

## Curriculum Vitae

MANUEL KUHN

**Date Prepared:** 03/24/2025  
**Name:** Manuel Kuhn  
**Office Address:** 233B, de Marneffe Building, McLean Hospital, 115 Mill St, Belmont, MA 02478  
**Work Phone:** +1 (617) 855-4405  
**Work Email:** mkuhn@mclean.harvard.edu  
**Place of Birth:** Dresden, Germany

### Education:

10/2005 – 09/2007		Media Computer Science	Technical University of Dresden, Germany
10/2007 – 03/2013	Mag. rer. nat. (summa cum laude)	Psychology ( <i>Advisors:</i> <i>Lukas Pezawas, MD</i> <i>Claus Lamm, PhD</i> )	University of Vienna, Austria
04/2013 – 08/2017	Dr. rer. biol. hum. (magna cum laude)	Human Biology ( <i>Advisors:</i> <i>Tina B. Lonsdorf, PhD</i> <i>Christian Büchel, MD</i> )	Institute for Systems Neuroscience, Medical University Center Hamburg- Eppendorf, Germany

### Postdoctoral Training:

09/2017 – 06/2019	Post-doctoral Associate	Research group Fear, Anxiety & Stress ( <i>PI: Tina B. Lonsdorf, PhD</i> )	Institute for Systems Neuroscience, Medical University Center Hamburg- Eppendorf, Germany
07/2019 – 05/2020	Post-doctoral Associate	Affective & Translational Neuroscience Laboratory ( <i>PI: Alexander J. Shackman, PhD</i> )	University of Maryland
06/2020 – 06/2022	Post-doctoral Fellow	Laboratory for Affective and Translational Neuroscience ( <i>PI: Diego A. Pizzagalli, PhD</i> )	Center for Depression, Anxiety and Stress Research, McLean Hospital / Harvard Medical School

**Faculty Academic Appointments:**

07/2022 – Instructor, Department of Psychiatry, Harvard Medical School  
present

**Appointments at Hospitals/Affiliated Institutions:**

06/2020 – 06/2022	Research Fellow PhD	Laboratory for Affective and Translational Neuroscience (PI: Diego A. Pizzagalli, PhD)	Center for Depression, Anxiety and Stress Research, McLean Hospital / Harvard Medical School
07/2022 – present	Assistant Neuroscientist	Laboratory for Affective and Translational Neuroscience (PI: Diego A. Pizzagalli, PhD)	Center for Depression, Anxiety and Stress Research, McLean Hospital / Harvard Medical School

**Major Administrative Leadership Positions:****Local**

2022 – Director, Neuroimaging and Instrumentation Core, Laboratory for Affective and  
present Translational Neuroscience, McLean Hospital

**Committee Service:****Local**

2022 – Center for Depression, Anxiety and Stress Speaker Series, McLean Hospital, Chair  
present

**Other Professional Positions:**

2007-2012	Research Assistant	Vienna University of Technology
2009-2010	Research Assistant	University of Vienna
2011-2013	Research Assistant	Medical University of Vienna

**Professional Societies:**

2014	Organization for Human Brain Mapping (OHBM)	Student Member
2015-present	The German Psychological Society (DGPs; Section: Biological Psychology and Neuropsychology)	Member
2015-present	Research network for the (European) Interdisciplinary study of Fear and	Member

	Extinction Learning as well as the Return of Fear (EIFEL-ROF)	
2016	Society for Neuroscience (SfN)	Student Member
2024	Anxiety & Depression Association of America	Member
<b>Grant Review Activities:</b>		
2024	The European Region Tyrol-South Tyrol-Trentino's Interregional Research Projects (IRP) program, Reviewer	Austrian Science Fund (FWF)

### **Editorial Activities:**

#### **Ad hoc Reviewer**

*Behaviour Research and Therapy*  
*Biological Psychiatry*  
*Biological Psychiatry: CNI*  
*European Psychiatry*  
*International Journal of Psychophysiology*  
*Nature - Scientific Reports*  
*Nature - Translational Psychiatry*  
*PLOS One*  
*Psychophysiology*  
*Psychological Medicine*  
*Social, Cognitive and Affective Neuroscience*

