

ZHENGHAN QI

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EDUCATION

University of Illinois, Urbana-Champaign	Champaign, IL, USA	2006 – 2012
Ph.D. in Neuroscience		
Shanghai Medical College, Fudan University	Shanghai, China	2001 – 2006
M.D. in Basic Medicine		

Employment AUTHORIZATION

U.S. Permanent Resident

RESEARCH EXPERIENCE

Massachusetts Institute of Technology	Cambridge, MA, USA	2012 – present
Post-doctoral associate, McGovern Institute for Brain Research, Supervisor: John D. E. Gabrieli		
- Neural substrates of language impairment in neurodevelopmental disorders, including autism, dyslexia, specific language impairment and schizophrenia		
- Cognitive and neural predictors for successful language learning during adulthood		
- Cognitive and neural plasticity induced by language learning experiences		
Methods: fMRI, DTI, EEG, MEG		
Boston University	Boston, MA, USA	2012 – present
Post-doctoral associate, Center for Autism Research Excellence, Supervisor: Helen Tager-Flusberg		
- Neural substrates of language impairment in autism		
University of Illinois, Urbana-Champaign	Champaign, IL, USA	2006 – 2012
Graduate research assistant, Department of Psychology		
1. Language and Brain Lab, 2008-2012, Supervisor: Susan M. Garnsey		
- Electrophysiological markers of linguistic statistical learning		
- Hemispheric difference during online syntactic disambiguation		
Methods: EEG		
2. Language Acquisition Lab, 2009-2012, Supervisor: Cynthia L. Fisher		
- Verb acquisition in children and adults		
- Executive functioning and syntactic disambiguation in kindergarteners		
Methods: Eye-tracking		
3. Learning and Memory Lab, 2006-2008, Supervisor: Paul E. Gold		
- Roles of protein synthesis and neurotransmitter systems in memory consolidation		
Methods: Neurochemistry and animal behavior		

Chinese Academy of Sciences

Shanghai, China

2005 – 2006

Thesis research, Institute of Neuroscience, Supervisor: Yuqiang Ding

- Role of two transcription factors in the development of central nervous system; awarded Outstanding Undergraduate Thesis, Fudan University

Shanghai Medical College, Fudan University

Shanghai, China

2003 – 2004

Undergraduate research intern, Medical Neurobiology Lab, Supervisor: Fengyan Sun & Ping Zheng

- Exercise-induced neurogenesis in substantia nigra in Parkinson's disease; funded as the winning project in the Undergraduate Innovation Competition, Fudan University

SELECTED AWARDS

- Graduate Student Award, Cognitive Neuroscience Society 2012
- Graduate College Travel Award, University of Illinois 2010
- BUCLD 35 Paula Menyuk Award 2010
- Cognitive Science / Artificial Intelligence Award, University of Illinois 2010
- Neuroscience Graduate Fellowship, University of Illinois 2009
- China National Scholarship for Basic Sciences 2002 – 2005

PUBLICATIONS

1. **Qi Z.**, Han M., Wang Y., de los Angeles C., Liu Q., Garel K., Chen E., Whitfield-Gabrieli S., Gabrieli J. D. E., & Perrachione T. K. (Submitted). From right to left: Hemispheric reorganization for successful classroom-based foreign language learning.
2. **Qi Z.**, Beach S. D., Finn A. S., Minas J., Goetz C., Chan B., & Gabrieli J. D. E. (Submitted). Dissociable language learning strengths are predicted by native-language N400 and P600.
3. Lu C.*, **Qi Z.***, Harris A., Wisman Weil L., Han M., Halverson K., Perrachione T. K., Kjelgaard M., Wexler K., Tager-Flusberg H., & Gabrieli J. D. E. (Accepted). Shared neuroanatomical substrates for impaired phonological working memory across reading disability and autism. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging* (*: Equal Contribution)
4. Ryskin R. A., **Qi Z.**, Duff M. C., & Brown-Schmidt S. (Submitted). Verb biases are shaped through lifelong learning.
5. **Qi Z.**, Love J., Fisher C. L., Brown-Schmidt S. (Submitted) Referential context and executive functioning influence children's resolution of syntactic ambiguity.
6. **Qi Z.**, Han M., Garel K., Chen E. S., & Gabrieli J. D. E. (2014). White-matter structure in the right hemisphere predicts Mandarin Chinese learning success. *Journal of Neurolinguistics*, 33: 14-28.
7. **Qi Z.**, Yuan S., Fisher C. L. (2011) Where does verb bias come from: Experience with particular verbs affects online sentence processing, In N. Danis, K. Mesh, & H. Sung (Eds.), *Proceedings of 35th Boston University Conference on Language Development*. 500-512. Somerville, MA: Cascadilla Press.

