

Erica M. Barhorst-Cates

960 E 100 S Apt C4 Salt Lake City, UT 84102*(806) 239-5082*erica.barhorst-cates@psych.utah.edu

EDUCATION

Doctor of Philosophy, Cognition and Neural Science, University of Utah, in progress

Advisors-Dr. Sarah Creem-Regehr and Dr. Jeanine Stefanucci

Master of Science, Cognition and Neural Science, University of Utah, August 2016

Thesis: The effects of restricted peripheral field-of-view on spatial learning while navigating

Bachelor of Arts, Texas Tech University, Lubbock, TX, May 2013

Major: Psychology

Thesis: The Correlation of Dance Experience and Spatial Memory Abilities

Advisor-Dr. Roman Taraban

Minor: Spanish

GPA: 4.0; Summa Cum Laude with Highest Honors

Study Abroad: Seville, Spain-Fall 2011

RESEARCH EXPERIENCE

- April 2017-present Principal Investigator, Utah-Padua Navigation Experiences and Strategies Project
- Collaborators: Chiara Meneghetti, Sarah Creem-Regehr
 - Conducts cross-cultural analysis of wayfinding ability and strategy based on home environment structure and experience with mobility
 - Collaboration between the University of Utah and University of Padua, Italy
- March 2016-present Researcher, Beverly Taylor Sorenson Arts Learning Program
- Principal Investigator: Cheryl Wright
 - Assesses the effects of arts training on visuo-spatial cognitive development in elementary school-aged children
- August 2014-present Researcher, Spatial Cognition and Navigation (SCAN) project
- Principal Investigators: Elizabeth Cashdan, Sarah Creem-Regehr, Jeanine Stefanucci
 - Examines individual differences in spatial cognition and navigation abilities that may arise from environmental, experimental, and/or evolutionary demands in western and non-western populations
- July 2014-present Research Assistant, Designing Visually Accessibly Spaces
- Principal Investigators: Sarah Creem-Regehr and William Thompson
 - Studies the effects of low vision on navigation and spatial learning and aims to identify potential methods to improve these skills for low vision patients
- April 2012-May 2013 Honors Thesis, Cognitive Psychology
- Advisor: Dr. Roman Taraban
 - Title of Project: The correlation of dance experience and spatial memory abilities
- 2011-2013 Undergraduate Research Experience
- Undergraduate Research Fellow, TTU Cognitive Psychology Lab
 - Advisor: Dr. Michael Serra
 - Title of Project: The Effects of gum-chewing and aerobic exercise on memory and meta-memory
 - Dance/Movement Therapy class founder
 - Advisor: Dr. Sherry Sancibrian, TTU Health Sciences Center

- Established and taught a Dance/Movement Therapy class at Ballet Lubbock for local children on the autism spectrum; collaborated with advisor at check-in meetings; organized events and performances
- Research Assistant, TAMU Social Psychology Lab
 - Advisor: Dr. Brandon Schmeichel
- Research Assistant, TTU Social Psychology Lab
 - Advisor: Dr. Jeff Larsen
 - Skills acquired: Electromyography, Galvanic Skin Conductance

AWARDS AND HONORS

1. Philanthropic Educational Organization (P.E.O.) Scholar Award, 2018-2019, \$15,000
2. University of Utah Psychology Department Professional Development Award, 2017, \$500
3. National Science Foundation Graduate Research Fellowship Honorable Mention, 2015
4. University of Utah Psychology Departmental Commendation in Research Award, 2015
5. University of Utah Research Day First Place Award Graduate Division, 2015
6. Center for Active Learning and Undergraduate Engagement featured “Engaged Scholar”, 2013
7. Texas Tech University Highest Ranking Graduate, Spring 2013
8. Texas Tech University Honors College Banner Bearer, College of Arts and Sciences, Spring 2013
9. Texas Tech University Honors Endowed Merit Scholarship Recipient, 2010-2013
10. Texas Tech University Arts and Sciences Scholarship Recipient, 2011-2013
11. Texas Tech University Honors Scholarship Recipient, 2011-2012
12. Texas Tech University Honors Study Abroad Scholarship Recipient, 2011
13. Texas Tech University Study Abroad Scholarship Recipient, 2011

