

Curriculum Vitae  
November 2021

## Sydney Trask, Ph.D.

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## Positions

### **Purdue University**, West Lafayette, IN, 47907

Assistant Professor of Neuroscience and Behavior

August 2021 – Present

Faculty Associate of the Purdue Institute for Integrative Neuroscience

August 2021 – Present

Faculty Associate of the Purdue Center on Aging and the Life Course

August 2021 – Present

Faculty Associate of the Purdue Center for Research on Brain, Behavior, and Neurorehabilitation

November 2021 – Present

### Postdoctoral Work:

#### **The University of Wisconsin – Milwaukee**, Milwaukee, WI, 53201

Postdoctoral Research Fellow to Dr. Fred Helmstetter

May 2018 – July 2021

Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellow

August 2019 – July 2021

#### **The University of Vermont**, Burlington, VT, 05405

Postdoctoral Research Fellow to Dr. Mark Bouton

June 2017 – May 2018

## Education

### **The University of Vermont**, Burlington, VT 05405

Doctor of Philosophy in Psychological Science, May 2017

Dissertation: Cues Associated with Alternative Reinforcement Can Attenuate Resurgence of an Extinguished Instrumental Response

Research Mentor: Dr. Mark Bouton

### **The University of Vermont**, Burlington, VT 05405

Master of Arts in Psychological Science, February 2014

Thesis: Contextual Control of Operant Behavior: Evidence for Hierarchical Associations in Instrumental Learning

Research Mentor: Dr. Mark Bouton  
Kent State University, Kent, OH 44240  
Bachelor of Arts in Psychology, May 2012  
Summa Cum Laude  
Research Mentors: Dr. Aaron Jasnow, Dr. David Riccio

## Publications

1. **Trask, S.**, & Helmstetter, F. J. (in press). Unique roles for the anterior and posterior retrosplenial cortices in encoding and retrieval of memory for context. *Cerebral Cortex*.
2. **Trask, S.** (2022). Rethinking extinction-based treatments for specific phobias. *Biological Psychiatry*.
3. **Trask, S.**, Ferrara, N. C., Grisales, K., & Helmstetter, F. J. (2021). Optogenetic inhibition of either the anterior or posterior retrosplenial cortex disrupts retrieval of a trace, but not delay, fear memory. *Neurobiology of Learning and Memory*, *185*, 107530.
4. Ferrara, N. C., **Trask, S.**, Avonts, B., Loh, M. K., Padival, M., & Rosenkranz, J. A. (2021). Developmental shifts in amygdala activity during a high social drive state. *The Journal of Neuroscience*, *41*, 9308-9325.
5. Ferrara, N.C.\*, **Trask, S.\***, Pullins, S.E., & Helmstetter, F.J. (2021) Inhibition of the thalamo-amygdala pathway facilitates extinction learning. *Neurobiology of Learning and Memory*, *125*, 107526. \*Denotes equal contribution.
6. **Trask, S.**, Ferrara, N.C., Jasnow, A.M., Kwapis, J.L. (2021). Contributions of the cingulate-retrosplenial cortical axis to associative learning and memory: A proposed circuit for persistent memory maintenance. *Neuroscience & Biobehavioral Reviews*, *130*, 178-184.
7. **Trask, S.**, Pullins, S.E., Ferrara, N.C., & Helmstetter, F.J. (2021). The anterior retrosplenial cortex encodes event-related information and the posterior retrosplenial cortex encodes context-related information during memory formation. *Neuropsychopharmacology*, *46*, 1386-1392. [Article featured on cover image.]
8. Ferrara, N.C., **Trask, S.**, & Rosenkranz, J.A. (2021). Maturation of amygdala inputs regulate shifts in social and fear behaviors: A substrate for developmental effects of stress. *Neuroscience and Biobehavioral Reviews*, *125*, 11-25.
9. Dulka, B. N., **Trask, S.**, & Helmstetter, F. J. (2021). Age-related memory impairment and sex-specific alterations in phosphorylation of the Rpt6 proteasome subunit and polyubiquitination in the basolateral amygdala and medial prefrontal cortex. *Frontiers in Aging Neuroscience*, *13*, 163.
10. **Trask, S.**, Dulka, B.N., & Helmstetter, F.J. (2020). Age-related memory impairment is associated with increased zif268 protein accumulation and decreased Rpt6 phosphorylation. *International Journal of Molecular Sciences*, *21*, 5352.
11. Bouton, M. E., Thraillkill, E. A., **Trask, S.**, & Alfaro, F. (2020). Correction of response error vs. stimulus error in the extinction of discriminated operant learning. *Journal of Experimental Psychology: Animal Learning and Cognition*, *46*, 398-497.
12. **Trask, S.**, Reis, D. S., Ferrara, N. C., & Helmstetter, F. J. (2020) Decreased cued fear discrimination learning in female rats as a function of estrous phase. *Learning & Memory*, *27*, 254-257. [Article featured on cover image.]
13. **Trask, S.**, Shipman, M. L., Green, J. T., & Bouton, M. E. (2020). Some factors that restore goal-direction to habitual behavior. *Neurobiology of Learning and Memory*, *169*, 107161.
14. Ferrara, N.C., **Trask, S.**, Pullins, S.E., & Helmstetter, F.J. (2019). The dorsal hippocampus mediates synaptic destabilization and memory lability in the amygdala in the absence of contextual novelty. *Neurobiology of Learning and Memory*, *166*, 107089.

