

# STEVEN M. WEISBERG, PHD

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## ACADEMIC APPOINTMENTS

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2015-Present     Postdoctoral Fellow  
Center for Cognitive Neuroscience  
**University of Pennsylvania**  
Advisor: Dr. Anjan Chatterjee

## EDUCATION

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2015             PhD in Psychology  
Brain and Cognitive Sciences  
**Temple University**  
Advisor: Dr. Nora Newcombe

2008             BA in Psychology, *cum laude*  
Minor in Mathematics  
**College of William and Mary**  
Advisor: Dr. Jeanine Stefanucci

## FELLOWSHIPS

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2016-Present     Ruth L. Kirschstein Postdoctoral NRSA F32DC015203: *Neural representations of spatial directions in language, schemas, and images*. Sponsors: Anjan Chatterjee and Russell Epstein

2010-2012        University Fellowship, Temple University

## AWARDS AND HONORS

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2018             Biomedical Postdoctoral Program Travel Award, University of Pennsylvania

2017             Collaborative Symposium Award, Psychonomic Society

2017             Postdoctoral Fellow Award, Cognitive Neuroscience Society

2016             Biomedical Postdoctoral Program Travel Award, University of Pennsylvania

2014             College of Liberal Arts Travel Award, Temple University

2013             Training in fMRI Fellowship, University of Michigan, NIH

2013             Visiting Fellowship, Martinos Center for Biomedical Imaging, Massachusetts General Hospital

2013             Collaboration Grant, Science Across Virtual Institutes, Thematic Network in Spatial Cognition, NSF

2012             Department of Psychology Travel Award, Temple University

2004-2008        Dean's List, College of William and Mary

## PEER-REVIEWED PUBLICATIONS

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- Weisberg, S.M.**, Marchette, S.A., & Chatterjee, A. (2018). Behavioral and neural representations of spatial directions across words, schemas, and images. *Journal of Neuroscience*, 38(21), 4996-5007 [[Paper](#)]
- Weisberg, S.M.**, & Newcombe, N.S. (2018). Cognitive maps: Some people make them, some people struggle. *Current Directions in Psychological Science*. 27(4), 220-226. [[Preprint](#)] [[Paper](#)]
- Weisberg, S.M.**, Badgio, D., & Chatterjee, A. (2018). Feel the way with a vibrotactile compass: Does a navigational aid aid navigation? *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 44(5), 667-679. [[Paper](#)] [[Data](#)]
- Nazareth, A., **Weisberg, S.M.**, Margulis, K., & Newcombe, N.S. (2018). Charting the development of cognitive mapping. *Journal of Experimental Child Psychology*, 170, 86-106. [[Paper](#)]
- Galati, A., **Weisberg, S.M.**, Newcombe, N.S., & Avraamides, M.N. (2018). When gestures show us the way: Self-generated gestures selectively facilitate navigation and spatial memory. *Spatial Cognition and Computation*. [[Paper](#)]
- Blacker, K.J., **Weisberg, S.M.**, Newcombe, N.S., & Courtney, S.M. (2017). Navigation ability, relational and location working memory. *Visual Cognition*, 25(7-8), 691-702. [[Paper](#)]
- Weisberg, S.M.**, Badgio, D., & Chatterjee, A. (2017). A CRISPR new world: Public attitudes towards innovations in genetic modification. *Frontiers in Public Health: Public Health Policy*. [[Paper](#)]
- Atit, K., **Weisberg, S.M.**, Newcombe, N.S., & Shipley, T.F. (2016). Learning to interpret topographic maps: Understanding layered spatial information. *Cognitive Research: Principles & Implications*. [[Paper](#)]
- Cromley, J.G., **Weisberg, S.M.**, Dai, T., Newcombe, N.S., Schunn, C.D., Massey, C., & Merlino, F.J. (2016). Improving middle school science learning using diagrammatic reasoning. *Science Education* 100(6), 1184-1213. [[Paper](#)]
- Weisberg, S.M.**, & Newcombe, N.S. (2016). How do (some) people make a cognitive map? Routes, places, and working memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 42(5), 768-785. [[Paper](#)]
- Ngo, C., **Weisberg, S.M.**, Newcombe, N.S., & Olson, I.R. (2016). The relation between navigation strategy and associative memory: An individual differences approach. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 42(4), 663-670. [[Paper](#)]
- Holmes, C.A., Nardi, D.N., Newcombe, N.S., & **Weisberg, S.M.** (2015)\*. Children's use of slope to guide navigation: Sex differences relate to spontaneous slope perception. *Spatial Cognition and Computation*, 15(3), 170-185. [[Paper](#)]

**Weisberg, S.M.** & Newcombe, N.S. (2014). A slippery directional slope: Individual differences in using slope as a directional cue. *Memory & Cognition*, 42, 648-661. [[Paper](#)]

