

# EMILY K. LEIKER

Postdoctoral Fellow | Ph.D. in Cognitive Neuroscience

Dell Medical School | Department of Psychiatry | University of Texas at Austin

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**Research Interests:** episodic memory, memory vividness, emotion, mood and anxiety disorders, multivariate pattern analysis and other advanced neuroimaging analysis

## EDUCATION

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### **Ph.D., Psychology (Cognition & Neuroscience) - May 2017**

University of Missouri, Columbia, MO | Advisor: Dr. Jeffrey D. Johnson

### **M.A., Psychology (Cognition & Neuroscience) - December 2014**

University of Missouri, Columbia, MO | Advisor: Dr. Jeffrey D. Johnson

### **Graduate Certificate in Lifespan Development - December 2014**

University of Missouri, Columbia, MO | Advisors: Drs. Nicole Campione-Barr & Jeffrey D. Johnson

### **B.S., Neuroscience & Psychology - May 2011**

Drake University, Des Moines, IA | *magna cum laude*, with University Honors

## PUBLICATIONS

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**Leiker, E. K.**, Meffert, H., Thornton, L. C., Taylor, B. K., Aloï, J., Abdel-Rahim, H., . . . & Blair, R.J.R. Alcohol Use Disorder and Cannabis Use Disorder symptomatology in adolescents are differentially related to dysfunction in brain regions supporting face processing. *In revision*.

**Leiker, E. K.**, & Johnson, J. D. Effects of an episodic specificity induction on orienting retrieval to memory age. *Manuscript in preparation*.

**Leiker, E. K.**, & Johnson, J. D. Dissociating strategic orienting toward memory age from retrieval difficulty: An EEG study. *Manuscript in preparation*.

Thornton, L.C., Adams, K.O., Leiker, E.K., . . . & Blair, R.J.R. Problematic alcohol and cannabis use interact to facilitate frontal modulation during retaliation to social provocation. *Manuscript in preparation*.

Blair, K. S., Tyler, P. M., Thornton, L. C., Meffert, H., White, S. F., Taylor, B. K., **Leiker, E. K.**, . . . Pizzagalli, D.A., & Blair, R.J.R. The association of heightened threat processing and self-harm behavior. *Submitted manuscript*.

Blair, R.J.R, White, S.F., Tyler, P.M., Johnson, K., Lukoff, J., Thornton, L.C., **Leiker, E.K.**, . . . & Blair, K.S. (In Press). Threat responsiveness as a function of cannabis and alcohol use disorder severity. *Journal of Child and Adolescent Psychopharmacology*.

Blair, K. S., Aloï, J., Crum, K., Meffert, H., White, S. F., Taylor, B. K., **Leiker, E. K.**, Thornton, L.C., . . . Pollak, S., & Blair, R. J. R. Association of different types of childhood maltreatment with emotional responding and response control among youths. (2019). *JAMA Network Open*, 2(5), e194604.

**Leiker, E. K.**, & Johnson, J. D. (2015). Pattern reactivation co-varies with activity in the core recollection network during source memory. *Neuropsychologia*, 75, 88-98.

Johnson, J. D., Price, M. H., & **Leiker, E. K.** (2015). Episodic retrieval involves early and sustained effects of reactivating information from encoding. *NeuroImage*, 106, 300-310.

**Leiker, E. K.**, & Johnson, J. D. (2014). Neural reinstatement and the amount of information recollected. *Brain Research*, 1582, 125-138.

Acerbo, M. J., Lazareva, O. F., McInnerney, J., **Leiker, E.**, Wasserman, E. A., & Poremba, A. (2012). Figure-ground discrimination in avian brain: the nucleus rotundus and its inhibitory complex. *Vision Research*, 70, 18-26.

