

Education

University of Chicago, Chicago, IL **June 2017**
Ph.D. in Psychology (Cognition)
Thesis: *The role of anticipation in the relation between math anxiety and math performance.*
Committee: Sian L. Beilock, Ph.D. (Chair), Greg J. Norman, Ph.D., Marc G. Berman, Ph.D., and Susan C. Levine, Ph.D.

University of Chicago, Chicago, IL **June 2011**
M.A. in Social Sciences (Psychology)
Thesis: *Numeral-ordering ability mediates the relationship between math-anxiety and math-ability.*
Advisor: Sian L. Beilock, Ph.D.

Grinnell College, Grinnell, IA **May 2009**
B.A. in Psychology, Concentration in Neuroscience
Academic Advisor: Nancy L. Rempel-Clower, Ph.D.
Mentored Advanced Project Advisor: Janet M. Gibson, Ph.D.

Research Interests

Numerical cognition; individual differences in learning and performance; interactions between cognition and emotion; interdisciplinary research.

Publications

- Chang, H.**, Sprute, L., Maloney, E. A., Beilock, S. L., & Berman, M. G. (2017). Simple arithmetic: not so simple for highly math anxious individuals, *Social Cognitive and Affective Neuroscience*, *12*, 1940–1949.
- Chang, H.**, & Beilock, S. L. (2016). The math anxiety-math performance link and its relation to individual and environmental factors: a review of current behavioral and psychophysiological research. *Current Opinion in Behavioral Sciences*, *10*, 33-38.
- Ramirez, G., **Chang, H.**, Maloney, E. A., Levine, S. C., & Beilock, S. L. (2016). On the relationship between math anxiety and math achievement in early elementary school: The role of problem solving strategies. *Journal of Experimental Child Psychology*, *141*, 83-100.
- Chang, H.** & Gibson, J. M. (2011). The odd-even effect in Sudoku puzzles: Effects of working memory, aging, and experience. *American Journal of Psychology*, *124*, 313-324.
- Brooks, J. O., **Chang, H.**, & Krasnykh, O. (2009). Metabolic risks in older adults receiving second-generation antipsychotic medication. *Current Psychiatry Reports*, *11*, 33-40.

Funding/Awards

2013 – 2017	Norman Henry Anderson Research Fund	\$2,055.35
2015	Division of the Social Sciences Summer Grant	\$3,000
2015 – 2017	Hymen Milgrom Supporting Organization Chang, H. & Herts, J. <i>Reducing the link between math anxiety and low math achievement</i>	\$49,847
2016 – 2017	Chicago Center for Teaching Fellowship	\$3,600
2016 – 2017	Undergraduate Preceptorship	\$1,000

Presentations

Invited Talk

2014. *Understanding the relationship between math anxiety and performance*. Department of Psychology, Elmhurst College, Elmhurst, IL.

Departmental Talk

2013. *The role of math anxiety in learning arithmetic facts*. Department of Psychology Cognitive Brown Bag, University of Chicago, Chicago, IL.

2017. *Math anxiety and math performance: Exploring the intersection of emotion and cognitive control*. Department of Psychology Cognitive Brown Bag, University of Chicago, Chicago, IL.

Conference presentations

Chang, H., Sprute, L., Maloney, E. A., Beilock, S. L., & Berman, M. G. (2017, March). *Simple arithmetic: Not so simple for highly math anxious individuals*. Poster presented at the 2017 CNS Annual meeting in San Francisco, CA.

Chang, H., Van Hedger, K., Henry, A., Norman, G. J., & Beilock, S. L. (2014, November). *The role of anticipation in the relation between math anxiety and math performance*. Poster presented at the 55th Annual Meeting of the Psychonomic Society, Long Beach, CA.