**Weisberg, S.M.**, Nardi, D.N., Newcombe, N.S., & Shipley, T.F. (2014). Up by upwest: Is slope like north? *Quarterly Journal of Experimental Psychology*. 67(10), 1959-1976. [[Paper](#)]

**Weisberg, S.M.**, Schinazi, V.R., Newcombe, N.S., Shipley, T.F., & Epstein, R.A. (2014). Variations in cognitive maps: Understanding individual differences in navigation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 40(3), 669-682. [[Paper](#)]

## **CHAPTERS, PROCEEDINGS, COMMENTARIES, REPORTS, ETC.**

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**Weisberg, S.M.** & Newcombe, N.S. (2017). Embodied cognition and STEM learning: Overview of a topical collection in CR:PI. *Cognitive Research: Principles and Implications*, 2(38). [[Paper](#)]

**Weisberg, S.M.**<sup>1</sup>, Newcombe, N.S.<sup>1</sup>, Atit, K., Jacovina, M.E., Ormand, C.J., & Shipley, T.F. (2015). The lay of the land: Sensing and representing topography. *Baltic International Yearbook of Cognition, Logic and Communication*: Vol. 10. [[Paper](#)]

Nardi, D.N., Holmes, C.A., Newcombe, N.S., & **Weisberg, S.M.** (2015)\*. Sex differences and errors in the use of terrain slope for navigation. *Cognitive Processing*, 16(1), 323-326. [[Paper](#)]

**Weisberg, S.M.**, & Newcombe, N.S. (2013). Are all types of vertical information created equal? *Behavioral and Brain Sciences*, 36, 568-569. [[Paper](#)]

**Weisberg, S.M.** (2012). Embodied cognition approaches in integrated science, technology, engineering, and mathematics (iSTEM) education. Commissioned report for the National Academy of Engineering Committee on Integrated STEM Education. Published in *Toward Integrated STEM Education: Developing A Research Agenda* (2014).

\*After first author, authorship order is alphabetical.

<sup>1</sup>Co-first authors.

## **UNDER REVIEW**

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Nazareth, A., Newcombe, N.S., Shipley, T.F., Velazquez, M., & **Weisberg, S.M.** (submitted). Beyond small-scale spatial skills: Navigational skills and geoscience education. [[Preprint](#)]

**Weisberg, S.M.**, Newcombe, N.S., & Chatterjee, A. (submitted). Everyday taxi drivers: Do gifted navigators have larger hippocampi? [[Preprint](#)] [[Data and Code](#)]

## **IN PREPARATION**

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**Weisberg, S.M.**, & Chatterjee, A. (in prep). Reference frame preference differs in sports and space.

## SPOKEN PRESENTATIONS

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**Weisberg, S.M.** (2017). How to get the point: Spatial language and gesture can help teach topographic maps. Talk presented at the meeting of the *European Society for Cognitive Psychology (ESCoP)*. Potsdam, Germany.

Galati, A., **Weisberg, S.M.**, Newcombe, N.S., & Avraamides, M.N. (2015). Effects of gesturing strategies on navigation performance and spatial memory. Talk presented at *Psychonomic Society*. Chicago, IL.

**Weisberg, S.M.**, & Newcombe, N.S. (2015). It's not can but how: Navigation aptitude and strategy. Talk presented at *International Conference on Spatial Cognition*. Rome, Italy.

**Weisberg, S.M.** (2014). I get around, how do you? Individual differences in navigation aptitude. Invited Colloquium, ETH-Zurich, Switzerland.

**Weisberg, S.M.**, & Newcombe, N.S. (2014). Remembering what and where: The relation between components of navigation ability and working memory. Paper presented at the 1<sup>st</sup> annual *Pennsylvania Spatial Cognitive Symposium*. University Park, PA.

**Weisberg, S.M.**, Epstein, R.A., Newcombe, N.S., Schinazi, V.R., & Shipley, T.F. (2012). Where do you think you are: A virtual environment assessment of navigation ability. Doctoral colloquium at *Spatial Cognition 2012*. Bavaria, Germany.

**Weisberg, S.M.**, Brakoniecki, E., & Newcombe, N.S. (2012). The other side of the mountain: Slope as a cue in navigation. Paper presented at the *International Conference on Spatial Cognition*. Rome, Italy.

**Weisberg, S.M.**, Brakoniecki, E., & Newcombe, N.S. (2012). The other side of the mountain: Slope as a cue in navigation. Paper presented at *Cognitive Science Society*. Sapporo, Japan.

**Weisberg, S.M.** (2012). Structural alignment approach to contour map interpretation. Colloquium, Northwestern University. Evanston, IL.

