James F. Cavanagh, PhD

Curriculum Vitae 05/17/2024

Google Scholar Stats: Citations=10747 H=41 M=2.28

Biographical

Email:	jcavanagh@unm.edu
Phone:	415-867-0303
Web:	https://sites.google.com/site/crclunm/
Data Sharing:	www.predictsite.com
OrcID:	0000-0003-2428-3562

Education & Training

2019 - present	University of New Mexico	Associate Professor
2013 - 2019	University of New Mexico	Assistant Professor
2010 - 2013	Brown University	Post-Doc
2010	University of Amsterdam	Visiting Scholar
2005 - 2010	University of Arizona	Ph.D. Psychology
2002 - 2004	San Francisco State University	M.A. Psychology
1996 - 2000	Western Michigan University	B.A. Sociology

Research Interests

Oscillations: The brain processes information with oscillations of neuronal populations. I use EEG to measure these oscillations, particularly when the frontal cortex processes error or conflict information in order to adapt behavior.

Computations: Oscillations gate the timing, location, and intensity of neuronal calculations. I integrate abstract and neural network modeling with EEG to understand the computational functions of fronto-striatal systems during adaptive behavior.

& Implications: These perspectives combine into a powerful approach for understanding brain function, and may reveal the manner of compromised fronto-striatal functioning in neurological and psychiatric disorders.

Under Review

Ging-Jehli, N.R., **Cavanagh, J.F.**, Ahn, M., Segar, D.J., Asaad, W.F. & Frank, M.J. Pump the brakes: Distinct basal ganglia decision dynamics under conflict and uncertainty.

Fox, N.A., ... **Cavanagh, J.F.** ... and the HBCD EEG Workgroup. The development and structure of the HEALthy Brain and Child Development (HBCD) Study EEG protocol.

Lavelle, M. & **Cavanagh J.F.** Post-error attention control: Posterior alpha/beta activity is reflexive whereas frontal theta is strategic.

Pirrung, C.J.H., Singh, G., Hogeveen, J., Quinn, D. & **Cavanagh, J.F.** Hypoactivation of ventromedial frontal cortex in major depressive disorder: an MEG study of the Reward Positivity.

Publications

Narayanan, N.S., Jourahmad, Z., Cole, R.C. & **Cavanagh, J.F.** (2024) Cortical low frequency failures underlie cognitive dysfunction in Parkinson's disease. *Trends in Cognitive Science*

Hogeveen, J., Campbell, E.M., Mullins, T.S., Quinn, D.K., Mayer, A.R. & **Cavanagh, J.F.** (2024) Neural response to monetary incentives in acquired adolescent depression. *Brain Communications*

Hawkins, G.E., **Cavanagh, J.F.**, Brown, S.D. & Steyvers, M. (2024) Cognitive Models as a Tool to Link Decision Behavior with EEG Signals. In: *An Introduction to Model-Based Cognitive Neuroscience* Second Edition. Springer press. Eds: Foorstmann, B.U. & Truner, B.M.

Nwakamma, M.C., Stillman, A.M., Gabard-Durnam, L.J., **Cavanagh, J.F.**, Hillman, C.H. & Morris, T.P. (2024) Spectral parameterization reveals slowing of alpha peak frequency following mild traumatic brain injury. *Neurotrauma Reports*

Noback, M., Bhakta, S.G., Talledo, J.A., Kotz, J.E., Benster, L., Roberts, B.Z., Nungaray, J.A., Light, G.A., Swerdlow, N.R., Brigman, J.L., **Cavanagh, J.F.** & Young, J.W. (2024) Amphetamine increases motivation of humans and mice as measured by breakpoint, but does not affect a putative EEG biomarker. *Cognitive, Affective, and Behavioral Neuroscience*

Kehrer, P., Brigman, J.L. & **Cavanagh, J.F.** (2024) Depth recordings of the mouse homologue of the Reward Positivity. *Cognitive, Affective, and Behavioral Neuroscience*