### **Honors and Prizes:**

2010	Joint study program	University of Vienna / University of Urbana-Champaign, IL	Academic success
2011	Performance scholarship	University of Vienna	Academic success
2012	Performance scholarship	University of Vienna	Academic success
2015	Poster award	The German Psychological Society (DGPs)	Research
2017	Poster award	World Association for Stress Related and Anxiety Disorders	Research

### **Report of Funded and Unfunded Projects**

#### **Current**

2023-2025 (start 07/23)	A combined investigation of the protective impact of the NOF/Q antagonist LY-2940094 on stress-induced depression- and anxiety-related phenotypes in humans. Eric Dorris Memorial Fellowship (competitive local selection process, \$40,000). Principal Investigator		
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This project elucidates the role of the nociceptin system on depression- and fear-related phenotypes within the same individual to determine a potential dissociable impact of a nociceptin antagonist on emotional disorders.

2024-2025  
(start 04/24) A combined investigation of the protective impact of the NOF/Q antagonist LY-2940094 on stress-induced depression- and anxiety-related phenotypes in humans. NIMH Conte Center grant (P50 MH119467) Seed Grand Program (competitive selection process, \$41,000).  
Principal Investigator  
This project elucidates the role of the nociceptin system on depression- and fear-related phenotypes within the same individual to determine a potential dissociable impact of a nociceptin antagonist on emotional disorders.

### **Report of Regional, National and International Invited Teaching and Presentations**

☒ *No presentations below were sponsored by 3<sup>rd</sup> parties/outside entities*  
☐ *Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

#### **Local**

2025 Linking Behavior to Neural Activity - Applications of Functional Magnetic Resonance Imaging and Computational Psychiatry / guest lecture  
MIT, Cambridge, Massachusetts, USA

#### **National**

2013 SFB TRR-58 PhD Student Research Symposium / plenary talk  
Marktbreit, Germany

2014 SFB TRR-58 PhD Student Research Symposium / plenary talk  
Bad Gandersheim, Germany

2014 Annual SPM course / workshop host tutoring beginner and expert groups neuroimaging analyses using SPM  
Institute for Systems Neuroscience  
University Medical Center Hamburg-Eppendorf, Hamburg, Germany

2014 Annual MATLAB course / workshop host tutoring beginner groups MATLAB  
Institute for Systems Neuroscience  
University Medical Center Hamburg-Eppendorf, Hamburg, Germany

2015 Annual SPM course / workshop host tutoring beginner and expert groups neuroimaging analyses using SPM  
Institute for Systems Neuroscience  
University Medical Center Hamburg-Eppendorf, Hamburg, Germany

2015 Annual MATLAB course / workshop host tutoring beginner groups MATLAB  
Institute for Systems Neuroscience  
University Medical Center Hamburg-Eppendorf, Hamburg, Germany

2016 Annual SPM course / workshop host tutoring beginner and expert groups neuroimaging analyses using SPM  
Institute for Systems Neuroscience  
University Medical Center Hamburg-Eppendorf, Hamburg, Germany

- 2016 Annual MATLAB course / workshop host tutoring beginner groups MATLAB  
Institute for Systems Neuroscience  
University Medical Center Hamburg-Eppendorf, Hamburg, Germany
- 2016 Mismatch or Allostatic Load? Timing of Life-adversity Differentially Shapes Gray Matter  
Volume and Anxious Temperament / plenary talk  
Psychologie & Gehirn 2016  
Trier, Germany
- 2017 Annual SPM course / workshop host tutoring beginner and expert groups neuroimaging  
analyses using SPM  
Institute for Systems Neuroscience  
University Medical Center Hamburg-Eppendorf, Hamburg, Germany
- 2017 Annual MATLAB course / workshop host tutoring beginner groups MATLAB  
Institute for Systems Neuroscience  
University Medical Center Hamburg-Eppendorf, Hamburg, Germany
- 2017 The Impact of Life Events on the Return of Fear and Fear Generalization - Mechanisms  
and Clinical Implications / plenary talk  
Symposium of the Clinical Psychology and Psychotherapy section of the DGPs  
Chemnitz, Germany
- 2020 Life stress and the neurobiology of fear, anxiety, and affective temperament -  
Investigations in healthy adults and their translational value for clinical research  
Center for Depression, Anxiety, and Stress Research, Belmont, USA