## ACADEMIC PRESENTATIONS

\*indicates presenting author

### INTERNATIONAL CONFERENCES

- Leiker, E. K.\***, Meffert, H., Taylor, B. K., Thornton, L. C., ... & Blair, R. J. R. (2019, March). Neurobehavioral responses to novelty are altered as a function of youth depression severity. Poster presented at Cognitive Neuroscience Society, San Francisco, CA.
- Leiker, E. K.\***, Meffert, H., Aloji, J., ... & Blair, R. J. R. (2018, May). Emotion processing in youth with alcohol and cannabis use disorder symptomatology. Poster presented at Social & Affective Neuroscience Society, Brooklyn, NY.
- Leiker, E. K.\***, Griffiths, E. A., Wright, E. N., & Johnson, J. D. (2016, November). Strategic orienting of retrieval processes toward simulated memories of different artificial remoteness. Poster presented at Society for Neuroscience, San Diego, CA.
- Leiker, E. K.\***, & Johnson, J. D. (2015, March). Functional connectivity between the neural correlates of recollection and reinstatement during episodic memory retrieval. Poster presented at Cognitive Neuroscience Society Annual Meeting, San Francisco, CA.
- Leiker, E. K.\***, & Johnson, J. D. (2015, October). Identifying the core recollection network based on single-trial measures of neural pattern reactivation. Poster presented at Society for Neuroscience, Chicago, IL.
- Leiker, E. K.\***, & Johnson, J. D. (2014, April). Source memory confidence co-varies with differences in neural reinstatement. Poster presented at Cognitive Neuroscience Society Annual Meeting, Boston, MA.
- Johnson, J. D.\* & **Leiker, E. K.** (2014, November). Source memory confidence and tracking neural reactivation during retrieval. In K. J. Mitchell (Chair), *Multi-voxel pattern analyses of source memory*. Symposium talk presented at the Psychonomic Society Annual Meeting, Long Beach, CA.
- Price, M.\* & **Leiker, E.**, & Johnson, J. D. (2014, November). Temporal dissociation of the reactivation of episodic content during judgments of memory confidence. Poster presented at Psychonomic Society Annual Meeting, Long Beach, CA.
- Leiker, E.\*** & Johnson, J. D. (2013, April). Visual imagery ability and the neural correlates of recollection. Poster presented at Cognitive Neuroscience Society Annual Meeting, San Francisco, CA.
- Leiker, E. K.\*** & Johnson, J. D. (2012, October). Neural reinstatement and the amount of recollected information. Poster presented at Society for Neuroscience, New Orleans, LA.
- Acerbo, M. J.\* & Lazareva, O. F., McInnerney, J., **Leiker, E.**, Poremba, A., & Wasserman, E. A. (2012, October). Metabolic activity of nucleus rotundus and its inhibitory complex associated with figure-ground discrimination. Poster presented at satellite meeting of Comparative Cognition Society at Society for Neuroscience, New Orleans, LA.
- Lazareva, O. F.\* & Kandray, K., & **Leiker, E.** (2012, March). Effect of generalization gradients, relational disparity, and familiarity in motion-based transposition. Poster presented at International Conference on Comparative Cognition, Melbourne, FL.
- Leiker, E.\***, & Lazareva, O. (2011, March). Transposition task based on speed of motion. In B. Cook (Chair), *Discrimination Learning*. Symposium talk presented at the International Conference on Comparative Cognition, Melbourne, FL.
- Carlson, G.\* & **Leiker, E.\***, & Lazareva, O. (2010, March). Multiple-pair transposition based on relative speed of rotation. Poster presented at International Conference on Comparative Cognition, Melbourne, FL.

## REGIONAL CONFERENCES

- Leiker, E.\*** (2019, August). Affective learning through social referencing: signals of disgust. Talk presented at Dallas and Austin Area Memory Meeting, Dallas, TX.
- Leiker, E.\***, Goodwin, K.\*, Lazareva, O., & Acerbo, M. (2011, April). Effect of lesion of nucleus subpretectalis on visual discrimination in pigeons. Poster presented at Drake University Conference on Undergraduate Research in the Sciences, Des Moines, IA.
- Leiker, E.\***, Kandray, K.\*, & Lazareva, O. (2011, April). Relational learning in transposition task based on speed of motion. Poster presented at Drake University Conference on Undergraduate Research in the Sciences, Des Moines, IA.
- Leiker, E.\***, Carlson, G., & Lazareva, O. (2010, March). Relational learning using speed of motion. Poster presented at Drake University Conference on Undergraduate Research in the Sciences, Des Moines, IA.