McKeown, D.J., Schinazi, V.R., Baumann, O., Moustafa, A.A., Finley, A., Kelley, N., **Cavanagh, J.F.**, Keage, H. & Angus, D.J. (2024) Test-retest reliability of spectral parameterization by 1/f characterization using Specparam. *Cerebral Cortex*

McKeown, D.J., Jones, M., Pihl, C., Finley, A., Kelley, N., Baumann, O., Schinazi, V.R., Moustafa, A.A., **Cavanagh, J.F.** & Angus, D.J. (2023) Atypical resting aperiodic and periodic neural activity in Parkinson's disease. *Psychophysiology*

Cavanagh, J.F. (2023) Frontal theta helps to explain etiological variability. *Biological Psychiatry* [Invited Commentary]

Singh, G., Campbell, E., Hogeveen, J., Witkiewitz, K., Claus, E.D. & **Cavanagh, J.F.** (2023) Alcohol imagery boosts the Reward Positivity in heavy drinkers. *Psychiatry Research: Neuroimaging*

Campbell, E.M., Singh, G.S., Claus, E.D., Witkiewitz, K., Costa, V.D., Hogeveen, J. & **Cavanagh, J.F.** (2023) Electrophysiological markers of aberrant cue-specific exploration in heavy drinkers. *Computational Psychiatry*

Olguin, S.L., **Cavanagh, J.F.**, Young, J.W. & Brigman, J.L. (2023) Impaired cognitive control after moderate prenatal alcohol exposure corresponds to increased power in neurophysiological recordings during rodent touchscreen measures. *Neuropharmacology*

Singh, A., Cole, R.C., Espinoza, A.I., **Cavanagh, J.F.** & Narayanan, N.S. (2023) Evoked midfrontal activity predicts cognitive deficits in Parkinson's disease. *Journal of Neurology, Neurosurgery, and Psychiatry*

Jackson, T.J. & **Cavanagh, J.F.** (2023) Reduced positive affect alters reward learning via reduced information encoding in the Reward Positivity. *Psychophysiology*

Fink, B., Claus, E., **Cavanagh, J.F.**, Hamilton, D.A. & Biesen, J.N. (2023) Heart rate variability as a mechanism between alcohol use and intimate partner violence. *Frontiers in Psychiatry*

Wong, J.K., ... **Cavanagh J.F.**, ... Okun, M.S. (2023) Proceedings of the 10th annual deep brain stimulation think tank. *Frontiers in Human Neuroscience*.

Biernacki, K., Myers, C.E., Cole, S., **Cavanagh, J.F.** & Baker, T.E. (2023) Causal effects of prefrontal transcranial magnetic stimulation on dopamine-mediated reinforcement learning in healthy adults. *European Journal of Neuroscience*

Cavanagh, J.F. & Cohen, M. X. Frontal midline theta as a model specimen of cortical theta. In: *The Handbook of EEG Frequency*. Oxford press, Eds: Gable, P.A., Miller, M. & Bernat, E.B.

Cavanagh, J.F., Olguin, S., Talledo, J.A., Kotz, J.E., Roberts, B.Z., Nungaray, J.A., Sprock, J., Gregg, D., Bhakta, S.G., Light, G.A., Swerdlow, N.R., Young, J.W. & Brigman, J.L. (2022) Amphetamine alters an EEG feature of reward in humans and mice. *Psychopharmacology*, 239: 923-933.

Cole, R.C., Espinoza, A.I., Singh, A., Berger, J.I., **Cavanagh, J.F.**, Greenlee, J.D. & Narayanan, N.S. (2022) Novelty-induced frontal-STN networks in Parkinson's disease. *Cerebral Cortex*, 1-17.

Bhakta, S.G., **Cavanagh, J.F.**, Talledo, J.A., Kotz, J.E., Benster, L., Roberts, B.Z., Nungaray, J.A., Brigman, J.L, Gregg, D., Light, G.A., Swerdlow, N.R., & Young, J.W. (2022) EEG reveals that dextroamphetamine improves cognitive control through multiple processes in healthy participants. *Neuropsychopharmacology*, 47: 1029-1036.

