

# Yingchen He

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## Education

2011 – 2017 **Ph.D.** in Psychology – Cognitive and Brain Sciences program, **Minor** in Biomedical Engineering, University of Minnesota, Minneapolis, MN

Advisor: Dr. Gordon Legge

Dissertation: *Improving Letter Recognition and Reading in Peripheral Vision: Sensory and Cognitive Constraints.*

2007 – 2011 **B.S., Double Major** in Biological Sciences and Psychology, Beijing University, China

## Professional Experience

2020 - present Assistant Professor, Department of Psychology, North Carolina State University

Program: Human Factors and Applied Cognition

Director of the Translational Vision Research Lab

2017 – 2020 Postdoctoral Associate, Department of Ophthalmology and Visual Neurosciences / Department of Psychology, University of Minnesota

Supervisors: Dr. Sandra Montezuma; Dr. Stephen Engel

Focus: Evaluation and optimization of retinal implants; designing and assessing an eyetracker-based assistive tool as a reading aid.

## Research Interests

- Visual constraints in daily tasks including reading, object recognition, and navigation
- Accessibility of technology for people with visual differences.
- Training and rehabilitation for people with vision loss.
- Brain plasticity following training, long-term vision loss, and the regaining of sight.

## Competitive Awards and Honors

- Best Dissertation Award, University of Minnesota, 2018  
*Each year, the University of Minnesota awards 4 of these to their PhD graduates.*
- MnDRIVE (Minnesota's Discovery, Research, and Innovation Economy) Fellowship in Neuromodulation, University of Minnesota, 2018.  
*Competitive postdoctoral fellowship awarded to 4 individuals*

- Doctoral Dissertation Fellowship, University of Minnesota, 2015.  
*Competitive fellowship awarded to only 10% of eligible doctoral students.*
- Gloria J. Randahl Psychology Fellowship, University of Minnesota, 2013, 2014.  
*Awarded to women graduate students in cognitive psychology with excellent academic record and exceptional potential.*
- David Campbell Graduate Research Fellowship, 2013.  
*Travel award for international conferences*
- Graduate Summer Research Fellowship, 2013.  
*Research fellowship for early year Ph.D. students*
- Graduate Research Partnership Program Fellowship, 2012.  
*Research fellowship for early year Ph.D. students*

## Fellowship and Grant

“Mapping the electrically-elicited visual responses in blind patients implanted with the Argus II”. \$60,710.

University of Minnesota                      He (PI)                      09/01/18 – 05/24/20  
Role: Principal Investigator

“Optimizing the Argus II Retinal Prosthesis System for Visual Functioning Using Brain Signals”. \$40,433.

Engdahl Family Research Fund              Legge (PI)                      09/01/17 – 08/31/18  
Role: Key Personnel (drafted the proposal)

“Optimizing A Protocol for Reading Rehabilitation in Age-related Macular Degeneration”. \$25,000.

University of Minnesota                      He (PI)                      09/01/15 – 05/31/16  
Role: Principal Investigator

## Journal Articles, Refereed

**He, Y.,** Sun, S., Roy, A., Caspi, A., & Montezuma, S. R. (2020). Improved mobility performance with an artificial vision therapy system using a thermal sensor. *Journal of Neural Engineering*, 17.

- Montezuma, S. R., Sun, S. Y., Roy, A., Caspi, A., Dorn, J. D., & **He, Y.** (2020). Improved localisation and discrimination of heat emitting household objects with the artificial vision therapy system by integration with thermal sensor. *British Journal of Ophthalmology*, bjophthalmol-2019-315513.
- He, Y.**, Huang, N. T., Caspi, A., Roy, A., & Montezuma, S. R. (2019). Trade-off between field-of-view and resolution in the thermal-integrated Argus II system. *Transl Vis Sci Technol*, 8(4):29.
- Baskaran, K., Macedo, A. F., **He, Y.**, Hernandez-Moreno, L., Queirós, T., Mansfield, J. S., & Calabrèse, A. (2019). Scoring Reading Parameters: An Inter-Rater Reliability Study Using The MNREAD Chart. *PLoS ONE*, 14(6): e0216775.
- He, Y.**, Legge, G. E., & Kwon, M. (2018). Common constraints limit Korean and English character recognition in peripheral vision. *Journal of Vision*, 18(1):5, 1–15.
- Calabrese, A., To, L., **He, Y.**, Berkholtz, E., Rafian, P., & Legge, G. E. (2018). Comparing Performance on the MNREAD iPad app with the MNREAD acuity chart. *Journal of Vision*, 18(1):8, 1-11.
- He, Y.**, & Legge, G. E. (2017). Linking crowding, visual span, and reading. *Journal of Vision*, 17(11):11, 1-15.
- Calabrèse, A., Cheong, A. M. Y., Cheung, S. H., **He, Y.**, Kwon, M. Y., Mansfield, J. S., ... Legge, G. E. (2016). Baseline MNREAD measures for normally sighted subjects from childhood to old age. *Investigative Ophthalmology and Visual Science*, 57(8), 3836–3843.
- He, Y.**, Scholz, J., Gage, R., Kallie, C., Liu, T., & Legge, G. E. (2015). Comparing the Visual Spans for Faces and Letters. *Journal of Vision*, 15(8), [7].
- Chen, J., **He, Y.**, Zhu, Z., Zhou, T., Peng, Y., Zhang, X., & Fang, F. (2014). Attention-dependent early cortical suppression contributes to crowding. *The Journal of Neuroscience*, 34(32), 10465-10474.
- He, Y.**, Legge, G. E., & Yu, D. (2013). Sensory and Cognitive Influences on the Training-Related Improvement of Reading Speed in Peripheral Vision. *Journal of Vision*, 13(7), 1-14.