### **International**

- 2018 Introduction to Bayesian Analysis for Fear Conditioning Data / talk  
European Meeting of Human Fear conditioning (EMHFC)  
Cardiff, UK
- 2019 Introduction to Bayesian Analysis for Fear Conditioning Data / talk  
European Meeting of Human Fear conditioning (EMHFC)  
Würzburg, Germany
- 2021 Navigating the Multiverse of Skin Conductance Response Quantification Approaches /  
plenary talk  
Meeting Society for Psychophysiological Research (SPR)  
Virtual meeting
- 2024 Computational Phenotyping of Effort-Based Decision Making in Unmedicated Adults  
with Remitted Depression / plenary talk  
49th Annual Conference "Psychology and Brain", Hamburg, Germany.
- 2025 Neural and Computational Phenotyping of Stress and Reward Processing in Remitted  
Depression / invited talk  
Decision Neuroscience of Human Interactions Laboratory, Heidelberg University,  
Heidelberg, Germany.

### **Report of Education of Patients and Service to the Community**

☒ *No presentations below were sponsored by 3<sup>rd</sup> parties/outside entities*

☐ *Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

### Activities

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|------|---|
| 2013 | Biannual Night of Science Hamburg / Instructor<br>Hands-on experimental demonstrations and scientific dissemination to the public |
| 2015 | Biannual Night of Science Hamburg / Instructor<br>Hands-on experimental demonstrations and scientific dissemination to the public |
| 2017 | Biannual Night of Science Hamburg / Instructor<br>Hands-on experimental demonstrations and scientific dissemination to the public |

### Report of Scholarship

ORCID ID: 0000-0003-2210-9130

### Peer-Reviewed Scholarship in print or other media:

\* Indicates shared authorship

### Research Investigations

1. Mertens G\*, **Kuhn M\***, Raes AK, Kalisch R, De Houwer J, Lonsdorf TB. Fear expression and return of fear following threat instruction with or without direct contingency experience. *Cogn Emot.* 2016 Aug;30(5):968-84. PMID: 25966279.
2. **Kuhn M**, Scharfenort R, Schumann D, Schiele MA, Münsterkötter AL, Deckert J, Domschke K, Haaker J, Kalisch R, Pauli P, Reif A, Romanos M, Zwanzger P, Lonsdorf TB. Mismatch or allostatic load? Timing of life adversity differentially shapes gray matter volume and anxious temperament. *Soc Cogn Affect Neurosci.* 2016 Apr;11(4):537-47. PMID: 26568620.
3. **Kuhn M**, Haaker J, Glotzbach-Schoon E, Schumann D, Andreatta M, Mechias ML, Raczka K, Gartmann N, Büchel C, Mühlberger A, Pauli P, Reif A, Kalisch R, Lonsdorf TB. Converging evidence for an impact of a functional NOS gene variation on anxiety-related processes. *Soc Cogn Affect Neurosci.* 2016 May;11(5):803-12. PMID: 26746182.
4. **Kuhn M\***, Mertens G\*, Lonsdorf TB. State anxiety modulates the return of fear. *Int J Psychophysiol.* 2016 Dec;110:194-199. PMID: 27496367.
5. Sjouwerman R, Niehaus J, **Kuhn M**, Lonsdorf TB. Don't startle me-Interference of startle probe presentations and intermittent ratings with fear acquisition. *Psychophysiology.* 2016 Dec;53(12):1889-1899. PMID: 27628268.
6. Lonsdorf TB, Menz MM, Andreatta M, Fullana MA, Golkar A, Haaker J, Heitland I, Hermann A, **Kuhn M**, Kruse O, Meir Drexler S, Meulders A, Nees F, Pittig A, Richter J, Römer S, Shiban Y, Schmitz A, Straube B, Vervliet B, Wendt J, Baas JMP, Merz CJ. Don't fear 'fear conditioning': Methodological considerations for the design and analysis of studies on human fear acquisition, extinction, and return of fear. *Neurosci Biobehav Rev.* 2017 Jun;77:247-285. PMID: 28263758.