Cavanagh, J.F., Ryman, S. & Pirio Richardson, S. (2022) Cognitive control in Parkinson's disease. *Progress in Brain Research*, 1, 137-152.

Brown, D.R., Jackson, T.J. & **Cavanagh, J.F.** (2022) The Reward Positivity is sensitive to affective liking. *Cognitive, Affective, and Behavioral Neuroscience*, 22, 258:267.

Cavanagh, J.F., Gregg, D., Light, G.A., Olguin, S. Sharp, R.F., Bismark, A.W., Bhakta, S.G., Swerdlow, N.R., Brigman, J.L. & Young, J.W. (2021) Electrophysiological biomarkers of behavioral dimensions from cross-species paradigms. *Translational Psychiatry*, 11, 482

Phillips, J., Pirrung, C.J., Weersinghe, I., Kanishka, G.K., Satharasinghe, Y., Lalitharatne, T., **Cavanagh, J.F.**, Kodituwakku, P. & Wanigasinghe, J. (2021) Portable aquisition of auditory ERPs: a pilot study of premature infants. *Pediatric Neurology*, 122, 84-88.

Hogeveen, J.R. Aragon, D.F., Rogge-Obando, K., Campbell, R.A., Yeo, R.A., Shuttleworth, C.W., Avila-Rieger, R.E., Wilson, J.K., Fratzke, V., Brandt, E., Story-Remer, J., Gill, D., Mayer, A.R., **Cavanagh, J.F.** & Quinn, D. (2021) Ventromedial prefrontal-anterior cingulate hyperconnectivity scales with apathy in Traumatic Brain Injury. *Journal of Neurotrauma*, 38, 2264-2274.

Dalton, S.G.H., **Cavanagh, J.F.** & Richardson, J.D. (2021) Spectral resting-state EEG (rs-EEG) in chronic aphasia is reliable, sensitive, and correlates with functional behavior. *Frontiers in Human Neuroscience*, 15, #624660

Singh, A., Cole, R.C., Espinoza, A.I., Evans, A., Cao, S., **Cavanagh, J.F.** & Narayanan, N.S. (2020) Interval timing variability and midfrontal ~4Hz rhythms correlate with cognitive dysfunction in Parkinson's disease. *NP: Parkinson's Disease*, 7, 14, 1-8.

Gershman, S.J., Guitart-Masip, M. & **Cavanagh, J.F.** (2020) Neural signatures of arbitration between Pavlovian and instrumental action selection. *PLoS Computational Biology*

Anjum, Md Fahim, Dasgupta, S., Mudumbai, R., Singh, A., **Cavanagh, J.F.** & Narayanan, N. (*in press*) Linear predictive coding distinguishes spectral EEG features of Parkinson's disease. *Parkinsonism & Related Disorders*

Brandt, E., Wilson, K.W., Rieger, R.E., Gill, D., Mayer, A.W. & **Cavanagh, J.F.** (*in press*) Respiratory sinus arrhythmia correlates with depressive symptoms following mild traumatic brain injury. *Journal of Psychophysiology*

Brown, D.R. **& Cavanagh, J.F.** (2020) Novel rewards occlude the reward positivity, and what to do about it. *Biological Psychology*

Singh, A. Cole, R.A., Espinoza, A.I., Brown, D.R., **Cavanagh, J.F.** & Narayanan, N. (2020) Frontal theta and beta oscillations during lower-limb movement in Parkinson's Disease. *Clinical Neurophysiology*, 131, 694-702.

Fink, B.C., Howell, B.C., Salway, S., **Cavanagh, J.F.**, Hamilton, D.A., Claus, E.D. & Frost, M.E. (2020) Frontal alpha asymmetry in alcohol-related intimate partner violence. *Social, Cognitive, and Affective Neuroscience*

Brown, D.R., Pirio Richardson, S. & **Cavanagh, J.F**. (2020) An EEG feature of reward processing is sensitive to Parkinson's disease duration. *Brain Research*

Marquardt, K., **Cavanagh, J.F.** & Brigman, J.L. (2019) Alcohol exposure in utero disrupts cortico-striatal coordination required for behavioral flexibility. *Neuropharmacology*.

