected by both linguistic roles and physical properties. *The 8th Göttingen Meeting of the German Neuroscience Society*. Göttingen, Germany.
49. **Shuai, L.** & Wang, W. S-Y. (2008). Tone lateralization under noisy conditions. *Proceedings of 4th International Conference on Speech Prosody*, 751-754. Campinas, Brazil.
50. **Shuai, L.** (2008). An ERP experiment on tone and consonant dichotic listening. *The 5th Postgraduate Research Forum on Linguistics: Contemporary Approaches to Linguistic Analysis*. Hong Kong.

#### National Journals (in Chinese)

51. **Shuai, L.** & Gong, T. (2013). 评《脑与语言认知》：脑与语言认知研究新进展(A review of *NAO YU YUYAN RENZHI: A survey of recent research on brain and language cognition*). *Journal of Chinese Linguistics*, 41(2): 468–478.

52. Gong, T. & Shuai, L. (2013). 用计算机模拟研究语言演化(Using computer simulation to study language evolution). *中国社会科学报(Social Sciences in China)*, 2013/03/04.
53. Shuai, L. & Gong, T. (2013). 语言演化与大脑偏侧化(Language evolution and lateralization). *中国社会科学报(Social Sciences in China)*, 2013/02/04.
54. Gong, T., Shuai, L. & Wang, W. S-Y. (2013). 用计算机模拟研究语言演化(Using computer simulation to study language evolution). *语言科学(Linguistic Sciences)*, 12(1): 82–100.
55. Gong, T. & Shuai, L. (2012). 语言演化的生命科学探索 (Exploring language evolution in life science disciplines). *科学(Science)*, 64(1): 29-32.
56. Gong, T., Shuai, L., & Ansaldo, U. (2011). 演化语言学跨学科方法概述 (A brief survey of interdisciplinary approach in evolutionary linguistics). *现代人类学通讯 (Communication on contemporary anthropology)*, 5: 163-272/e43.

### Invited Presentations

- Shuai, L. (2010). ERP Studies of Tone Lateralization and Beyond. Invited talk presented to Institute for Learning & Brain Sciences, University of Washington. Nov. 8, 2010.
- Shuai, L. (2010). Language as an 'interface' – evidence from tone perception and its lateralization. Invited talk presented to Department of Linguistics, The University of Hong Kong. Apr. 27, 2010.
- Shuai, L. (2009). Tone lateralization and 'language as an interface'. Invited talk presented to Max Planck Institute for Human Cognitive and Brain Sciences, Department of Neuropsychology, Leipzig, Germany. Mar. 18, 2009.

### Research Activities

- 2014/10–now Collaborating with Haskins scientists in multiple projects on EEG/ERP signatures of reading difficulties, simulating tone languages, and second language acquisition.
- 2012/09–2014/08 Established new EEG lab with PI, and conducted psychoacoustic and EEG experiments on auditory scene analysis in the Johns Hopkins University.
- 2010/09–2012/01 Conducted experiments on second language acquisition, music and tone perception in tone language speakers in the City University of Hong Kong.
- 2009/09–2010/08 Participated in the EEG lab set up, conducting the ERP studies on children with dyslexia, and helping with the research proposal preparation in the Aphasia, Dyslexia & Dysgraphia Lab in The University of Hong Kong. Accumulating experiences in working with dyslexic children. Building skills in writing research proposals.
- 2007/08–2007/09 Conducted the pilot fMRI study of speech perception and tone lateralization with the help from The State Key Laboratory of Brain and Cognitive Sciences at Hong Kong University. Trained on how to conduct fMRI experiments and how to analyze results.
- 2007/04–2007/10 Acted as a project manager to establish an EEG lab in The Chinese University of Hong Kong. Transferred and upgraded an inactive EGI 128-channel EEG system from the Prince of Wales Hospital to the campus of The Chinese University of Hong Kong. Cooperated with colleagues to fix the problem of the system and started ERP experiments.
- 2004/07 Attended the 2004 Complex System Summer School in China held by The Santa Fe Institute. Attended a variety of courses on the complex systems in physics, biology, and language. Became interested in the neurolinguistic studies since then.