7. Lueken U\*, **Kuhn M\***, Yang Y, Straube B, Kircher T, Wittchen HU, Pfleiderer B, Arolt V, Wittmann A, Ströhle A, Weber H, Reif A, Domschke K, Deckert J, Lonsdorf TB. Modulation of defensive reactivity by GLRB allelic variation: converging evidence from an intermediate phenotype approach. *Transl Psychiatry*. 2017 Sep 5;7(9):e1227. doi: 10.1038/tp.2017.186. PMID: 28872638.
8. Mertens G, Braem S, **Kuhn M**, Lonsdorf TB, van den Hout MA, Engelhard IM. Does US expectancy mediate the additive effects of CS-US pairings on contingency instructions? Results from subjective, psychophysiological and neural measures. *Behav Res Ther*. 2018 Nov;110:41-46. PMID: 30223152.
9. **Kuhn M**, Wendt J, Sjouwerman R, Büchel C, Hamm A, Lonsdorf TB. The neurofunctional basis of affective startle modulation in humans: Evidence from combined facial electromyography and functional magnetic resonance imaging. *Biol Psychiatry*. 2020 Mar 15;87(6):548-558. PMID: 31547934.
  - Early Career Investigator Commentary. Kaczurkin AN. Advances in mapping the startle eye-blink response onto neural circuits. *Biol Psychiatry*. 2020 Mar 15;87(6):e9-e11. PMID: 32081253.
10. Hur J, Smith JF, DeYoung KA, Anderson AS, Kuang J, Kim HC, Tillman RM, **Kuhn M**, Fox AS, Shackman AJ. Anxiety and the neurobiology of temporally uncertain threat anticipation. *J Neurosci*. 2020 Oct 7;40(41):7949-7964. PMID: 32958570.
11. Ehlers MR, Nold J, **Kuhn M**, Klingelhöfer-Jens M, Lonsdorf TB. Revisiting potential associations between brain morphology, fear acquisition and extinction through new data and a literature review. *Sci Rep*. 2020 Nov 16;10(1):19894. PMID: 33199738.
12. Hur J\*, **Kuhn M\***, Grogans SE, Anderson AS, Islam S, Kim HC, Tillman RM, Fox AS, Smith JF, DeYoung KA, Shackman AJ. Anxiety-Related Frontocortical Activity Is Associated With Dampened Stressor Reactivity in the Real World. *Psychol Sci*. 2022 Jun;33(6):906-924. doi: 10.1177/09567976211056635. Epub 2022 Jun 3. PMID: 35657777.
13. **Kuhn M**, Gerlicher AMV, Lonsdorf TB. Navigating the manyverse of skin conductance response quantification approaches - A direct comparison of trough-to-peak, baseline correction, and model-based approaches in Ledalab and PsPM. *Psychophysiology*. 2022 Sep;59(9):e14058. doi: 10.1111/psyp.14058. Epub 2022 Apr 2. PMID: 35365863.
14. Sjouwerman R, Illius S, **Kuhn M**, Lonsdorf TB. A data multiverse analysis investigating non-model based SCR quantification approaches. *Psychophysiology*. 2022 Jul 2:e14130. doi: 10.1111/psyp.14130. Epub 2022 Jul 2. PMID: 35780077.
15. Klingelhöfer-Jens M, Ehlers MR, **Kuhn M**, Keyaniyan V, Lonsdorf TB. Robust group- but limited individual-level (longitudinal) reliability and insights into cross-phases response prediction of conditioned fear. *Elife*. 2022 Sep 13;11:e78717. doi: 10.7554/eLife.78717. PMID: 36098500.
16. Koppold A, Kastrinogiannis A, **Kuhn M**, Lonsdorf TB. Watching with Argus Eyes: Characterization of emotional and physiological responding in adults exposed to childhood

maltreatment and/or recent adversity. *Psychophysiology*. 2023 Jul;60(7):e14253. doi: 10.1111/psyp.14253. Epub 2023 Feb 2. PMID: 36727722.