Cavanagh, J.F., Rieger, R.E, Wilson, K.W., Gill, D., Brandt, E. & Mayer, A. (2019) Joint analysis of frontal theta synchrony and white matter following mild traumatic brain injury. *Brain Imaging and Behavior*

Broadway, J.M., Rieger, R.E., Wilson, K.W., Gill, D., Quinn, D., Mayer, A.W. & **Cavanagh, J.F.** (2019) Frontal lobe predictors of delayed memory deficits among acute and chronic mild traumatic brain injury patients. *Cortex*, 120, 240-248.

Cavanagh, J.F., Wilson, K., Reiger, R., Gill, D., Broadway, J.M., Story Remer, J.H., Fratzke, V., Mayer, A.R. & Quinn, D.K. (2019) ERPs predict symptomatic distress and recovery in sub-acute mild traumatic brain injury. *Neuropsychologia*

Kane, J., **Cavanagh, J.F.** & Dillon, D.G. (2019) Reduced theta power during memory retrieval in depressed adults. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 4(7), 636-643.

Erb, C. & **Cavanagh, J.F.** (2019) Layers of latent effects in cognitive control: An EEG investigation. *Acta Psychologia*, 195, 1-11.

Marquardt, K., Josey, M., Kenton, J.A., **Cavanagh, J.F**., Holmes, A. & Brigman, J.L. (2019) Impaired cognitive flexibility following NMDAR-GluN2B deletion is associated with altered orbitofrontal-striatal function. *Neuroscience*, 404, 338-352.

Cooper, P.S. Karayanidis, F., McKewen, M., McLellan-Hall, S., Wong, A.S.W., Skippen, P. & **Cavanagh, J.F.** (2019) Frontal theta predicts specific cognitive control-induced behavioral changes beyond general reaction time slowing. *NeuroImage*, 189, 130-140.

Janowich, J.R. & **Cavanagh, J.F.** (2019) Immediate vs. delayed control demands elicit distinct mechanisms for instantiating proactive control. *Cognitive, Affective, and Behavioral Neuroscience,* 19(4), 910-926.

Cavanagh, J.F. (2019) Early Career Award 2018: Electrophysiology as a theoretical and methodological hub in the neural sciences. *Psychophysiology*, 56(2)

Albrecht, M.A., Waltz, J., **Cavanagh, J.F**., Frank, M.J. & Gold, J.M. (2019) Increased conflict-induced slowing, but no differences in conflict-induced positive or negative prediction error learning in patients with schizophrenia. *Neuropsychologia*, 123, 131-140.

Cavanagh, J.F., Bismark, A.W., Frank, M.J. & Allen, J.J.B. (2019) Multiple dissociations between co-morbid depression and anxiety on reward and punishment processing: Evidence from computationally-informed EEG. *Computational Psychiatry*, https://doi.org/10.1162/cpsy_a_00024

Janowich, J.R. & **Cavanagh, J.F.** (2018) Delay Knowledge and Trial Set Count Modulate Use of Proactive vs. Reactive Control: A Meta-Analytic Review, *Psychonomic Bulletin and Review*, 25(4), 1249-1268.

Singh, A. Pirio Richardson, S. Narayanan, N, **Cavanagh, J.F.** (2018) Frontal midline theta is diminished during cognitive control in Parkinson's disease. *Neuropsychologia*, 117, 113-122.

Ryman, S., **Cavanagh, J.F.**, Wertz, C.J., Shaff, N.A., Dodd, A.B., Stevens, B., Ling, J. Yeo, R.A. & Mayer, A.R. (2018) Impaired Midline Theta Power and Connectivity During Proactive Cognitive Control in Schizophrenia. *Biological Psychiatry*, 84(9), 675-683.

Brown, D.R. & **Cavanagh, J.F.** (2018) Rewarding images do not invoke the reward positivity: they inflate it. *International Journal of Psychophysiology*, 132, 226-235.

