

Thomas E. Kraynak, PhD

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Primary Research Interests

Neurobiology of Stress, Brain-Body Interaction, Brain Aging

Employment

2022 Postdoctoral Fellow
Department of Epidemiology
University of Pittsburgh

Education

2015 – 2021 PhD in Biological & Health Psychology
Minor in Quantitative Methodology
University of Pittsburgh

2015 – 2021 Certificate in Cognitive Neuroscience
Center for the Neural Basis of Cognition

2007 – 2011 BA in Psychology *cum laude*
Case Western Reserve University

2007 – 2011 BM in Piano Performance *with Academic Honors*
Cleveland Institute of Music

Publications

Gianaros, P. J., Rasero, J., DuPont, C. M., **Kraynak, T. E.**, Gross, J. J., McRae, K., Wright, A. C. G., Verstynen, T. D., & Barinas-Mitchell, E. (accepted). Multivariate brain activity while viewing and reappraising affective scenes does not predict the multiyear progression of preclinical atherosclerosis in otherwise healthy midlife adults. *Affective Science*.

Kragel, P. A., Han, X., **Kraynak, T. E.**, Gianaros, P. J., & Wager, T. D. (2021). Functional MRI can be highly reliable, but it depends on what you measure: A commentary on Elliott et al. (2020). *Psychological Science*, 32(4), 622-626.

Gianaros, P. J., **Kraynak, T. E.**, Kuan, D. C. H., Gross, J. J., McRae, K., Hariri, A. R., Manuck, S. B., Rasero, J., & Verstynen, T. D. (2020). Affective brain patterns as multivariate neural correlates of cardiovascular disease risk. *Social Cognitive and Affective Neuroscience*, 15(10), 1034-1045.

Kraynak, T. E., Marsland, A. L., Hanson, J. L., & Gianaros, P. J. (2019). Retrospectively reported childhood physical abuse, systemic inflammation, and resting corticolimbic connectivity in midlife adults. *Brain, Behavior, and Immunity*, 82, 203-213.

Ginty, A. T., **Kraynak, T. E.**, Kuan, D. C. H., & Gianaros, P. J. (2019). Ventromedial prefrontal cortex connectivity during and after psychological stress in women. *Psychophysiology*, e13445.

Khalsa, S. S., et al. [including **Kraynak, T. E.**] (2018). Interoception and Mental Health: A Roadmap. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 3, 501–513.

Kraynak, T. E., Marsland, A. L., & Gianaros, P. J. (2018). Neural mechanisms linking emotion with cardiovascular disease. *Current Cardiology Reports*, 20(12), 128.

Kraynak, T. E., Marsland, A. L., Wager, T. D., & Gianaros, P. J. (2018). Functional neuroanatomy of peripheral inflammatory physiology: A meta-analysis of human neuroimaging studies. *Neuroscience & Biobehavioral Reviews*, 94, 76-92.

Ginty, A. T., **Kraynak, T. E.**, Fisher, J. P., & Gianaros, P. J. (2017). Cardiovascular reactivity to psychological stress: Neurophysiological substrates and links to cardiovascular disease. *Autonomic Neuroscience*, 207, 2-9.

Marsland, A. L., Kuan, D. C. H., Sheu, L. K., Krajina, K., **Kraynak, T. E.**, Manuck, S. B., & Gianaros, P. J. (2017). Systemic inflammation and resting state connectivity of the default mode network. *Brain, Behavior, and Immunity*, 62, 162-170.

Price, R. B., Gates, K., **Kraynak, T. E.**, Thase, M. E., & Siegle, G. J. (2017). Data-driven subgroups in depression derived from directed functional connectivity paths at rest. *Neuropsychopharmacology*, 42(13), 2623-2632.

Price, R. B., Lane, S., Gates, K., **Kraynak, T. E.**, Horner, M. S., Thase, M. E., & Siegle, G. J. (2017). Parsing heterogeneity in the brain connectivity of depressed and healthy adults during positive mood. *Biological Psychiatry*, 81(4), 347-357.

Tabibnia, G., Creswell, J. D., **Kraynak, T. E.**, Westbrook, C., Julson, E., & Tindle, H. A. (2014). Common prefrontal regions activate during self-control of craving, emotion, and motor impulses in smokers. *Clinical Psychological Science*, 2(5), 611-619.

Preprints

Rasero, J., Betzel, R., Sentis, A. I., **Kraynak, T. E.**, Gianaros, P. J., & Verstynen, T. (2021). Similarity in evoked responses does not imply similarity in macroscopic network states across tasks. *bioRxiv*. <https://doi.org/10.1101/2021.11.27.470015>

Manuscripts in Preparation

Kraynak, T. E., Verstynen, T. D., Marsland, A. L., & Gianaros, P. J. (in prep). Individual differences in local white matter connectivity covary with stressor-evoked cardiovascular reactivity.

Kraynak, T. E., MacCormack, J. K., Marsland, A. L., Jennings, J. R., Critchley, H. D., & Gianaros, P. J. (in prep). Meta-analytic evidence for shared and specific human neural correlates of cardiac interoception and stressor-evoked cardiovascular reactivity.