RESEARCH GRANTS AND FELLOWSHIPS

1. Beverley Taylor Sorenson Arts Learning Program travel grant for research dissemination, 2017, \$2000
2. University of Utah Clayton Award for Excellence in Graduate Research, 2017, \$2000
3. Women in Cognitive Science (WICS) Travel Award to Initiate International Research Collaborations, 2017, \$2200
4. University of Utah Graduate Recruitment Fellowship, Fall 2014, \$5600
5. Dr. Sarah Kulkofsky Undergraduate Research Scholarship Recipient, 2012-2013, \$500
6. Undergraduate Research Fellowship, 2012-2013, \$5220

PUBLICATIONS

1. Rand, K.M., Barhorst-Cates, E.M., Kiris, E., Thompson, W.B., & Creem-Regehr, S.H. (2018). Going the distance and beyond: Simulated low vision increases perception of distance traveled during locomotion. *Psychological Research*.
2. Barhorst-Cates, E.M., Rand, K.M., & Creem-Regehr, S.H. (2017). Let me be your guide: Physical guidance improves spatial learning for older adults with simulated low vision. *Experimental Brain Research*, 235(11), 3307-3317. 10.1007/s00221-017-5063-8.
3. Barhorst-Cates, E. M., Rand, K. M., & Creem-Regehr, S. H. (2016). The Effects of Restricted Peripheral Field-of-View on Spatial Learning while Navigating. *PloS one*, 11(10), e0163785.

MANUSCRIPTS UNDER REVIEW

1. Barhorst-Cates, E.M., Stefanucci, J.K., & Creem-Regehr, S.H. (2018). Dance training as a method for improving spatial skills: A review.

CONFERENCE PRESENTATIONS

1. McElroy, N., Barhorst-Cates, E.M., Tarampi, M.R., & Stefanucci, J.K. (2018, April). Investigating static and dynamic spatial abilities in dancers. Poster to be presented at the 88th annual meeting of the Rocky Mountain Psychological Association, Denver, Colorado.
2. Barhorst-Cates, E.M., Wright, C., Creem-Regehr, S.H., Stefanucci, J.K., & Cashdan, E.A. (2017, November). Examining the impact of dance training on spatial abilities in 9-10 year olds. Poster presented at the 58th annual meeting of the Psychonomic Society, Vancouver, British Columbia, Canada.
3. Barhorst-Cates, E.M., Padilla, L.M.K., Schug, M., Creem-Regehr, S.H., Cashdan, E., & Stefanucci, J.K. (2017, April). Navigation and mental rotation: Examining effects of childhood and life-long mobility experience in the U.S. and Faroe Islands. Paper presented at the 87th annual meeting of the Rocky Mountain Psychological Association, Salt Lake City, Utah.
4. Dalley, M., Barhorst-Cates, E.M., & Creem-Regehr, S.H. (2017, April). The effects of restricted field-of-view on distance estimation while navigating. Paper presented at the 87th annual meeting of the Rocky Mountain Psychological Association, Salt Lake City, Utah.
5. Meisinger, P., Barhorst-Cates, E.M., & Creem-Regehr, S.H. (2017, April). How teaching egocentric and allocentric learning strategies affect spatial learning. Poster presented at the 87th annual meeting of the Rocky Mountain Psychological Association, Salt Lake City, Utah.
6. Meisinger, P., Barhorst-Cates, E.M., & Creem-Regehr, S.H. (2016, November). Search strategies during small-scale spatial layout learning with restricted peripheral field. Poster presented at the 57th annual meeting of the Psychonomic Society, Boston, Massachusetts.
7. Barhorst-Cates, E.M., Rand, K.M., & Creem-Regehr, S.H. (2016, August). Mobility monitoring demands during navigation with simulated low vision. Poster presented at the 2016 Spatial Cognition conference, Philadelphia, Pennsylvania.
8. Rand, K.M., Creem-Regehr, S.H., & Barhorst-Cates, E.M. (2016, August). Overestimation of Distance Traveled with Degraded Vision: Evidence from Walking and Wheeling. Poster presented at the 2016 Spatial Cognition conference, Philadelphia, Pennsylvania.
9. Creem-Regehr, S.H., Barhorst-Cates, E.M., Rand, K.M., & Thompson, W.B. (2016, June). When and how does restricted field influence spatial learning during navigation? Paper presented at the 30th anniversary meeting of the European Workshop on Imagery and Cognition, Paris, France.
10. Barhorst-Cates, E.M., Rand, K. M., & Creem-Regehr, S.H. (2016, May). Navigation and spatial memory for older adults with simulated low vision. Poster presented at the 16th Annual Meeting of the Vision Sciences Society, St. Pete Beach, Florida.
11. Barhorst-Cates, E.M., Rand, K. M., Thompson, W. B., Creem-Regehr, S.H. (2016, May). Does slower walking speed reduce cognitive load while navigating? Poster presented at the 2nd International Meeting of the Psychonomics Society, Granada, Spain.
12. Rand, K.M., Barhorst-Cates, E.M., Thompson, W.B., & Creem-Regehr, S.H. (2016, May). Generalizing effects of types of low vision and age on spatial learning while navigating. Paper presented at the 2nd International Meeting of the Psychonomics Society, Granada, Spain.
13. Barhorst, E. M., Rand, K. M., Thompson, W. B., Creem-Regehr, S. H. (2015, November). The effects of restricted peripheral field on spatial learning while navigating. Poster presented at the 56th annual meeting of the Psychonomic Society, Chicago, Illinois.
14. Barhorst, E. M. (2015, April). The effects of restricted field-of-view on spatial learning while navigating. Paper presented at the 85th annual meeting of the Rocky Mountain Psychological Association, Boise, Idaho.
15. Cashdan, E, Gagnon, K, Barhorst, E, Padilla, L.M., Stefanucci, J.K, Creem-Regehr, S.H. (2015, May). Sex differences in range size: When is travel worth the risk? Paper presented at the 27th annual meeting of the Human Behavior and Evolution Society, Columbia, MO.