Bridwell, D.A., **Cavanagh, J.F.**, Collins, A.G.E., Nunez, M.D., Srinivasan, R., Stober, S. & Calhoun, V.D. (2018) Moving beyond ERP components: A selective review of approaches to integrate EEG and behavior. *Frontiers in Human Neuroscience*, 12, 106.

Broadway, J.M, Frank, M.J. & **Cavanagh, J.F.** (2018) Effects of dopamine D2 agonist on working memory capacity and EEG: An individual differences investigation. *Cognitive, Affective, and Behavioral Neuroscience*, 18(3), 509-520.

Cavanagh, J.F., Kumar, P., Mueller, A.A., Pirio Richardson, S. & Mueen, A. (2018). Diminished EEG habituation to novel events effectively classifies Parkinson's patients. *Clinical Neurophysiology*, 129, 409-418.

Cavanagh, J.F., Napolitano, A., Wu, C. & Mueen, A. (2017). The Patient Repository for EEG Data + Computational Tools. *Frontiers in Neuroinformatics,* 11, 67.

Smith, E.E., **Cavanagh, J.F.** & Allen, J.J.B. (2017) Intracranial source activity (eLORETA) related to scalp-level asymmetry scores and depression status. *Psychophysiology* 55(1),

Pinner, J.F.L. & **Cavanagh, J.F.** (2017) Frontal theta accounts for individual differences in the cost of conflict on decision making. *Brain Research*, 1672, 73-80.

Brown, D.R. & **Cavanagh, J.F.** (2017) The sound and the fury: Late positive potential is sensitive to sound affect. *Psychophysiology*, 54 (12), 1812-1825.

Cavanagh, J.F., Meyer, A. & Hajcak, G. (2017) Error-specific cognitive control alterations in General Anxiety Disorder. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 2(5), 413-420.

Cavanagh, J.F., Mueller, A.A., Brown, D.A., Janowich, J.R., Story-Remer, J.H., Wegele, A. & Pirio Richardson, S. (2017) Cognitive states influence dopamine-driven aberrant learning in Parkinson's disease. *Cortex*, 90, 115-124.

Chen, K-H., Okerstrom, K.L., Kingyon, J.R., Anderson, S.W., **Cavanagh, J.F.** & Narayanan, N.S. (2016) Startle habituation and midfrontal theta activity in Parkinson's Disease. *Journal of Cognitive Neuroscience*, 28 (12), 1923-1932.

van de Vijver, I., Ridderinkhof, K.R., Harsay, H.A., Reneman, L., **Cavanagh, J.F**. Buitenweg, J. & Cohen, M.X. (2016) Frontostriatal anatomical connections predict age- and difficulty-related differences in reinforcement learning. *Neurobiology of Aging*, 46, 1-12.

Albrecht, M.A., Waltz, J., **Cavanagh, J.F.**, Frank, M.J. & Gold, J.M. (2016) Reduction of Pavlovian bias in schizophrenia: Enhanced effects in clozapine-administered patients. *PLoS ONE,* 11(4), http://dx.doi.org/10.1371/journal.pone.0152781

Cavanagh, J.F. & Castellanos, J. (2016). Identification of canonical neural events during continuous gameplay of an 8-bit style video game. *NeuroImage,* 133, 1-13.

Parker, K.L., Chen, K-H., Kingyon, J.R., **Cavanagh, J.F.** & Narayanan, N.S. (2015). Medial frontal ~4Hz activity in humans and rodents is attenuated in PD patients and in rodents with cortical dopamine depletion. *Journal of Neurophysiology*, 114, 1310-1320.

Cavanagh, J.F. (2015) Cortical delta activities reflect reward prediction error and related behavioral adjustment, but at different times. *NeuroImage*, 110, 205-216.

Cavanagh, J.F. & Shackman, A.J. (2015) Frontal theta reflects dispositional anxiety and cognitive control: Evidence from meta analyses. *Journal of Physiology – Paris*, 109, 3-15.