MacCormack, J. K., Gianaros, P. J., & **Kraynak, T. E.** (submitted). Neuroimaging methods. Chapter in Handbook of Health Psychology.

Awards and Honors

2020	Dr. Ruth L. Myers Memorial Award for Research Excellence Department of Psychology, University of Pittsburgh
2019	Health Behavior International Collaborative Award Sponsored by the American Psychosomatic Society Mentors: Sarah N. Garfinkel, PhD, and Hugo D. Critchley, DPhil
2019	MacLean Scholar Travel Award for Neuroscience Research Trainees American Psychosomatic Society Annual Meeting
2017	Honorable Mention National Science Foundation Graduate Research Fellowship Program
2016	Travel Award Laureate Institute for Brain Research Interoception Summit
2016	Scholar Award American Psychosomatic Society Annual Meeting
2015	MacLean Scholar Travel Award for Neuroscience Research Trainees American Psychosomatic Society Annual Meeting
2015	Citation Poster Award American Psychosomatic Society Annual Meeting
2014	Student Poster Award Society for Psychophysiological Research 54 th Annual Meeting
2014	Outstanding Poster Award, Staff University of Pittsburgh Department of Psychiatry Research Day
2011	Outstanding SAGES Writing Portfolio Award Case Western Reserve University

Invited Presentations

Kraynak, T. E. (2019, March). Predicting individual differences from brain imaging data. Presentation for the Community for Advanced Methodological Learning, University of Pittsburgh, Pittsburgh, PA.

Conference Presentations

Kraynak, T. E., Karim, H. T., Manuck, S. B., Marsland, A. L., & Gianaros, P. J. (2022, March). Cardioimmunometabolic risk is associated with brain-age in midlife. Paper session talk accepted at the American Psychosomatic Society Annual Scientific Meeting, Long Beach, CA.

Kraynak, T. E., Marsland, A. L., Verstynen, T. D., & Gianaros, P. J. (2020, March). Wired for stress: structural connectome correlates of stressor-evoked cardiovascular reactivity. In K. A. Muscatell (Chair), *Neuroscience in Psychosomatic Medicine: Linking brain and body to understand health*. Symposium

accepted at the American Psychosomatic Society Annual Scientific Meeting, Long Beach, CA.

** meeting canceled due to COVID-19*

Kraynak, T. E., Marsland, A. L., Verstynen, T. D., & Gianaros, P. J. (2020, March). Systemic inflammation covaries with the local structural connectome within suspected interoceptive pathways. Paper session talk accepted at the American Psychosomatic Society Annual Scientific Meeting, Long Beach, CA.

** meeting canceled due to COVID-19*

Kraynak, T. E., Marsland, A. L., Hanson, J. L., & Gianaros, P. J. (2019, March). An inflammatory pathway links retrospective reports of childhood physical abuse with resting corticolimbic connectivity in midlife adults. Paper session talk presented at the American Psychosomatic Society Annual Scientific Meeting, Vancouver, BC, Canada. ** MacLean Scholar Travel Award*

Kraynak, T. E., Marsland, A. L., & Gianaros, P. J. (2017, March). Retrospective recall of childhood abuse and midlife subclinical cardiovascular disease: Cross-sectional and longitudinal associations. Paper session talk presented at the American Psychosomatic Society Annual Scientific Meeting, Seville, Spain.

DeRamus, T. P.*, **Kraynak, T. E.***, Roman, C. A.*, Silva, R. F.*, Thye, M. D.*, & Yeh, F.C. (2016, July). Test-retest reliability of white matter pathways in diffusion imaging: Comparing acquisition and reconstruction methods. Presentation for the Multimodal Neuroimaging Training Program Symposium on Cognitive and Affective Neuroscience, Pittsburgh, PA. ** shared first authorship*

Kraynak, T. E., Marsland, A. L., Manuck, S. B., & Gianaros, P. J. (2016, March). Circulating interleukin-6 covaries with resting brain network connectivity and topology in midlife adults. Paper session talk presented at the American Psychosomatic Society Annual Scientific Meeting, Denver, CO. ** APS Scholar Award*

Kraynak, T. E., Marsland, A. L., Wager, T. D., & Gianaros, P. J. (2016, March). Functional neuroimaging of human brain-immune interactions: a quantitative meta-analysis. Paper session talk presented at the American Psychosomatic Society Annual Scientific Meeting, Denver, CO.

Kraynak, T. E., Siegle, G. J., Srinath, A. E., Keljo, D. J., Jones, N., Regueiro, M., Szigethy, E. (2014, May). Pain-associated periaqueductal gray resting state functional connectivity in pediatric inflammatory bowel disease. Symposium talk presented at Digestive Disease Week, Chicago, IL.