16. Gill, D. M., Stefanucci, J. K., Creem-Regehr, S. H., & Barhorst, E. (2015, July). The effects of spatial anxiety on memory for spatio-temporal scale. Poster presented at CogSci 2015, Pasadena, CA, USA.
17. Barhorst, E. M. (2013, April). The correlation of dance experience and spatial memory abilities. Paper presented at the Texas Tech University Undergraduate Research Conference, Lubbock, TX.
18. Barhorst, E. M. (2013, April). The effects of gum-chewing and aerobic activity on memory and meta-memory. Poster presented at the 59th Annual Meeting of the Southwestern Psychological Association, Ft. Worth, TX.
19. Barhorst, E. M. (2013, May). The effects of gum-chewing and aerobic activity on memory and meta-memory. Poster presented at the 85th Annual Meeting of the Midwestern Psychological Association, Chicago, Illinois.
20. Barhorst, E. M. (2013, April). The effects of gum-chewing and aerobic activity on memory and meta-memory. Oral presentation given at the Texas Tech University Undergraduate Research Conference, Lubbock, TX.
21. Barhorst, E. M., & Taraban, R. (2013, November). The correlation of dance experience and spatial memory abilities. Poster presented at the 54th annual meeting of the Psychonomic Society, Toronto, Ontario, Canada.

INVITED TALKS

1. Barhorst-Cates, E. M. (2017). *Individual Differences in Navigation Style: Effects of Home Environment Structure*. Invited talk presented at Universita degli Studi di Padova, Padua, Italy.

MANUSCRIPTS IN PREPARATION

1. Barhorst-Cates, E. M., & Taraban, R. (2018). Spatial working memory is enhanced for movement experts in traditional and embodied tasks.
2. Creem-Regehr, S.H., Stefanucci, J.K., Cashdan, E.A., Barhorst-Cates, E.M. (2018). Validation of a two-choice response bodies mental rotation task in Western adults and children.
2. Schug, M., Barhorst-Cates, E. M., Cashdan, E., Stefanucci, J.K., & Creem-Regehr, S.H. (2018). Childhood experience in Legos play and range size improves mental rotation: A cross-cultural study of the Faroe Islands and Northeastern U.S.

PROJECTS IN PROGRESS

1. Measuring differences in navigation style and strategy based on home environment structure and experience with navigation. A cross-cultural study between Utah and Padua, Italy.
2. Assessing the effectiveness of dance training on the development of visuo-spatial abilities in elementary school-aged children.
3. Developing and validating a measure of mobility including the underlying factors of pleasure in exploring, wayfinding anxiety, navigation ability, and harm avoidance.
4. Examining the relationship between multiple object tracking (MOT) and dynamic spatial ability in movement experts.
5. Evaluating the effectiveness of taught strategies on spatial layout learning with restricted peripheral field-of-view.
6. Examining the contributions of visual and locomotion-based information during large-scale spatial learning for different types of extreme visual impairment.