Turan, B., Foltz, C., **Cavanagh, J.F.**, Wallace, B.A., Cullen, M., Rosenberg, E.L., Jennings, P., Ekman, P. & Kemeny, M.E. (2015) Anticipatory sensitization to repeated stressors: The role of initial cortisol reactivity and meditation / emotion skills training. *Psychoneuroimmunology*, 52, 229-238.

Frank, M.J., Gagne, C. Nyhus, E., Masters, S.E., Wiecki, T.V., **Cavanagh, J.F.** & Badre, D. (2015) fMRI and EEG correlates of dynamic decision parameters during reinforcement learning. *Journal of Neuroscience*. 35, 484-494.

Parker, K.L., Chen, K-H., Kingyon, J., **Cavanagh, J.F.** & Narayanan, N.S. (2015) Prefrontal D1 dopamine signaling is essential for temporal control during interval timing. *Journal of Neuroscience*, 34(50), 16774-16783.

Cavanagh, J.F., Masters, S.E., Bath, K. & Frank, M.J. (2014) Conflict acts as an implicit cost in reinforcement learning. *Nature Communications* 5:5394.

Cavanagh, J.F. & Frank, M.J. (2014) Frontal theta as a mechanism for cognitive control. *Trends in Cognitive Science*, 18(8), 414-421.

Cavanagh, J.F., Sanguinetti, J.L., Allen, J.J.B., Sherman, S.J. & Frank, M.J. (2014). The subthalamic nucleus contributes to post-error slowing. *Journal of Cognitive Neuroscience*, 26(100), 2637-2644.

Cavanagh, J.F., Wiecki, T.V., Kochar, A., & Frank, M.J. (2014) Eye tracking and pupillometry reflect dissociable indices of latent cognitive processes. *Journal of Experimental Psychology: General*, 143(4), 1476-1488.

Collins, A.G.E., **Cavanagh, J.F.**, & Frank, M.J. (2014) Human EEG uncovers latent, generalizable rule structure during learning. *Journal of Neuroscience*, 34(13), 4677-4685.

Narayanan, N.S.*, **Cavanagh, J.F.***, Frank, M.J. & Laubach, M. (2013) A common low frequency oscillatory mechanism for adaptive control in rats and humans. *Nature Neuroscience*, 16(12), 1888-1895.

Cavanagh, J.F. (2013) The Where and When of "What-If". *Neuron,* 79(6), 1040-1041. [Invited Commentary]

Cavanagh, J.F., Eisenberg, I., Guitart-Masip, M., Huys, Q. & Frank, M.J. (2013) Frontal theta overrides Pavlovian learning biases. *Journal of Neuroscience,* 33(19), 8541-8548.

Cavanagh, J.F. & Frank M.J. (2013) Stop! Stay tuned for more information. *Experimental Neurology*. [Invited Commentary]

Cavanagh, J.F., Figueroa, C.M., Cohen, M.X & Frank, M.J. (2012) Frontal theta reflects uncertainty and unexpectedness in exploration and exploitation. *Cerebral Cortex, 11, 2575-2586*

Cavanagh, J.F., Neville, D., Cohen, M.X, van de Vijver, I., Harsay, H., Watson, P., Buitenweg, J., & Ridderinkhof, K.R. (2012). Individual differences in risky decision-making among seniors correlates with increased reward sensitivity. *Frontiers in Decision Science*, 6(111)*,* 1-7

Cavanagh, J.F., Zambrano-Vazquez, L., & Allen, J.J.B. (2012) Theta lingua franca: A common mid-frontal substrate for action monitoring processes. *Psychophysiology*, 49(2), 220-238

Kemeny, M.E., Foltz, C.A, **Cavanagh, J.F,** Giese-Davis, J., Jennings, P., Rosenberg, E.L., Gillath, O., Shaver, P., Wallace, A. & Ekman, P. (2012) Contemplative/emotion training enhances emotional behavior. *Emotion*, 12(2), 338-350

Cavanagh, J.F., Bismark, A., Frank, M.J., & Allen, J.J.B. (2011) Larger error signals in depression are associated with better avoidance learning. *Frontiers in Psychology: Cognition*, 2, 331, 1-6.