8. **Qi Z.**, Gold P. E. (2009) Intrahippocampal infusions of anisomycin produce amnesia: contribution of increased release of norepinephrine, dopamine and acetylcholine. *Learning & Memory*. 16(5): 308-314.
9. **Qi Z.**, Jiang W., Fang C., (2006) Neurogenesis in substantia nigra of adult brain: retrospect and prospect. *Chinese Journal of Clinical Neurosciences*. 14 (1): 97-101

MANUSCRIPTS

1. **Qi Z.**, Han M., Thompson T., Gerasimov K., Chen E. S., & Gabrieli J. D. E. (In prep) White-matter structural plasticity induced by classroom-based foreign language learning.
2. **Qi Z.**, Pantazis D., de los Angeles C., Perrachione T. K., & Gabrieli J. D. E. (In prep) Sensitivity to speech distributional information in children with autism.
3. **Qi Z.**, Garnsey S. M. (In prep) Prediction-based distributional learning of novel verb bias: an ERP study.
4. **Qi Z.**, Yuan S., Fisher C. L., Garnsey S. M. (In prep) Event vs. linguistic distributional information: Verb bias learning in adults and in children.

PUBLISHED ABSTRACTS AND PRESENTATIONS

- **Qi Z.**, Pantazis D., de los Angeles C., Perrachione T. K., & Gabrieli J. D. E. (2015) Sensitivity to speech distributional information in children with autism: a MEG study. Talk presented at the *International Meeting for Autism Research*, Shanghai, China
- **Qi Z.**, Lu C., Harris A., Weil L. W., Han M., Halverson K., Perrachione T. K., Kjelgaard M., Wexler K., Tager-Flusberg T., & Gabrieli J. D. E. (2015). Transdiagnostic neural basis for impaired phonological working memory across reading disability and autism, Poster presented at the *Society for Neurobiology of Language*, Chicago, IL
- **Qi Z.**, Pantazis D., de los Angeles C., Perrachione T. K., & Gabrieli J. D. E. (2015) Sensitivity to speech distributional information in children with autism: a MEG study. Poster presented at the *Society for Neurobiology of Language*, Chicago, IL
- **Qi Z.**, Pantazis D., de los Angeles C., Perrachione T. K., & Gabrieli J. D. E. (2015) Sensitivity to speech distributional information in children with autism. Poster presented at the *Boston University Conference on Language Development*, Boston, MA
- **Qi Z.**, Lu C., Harris A., Weil L. W., Han M., Halverson K., Perrachione T. K., Kjelgaard M., Wexler K., Tager-Flusberg T., & Gabrieli J. D. E. (2015). Transdiagnostic neural basis for impaired phonological working memory across reading disability and autism spectrum disorder, Poster presented at the *Society for Neuroscience*, Chicago, IL
- Ryskin R., **Qi Z.**, & Brown-Schmidt S. (2015). Rapid learning of a verb bias. Poster presented at the *Psychonomics Society Annual Meeting*, Chicago, IL
- Han M., **Qi Z.**, Lu C., Halverson K., Weil L. W., Kjelgaard M., Tager-Flusberg T., Wexler K., & Gabrieli J. D. E. (2015). Structural bases of language-impairment in children with autism. Poster presented at the *Cognitive Neuroscience Society*, San Francisco, MA