Selected as one of eleven finalists for the APA Division 3 Early Career Poster Award

Chang, H., Lyons, I. M., & Beilock, S. L. (2013, November). *Symbolic processing mediates the relationship between math anxiety and mental arithmetic performance*. Poster presented at the 54th Annual Meeting of the Psychonomic Society, Toronto, Ontario, Canada. **Selected as one of nine finalists for the APA Division 3 Early Career Poster Award**

Chang, H., Lyons, I. M., & Beilock, S. L. (2013, May). *Symbolic processing mediates the relationship between math-anxiety and mental-arithmetic*. Oral presentation at the 85th Annual Meeting of the Midwestern Psychological Association, Chicago, IL.

Brooks, J. O., **Chang, H.**, Bearden, C. E., & Glahn, D. C. (2011, June). *Prefrontal and limbic dysregulation during emotional processing in bipolar disorder: a functional magnetic resonance imaging meta-analyses*. Poster presented at the 9th International Conference on Bipolar Disorder, Pittsburgh, PA.

Brooks, J. O., **Chang, H.**, Bearden, C. E., & Glahn, D. C. (2010, May). *Dysregulated activation of prefrontal and limbic regions in emotional processing in bipolar disorder: A meta-analysis*. Poster presented at the 65th Annual Meeting of the Society of Biological Psychiatry, New Orleans, LA.

Gibson, J. M. & **Chang, H.** (2009, May). *Working memory modulates the odd-even effect in Sudoku puzzles and math problems*. Poster presented at the 21st Annual Meeting of the Association for Psychological Science, San Francisco, CA.

Research Experience

Postdoctoral Fellow

June 2017 – Present

Institution: Department of Psychiatry and Behavioral Sciences, Stanford University, Stanford, CA

Project: Cognitive and brain mechanisms of mathematical learning in children (Mentor: Vinod Menon, Ph.D.)

- Understand the neurocognitive mechanisms underlying effective interventions optimized for children's mathematical learning by implementing advanced functional neuroimaging tools.

Doctoral Student Researcher

Sept. 2012 – June 2017

Institution: Department of Psychology, University of Chicago, Chicago, IL

Projects: Basic symbolic (numerical) processing; training-related changes in arithmetic strategy selection and efficiency; neural and physiological correlates of math anxiety and math performance (Mentor: Sian L. Beilock, Ph.D.)

- Reviewed literature and addressed research questions to advance knowledge in the field;
- Designed and conducted research projects, recruited participants from various populations, carried out analyses, and communicated the findings to the scientific and broader community.

Research Assistant

May 2011 – July 2012

Institution: Human Performance Lab, Department of Psychology, University of Chicago, Chicago, IL

Project: Learning Math & Spatial Skills (P.I.: Sian L. Beilock, Ph.D.)

- Recruited first and second grade teachers and their students, prepared and administered various cognitive and affective measures, trained individuals, coded qualitative data, and built and managed data sets to facilitate a research project aimed at illuminating the factors associated with math achievement in early elementary school.

Staff Research Associate I

Jan. 2010 – May 2010

Institution: Cousins Center for Psychoneuroimmunology, University of California, Los Angeles, CA

Project: Sleep and Healthy Aging Research Study (P.I.: Michael R. Irwin, M.D.)

- Recruited older adults from the Greater Los Angeles Area and administered telephone surveys to study the relation among subjective social isolation, sleep, and general health in older adults.

Research Assistant

Aug. 2009 – May 2010

Institution: Semel Institute for Neuroscience and Human Behavior, University of California, Los Angeles, CA

Project: Meta-analysis of fMRI studies of affective processing in healthy adults and patients with bipolar disorder (Supervisor: John Brooks, Ph.D., M.D.)

- Performed meta-analyses on functional magnetic resonance imaging studies of affective processing in healthy individuals and patients with bipolar disorder.

Undergraduate Student Researcher

Aug. 2008 – May 2009

Institution: Department of Psychology, Grinnell College, Grinnell, IA

Project: The odd/even effect and working memory (Mentor: Janet M. Gibson, Ph.D.)

- Developed a research protocol to investigate the role of working memory in processing odd and even numbers across younger and older adults;
- Recruited younger adults from college campus and older adults from the surrounding community, ran experiments, analyzed the data, and presented the findings at an academic conference.

