

## Li-Hung Chang (張立鴻)

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National Yang-Ming University  
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### EDUCATION

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| May 2014 | Ph.D. in Cognitive Science<br>Brown University, Providence, RI           |
| May 2008 | M.A. in Psychology<br>Boston University, Boston, MA                      |
| May 2003 | B.B.A. in International Trade<br>Chung Yuan Christian University, Taiwan |

### RESEARCH AREAS

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Cognitive Neuroscience of Aging, Perceptual & Motor learning, Brain imaging, and Cortical Plasticity

### ACADEMIC APPOINTMENTS

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| 2014-Present | Assistant Professor,<br>Education Center for Humanities and Social Sciences,<br>National Yang-Ming University (國立陽明大學)     |
| 2014         | Postdoctoral Fellow,<br>Department of Cognitive, Linguistic, & Psychological Sciences,<br>Brown University, Providence, RI |

### PUBLICATIONS

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- Chang, L.-H., Shibata, K., Andersen, G. J., Sasaki, Y., & Watanabe, T. (2014). Age-related declines of stability in visual perceptual learning. *Current Biology*, pii: S0960-9822(14)01350-5. (SCI)
- Yotsumoto, Y.\*, Chang, L.-H.\*, Ni, R., Pierce, R., Andersen, G. J., Watanabe, T., & Sasaki, Y. (2014) White matter in the older brain is more plastic than in the younger brain., *Nature Communications*, 5:5504. (SCI) (\*Equal contributions)
- Chang, L.-H\*., Yotsumoto, Y.\*, Salat, D., Andersen, G. J., Watanabe, T., & Sasaki, Y. (2014). Reduction in the retinotopic early visual cortex with normal aging and magnitude of perceptual learning. (\*Equal contributions) *Neurobiology of Aging* pii: S0197-4580(14)00538-7. (SCI)
- Yotsumoto Y., Watanabe, T., Chang, L.-H., & Sasaki, Y. (2013). Consolidated learning can be susceptible to gradually-developing interference in prolonged motor learning. *Front. Comput Neurosci*, May 28;7:69. (SCI)
- Shibata, K., Chang, L.-H., Kim, D., Nanez, J., Kamitani, Y., Watanabe, T., & Sasaki, Y. (2012). Decoding Reveals Plasticity in V3A as a Result of Motion Perceptual Learning. *PLoS One*, July (8): e44003, Epub. (SCI)
- Choi, H., Chang, L.-H., Shibata, K., Sasaki, Y., & Watanabe, T. (2012). Resetting capacity limitations: Long-lasting elimination of attentional blink by training. *Proc Natl Acad Sci*, Jul;109(30):12242-7. (SCI)

Yotsumoto Y., Chang, L.-H., Watanabe, T., & Sasaki, Y. (2009). Interference and feature specificity in visual perceptual learning. *Vision Research*, Oct;49(21):2611-23. (SCI)

#### **DEGREE DISSERTATION**

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Chang, L.-H. (2014). The Effects of Aging on Visual Perceptual Learning and Plasticity. *PhD Dissertation*, Brown University

#### **CONFERENCE PRESENTATIONS**

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Chang, L.-H., Shibata, K., Yotsumoto, Y., Andersen, G. J., Sasaki, Y., & Watanabe, T. Stronger Task Irrelevant Perceptual Learning with Older than Younger People. 2013 SfN Conference, California (poster presentation).

Chang, L.-H., Shibata, K., Yotsumoto, Y., Andersen, G. J., Sasaki, Y., & Watanabe, T. When is old better? Task Irrelevant Perceptual Learning with older people. 2013 VSS Conference, Florida (poster presentation).

Kim, D., Chang, L.-H., Nanez, J., Sasaki, Y., & Watanabe, T. Roles of subcortical processing in Visual Perceptual Learning. 2013 VSS Conference, Florida (poster presentation).

Chang, L.-H., Yotsumoto, Y., Watanabe, T., & Sasaki, Y. Brain morphological changes associated with normal aging in the early visual cortex. 2012 VSS Conference, Florida (talk presentation).

Chang, L.-H., Yotsumoto, Y., Salat, D., Watanabe, T., & Sasaki, Y. Age-associated changes on human retinotopic representation in the early visual cortex. 2011 SfN Conference, Washington D.C. (talk presentation).

Kang, D., Liu, C., Chang, L.-H., Takahashi, E., Watanabe, T., & Sasaki, Y. White matter tract connectivity between visual and higher-level cortical regions in association with perceptual learning. 2011 SfN Conference, Washington D.C. (poster presentation).

Liu, C., Chang, L.-H., Tsai, Y., Kang, D., Sasaki, Y., & Watanabe, T. Visual perceptual learning is associated with white matter changes in early visual areas. 2011 SfN Conference, Washington D.C. (poster presentation).

Kang, D., Liu, C., Chang, L.-H., Takahashi, E., Watanabe, T., & Sasaki, Y. White matter connectivity changes between visual and higher-level cortical regions in association with perceptual learning revealed by diffusion tensor tractography. 2011 VSS Conference, Florida (talk presentation).