**Weisberg, S.M.** & Newcombe, N. S. (2011). Slope and navigation: All downhill? *Graduate Fellows Research Symposium*, Temple University. Philadelphia, PA.

## POSTERS

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**Weisberg, S.M.**, Newcombe, N.S., & Chatterjee, A. (2018). Everyday taxi drivers: Do gifted navigators have larger hippocampi? Poster presented at *iNav*, Mt. Tremblant, Canada.

**Weisberg, S.M.**, Newcombe, N.S., & Chatterjee, A. (2018). Everyday taxi drivers: Do gifted navigators have larger hippocampi? Poster presented at *Cognitive Neuroscience Society*. Boston, MA.

- Weisberg, S.M.**, Marchette, S.A., & Chatterjee, A. (2017). Which way: Neural decoding of spatial directions in images, schemas, and words. Poster presented at *Cognitive Neuroscience Society*. San Francisco, CA. Awarded the Postdoctoral Fellow Award.
- Nazareth, A., **Weisberg, S.M.**, Margulis, K., Do, A., Haj, R., & Newcombe, N.S. (2016). Age-related differences in cognitive mapping during spatial navigation. Poster presented at *Psychonomic Society*. Boston, MA.
- Weisberg, S.M.**, Badgio, D., & Chatterjee, A. (2016). Feel the way: Does a vibrotactile compass help you learn a space? Poster presented at *Interdisciplinary Navigation Symposium (iNav)*. Bad Gastein, Austria.
- Weisberg, S.M.**, Trinh, S., & Chatterjee, A. (2016). Recalculating...Processing words, schemas, and images of spatial directions. Poster presented at *Cognitive Neuroscience Society*. New York, NY.
- Weisberg, S.M.**, Atit, K., Newcombe, N.S., & Shipley, T.F. (2015). How to get the point: Spatial language interacts with gesture in learning topographic maps. Poster presented at *Psychonomic Society*. Chicago, IL.
- Blacker, K., **Weisberg, S.M.**, Newcombe, N.S., & Courtney, S.M. (2015). How working memory for spatial locations versus spatial relations predicts navigation ability. Poster presented at *Psychonomic Society*. Chicago, IL.
- Ngo, C., **Weisberg, S.M.**, Newcombe, N.S., & Olson, I.R. (2015). The relation between navigation strategy and associative memory: An individual differences approach. Poster presented at *International Conference on Spatial Cognition*. Rome, Italy.
- Weisberg, S.M.**, Beswick, M., & Chatterjee, A. (2015). Vento-medial Prefrontal Cortex and Stability in Art Preference. Poster presented at *Cognitive Neuroscience Society*. San Francisco, CA.
- Galati, A., **Weisberg, S.M.**, Newcombe, N.S., & Avraamides, M.N. (2014). Self-generated gestures selectively influence navigation performance and spatial memory. Poster presented at *Psychonomic Society*. Long Beach, CA.
- Ngo, C., Newcombe, N.S., Olson, I.R., & **Weisberg, S.M.** (2014). The relation between navigation strategy and associative memory: An individual differences approach. Poster presented at *Psychonomic Society*. Long Beach, CA.
- Weisberg S.M.** & Newcombe, N.S. (2014). Remembering what and where: The relation between components of navigation ability and working memory. Poster presented at *Psychonomic Society*. Long Beach, CA.

**Weisberg, S.M.**, & Newcombe, N.S. (2014). Remembering what and where: The relation between components of navigation ability and working memory. Poster presented at *Spatial Cognition 2014*. Bremen, Germany.

**Weisberg, S.M.**, Newcombe, N.S., & Shipley, T.F. (2013). What predicts understanding of topographic maps? Poster presented at *Psychonomic Society*. Toronto, CA.

Holmes, C.A., Nardi, D., Newcombe, N.S., & **Weisberg, S.M.** (2013). Hitting the slopes: The strength of gradient cues in child navigation. Poster presented at the Society for Research in Child Development (SRCD) Biennial Meeting, Seattle, WA.

**Weisberg, S.M.**, Newcombe, N.S., & Shipley, T.F. (2013). Using analogical learning to improve contour map reading. Poster presented at the 6<sup>th</sup> annual *inter-Science of Learning Center*. Philadelphia, PA.

Holmes, C., Newcombe, N.S., **Weisberg, S.M.**, & Nardi, D.N. (2013). Hitting the slopes: Children's use of gradient cues for reorientation. Poster presented at the 6th annual *inter-Science of Learning Center*. Philadelphia, PA.

**Weisberg, S.M.**, Nardi, D., Newcombe, N.S. & Shipley, T.F. (2012). Sensing the slopes: Sensory modality effects on a goal location task. Poster presented at *Psychonomic Society*. Minneapolis, MN.