Research Assistant

May 2008 – Aug. 2008

Institution: VA Palo Alto Health Care System; Stanford University School of Medicine, Palo Alto, CA

Project: Neurocognitive function in older adults with bipolar disorder (P.I.: John Brooks, Ph.D., M.D.)

- Assisted with data entry and analyses, literature search, and writing a manuscript.

Training Course Completed

2015. The Mind Research Network (MRN) fMRI Image Acquisition and Analyses Course.

Teaching and Advising Experience

Teaching (Institution: University of Chicago, Chicago, IL)

Instructor

- Cognitive Psychology Summer 2016
- Designed a syllabus to teach undergraduate and visiting high school students;
 - Developed teaching methods and assessments that facilitate student-centered learning.

Teaching Assistant

- Psychological Research Methods Winter 2015, Winter 2016
- Led weekly lab section to advise students on designing and conducting a research project, writing research proposal and report, and presenting a scientific poster;
 - Delivered guest lectures on Experimental Design.

- Cognitive Psychology Spring 2015
- Led weekly discussion section to review course materials and facilitate students' discussion on topics related to cognition;
 - Assisted in developing questions for weekly quizzes and short-answer assignments.

- Psychological Statistics Fall 2015
- Led weekly lab section and held regular office hours to review statistical concepts;
 - Graded weekly assignments and identified students' difficulty in mastering certain topics to be later reviewed during the lab section.

Advising (Institution: University of Chicago, Chicago, IL)

- Undergraduate Preceptor in Psychology* Sept. 2016 – June 2017
- Co-led a Lab Night event for research lab members across campus to introduce opportunities to undergraduate students interested in gaining research experience;
 - Assisted in holding workshops and panels for undergraduate students' academic and career development.

- Chicago Center for Teaching Fellow* June 2016 – June 2017
- Developed and co-led workshop series that cover pedagogical topics on undergraduate teaching in the field of Psychology;
 - Acted as a mentor for graduate students to provide resources on teaching and discuss teaching issues across disciplines in the University.

- Research lab mentor* Sept. 2012 – June 2017
- Advised senior honor's thesis and independent study;
 - Mentored undergraduate, graduate, and high school graduate research assistants.

Pedagogical Training

2015 - 2016. *Workshop on Teaching in the College, College Teaching Course, Teaching by Discussion, How to Design an Award Winning Course, Teaching Portfolios*. Chicago Center for Teaching, University of Chicago, Chicago, IL.

University Service

Institution: Department of Psychology, University of Chicago, Chicago, IL

Student coordinator

Sept. 2013 – June 2015

Cognitive Brown Bag series

- Invited guest speakers and coordinated department-wide workshop series on topics in Cognition.

Professional Development Committee member

Sept. 2015 – June 2016

Psychology Graduate Student Organization

- Assisted in planning and organizing events that help graduate students navigate their career paths.

Outreach

2015. “What do I study?” (5th grade classes), “How to look at brain data: A tutorial.” (12th grade advanced biology class). Francis W. Parker School, Chicago, IL.

Skills

Laboratory

Animal (rat handling; performance of intraperitoneal/subcutaneous injections, stereotaxic surgery, perfusion, histology [cutting frozen sections, mounting, staining, lesion analysis]; behavioral task design, behavioral coding and analysis); Clinical (neuropsychological assessment); Survey (computer-assisted telephone interviewing [CATI]); Experimental (computerized task design, quantitative and qualitative data coding and analysis); Psychophysiological (electrocardiogram, functional magnetic resonance imaging data acquisition and analysis).

Computer

MS Office, E-Prime, SPSS, Stata, R, Matlab, MindWare Heart Rate Variability and Impedance Cardiography Analysis Software, Statistical Parametric Mapping, BrainVoyager, BrainMap Software.

Languages

English, Korean.

Professional Affiliations

American Psychological Association: Division 3

Association for Psychological Science

Cognitive Neuroscience Society

Midwestern Psychological Association

Psychonomic Society