TEACHING AND MENTORING

- 2018 (fall) **Teaching Assistant, Utah Department of Psychology Honors Program**
- Selected to serve as Graduate Teaching Assistant
 - Mentors and works one-on-one with Honors Thesis students in formal setting

- 2018-present **Teaching Assistant, Utah Department of Psychology: “Research Methods”**
- Teaches lab section of Research Methods, teaches scientific writing
- 2017-present **High School Science Fair Advisor, Academy for Math, Engineering, and Science**
- Teaches statistical methods, advises on design of science projects, runs statistical analyses for students
- Summer 2017 **Undergraduate & Master’s Theses Co-Advisor, Università degli Studi di Padova**
- Taught research and statistical methods one-on-one with three University of Padua students who completed thesis projects
- 2016-present **Human Factors Certificate Graduate Advisor, Utah Department of Psychology**
- Introduces undergraduate researchers to the application of basic research principles to answer applied questions, trains students on research methods and data analysis
 - Assists with the design, conduct, and writing of independent undergraduate applied research projects
- 2014-2017 **Graduate Student Honors Thesis Advisor, Utah Department of Psychology**
- Introduces undergraduate researchers to the scientific method, trains students on research methods and data analysis
 - Assists with the design, conduct, and writing of independent undergraduate research projects
- Fall 2014 **Guest Lecturer, Utah Department of Psychology; “Sensation and Perception”**

UNDERGRADUATE RESEARCH SUPERVISION

- Natalie McElroy, Undergraduate Research Opportunity (UROP), University of Utah (2017-present)
- Chiara De Rienzo, Undergraduate Thesis University of Padua (2017-present)
- Michela Puppione, Undergraduate Thesis University of Padua (2017-present)
- Cristina Alaimo, Master’s Thesis University of Padua (2017)
- Jeremy Donaldson, Human Factors Certificate, University of Utah (Fall 2017)
- Piper Meisinger, Honors Thesis, University of Utah (2016-2017)
- Madalyn Dalley, Human Factors Certificate, University of Utah (2016-2017)
- Kimberly Sholler, Human Factors Certificate, University of Utah (2016-2017)

SERVICE

- 2018-present **Volunteer Judge for Undergraduate Research Conference, University of Utah**
- Judges undergraduate researchers’ poster presentations
- 2017-present **Graduate Committee Member, University of Utah Department of Psychology**
- Serves as interface between students and faculty, assists with administration of various departmental activities including faculty tenure review and more
- 2016-present **Graduate Student Advisor, The Diversity Graduate School Application Advisory**
- Advises underrepresented undergraduates who are interested in applying to graduate school about the application process and available opportunities
- 2016-present **Science Fair Judge, Salt Lake City Charter School District**
- Provides mentoring and constructive criticism at regional middle school and high school science fairs
- 2016-present **Cognition and Neural Science Area Writing Group Head**
- Schedules weekly writing group meetings and peer-edits papers
- 2015-present **Graduation Committee Member, University of Utah Department of Psychology**
- Assists in fundraising and organization of departmental graduation reception

- 2011-2013 **FIRST Tech Challenge Robotics Competition, TTU College of Engineering**
 ○ Helped to organize and run two annual competitive high school robotics competitions
- 2010-2011 **Tutor/Ballet Teacher, Lubbock Hope Community of Shalom**
 ○ After-school tutoring, taught free biweekly ballet lessons
- 2012 **Performer, KTRON Clothing Anti-Bullying Campaign Commercial**
- 2011 **Guest Teacher, YWCA Junior League Healthy Kids' Camp**
 ○ Summer kids' camp guest dance teacher
- 2009-2011 **Server, Carpenter's Kitchen**

MEMBERSHIPS

1. Vision Sciences Society Student Member 2016-present
2. Psychonomics Society Student Member 2015-present
3. Women in Cognitive Science Student Member-2015-present
4. American Psychological Association Division 21 Student Member 2015-present
5. Psi Chi Honors Society (served as Vice President) 2012-2013
6. Texas Tech University Psychology Club (served as Vice President) 2012-2013
7. Southwestern Psychological Association Undergraduate Member 2013
8. Mortar Board Senior Honors Society 2012-2013
9. Gamma Beta Phi Honors Service Organization 2011-2013