**Weisberg, S.M.**, Epstein, R.A., Newcombe, N.S., Schinazi, V.R., & Shipley, T.F. (2012). Developing a virtual environment assessment of navigation ability. Poster presented at *Association for Psychological Science Convention*. Chicago, Illinois.

**Weisberg, S.M.**, Newcombe, N.S., & Shipley, T.F. (2012). Teaching contour maps using analogical learning. Poster presented at the 5<sup>th</sup> annual *inter-Science of Learning Center Conference*. San Diego, CA.

**Weisberg, S.M.** & Newcombe, N.S. (2011). The role of slope as a navigational cue. Poster presented at the 4<sup>th</sup> annual *inter-Science of Learning Center Conference*. Washington, D.C.

## **SYMPOSIA**

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2015 Organizer and Presenter: *Individual Differences in Navigating*, International Conference on Spatial Cognition, Rome, Italy. Speakers: Steven Weisberg, Steven Marchette, James Negen, Tim McNamara

## **SERVICES AND LEADERSHIP**

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2016 Local Planning Committee, Spatial Cognition Conference, Philadelphia, PA

2013 Local Planning Committee, inter-Science of Learning Center Conference, Philadelphia, PA

2012 SILC Planning Representative: Co-Chair, Networking Committee, inter-Science of Learning Center Conference, San Diego, CA

General Public Dissemination:

- 2014 Presenter, Quadrangle Sunrise Senior Living Services, Social Issues Committee  
Presentation Series  
Presenter, Philadelphia Science Festival, Spatial Intelligence and Learning Center  
2013 Guest Lecture, Conestoga High School AP Psychology  
2012 Presenter, Philadelphia Science Festival, Spatial Intelligence and Learning Center

Students Mentored (\*Honors Student; **Published Peer-reviewed work**):

*Temple University* – Ryan Barnett, Edward Brakoniecki\*, James Callahan, Chelsa Clofer,  
Brian Hickman, Benjamin Van Son, Kelsey Decker, Stephany Wilson, David Spain, Jon Bento,  
Hayley Van Duyn, Chrystyna Colon, Emily Auerbach, Dominique Losen, Vladislav Mendelson  
*University of Pennsylvania* – Sam Trinh\*, **Daniel Badgio**, Antonio Nicosia

Ad Hoc Reviewer (peer-reviewed journals, verified record on [Publons](#)):

*American Journal of Psychology*  
*Attention, Perception, & Psychophysics*  
*Behavioral and Brain Sciences*  
*Behavioral Research Methods*  
*Child Development*  
*Cognitive Processing*  
*Cognitive Psychology*  
*Cognitive Research: Principles & Implications*  
*Frontiers in Psychology: Developmental*  
*Journal of Experimental Education*  
*Journal of Experimental Psychology: Applied*  
*Journal of Experimental Psychology: Learning, Memory, and Cognition*  
*Journal of Visualized Experiments*  
*Learning and Individual Differences*  
*Memory*  
*Memory & Cognition*  
*Quarterly Journal of Experimental Psychology*  
*Spatial Cognition and Computation*  
*Scientific Reports*

Ad Hoc Reviewer (other):

Cognitive Science Society Conference (2018)  
International Conference of Spatial Cognition (2012, 2015)  
inter-Science of Learning Center Conference (2011, 2012)  
Spatial Cognition Conference (2016, 2018)  
Special Issue, Spatial Cognition X Proceedings (2017)

**TEACHING EXPERIENCE**

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- 2014 Guest Lecturer, Spatial Cognition, Sensation & Perception  
2013 Primary Instructor, Foundations in Cognitive Psychology

## PRESENT POSITIONS

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- 2015-Present    Post-doctoral Fellow, University of Pennsylvania  
                    *Advisor: Dr. Anjan Chatterjee*
- 2015-Present    [Digital Associate Editor](#), Psychonomic Society

## PAST POSITIONS

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- 2016              Guest Editor, Special issue of *Cognitive Research: Principles & Implications*,  
                    [Embodied Cognition and STEM Education](#)
- 2010-2014       Graduate Student, Temple University, Spatial Intelligence and Learning Center  
                    *Advisor: Dr. Nora Newcombe*
- 2013              Primary Instructor, Foundations in Cognitive Psychology, Temple University
- 2010              Research Assistant, Temple University, Spatial Intelligence and Learning Center  
                    *Advisor: Dr. Nora Newcombe*
- 2007-2008       Research Assistant, College of William and Mary, Psychology Department  
                    *Advisor: Dr. Jeanine Stefanucci*

## PROFESSIONAL MEMBERSHIPS

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- 2015-Present, Member, Cognitive Neuroscience Society
- 2012-Present, Member, Psychonomic Society
- 2010-Present, Member, Spatial Intelligence and Learning Center
- 2010-2012, Member, Cognitive Science Society
- 2010-2012, Member, Association for Psychological Science