Cavanagh, J.F., Wiecki, T.V., Cohen, M.X, Figueroa, C.M., Samanta, J., Sherman S.J., Frank, M.J. (2011) Subthalamic nucleus stimulation reverses mediofrontal influence over decision threshold. *Nature Neuroscience*, 14(11), 1462-1467

Cohen, M.X, **Cavanagh, J.F.** & Slagter, H.A. (2011) Commentary on Foti et al. *Human Brain Mapping*, 32(12), 2270-2271

Cohen, M.X, **Cavanagh, J.F.** (2011). Single trial regression elucidates the role of prefrontal theta oscillations in response conflict. *Frontiers in Psychology: Perception Science*, 2, 30, 1-12

Cavanagh, J.F., Frank, M.J., & Allen, J.J.B. (2011). Social stress reactivity alters reward and punishment learning. *Social, Cognitive, and Affective Neuroscience*, 6(3), 311-320

Cavanagh, J.F., Gründler, T.O.J., Frank, M.J. & Allen, J.J.B. (2010). Altered cingulate sub-region activation accounts for task related dissociation in ERN amplitude as a function of obsessive – compulsive symptoms. *Neuropsychologia,* 48(7), 2098-2109

Cavanagh, J.F., Frank, M.J., Klein, T.J. & Allen, J.J.B. (2010). Frontal theta links prediction error to behavioral adaptation in reinforcement learning. *NeuroImage,* 49(4), 3198-3209

Gründler, T.O.J.*, **Cavanagh, J.F.*,** Figueroa, C.M., Frank, M.J. & Allen, J.J.B. (2009). Task related dissociation in ERN amplitude as a function of obsessive – compulsive symptoms. *Neuropsychologia,* 47(8-9), 1978-1987

Cavanagh, J.F.*, Cohen, M.X.* & Allen, J.J.B. (2009). Prelude to and resolution of an error: EEG phase synchrony reveals cognitive control dynamics during action monitoring. *Journal of Neuroscience*, 29(1), 98-105

Cavanagh, J.F., & Allen, J.J.B. (2009). The Behavioral Activation System. *In Sander, D. & Scherer, K.R. Oxford Companion to Affective Sciences, Oxford University Press*.

Cavanagh, J.F., & Allen, J.J.B. (2009). The Behavioral Inhibition System. *In Sander, D. & Scherer, K.R. Oxford Companion to Affective Sciences, Oxford University Press*.

Cavanagh, J.F., & Allen, J.J.B. (2008). Multiple aspects of the stress response to social evaluative threat: An electrophysiological investigation. *Psychoneuroendocrinology*, 33, 41-53

Cavanagh, J., Geisler, M. (2006). Mood effects on the ERP processing of emotional intensity in faces: A P3 investigation with depressed students. *International Journal of Psychophysiology*, 60, 27-33

Current Funding

NIDA U01DA055359 Dates: 09/30/2021 – 06/30/2026
Bakhireva/Leeman (M-PIs)
"*18/24 The Healthy Brain and Child Development National Consortium*"
Total Costs: $5,476,047
Role: Co- Investigator 10%

NIDCD RO1DC019292-01 Dates: 05/01/2021 – 04/30/2026
PI: Jessica Richardson
"*Optimizing targeted interventions for aphasia*"
Direct Costs: $1,900,000
Role: Co- Investigator 5%

Completed Funding

NIMH RO1MH119382-01 Dates: 04/01/2019 – 01/31/2024
PI: James F. Cavanagh
"A Novel Bench-to-Bedside Translational Model of Anhedonia"
Direct Costs: $1,262,551
Role: PI 50%

NIGMS P30GM122734 Dates: 05/01/2022 – 06/31/2023
PI: James F. Cavanagh
"*Causal Dissociation of Value Contributions to the Reward Positivity*"
Direct Costs: $24,860
Role: Pilot project PI

NINDS P20NS123151-01 Dates: 07/01/2021 – 06/30/2023
PI: Nandakumar S. Narayanan
"*Prefrontal Cortex, Cognition, and Speech Symptoms in PD (PRECIS-PD)*"
Direct Costs: $926,740
Role: Co- Investigator 10%