## COLLOQUIA & SEMINARS

- Leiker, E. K.\*** (2017). Controlled processing to target remote or recent memories: Implications for memory enhancement. Talk presented at Developmental Seminar, University of Missouri, Columbia, MO.
- Leiker, E. K.\*** (2017). Strategically orienting retrieval to the age of a memory. Talk presented at Cognition & Neuroscience Colloquium, University of Missouri, Columbia, MO.
- Leiker, E. K.\*** (2016). Investigating the relationship between neural correlates of recollection. Talk presented at Cognition & Neuroscience Colloquium, University of Missouri, Columbia, MO.
- Leiker, E. K.\*** (2016). Targeting memories of different ages: Do retrieval orientation effects persist after equating retrieval difficulty? Talk presented at Cognition & Neuroscience Colloquium, University of Missouri, Columbia, MO.
- Leiker, E. K.\***, & Price, M. H.\* (2015). Electrophysiological correlates of retrieval orientation. Talk presented at Cognition & Neuroscience Seminar, University of Missouri, Columbia, MO.
- Leiker, E. K.\*** (2015). Relating content-specific and content-general effects of episodic memory retrieval. Talk presented at Cognition & Neuroscience Colloquium, University of Missouri, Columbia, MO.
- Leiker, E. K.\*** (2015). Investigating the role of cortical reinstatement in episodic memory retrieval. Talk presented at Life Sciences Fellowship Seminar, University of Missouri, Columbia, MO.
- Leiker, E.K.\*** (2014). Content reinstatement and source confidence during episodic memory retrieval. Talk presented at Cognition & Neuroscience Colloquium, University of Missouri, Columbia, MO.
- Leiker, E. K.\*** (2014). Reinstatement during a source memory task. Talk presented at Neuroscience Data Blitz, University of Missouri, Columbia, MO.
- Leiker, E. K.\*** (2013). Reinstatement of cortical patterns during memory retrieval. Talk presented at Cognition & Neuroscience Colloquium, University of Missouri, Columbia, MO.

## RESEARCH APPOINTMENTS & EXPERIENCE

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**Postdoctoral Fellow, Dunsmoor Lab for Learning, Memory, and Emotion** | May 2019 - present  
 Supervisor: Joseph Dunsmoor | Department of Psychiatry, Dell Medical School | University of Texas at Austin

**Postdoctoral Research Fellow, Center for Neurobehavioral Research** | Sept. 2017 - April 2019  
 Supervisors: James Blair, Harma Meffert, & Stuart White | Boys Town National Research Hospital  
 Research projects:

- Neural underpinnings of novelty preference in a reinforcement learning paradigm as a function of depression and anxiety symptomatology
- Differentiability of brain activity patterns between healthy and disordered youth across a series of affective tasks
- Neural dysfunction during face and expression processing in youth as a function of alcohol and cannabis use disorder severity

**Graduate Research Assistant, Memory & Neuroimaging Lab** | Aug. 2011 - May 2017 Advisor:

Jeffrey D. Johnson | Department of Psychological Sciences, University of Missouri

Research projects:

- Investigated the neurocognitive mechanism of episodic retrieval by applying multivariate pattern classifiers to measure reactivation in both fMRI and EEG data, and explored the relation of reactivation to key recollection brain regions and the quality of information retrieved
- Explored the role of retrieval orientation in retrieval differences between remote and recent memories, and examined the contribution of episodic specificity processing to these differences

**Visiting Graduate Research Assistant, Clinical Neuropsychology Lab** | Sept. 2011 - July 2012

Advisor: Shawn E. Christ | Department of Psychological Sciences, University of Missouri

- Assisted with processing structural brain images for cortical thickness analysis in a study examining structural differences between typically- and atypically-developing individuals
- Assisted with fMRI scanning sessions and eye-tracking measurement for several studies investigating neurocognitive differences between typically- and atypically-developing individuals

**Research Assistant, Comparative Perception & Attention Laboratory** | Aug. 2009 - May 2011

Advisors: Olga F. Lazareva & Martin Acerbo | Psychology Department, Drake University

Research projects:

- Evaluated the effects of transposition training on visual processing and relational learning in pigeons and humans
- Investigated the neural underpinnings of figure-ground processing in pigeons, using targeted neurotoxic lesions to selectively impair function of specific visual-processing regions

**Research Assistant, Developmental Neuroscience Laboratory**, Jan. - May 2009 Advisor:

Brian Sanders | Psychology Department, Drake University

Research projects:

- Examined the impact of early maternal separation on fear conditioning behavior in a rat model of PTSD

## **RESEARCH SKILLS & EXPERTISE**

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- Episodic memory, cortical pattern reactivation, and retrieval orientation
- Design, implementation, and analysis of behavioral, fMRI, and EEG experiments
- Advanced neuroimaging analysis: multivariate pattern analysis, functional and informational connectivity, beta-series analysis, and cluster analysis

**Software Experience:**

- AFNI, MATLAB, Python, R, SPSS, SAS, FSL, Caret, SPM Toolbox, EEG Toolbox, and ERP Lab, EPrime, Presentation

## **TEACHING EXPERIENCE**

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**INSTRUCTOR**

- Human Memory, August 2015 - July 2016  
Department of Psychological Sciences, University of Missouri

**GUEST LECTURER**

- Control Techniques, Experimental Social Psychology (October 4, 2016)  
Department of Psychological Sciences, University of Missouri | Instructor: Bruce D. Bartholow
- Variables Used in Research, Experimental Social Psychology Capstone (September 22, 2016)  
Department of Psychological Sciences, University of Missouri | Instructor: Bruce D. Bartholow
- EEG demonstration, Honors Developmental Psychology (January 27, 2015; January 24, 2017)  
Department of Psychological Sciences, University of Missouri | Instructor: Jen Bohanek

## GRADUATE TEACHING ASSISTANT

- Experimental Social Psychology Capstone, August – December 2016  
Department of Psychological Sciences, University of Missouri | Instructor: Bruce D. Bartholow
- Developmental Psychology Capstone, January – May 2017  
Department of Psychological Sciences, University of Missouri | Instructor: Kristy vanMarle

## FELLOWSHIPS & MERIT-BASED SCHOLARSHIPS

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- **Robert F. Daniels Teaching Fellowship** | University of Missouri, Aug. 2015-May 2016  
*Department-wide fellowship to support graduate student teaching development, provides full tuition support and stipend*
- **Life Sciences Pre-doctoral Research Fellowship** | University of Missouri, Aug. 2011-July 2015  
*University-wide merit-based fellowship awarded to the top incoming graduate students in the Life Sciences, provides full financial support for tuition and fees, a yearly stipend, and travel allowance*
- **National Alumni Full-Tuition Scholarship** | Drake University, Aug. 2007-May 2011  
*University-wide merit-based scholarship awarded to the top six incoming undergraduates, provides full financial support for tuition, fees, and room & board*
- **Presidential Scholarship** | Drake University  
*University-wide merit-based scholarship awarded to competitive incoming undergraduates, provides annual tuition support*
- **Trustee Scholarship** | Drake University  
*University-wide merit-based scholarship awarded to participants in the National Alumni Scholarship competition, provides annual tuition support*

## OTHER AWARDS, HONORS & DISTINCTIONS

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### TRAVEL & RESEARCH AWARDS

- Graduate Student Travel Award, Department of Psychological Sciences, University of Missouri, November 2016; October 2015; February 2015; February 2014; April 2013; November 2012
- Graduate Travel Award, Graduate Professional Council, University of Missouri, February 2014
- Graduate Student Travel Award, Life Sciences Fellowship Program, University of Missouri, August 2012
- Experimental Psychology Award, Department of Psychology, Drake University, August 2010 – May 2011
- Student Travel and Research Award, College of Arts & Sciences, Drake University, March 2011; March 2010
- Student Research Award, Department of Psychology, Drake University, January 2010

### OTHER HONORS

- Psi Chi International Honor Society in Psychology, August 2010 – present
- Alpha Lambda Delta National Freshman Honor Society, January 2008 – present
- President's List, Drake University, Spring 2010 – Spring 2011
- Dean's List, Drake University, Fall 2007; Fall 2009

## PROFESSIONAL SERVICE ACTIVITIES

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### Graduate Peer Mentor | August 2016 – May 2017

Department of Psychological Sciences, University of Missouri

*Mentored and provided support to a first-year graduate student in the department*

### Committee on Diversity and Inclusion, Student Member | August 2016 – May 2017

Department of Psychological Sciences, University of Missouri

*Promoted diversity and inclusion within the department, recommended policy changes and advocated for training initiatives in response to departmental data on faculty, staff, and graduate student experiences*