## Conference Presentations

- He, Y.**, Toft-Nielsen, J., Sun, S., Roy, A., Caspi, A., & Montezuma, S. R. Comparing Visual Evoked Potentials between Prosthetic Vision, Normal Vision, and Simulated Acuity Reduction. *Vision Science Society 19th Annual Meeting*. May 17-22, 2019, St. Pete Beach, FL.

- He, Y.,** Sun, S., Johannsen, T., Perry, J., Herrera, A., Roy, A., Caspi, A., Barbour, R., & Montezuma, S. R. Characterizing the Visual Cortical Hemodynamic Response in Retinal Prostheses Users. *Association for Research in Vision and Ophthalmology Annual Meeting*. Apr 28 - May 02, 2019, Vancouver, Canada.
- He, Y.,** Huang, N., Caspi, A., Roy, A., Engel, S., Legge, G. E., van Kujik, E. J., Koozekanani, D., & Montezuma, S. R. Development of an electroencephalogram (EEG) protocol to map electrically-elicited visual responses in blind patients implanted with the Argus II retinal prosthesis. *Association for Research in Vision and Ophthalmology Annual Meeting*. April 29 – May 2, 2018. Honolulu, HI
- He, Y.,** Kwon, M., Legge, G. Training Peripheral Vision to Read Korean Characters Transfers to English. *Vision Sciences Society 17th Annual Meeting*. May 19-24, 2017. St. Pete Beach, FL
- He, Y.,** & Legge, G. Crowded Letter Recognition in Peripheral Vision Is Not Solely Determined by Target-Flanker Cortical Distance. *Vision Sciences Society 16th Annual Meeting*. May 13-18, 2016. St. Pete Beach, FL
- He, Y.,** & Legge, G. Training as Part of a Word Game Increases Reading Speed in Peripheral Vision. *Vision Sciences Society 14th Annual Meeting*. May 16-21, 2014. St. Pete Beach, FL
- He, Y.,** & Legge, G. Developing A Word-Puzzle Game to Increase Reading Speed in Peripheral Vision. *The 9th Asia-Pacific Conference on Vision*. July 5-8, 2013. Suzhou, China
- He, Y.,** & Legge, G. Uncrowding the Visual Span: Does It Improve Reading? *Vision Sciences Society 13th Annual Meeting*. May 10-15, 2013. Naples, FL
- He, Y.,** & Legge, G. Reduced crowding accounts for enlargement of the visual span after training. *Vision Sciences Society 12th Annual Meeting*. May 11-16, 2012. Naples, FL

## **Ad-Hoc Reviewing**

*Brain and Behavior*

*International Journal of Gaming and Computer-Mediated Simulations*.

*Investigative Ophthalmology and Visual Science*

*Journal of Neural Engineering*

*Journal of Vision* (recognized as “**Exceptionally Good Review**”)

*Optometry and Vision Science*

*Scientific Reports*

*Translational Vision Science & Technology*

## **Public and University Service**

- Committee Member, Award Committee of Department of Psychology, NC State University, 2020-present  
*Facilitated the award nomination and application process of faculty members.*
- Presenter, low-vision support group meetings, 2019  
*Communicated research efforts to the community.  
Listened to the difficulties people with low vision are facing.*
- Booth Presenter, Macular Degeneration Breakfast, 2019  
*Communicated our research projects to patients and donors.*
- Sign Language Teacher, Loving Heart Society of Beijing University, 2009.  
*Taught Chinese Sign Language in one semester.  
Performed sign language songs at university events to raise awareness.*
- Volunteer Teacher, Brain Awareness Week, 2014  
*Taught elementary school children about the brain.*
- Scientific Judge, Minnesota Brain Bee Competition, 2019.
- V.P. Finance/President, Beijing University Alumni Association at the University of Minnesota, 2011-2016
- Volunteer, Beijing 2008 Paralympic Games, 2008.