17. Lewis MW, Webb CA, **Kuhn M**, Akman E, Jobson SA, Rosso IM. Predicting Fear Extinction in Posttraumatic Stress Disorder. *Brain Sciences*. 2023 Jul 28; 13(8):1131. doi: 10.3390/brainsci13081131.
18. Ging-Jehli NR\*, **Kuhn M**\*, Blank JM, Chanthrakumar P, Steinberger DC, Yu Z, Herrington TM, Dillon DG, Pizzagalli DA,\*, Frank MJ\*. Cognitive Signatures of Depressive and Anhedonic Symptoms and Affective States Using Computational Modeling and Neurocognitive Testing. *Biol Psychiatry Cogn Neurosci Neuroimaging*. 2024 Jul;9(7):726-736. doi: 10.1016/j.bpsc.2024.02.005. Epub 2024 Feb 23. PMID: 38401881.
19. Dillon DG, Belleau EL, Origlio J, McKee M, Jahan A, Meyer A, Souther MK, Brunner D, **Kuhn M**, Ang YS, Cusin C, Fava M, Pizzagalli DA. Using Drift Diffusion and RL Models to Disentangle Effects of Depression On Decision-Making vs. Learning in the Probabilistic Reward Task. *Comput Psychiatr*. 2024 May 3;8(1):46-69.
20. Grogans S, Hur J, Barstead MG, Anderson AS, Islam S, Kim HC, **Kuhn M**, Tillman RM, Fox AS, Smith JF\*, DeYoung KA\*, Shackman AJ\*. Neuroticism/negative emotionality is associated with increased reactivity to uncertain threat in the bed nucleus of the stria terminalis, not the amygdala. *Journal of Neuroscience*. 2024 Aug 7;44(32):e1868232024.
21. **Kuhn M**\*, Steinberger DC\*, Bendezú JJ, Ironside M, Kang MS, Null KE, Brunner DL, Pizzagalli DA. Psychobiological Stress Response Profiles in Current and Remitted Depression: A Person-Centered, Multisystem Approach. *Biol Psychiatry Glob Open Sci*. 2024 Oct 9;5(1):100400. doi: 10.1016/j.bpsgos.2024.100400. PMID: 39582798.
  - Commentary. de Kloet ER, Molendijk ML. Stress System Concordance: A Signature of Resilience. *Biol Psychiatry Glob Open Sci*. 2025; 5:100427.
22. **Kuhn, M.**, Palermo, E.H., Pagnier, G., Blank, J.M., Steinberger, D.C., Long, Y., Nowicki, G., Cooper, J.A., Treadway, M.T., Frank, M.J., Pizzagalli, D.A. (in press). Computational phenotyping of effort-based decision making in unmedicated adults with remitted depression. *Biological Psychiatry Cognitive Neuroscience and Neuroimaging*.

### Other peer-reviewed scholarship

1. **Kuhn M**, Popovic A, Pezawas L. Neuroplasticity and memory formation in major depressive disorder: an imaging genetics perspective on serotonin and BDNF. *Restor Neurol Neurosci*. 2014;32(1):25-49. PubMed PMID: 23603442.
2. Popovic A, **Kuhn M**, Pezawas L. [Chronic pain from a psychiatric perspective - Neurobiology and therapy]. *Manuelle Medizin*. 2013 February; 51(1):1-5. German.
3. Wendt J, **Kuhn M**, Hamm AO, Lonsdorf TB. Recent advances in studying brain-behavior interactions using functional imaging: The primary startle response pathway and its affective modulation in humans. *Psychophysiology*. 2023 Jul 4:e14364. doi: 10.1111/psyp.14364. Epub ahead of print. PMID: 37402156.



## Non-peer reviewed scholarship in print or other media:

### Proceedings of meetings or other non-peer reviewed scholarship

1. Koppold A, Lonsdorf TB, **Kuhn M**, Weymar M, Ventura-Bort C. Physiological Harmony or Discord? Unveiling the Correspondence Between Subjective Arousal, Valence and Physiological Responses. Preprint at [www.biorxiv.org/content/10.1101/2024.05.31.596899v1](http://www.biorxiv.org/content/10.1101/2024.05.31.596899v1).
2. Palermo E, Fisher H, Blank J, Anderson C, Bogdanov M, Steinberger D, Long Y, Nowicki G, Smith G, Webb CA, **Kuhn M\***, Pizzagalli DA\*. Characterizing Emotion Dynamics in Remitted Depression: A Network Approach Using Ecological Momentary Assessment. Preprint at <https://osf.io/preprints/psyarxiv/qcpv8>.