- **Qi Z.**, Wang Y., Liu Q., de los Angeles C., Whitfield-Gabrieli S., & Gabrieli J. D. E. (2014). Foreign language learning experience enhances inter-hemispheric functional connectivity. Poster presented at the *Biennial Conference on Resting State / Brain Connectivity*. Boston, MA.
- **Qi Z.**, Finn A., Ghosh S., Minas J., Chan B., & Gabrieli J. D. E. (2014). Temporal dynamics of EEG topographic similarity during successful language learning. Poster presented at the *Society for Neurobiology of Language*, Amsterdam, Netherlands.
- **Qi Z.**, Perrachione T. K., Han M., Garel K., Chen E., Finn A., Gabrieli J. D. E. (2014). Functional brain imaging predicts foreign language learning success in the classroom. Poster presented at the *Cognitive Neuroscience Society*, Boston, MA
- Han M., **Qi Z.**, Murtagh J., Garel K., Chen E., Gabrieli J. D. E. (2014). White matter integrity predicts adult second language learning outcomes. Poster presented at the *Cognitive Neuroscience Society*, Boston, MA
- Brown-Schmidt S., **Qi Z.**, Duff M. (2014). Contributions of hippocampal-dependent declarative memory to on-line processing of global syntactic ambiguity. Poster presented at the *CUNY Sentence Processing Conference*, Columbus, OH
- **Qi Z.**, Perrachione T. K., Harris A., Ostrovskaya I., Beach S., Halverson K., Cyr A., Sher K., Kjelgaard M., Gabrieli J. D. E., Wexler K., Tager-Flusberg T. (2013). Neural signatures of phonological working memory and grammatical processing in autism spectrum disorders. Poster presented at *Society for Neuroscience*, San Diego, CA
- **Qi Z.**, Perrachione T. K., Harris A., Ostrovskaya I., Beach S., Halverson K., Cyr A., Sher K., Kjelgaard M., Gabrieli J. D. E., Wexler K., Tager-Flusberg T. (2013). Neural signatures of phonological working memory and grammatical processing in autism spectrum disorders. Poster presented at *Society for Neurobiology of Language*, San Diego, CA
- **Qi Z.**, Fisher C. L. (2013) Learning new linguistic information about familiar verbs in 5-year-olds and adults. Talk presented at *Society for Research in Child Development*, Seattle, WA
- **Qi Z.**, Garnsey S. M. (2012) Individual difference in verb bias learning: an ERP study. Poster presented at the *CUNY Sentence Processing Conference*, New York, NY.
- **Qi Z.**, Garnsey S. M. (2012) Neurocognitive plasticity in verb bias learning: an ERP study. Talk presented at *Cognitive Neuroscience Society*, Chicago, IL.
- **Qi Z.**, Fisher C. L., Brown-Schmidt S. (2011) On recovering from 'kindergarten path' errors: referential context and executive functioning influence children's online ambiguity resolution. Talk presented at *Architectures and Mechanisms for Language Processing*, Paris, France.
- **Qi Z.**, Garnsey S. M. (2011) Learning structural biases of novel verbs: an ERP study. Poster presented at *Society for Neurobiology of Language*, Annapolis, MD.
- **Qi Z.**, Jackson S. R., Garnsey S. M. (2010) The left hemisphere knows more about verbs (in most people), Poster presented at *Society for Neuroscience*, San Diego, CA.
- **Qi Z.**, Yuan S., Fisher C. L. (2010) Where does verb bias come from: Experience with particular verbs affects online sentence processing. Talk presented at *Boston University Conference on Language Development*, Boston, MA.