Conference Posters

Kraynak, T. E., Marsland, A. L., Jennings, J. R., Critchley, H. D., & Gianaros, P. J. (2020, March). Meta-analytic evidence for shared and specific human neural correlates of stressor-evoked cardiovascular reactivity and cardiac interoceptive processing. Poster accepted at the American Psychosomatic Society Annual Scientific Meeting, Long Beach, CA. ** meeting canceled due to COVID-19*

DuPont, C. M., Rasero, J., **Kraynak, T. E.**, Kamarck, T. W., Manuck, S. B., Verstynen, T. D., & Gianaros, P. J. (2020, March). Brain morphology and stressor-evoked cardiovascular reactivity: a machine learning analysis in midlife adults. Poster accepted at the American Psychosomatic Society Annual Scientific Meeting, Long Beach, CA. ** meeting canceled due to COVID-19*

DeRamus, T. P.*, **Kraynak, T. E.***, Roman, C. A.*, Silva, R. F.*, Thye, M. D.*, & Yeh, F.C. (2016, July). Reproducibility of graph theoretical analysis in structural connectomics. Poster presented at the Multimodal Neuroimaging Training Program Symposium on Cognitive and Affective Neuroscience, Pittsburgh, PA. ** shared first authorship*

Kraynak, T. E., Siegle, G. J., & Hall, M. H. (2015, March). Reduced stressor-evoked perigenual anterior cingulate reactivity and functional connectivity in insomnia. Poster presented at the American Psychosomatic Society Annual Scientific Meeting, Savannah, GA. * *Citation Poster and MacLean Scholar Travel Award*

Kraynak, T. E., Collier, A., D'Andrea, W., Hooley, J. M., & Siegle, G. J. (2014, September). Childhood trauma is associated with exaggerated neural reactivity to criticism. Poster presented at the Society for Psychophysiological Research Annual Meeting, Atlanta, GA. * *Student Poster Award*

Kraynak, T. E. (2011, August). Functional neuroimaging of musical emotions: a review and meta-analysis. Poster presented at the Society for Music Perception and Cognition biennial conference, Rochester, NY.

Research Support and Experience

2022	Postdoctoral Fellowship NIH NIA T32 AG055381 Population Neuroscience of Aging & Alzheimer's Disease Department of Epidemiology University of Pittsburgh
2020 – 2021	Andrew W. Mellon Predoctoral Fellowship Dietrich School of Arts & Sciences University of Pittsburgh
2019 – 2020	Graduate Student Researcher NIH NHLBI HL040962 Stress, Emotion, and Neural Circuits for CVD Risk
2015 – 2018	Predoctoral Fellowship NIH NHLBI T32 HL007560 Cardiovascular Behavioral Medicine Training Program Department of Psychiatry University of Pittsburgh
2012 – 2015	Research Specialist Program in Cognitive Affective Neuroscience Supervisor: Greg J. Siegle, PhD Department of Psychiatry University of Pittsburgh
2011 – 2012	Lab Manager and Research Associate Affective Neuroscience Lab Supervisor: Golnaz Tabibnia, PhD Department of Social and Decision Sciences Carnegie Mellon University

Professional Memberships

Association for Psychological Science
American Psychosomatic Society
Psychoneuroimmunology Research Society
Society for Psychophysiological Research

Ad-Hoc Journal Reviewing

Annals of the New York Academy of Sciences
Biological Psychiatry
Brain, Behavior, and Immunity
Human Brain Mapping
Psychophysiology
Psychosomatic Medicine
Social Cognitive and Affective Neuroscience

Professional Service

2020 - present	Member, Emerging Leaders Special Interest Group American Psychosomatic Society
2019 – 2020	Student Representative Biological & Health Psychology Program, University of Pittsburgh
2019 – 2020	Meeting Coordinator Pitt-CMU Psychoneuroimmunology Journal Club
2017 – 2018	Psychology Department Representative Dietrich School of Arts & Sciences Graduate Student Organization
2011	Student Board Member CWRU University Hospitals Center for Music and Medicine
2010 – 2011	President and Member CWRU Psi Chi Honor Society Executive Board
2009 – 2011	Mu Phi Epsilon Honor Society Cleveland Institute of Music Chapter

Teaching Experience

Summer 2021	Teaching Fellow and Course Instructor PSY 0505 Introduction to Biopsychology Department of Psychology, University of Pittsburgh
Fall 2018	Teaching Fellow and Course Instructor PSY 0035 Research Methods Lab Department of Psychology, University of Pittsburgh
Fall 2018	Teaching Assistant PSY 0035 Research Methods Instructor: Benjamin M. Rottman, PhD Department of Psychology, University of Pittsburgh

Specialized Training

2017	Neurohackweek Summer School for Neuroimaging and Data Science University of Washington eScience Institute, Seattle, WA
2016	Diffusion Weighted Imaging Module Multimodal Neuroimaging Training Program Center for the Neural Basis of Cognition, Pittsburgh, PA
2013	Matlab Mini-Course Center for the Neural Basis of Cognition, Pittsburgh, PA
2011	Network Analysis: Functional Connectivity Neurometrika, Boston, MA

Additional Research Interests

Behavioral Medicine
Brain Imaging
Cardiovascular Psychophysiology
Cognitive Aging
Early Life Adversity
Emotion
Interoception
Machine Learning
Network Neuroscience
Psychoneuroimmunology