### Thesis:

1. **Kuhn M**. (Doctoral thesis) Fearing nature, nurture and thyself: Inter-individual differences shape the neurobiology of fear processing and anxious temperament. Universität Hamburg. 2017. <https://d-nb.info/1140603752>

### Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings (last 3 years):

1. Blank JM, **Kuhn M**, Long Y, Nowicki G, Steinberger DC, Pizzagalli DA. Reward Motivation in Remitted Depression. McLean Research Day 2022. Belmont, MA, USA.
2. Steinberger DC\*, Blank JM\*, **Kuhn M**, Ironside MA, Kang MS, Brunner DL, Null KE, Pizzagalli DA. Mental Health Links to Group-Based Trajectories of Stress Experience and Physiology in Current and Remitted Depression. Annual meeting of the Society for Research in Psychopathology 2022. Philadelphia, PA, USA.
3. Blank JM, Steinberger DC, Long Y, Nowicki G, **Kuhn M**, Treadway MT, Pizzagalli DA. Reward Motivation in Remitted Depression. Annual meeting of the Society for Research in Psychopathology 2022. Philadelphia, PA, USA.
4. Koppold A, Kastrinogiannis A, **Kuhn M**, Lonsdorf TB. Affective Startle Modulation and Life Adversity. Annual meeting of the Society for Psychophysiological Research 2022. Vancouver, Canada.
5. Steinberger DC\*, Blank JM\*, **Kuhn M**, Ironside MA, Kang MS, Brunner DL, Null, KE, Pizzagalli DA. Mental health links to group-based trajectories of stress experience and physiology in current and remitted depression. 14th Annual National Network of Depression Centers Conference 2022. Ann Arbor, MI, USA.
6. Santos K\*, Blank JM\*, **Kuhn M**, Pizzagalli DA. Early Life Stress and Neurobiological Alterations in Adults with Remitted Depression. Annual Biomedical Research Conference for Minorized Scientists 2022. Anaheim, CA, USA.
7. **Kuhn M**, Blank JM, Steinberger DC, Long Y, Nowicki G, Yu Z, Thaikkandi S, Pedersen ML, Herrington TM, Frank M, Pizzagalli DA. Approach-avoidance behavior and conflict in remitted depression: Neural correlates and latent decision-making processes. Annual Meeting of the American College of Neuropsychopharmacology 2022. Phoenix, AZ, USA.

8. Li M, **Kuhn M**, Woronko SE, Zhukovsky P, Borchers LR, Alexander MM, Landi M, Ren B, Vitaliano G, Brennan BP, & Pizzagalli DA. Using biological and behavioral markers to guide depression treatment in the Sequential Multiple Assignments for Randomized Trial (SMART): protocol overview. McLean Research Day 2023. Belmont, MA, USA.
9. Woronko SE, **Kuhn M**, Li M, Zhukovsky P, Borchers LR, Alexander MM, Landi M, Ren B, Vitaliano G, Brennan BP, & Pizzagalli DA. Using biological and behavioral markers to guide depression treatment in the Sequential Multiple Assignments for Randomized Trial (SMART): randomization and data processing protocol. McLean Research Day 2023. Belmont, MA, USA.
10. Ging-Jehli NR, **Kuhn M**, Pedersen ML, Blank J, Herrington TM, Yu Z, Long Y, Thaikkandi S, Nowicki G, Steinberger D, Pizzagalli DA, Frank MJ. Linking behavioral and neural effects of acute stress in humans: a computational psychiatric approach with implications for depression. Winter Conference on Brain Research (WCBR) 2023. Snowbird, UT, USA
11. Grogans SE, Hur J, Barstead MG, Anderson AS, Islam S, Kim HC, **Kuhn M**, Tillman RM, Fox AS, Smith JF, DeYoung KA, Shackman AJ. Neuroticism is associated with increased reactivity to uncertain threat—but not ‘threat-related’ emotional faces—in the bed nucleus of the stria terminalis. Annual Meeting of the Society of Biological Psychiatry (SOBP) 2023. San Diego, CA, USA
12. Grogans SE, Hur J, **Kuhn M**, Anderson AS, Islam S, Kim HC, Tillman RM, Fox AS, Smith JF, DeYoung KA, Shackman AJ. Attenuated Safety-Related vmPFC Activation is Associated With Pervasively Elevated Real-World Distress. Annual Meeting of the Society of Biological Psychiatry (SOBP) 2023. San Diego, CA, USA.
13. Ging-Jehli NR, **Kuhn M**, Chanthrakumar P, Blank J, Steinberger D, Pizzagalli DA, Frank MJ. Cognitive signatures of anhedonia severity in a dynamic approach-avoidance conflict task with sequential sampling modeling. Computational Psychiatry Conference (CPCONF) 2023. Dublin, Ireland.
14. Falkenstein MJ, **Kuhn M**, Kuckertz JM, Woodson O, Bezaehler A, Webb C, & Beard C. Digital approach-avoidance training as a treatment augmentation for obsessive compulsive disorder. Flash talk presented by MJF at the Annual Meeting of the Society for Digital Mental Health. 2023. Virtual meeting.
15. Falkenstein MJ, Woodson O, **Kuhn, M**, Kuckertz JM, Bezaehler A, Webb C, & Beard C. Approach-Avoidance Training as an Augmentation of Exposure and Response Prevention for Contamination OCD. Symposium presented at the 2023 International Obsessive-Compulsive Disorder Foundation (IOCDF) Research Symposium, San Francisco, CA, USA.
16. Kim H, Park J, **Kuhn M**, Kim MJ, Hur J. Neuroticism and Brain Responses to Emotional Conflict. Society for Research in Psychopathology (SRP) 2023. St. Louis, MO, USA.
17. Koppold A, Kastrinogiannis A, **Kuhn M**, Ehlers M, Ruge J, Klingelhöfer-Jens M, Lonsdorf TB. Facing the Aftermath: Uncovering the Association of Early Life Adversity with Emotional Processing, Psychophysiology and Measurement Heterogeneity. Annual Meeting of the Society-for-Psychophysiological-Research (SPR) 2023. New Orleans, LA, USA.