15. Ferrara, N.C., Jarome, T.J., Cullen, P.K., Orsi, S.A., Kwapis, J.L., **Trask, S.**, Pullins, S.E., & Helmstetter, F.J. (2019). GluR2 endocytosis-dependent protein degradation in the amygdala mediates memory updating, *Scientific Reports*, *9*, 5180.
16. **Trask, S.** (2019). Cues associated with alternative reinforcement can attenuate resurgence of an extinguished free operant response, *Learning & Behavior*, *47*, 66-79.
17. Thrailkill, E. A., **Trask, S.**, Vidal, P., Alcalá, J. A., & Bouton, M. E. (2018). Stimulus control of actions and habits: A role for reinforcer predictability and attention in the development of habitual behavior, *Journal of Experimental Psychology: Animal Learning and Cognition*, *44*, 370-384.
18. Shipman, M. L., **Trask, S.**, Bouton, M. E., & Green, J. T. (2018). Inactivation of the pre- or infralimbic cortices differentially affects minimally and extensively trained actions, *Neurobiology of Learning and Memory*, *155*, 164-172.
19. **Trask, S.**, Keim, C. L., & Bouton, M. E. (2018). Factors that encourage generalization from extinction to test reduce resurgence of an extinguished operant response, *Journal of the Experimental Analysis of Behavior*, *110*, 11-23.
20. **Trask, S.**, & Bouton, M. E. (2018). Retrieval practice after multiple context changes, but not long retention intervals, reduces the impact of a final context change on instrumental behavior. *Learning & Behavior*, *46*, 213-221.
21. **Trask, S.** (2017). Free operant response. In J. Vonk & T. K. Shackelford (Eds.), *Encyclopedia of Animal Learning and Cognition*, New York, NY: Springer.
22. **Trask, S.**, Thrailkill, E. A., & Bouton, M. E. (2017). Occasion setting, inhibition, and the contextual control of extinction in Pavlovian and instrumental (operant) learning. *Behavioural Processes*, *137*, 64-72.
23. **Trask, S.**, Shipman, M. L., Green, J. T., & Bouton, M. E. (2017). Inactivation of the prelimbic cortex attenuates context-dependent excitatory operant responding. *The Journal of Neuroscience*, *37*, 2317-2324.
24. Bouton, M. E., **Trask, S.**, & Carranza-Jasso, R. (2016). Learning to inhibit the response during instrumental (operant) extinction. *Journal of Experimental Psychology: Animal Learning and Cognition*, *42*, 246-258.
25. **Trask, S.**, & Bouton, M. E. (2016). Discriminative properties of the reinforcer can be used to attenuate the renewal of extinguished operant behavior. *Learning & Behavior*, *44*, 151-161.
26. Bouton, M. E., & **Trask, S.** (2016). Role of the discriminative properties of the reinforcers in resurgence. *Learning & Behavior*, *44*, 137-150.
27. **Trask, S.**, Schepers, S. T., & Bouton, M. E. (2015). Context change explains resurgence after the extinction of operant behavior. *Mexican Journal of Behavior Analysis*, *41*, 187-210.
28. **Trask, S.**, & Bouton, M. E. (2014). Contextual control of operant behavior: Evidence for hierarchical associations in instrumental learning. *Learning & Behavior*, *42*, 281-288.