INVITED TALKS

- “Language in the developmental mind” (Oct. 2015), Invited talk at Beckman Institute, University of Illinois, Urbana-Champaign
- “Neural bases of phonological deficits in children with ASD: a multimodal approach” (Sep. 2015), Invited talk at Center for Autism Research Excellence, Boston University.
- “Neural bases of phonological deficits in children with ASD” (Aug. 2015), Invited talk at Institute for Learning and Brain Sciences, University of Washington.
- “Dynamic language learning: from moment-to-moment distributional learning to long-term neural plasticity” (Mar. 2015), Invited talk at Language and Cognition Seminar Series, Harvard University.
- “Resting state functional connectivity: methods and clinical applications” (Nov. 2014), Invited talk at Shanghai Mental Health Center.
- “Who is more equipped to learn a new language during adulthood: neural predictors of successful language learners” (Mar. 2014), Invited talk at Kuperberg Lab Meeting, Tufts University
- “Revisiting kindergarten-path effect: the influence of referential context and executive functioning” (July. 2013), Invited talk at Language and Cognition Seminar Series, Harvard University
- “Neuroplasticity in verb bias learning: Evidence in children and adults” (May. 2012), Talk at Friday on the Brain series at Beckman Institute, University of Illinois, Urbana-Champaign
- “Eye-tracking and ERP evidence of learning linguistic vs. event statistical information” (Oct. 2011), Talk at Developmental Brownbag series at Dept. of Psychology, University of Illinois, Urbana-Champaign

TEACHING EXPERIENCE

- Awarded University of Illinois Graduate Teacher Certificate 2010
- Assistant Instructor, Introductory Psychology 2009
University of Illinois
Designed syllabus and all lectures, assignments, and discussions
Taught 98 students, 4 lecture-hours per week.
- Assistant Instructor, Techniques of Biological Psychology 2008
University of Illinois
Designed syllabus and all lectures, lab projects, and assignments
Taught 18 students, 6 lecture-/lab-hours per week.
- Teaching Assistant for Exercise and Brain Function 2008
For course with Prof. Donna Korol, University of Illinois

MENTORING EXPERIENCE

- 5 Full-time MIT research assistants
Keri Garel, Michelle Han, Calvin Goetz, Yoel Sanchez, Carlo de los Angeles 2013 – Present

- 15+ Undergraduate research assistants
MIT: Katalina Sher, Sylvia Astaves, Valkyrie Felso, Anna Blatz, Carol Davis, Anthony Preza, Stacy Kamumbu, Hiram Moncivais 2012 – Present
University of Illinois: Elyse Dankoski, Pawel Laciak, Jun Meng, Hanting Wang, Adam Barnas, Brittney Pierson, Tatsu Shigeta, Sean Wagner 2007 – 2012
- 5 MIT summer research interns
Sara Beach: Harvard PhD student in Speech and Hearing Bioscience and Technology Summer 2015
Athulya Aravind: MIT PhD student in Linguistics Summer 2013
Sarah Prieto: Amgen Undergraduate Scholar Summer 2015
Michelle Hung, Young Hoon Oh: Peddie high school students Summer 2014-15
- 2 MIT visiting students
Qi Liu, Yunxin Wang: Beijing Normal University PhD students in Psychology 2013 – 2014

PROFESSIONAL SERVICES

- Conference program committee: *Society for Psychophysiological Research* (2016)
- Conference reviewer: *Society for Neurobiology of Language*
- Journal reviewer: *American Journal of Neuroradiology; Cerebral Cortex; Developmental Psychology; Frontier in Human Neuroscience; Journal of Neurodevelopmental Disorders; Journal of Neurolinguistics*
- Member: *Society for Neuroscience; Society for Neurobiology of Language; Cognitive Neuroscience Society; International Society for Autism Research; Society for Psychophysiological Research*

OUTREACH ACTIVITY

- “Autism, Language and Brain” (July, 2014), Invited Talk at the Education Cooperative Summer Science Institute

ACADEMIC REFERENCES

- Dr. John D. E. Gabrieli, gabrieli@mit.edu
- Dr. Helen B. Tager-Flusberg, htagerf@bu.edu
- Dr. Cynthia L. Fisher, clfishe@illinois.edu
- Dr. Susan M. Garnsey, sgarnsey@psych.illinois.edu

LANGUAGES

- Mandarin & Shanghainese: Native
- English: Fluent