18. Lam CT, Woronko SE, Li M, Borchers LR, **Kuhn M**, Zhukovsky P, Pizzagalli DA. Reward learning and clinical severity in treatment-seeking adults with major depressive disorder. McLean Research Day 2024. Boston, MA, USA.
19. Anderson C, Bogdanov M, **Kuhn M**, Palermo EH, Steinberger DC, Blank JM, Pizzagalli DA. The role of perceived stress and trait anticipatory pleasure in effort-based decision-making among individuals with remitted depression. McLean Research Day 2024. Boston, MA, USA.
20. **Kuhn M**, Palermo EH, Pagnier G, Blank JM, Steinberger DC, Long Y, Nowicki GP, Cooper JA, Treadway MT, Frank MJ, Pizzagalli DA. Computational Phenotyping of Effort-Based Decision Making in Unmedicated Adults with Remitted Depression. Anxiety & Depression Association of America Conference 2024. Boston, MA, USA.
21. Palermo EH, **Kuhn M**, Blank JM, Long Y, Nowicki GP, Webb CA, Pizzagalli DA. The association between emotional reactivity to an in-laboratory stressor and emotional variability in daily life varies based on depression history. Anxiety & Depression Association of America Conference 2024. Boston, MA, USA.
22. Anderson C, Bogdanov M, **Kuhn M**, Palermo EH, Steinberger DC, Blank JM, Pizzagalli DA. Perceived stress and early life adversity reduce motivation to exert physical effort for reward in healthy controls. Anxiety & Depression Association of America Conference 2024. Boston, MA, USA.
23. **Kuhn M**, Ging-Jehli NR, Palermo EH, Yu Z, Herrington TM, Blank JM, Thaikkandi S, Frank MJ, Pizzagalli DA. Neural correlates of stress-induced approach-avoidance behavior and conflict in remitted depression. Annual Meeting of the Society of Biological Psychiatry (SOBP) 2024. Austin, TX, USA.
24. Grogans SE, Hur J, Barstead MG, Anderson AS, Islam S, Kim HC, **Kuhn M**, Tillman RM, Fox AS, Smith JF, DeYoung KA, Shackman AJ. The neural systems and real-world mood dynamics underlying dispositional risk for internalizing illness. Annual Meeting of the Society of Biological Psychiatry (SOBP) 2024. Austin, TX, USA.
25. Zhukovsky P, Sneider J, **Kuhn M**, Woronko S, Mohan L, Borchers L, Ren B, Vitaliano G, Brennan B, Rubbani S, Coletti J, Ressler K, Pizzagalli DA. Nucleus Accumbens and Global Cortical Connectivity May Be Important Neural Correlates of Anhedonia in Major Depressive Disorder. Annual Meeting of the Society of Biological Psychiatry (SOBP) 2024. Austin, TX, USA.
26. Palermo EH, **Kuhn M**, Blank JM, Anderson C, Bogdanov M, Steinberger DC, Long Y, Nowicki G, Smith GW, Webb, CA, & Pizzagalli DA. Hippocampal Activation During an Approach/Avoidance Conflict Task is Associated with Approach/Avoidance Behavior in Daily Life. Society for Research on Psychopathology (SRP) 2024 Annual Convention, Montreal, Canada.
27. Smith GW, Bogdanov M, **Kuhn M**, Palermo EH, Anderson C, Steinberger DC, Blank JM, Pizzagalli DA. Physiological and Subjective Responses to a Social Stressor in Individuals with Depression, Remitted Depression, and Healthy Controls. Society for Research on Psychopathology (SRP) 2024 Annual Convention, Montreal, Canada.