#### Manuscripts Under Review

1. **Trask, S.**, Mogil, J. S., Helmstetter, F. J., Stucky, C. L., & Sadler, K. E. (submitted). Contextual control of conditioned pain tolerance and endogenous analgesic systems: Evidence for sex-based differences in endogenous opioid engagement.

#### Selected Paper Presentations

(Full list of paper presentations available [here](#))

Contextual control of conditioned pain tolerance and endogenous analgesic systems. **Sydney Trask.**

*Invited Presentation* at the annual meeting of the Midwestern Psychological Association in April, 2022 (Chicago, IL).

Different roles for anterior and posterior retrosplenial cortices in memory for context. **Sydney Trask** and Fred J. Helmstetter. *Invited Presentation* at the annual meeting of the Eastern Psychological Association in March, 2021 (Boston, MA).

Distinct roles of the anterior and posterior retrosplenial cortices in encoding, but not retrieval, of aversive memory. **Sydney Trask** and Fred J. Helmstetter. *Invited Presentation* for the Innovation Sciences Seminar at The Rosalind Franklin University of Medicine and Science in May, 2020 (North Chicago, IL).

The role of the retrosplenial subregions in trace fear recall. **Sydney Trask** and Fred J. Helmstetter. Presented at the annual Neuroscience Symposium in March, 2019 (Milwaukee, WI).

Factors that encourage generalization from extinction to test reduce resurgence of an extinguished operant response. **Sydney Trask**, Christopher L. Keim, & Mark E. Bouton. Presented at the Eastern Psychological Association annual conference in March, 2018.

Association formation in operant behavior and prefrontal control of its expression. **Sydney Trask**. *Invited presentation* for the University of Maryland - Baltimore Department of Anatomy and Neurobiology in September, 2017 (Baltimore, MD).

Retrieval cues associated with alternative reinforcement can attenuate resurgence of an extinguished instrumental response. **Sydney Trask** and Mark E. Bouton. *Invited Presentation* at the annual conference for the Association of Behavioral Analysis International in May, 2017 (Denver, CO).

Cues associated with alternative reinforcement can attenuate reinforcement resurgence of an extinguished instrumental response. **Sydney Trask** and Mark E. Bouton. Presented at the annual meeting of the Society for the Quantitative Analysis of Behavior in May, 2017 (Denver, CO).

Transfer of operant responding to new contexts after training in multiple contexts. **Sydney Trask** and Mark E. Bouton. Presented at the Eastern Psychological Association annual conference in March, 2016 (New York, NY).

Reinforcers associated with extinction can attenuate free-operant renewal. **Sydney Trask** and Mark E. Bouton. Presented at the Eastern Psychological Association annual conference in March, 2015 (Philadelphia, PA).

Contextual control of operant behavior: Evidence for hierarchical associations in instrumental learning. **Sydney Trask** and Mark E. Bouton. Presented at the Eastern Psychological Association annual conference in March, 2014 (Boston, MA).

Bidirectional effects of increasing histone acetylation on extinction learning. **Sydney Trask**, Patrick K. Cullen, David C. Riccio, and Aaron M. Jasnow. Presented at the TriState Plus Meeting in April, 2012 (Kent, OH).