Liu, C., Chang, L.-H., Tsai, Y., Kang, D., Sasaki, Y., & Watanabe, T. Changes in white matter in young adults associated with perceptual learning. 2011 VSS Conference, Florida (talk presentation).

Chang, L.-H., Yotsumoto, Y., Ni, R., Salat, D., Andersen, G. J., Watanabe, T., & Sasaki, Y. White matter anisotropy changes in early visual areas only with older subjects in association with visual perceptual learning. 2010 SfN Conference, California (poster presentation).

Choi, H., Chang, L.-H., Shibata, K., Watanabe, T., & Sasaki, Y. Neural mechanisms of learning that completely removes attentional blink on a long-term basis - Learning to enhance attentional temporal resolution. 2010 SfN Conference, California (poster presentation).

- Shibata, K., Chang, L.-H., Sasaki, Y., Yotsumoto, Y., Kim, D., Nanez, J., Kamitani, Y., & Watanabe, T. Decoding reveals trained-task independent plasticity in V3A in association with motion perceptual learning. 2010 SfN Conference, California (poster presentation).
- Chang, L.-H., Yotsumoto Y., Nanez, J., Watanabe, T., & Sasaki, Y. Interference and feature specificity in visual perceptual learning. 2010 VSS Conference, Florida (poster presentation).
- Yotsumoto Y., Chang, L.-H., Ni R., Salat, D., Andersen, G. J., Watanabe, T., & Sasaki, Y. Perceptual learning and changes in white matter in the aged brain revealed by diffusion-tensor imaging (DTI). 2010 VSS Conference, Florida (talk presentation).
- Yotsumoto Y., Ni R., Chang, L.-H., Sasaki, Y., Watanabe, T., & Andersen, G. J. Cortical recruitment of multiple areas for perceptual learning of elderly adults is specific for the trained location. 2009 VSS Conference, Florida (poster presentation).
- Sasaki, Y., Yotsumoto, Y., Nanez J., Chang, L.-H., & Watanabe, T. Consolidated learning is still susceptible to anterograde interference. 2007 NIN Conference, Amsterdam, the Netherlands (poster presentation).

#### **INVITED TALK**

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- 2011            “Age-associated changes of brain morphometry in the early visual cortex”, 129<sup>th</sup> BioPsycho Symposium, Keio University, Tokyo, Japan.

#### **TEACHING EXPERIENCE**

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Courses Taught at National Yang-Ming University:	
General Psychology	Fall 2014
Cognitive Science & Life	Fall 2014
Morality and Human Cognition	Fall 2014

#### **ACADEMIC SERVICE**

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- 2009–2013      Lecturer, fMRI 101 and Brain Imaging Data Analysis workshop  
 Boston University (2010, 2012) and Brown University (2013)
- Two-day workshop on fMRI data analysis training

#### **SOCIETY/MEMBERSHIP**

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- 2014            Cognitive Neuroscience Society (CNS)
- 2010–2014      Society of Neuroscience (SfN)
- 2008–2014      Vision Sciences Society (VSS)
- 2007–2008      American Psychological Association

#### **CERTIFICATES**

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- 2012–2014      MRI certificated scanner (Level 3)  
 MRF, Brown Institute for Brain Science, Brown University
- 2008–2012      MRI certificated scanner (Green badge)  
 NMR Center, Massachusetts General Hospital, Harvard Medical School

- 2008 functional MRI Visiting Fellowship  
NMR Center, Massachusetts General Hospital, Harvard Medical School
- 2007–2014 Collaborative Institutional Training Initiative (CITI) Completion Report (Certificate of Completion, Human Study Curriculum)
- 2007 The Health Insurance Portability and Accountability Act of 1996 (HIPAA), Security Basic Training (Certificate of Completion HIPAA Security Rule test)
- 2007 The Summer School in Cognitive Neuroscience  
Institute of Cognitive Neuroscience, National Central University, Taiwan

## **SKILLS**

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### *Research related*

#### Cognitive Neuroscience:

Structural MRI morphometric analysis (Freesurfer)  
Magnetic Resonance Spectroscopy (MRS)  
fMRI Operation (3T scanner; 7 years experience)  
fMRI data analysis (Freesurfer, SPM)  
Diffusion tensor imaging (DTI) analysis (TBSS)  
DTI tractography analysis (TrackVis, Diffusion Toolkit)  
Electroencephalogram (EEG) acquisition  
Event-Related Potential (ERP) data analysis  
Simultaneous functional MRI and EEG acquisition  
Magnetoencephalography (MEG) Operation

### *Computer related*

Cognitive Neuroscience: MATLAB, Scan, Edit & Acquire (Neuroscan Co.),  
Psychtoolbox-3, E-PRIME,

Statistics: SPSS, STATISTICA, R

Computer proficiency: Windows, Mac OS, Microsoft Office  
Illustrator CS3 and Photoshop CS3