28. Anderson C, Bogdanov M, **Kuhn M**, Palermo EH, Steinberger DC, Blank JM, Pizzagalli DA. The role of recent and early life stress in effort-based decision-making. Society for Research on Psychopathology (SRP) 2024 Annual Convention, Montreal, Canada.
29. Palermo EH, Fisher H, Blank JM, Anderson C, Bogdanov M, Steinberger DC, Long Y, Nowicki GP, Smith, GW, Webb, CA, **Kuhn, M\***, & Pizzagalli DA\*. Characterizing Emotional Dynamics in Remitted Depression: A network Approach Using Ecological Momentary Assessment. The Special Interest Group Expo at the Association for Behavioral and Cognitive Therapies 58<sup>th</sup> Annual Convention, Philadelphia, PA, USA.
30. Castro GB, Didier P, **Kuhn M**, Kaplan CM, Hur J, Bradford DE, Curtin JJ, Smith JF, Shackman AJ. Alcohol Dampens Subjective, Psychophysiological, and Neurobiological Reactivity to Uncertain Threat. MiNDS Program at Temple University, Philadelphia, PA, USA.
31. Grogans SE, Hur J, Didier PR, Das S, Anderson AS, Islam S, Kim HC, **Kuhn M**, Fox AS, Smith JF, DeYoung KA, Shackman AJ. Increased reactivity to uncertain-threat anticipation in the bed nucleus of the stria terminalis and periaqueductal gray is associated with longitudinal worsening of internalizing symptoms, conditional on stress exposure. Annual Meeting of the Society of Biological Psychiatry (SOBP) 2025. Toronto, Canada.

## **Narrative Report**

Understanding the development, etiology, and maintenance of affective and mood disorders, such as major depression disorder (MDD) and anxiety-related disorders, is at the center of my research. As an experimental psychologist and neuroscientist with a programming background from two years of undergraduate course work in computer science, I employ interdisciplinary research strategies to dissect the structural and functional neuroarchitecture that underlies affective psychopathology including its relation to environmental and psychosocial factors. In particular, I leverage multimodal techniques such as neuroimaging, computational modeling, psychophysiology, neuroendocrine measures, ecological momentary assessment, clinical and life-stress interviews, and genetic analyses to contribute to a mechanistic understanding of affective disorders, with the goal to promote the development of more effective, more efficient and, ultimately, personalized treatment strategies. Within my previous graduate and post-doctoral research, I focused on fear conditioning, the prime laboratory model for fear- and anxiety-related processes, targeting one phenotype of affective symptomatology that spans trans-diagnostically across MDD and anxiety disorders. Utilizing this model, I investigated the contribution of genetic and environmental inter-individual factors as well as stress sensitivity to heightened anxiety and related learning processes. In addition, using innovative measures of parallel neuroimaging and psychophysiology, I demonstrated the neurobiological validity of the pathway that underlies the main laboratory outcome measure in cross-species investigations, the affective startle reflex. This work provides a major translational contribution by linking the two fields of rodent and human experimental work, supporting direct inferences. Moreover, I have been working on meta-scientific aspects such as improving the validity and reliability of affective laboratory outcome measures and experimental models in my own work as well as a member of the Young Scientist Research Network EIFEL-ROF. At the present, I am an Instructor of Psychiatry at Harvard Medical School/McLean Hospital's Center for Depression, Anxiety and Stress Research, focusing on one further cardinal phenotype of mood disorders, anhedonia, by employing laboratory models of effort and approach-avoidance conflict in MDD patients to investigate the neurobiology underlying deficits in reward-related decision-making processes. Throughout my career I have cultivated a passion to teach my extensive programming and neuroimaging skills nationally and internationally to fellow scientists on all levels of academic career stages. Currently, I have published 24 peer-reviewed articles and actively seek funding to pursue my academic path along

these areas of interest with the goal to become an independent investigator and to lead my own translational neuroscience laboratory.