### Selected Conference Abstracts

(Full list of conference abstracts available [here](#))

**Trask, S.,** Nelsen, J., Orsi, S., Duraiswamy, H., Grisales, K., Jarome, T.J., & Helmstetter, F.J. Fear devaluation and extinction rely on distinct molecular mechanisms but produce a similar behavioral outcome. Presented at the Society for Neuroscience annual meeting in November, 2021 (Chicago, IL).

**Trask, S.,** & Helmstetter, F.J. Unique roles for the anterior and posterior retrosplenial cortices in encoding and retrieval of memory for context. Presented at the annual meeting of the Pavlovian Society in September, 2020 (Burlington, VT).

**Trask, S.,** Pullins, S.E., & Helmstetter, F.J. Distinct roles of the anterior and posterior retrosplenial cortices in encoding, but not retrieval, of trace fear memory. Presented at the Society for Neuroscience annual meeting in October, 2019 (Chicago, IL).

**Trask, S.,** Ferrara, N.C., & Helmstetter, F.J. Optogenetic silencing of the thalamo-amygdala pathway, but not lateral amygdala, results in a long-term decrease in fear expression. Poster presented at the annual meeting of the Pavlovian Society in October, 2018 (Iowa City, IA).

**Trask, S.,** Keim, C. L., & Bouton, M. E. Factors that Encourage Generalization from Extinction to Test Reduce Resurgence of an Extinguished Operant Response. Poster presented at the annual meeting of the Pavlovian Society in October, 2017 (Philadelphia, PA).

**Trask, S.,** & Bouton, M. E. Cues associated with alternative reinforcement can attenuate reinforcement resurgence of an extinguished instrumental response. Presented at the annual Dartmouth Neuroscience Symposium in April, 2017 (Hanover, NH). \*Selected for 5-minute platform talk presentation.

**Trask, S.,** & Bouton, M. E. Reducing the negative impact of context change on an operant response. Poster presented at the annual meeting of the Pavlovian Society in October, 2016 (Jersey City, NJ).

**Trask, S.,** Shipman, M.L., Green, J.T., & Bouton, M.E. Inactivation of the prelimbic cortex attenuates context-dependent excitatory operant responding. Poster presented at the Eastern Psychological Association annual conference in March, 2016 (New York, NY).

Bouton, M.E., **Trask, S.,** & Carranza-Jasso, R. Learning not to make the response during operant extinction. Poster presented at the annual meeting of the Pavlovian Society in September, 2015 (Portland, OR).

**Trask, S.,** & Bouton, M.E. Discriminative role of the reinforcer in the inhibition of operant behavior. Poster presented at the annual meeting of the Pavlovian Society in September, 2014 (Seattle, WA).

Schepers, S.T., **Trask, S.,** & Bouton, M.E. Effects of imposing a negative contingency between the first behavior and Phase 2 reinforcement on resurgence after instrumental extinction. Poster presented at the Eastern Psychological Association annual conference in March, 2013 (New York, NY).

Leplla, C.A., **Trask, S.,** & Jasnow, A.M. Dopamine controls the precision of long-term fear memory. Poster presented at the Society for Neuroscience annual meeting in October, 2012 (New Orleans, LA).

**Trask, S.,** Cullen, P.K., Gos, K. K., Pickens, L., Fountain, S., & Riccio, D. C. Adolescent nicotine affects memory for stimulus attributes but not extinction. Poster presented at the annual meeting of the Midwestern Psychological Association in May, 2011 (Chicago, IL).

### Grant Funding

Involvement of the Retrosplenial Cortex in Distinct Aspects of Fear Memory. National Institute of Mental Health (F32MH120938: \$186,582). Role: P.I. 08/01/2019-07/31/2022