**Diversity Journal Club, Student Member** | August 2016 – May 2017  
Department of Psychological Sciences, University of Missouri  
*Participated in a student-led initiative to meet and discuss selected readings on diversity-related topics*

**Wellness Resources Committee, Founding Student Member** | May 2015 – August 2016  
Department of Psychological Sciences, University of Missouri  
*Instituted department initiatives to promote graduate student wellness, and successfully advocated for the provision of a dedicated nursing lounge and changing tables within the department*

**Coalition of Graduate Workers, Department Representative** | October 2015 – September 2016  
University of Missouri  
*Represented graduate student employees from the Department of Psychological Sciences in the newly-established union of graduate employees at the University of Missouri*

**Coalition of Graduate Workers, Founding Member** | September 2015 – May 2017  
University of Missouri  
*Contributed to organizing efforts and advocated for the foundation of a graduate employee union at the University of Missouri*

**Graduate Association for Psychology Students, Social Co-Chair** | September 2012 – September 2013  
Department of Psychological Sciences, University of Missouri

**Psi Chi, Chapter Vice President for Psychology Club** | August 2010 – May 2011  
Department of Psychology, Drake University

## **PROFESSIONAL DEVELOPMENT ACTIVITIES**

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### **CAREER & PROFESSIONAL DEVELOPMENT COURSES**

- Professional Development for Graduate Students, University of Missouri, January – May 2016
- Grant Proposal Preparation Seminar, University of Missouri, January – May 2015
- Preparing Future Faculty, University of Missouri, August 2014 – May 2015
- Teaching of Psychology Practicum, University of Missouri, January 2014 – May 2016
- Women's Professional Development Seminar, University of Missouri, August – December 2014
- Thesis Writing Seminar, University of Missouri, January – May 2014

### **CONFERENCES, SEMINARS, & EVENTS**

- International Brain-Computer Interface Society Meeting, May 30 – June 3, 2016
- Celebration of Women in Neuroscience Luncheon, Society for Neuroscience, November 15, 2016; October 20, 2015
- Women in Leadership Conference, University of Missouri, June 20-21, 2016; June 22-23, 2015
- Celebration of Teaching, University of Missouri, May 17-18, 2016
- RESPOND Mental Health Training for Graduate Instructors, University of Missouri, January 11-12, 2016
- Women in Cognitive Science Meeting, Psychonomic Society Annual Meeting, November 19, 2015
- Missouri Life Sciences Week, University of Missouri, April 13-17, 2015; April 14-18, 2014; April 15-19, 2013
- Communicating Your Science to the Non-Expert, Society for Neuroscience Webinar, July 23, 2014
- Show-Me Mental State Conference on Cognition, University of Missouri, May 17, 2012

### **SKILLS TRAINING & TECHNICAL DEVELOPMENT**

- Principles of fMRI 1 & 2, Coursera: Johns Hopkins University and University of Colorado Boulder, June 2017
- Introduction to Neurohacking in R, Coursera: Johns Hopkins University, June 2017
- R Programming, Coursera: Johns Hopkins University, December 2016
- Data Science in Neuroscience, Society for Neuroscience Short Course, November 11, 2016
- Statistical Analysis of fMRI Data, Coursera: Johns Hopkins University, April 2014
- Programming with MATLAB, University of Missouri, September 24, 2014

- MRI for Behavioral Scientists, University of Missouri, January – May 2014
- Multivariate Statistics in Psychology, University of Missouri, August – December 2013
- Programming for Everybody (Getting Started with Python), Coursera: University of Michigan, September – October 2014

## **PROFESSIONAL MEMBERSHIPS**

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Association for Psychological Science  
Cognitive Neuroscience Society  
Psychonomic Society  
Social & Affective Neuroscience Society  
Society for Neuroscience  
Women in Cognitive Science

## **MENTORING**

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- Mason Price, Ph.D.      Postdoc in Ben Hutchinson's lab at University of Oregon
- Niraj Shah              M.D./Ph.D. student at Indiana University School of Medicine
- Kimberly Johnson      Law student at University of Chicago Law School
- Jennie Lukoff            Research assistant at Center for Neurobehavioral Research, BTNRH