### Honors and Awards

American Aging Association Travel Award, The Annual Meeting of the American Aging Association, June 2021  
Session Chair, Neural Substrates of Learned and Innate Social and Fear Behaviors, The Annual Meeting of The Midwestern Psychological Association, April 2021  
Session Chair, Behavioral Neuroscience Papers II, The Annual Meeting of the Eastern Psychological Association, March 2021  
Session Chair, Neurobiology of Fear Learning, The Annual Meeting of the Pavlovian Society, September 2020  
Session Chair, Women in Learning Women to Watch Research Symposium, The Annual Meeting of the Pavlovian Society, September 2020  
Trainee Professional Development Award Recipient (\$1315), Society for Neuroscience, 2019  
Session Chair, Learning Papers: Conditioned Reinforcement, Outcome Specificity, and Counterconditioning, The Annual Meeting of the Eastern Psychological Association, March 2018  
Kent State Alumni Association Outstanding New Professional Award Finalist, 2017  
Graduate Student Senate Travel Grant (\$600), The University of Vermont, March 2017  
Honorable Mention: Outstanding Poster Presentation at the annual conference for Neuroscience, Behavior, and Health, The University of Vermont, January 2017  
Session Chair, Session 1, The Annual conference for Neuroscience, Behavior, and Health in January 2017  
Ronald Suiter Award Recipient (\$1000), The University of Vermont, November 2016  
Session Chair, Learning Papers IV: Elemental and Configural, The Annual Meeting of the Eastern Psychological Association, March 2016  
Outstanding Paper Presentation at the annual conference for Neuroscience, Behavior, and Health (\$100), The University of Vermont, January 2016  
Graduate Student Senate Travel Grant (\$600), The University of Vermont, March 2015

Graduate Student Senate Travel Grant (\$600), The University of Vermont, March 2014  
Outstanding Junior Psychology Major, Kent State University, 2010-2011 Academic Year  
President's List, Kent State University: 1 semester  
Dean's List, Kent State University: 6 semesters  
President's Scholarship (\$8,000/year), Kent State University, 2008-2012

## Teaching Experience

### Courses Taught

Psychological Sciences 69600: Seminar in Neuroscience and Behavior, Purdue University, Fall 2021, Spring 2022  
Psychological Sciences 31400: Introduction to Learning, Purdue University, Fall 2021  
Psychological Science 111: Learning, Cognition, and Behavior, The University of Vermont, Summer 2016  
Psychology 205: Learning, The University of Vermont, Summer 2015

### Graduate Teaching Assistant at the University of Vermont

Psychological Science 111: Learning, Cognition, and Behavior, Spring 2016 (Student Evaluation of TA performance: 4.3/5)  
Psychological Science 115: Biological Psychology, Fall 2015 (Student Evaluation of TA performance: 4.6/5)  
Psychology 104: Learning, Cognition, and Behavior, Spring 2014 (Student Evaluation of TA performance: 4.3/5)  
Psychology 221: Physiological Psychology, Fall 2013 (Student Evaluation of TA performance: 4.8/5)  
Psychology 110: Research Methods II, Spring 2013 (Student Evaluation of TA performance: 4.8/5)  
Psychology 109: Research Methods I, Fall 2012 (Student Evaluation of TA performance: 4.9/5)

### Invited Guest Lectures

Introduction to Learning and Memory, Spring 2020, Pennsylvania State University  
Locating Memories in the Brain, Fall 2019, Advanced Physiological Psychology, The University of Wisconsin-Milwaukee (graduate)  
Introduction to Learning and Memory, Fall 2019, Carthage College  
Neural Mechanisms of Actions and Habits (Focus on Prefrontal Control): Neurobiology of Learning and Memory, Spring 2019, The University of Wisconsin-Milwaukee (graduate)  
Neural Mechanisms of Actions and Habits: Learning, Cognition, and Behavior, Summer 2017, The University of Vermont  
Inactivation of the Prelimbic Cortex Attenuates Context-Dependent Operant Responding: Learning, Cognition, and Behavior, Spring 2016, The University of Vermont  
The Role of the Prelimbic Cortex in Excitatory Operant Responding: Biopsychology, Fall 2015, The University of Vermont  
Animal Models of Relapse: Research Methods, Spring 2015, Burlington College  
Mental Representations in Animals: Learning, Cognition, and Behavior, Spring 2014, The University of Vermont  
Automaticity: Learning, Cognition, and Behavior, Spring 2014, The University of Vermont  
Cognition in Instrumental Learning: Learning, Cognition, and Behavior, Spring 2014, The University of Vermont  
Categorization and Generalization: Learning, Fall 2013, The University of Vermont

### Mentored Students

Kael Alberghini, MA, The University of Vermont, 2014 – 2015  
Project: Context Switch Effects on Instrumental Response  
Publication: Trask, S., & Bouton, M. E. (2018). Retrieval practice after multiple context changes, but not long retention intervals, reduces the impact of a final context change on instrumental behavior. *Learning & Behavior*, 46, 213-221.  
Current Position: Organizational Development Specialist at Mimecast  
Christopher Keim, BS, The University of Vermont, 2016 – 2018  
Project: Effect of Contextual Generalization on Operant Resurgence

Publication: Trask, S., Keim, C. L., & Bouton, M. E. (2018). Factors that encourage generalization from extinction to test reduce resurgence of an extinguished operant response, *Journal of the Experimental Analysis of Behavior*, 110, 11-23.

### Tutoring

Psychology tutor for the Athletic Resource Center, Kent State University, September 2010 – May 2012

### **Editorial Experience**

*Brain Sciences*, Topic Editor, January 2021 – present.

*Frontiers in Behavioral Neuroscience*, Review Editor, July 2019 – present.

*Neuroanatomy and Behaviour*, Editor, April 2019 – present.

### **Professional Activity**

Graduate Research Fellowship Program Reviewer for the National Science Foundation, 2022

Executive Director of Women in Learning (Elected Position) – November 2019 – Present

Member of the Executive Committee for the Pavlovian Society (Elected Position) – October, 2019 – October, 2023

Curator of the Postdoctoral Professional Development Series at the University of Wisconsin-Milwaukee, July 2018 – Present

Journal of Neuroscience Reviewer Mentorship Program under the advisement of Dr. Gavan McNally – Completed in June, 2018

UC Berkeley: Foundations of Data Science: Computational Thinking with Python – Completed in May, 2018

Graduate Student Representative, Department of Psychological Science, The University of Vermont, 2013 – 2015

Reviewer: *Animal Behavior and Cognition*; *Behavioural Brain Research\**; *Behavioural Processes\**; *Brain Sciences\**; *eNeuro\**; *Frontiers in Behavioral Neuroscience\**; *JCI Insight*; *Journal of Neuroscience\**; *Journal of the Experimental Analysis of Behavior\**; *International Journal of Comparative Psychology*; *International Journal of Molecular Sciences\**; *Learning & Behavior\**; *Learning & Memory\**; *Neurobiology of Learning & Memory\**; *Neuropsychopharmacology*; *Quarterly Journal of Experimental Psychology*; *Scientific Reports*; *STAR Protocols*; *The Psychological Record\**

\*Indicates ≥3 reviews.

Professional Memberships:

Pavlovian Society: 2011-Present

Midwestern Psychological Association: 2011-Present

Society for Neuroscience: 2012-Present

Eastern Psychological Association: 2013-Present

Women in Learning: 2015-Present

International Behavioral Neuroscience Society: 2019-Present

American Aging Association: 2020-Present

### **Departmental Service**

Graduate Student Committee Member

Alisha Aroor, Preliminary Examination Committee, Purdue University, September 2021 – December 2021.

Gabrielle Bonanno, Master's Thesis Committee, Purdue University, October, 2021 – Present

### **Outreach**

Organizing committee member for the [Next Gen Neuro Seminar Series](#), August 2020 – February 2021.

Member of the Women in Learning quarterly newsletter committee, January 2020 – present.

Member of the Women in Learning annual luncheon planning committee, May 2018 – present.

Lead member and Founder of the Outstanding Graduate Woman in Learning Award, May 2018 – January 2020.  
Curator of the official Pavlovian Society Twitter account (@PavlovSociety), October 2018 – October 2019.  
Curator and Founder of the [Pavlovian Society Featured Faculty](#) monthly blog series, March 2019 – November 2020.