NIMH UH3MH109168-01 Dates: 09/04/2018 – 12/31/2020
PI: Jared Young
"Neurophysiological biomarkers of behavioral dimensions from cross-species paradigms"
Direct Costs: $1,307,090
Role: Co-Investigator 12%

UNM Grand Challenge Dates: 09/01/2019 – 08/31/2020
PI: James F. Cavanagh
"Biomarkers of Aberrant Control and Reward Processing in Individuals with an Alcohol Use Disorder"
Direct Costs: $10,000
Role: PI

UNM Grice Award Dates: 03/01/2019 – 08/31/2020
PI: James F. Cavanagh
"Role of the Infralimbic Cortex in Reinforcement Learning"
Direct Costs: $3,000
Role: PI

NIGMS P20GM109089-01A1 Dates: 09/15/2015 – 12/31/2018
PI: Bill Shuttleworth
UNM Center for Brain Recovery and Repair
Direct costs: $11,357,000
Subcomponent direct costs: $885,499
Role: Project PI 50%

NIMH UH2MH109168-01 Dates: 04/01/2016 – 03/31/2018
PI: Jared Young
"Neurophysiological biomarkers of behavioral dimensions from cross-species paradigms"
Direct Costs: $1,566,674
Role: Co-Investigator 5%

UNM Office of the Vice President of Research Dates: 06/01/2016 – 05/30/2017
PI: James Cavanagh
"*PRED+CT: A Patient Repository of EEG Data and Computational Tools*"
Direct Costs: $19,444
Role: PI

NIAAA R21AA0023947-01A1 Dates: 10/01/2015 – 09/31/2017
PI: Brandi Fink
Over-Arousal as a Mechanism between Alcohol and Intimate Partner Violence
Direct Costs: $214,178
Role: Co-Investigator 10%

University of Iowa Medical School Dates: 04/01/2013 – 04/01/2014
PI: Nandakumar S. Narayanan
"*Parkinson's Disease, Cognitive Symptoms, and Medial Prefrontal Processing*"
Direct costs: $20,000
Role: Co-Investigator

NSF 1125788 Dates: 09/01/2011 – 08/31/2015
PI: Michael J. Frank (*co-written by James F. Cavanagh)
"*Electrophysiological and Computational Studies of Action Monitoring*"
Direct costs: $757,012
Role: Co-Investigator

NIH NRSA T32MH019118-21 Dates: 07/01/2011 – 06/30/2012
PI: James F. Cavanagh
Direct costs: $40,556
Role: Fellowship

NIH NRSA F31MH082560-01A2 Dates: 09/15/2008 – 08/17/2010
PI: James F. Cavanagh
"*How stress alters neural systems of reinforcement: A model of depressive etiology*"
Direct costs: $61,326
Role: Fellowship

Professional Memberships and Service Activities

- Consulting Editor: *Cognitive, Affective, and Behavioral Neurosciences*
- Consulting Editor: *Brain Research*
- Program Chair: *New Mexico EEG and Behavior Conference*, Albuquerque, 2018
- Co-Organizer: *Opinions and Discussions on Cognitive Neuroscience*, Amsterdam, 2009
- Society for Psychophysiological Research:
    - Poster Judge (2015, 2017, 2022)
    - Early Careers Panelist (2015)
    - Program Committee (2017, 2019-2023)
    - Public Relations Committee (2021-2023)
    - Chair: Member Awards and Recognition Committee (2023)
    - Board of Directors (2023-2026)
- 2024 Ad Hoc Member: NIH *Biobeh. Mech. Of Emo., Stress & Health* Study Section
- 2023 Ad Hoc Member: NIMH *Conte Center* Study Section
- 2023 Ad Hoc Member: NIH *Human Complex Mental Functions* Study Section
- 2022 Ad Hoc Member: NIH *BRAIN F32* Study Section
- 2022 Panel Member: NSF *Science & Technology Centers* Program P221783
- 2022 Ad Hoc Member: NIH *TBI, Hemorrhage & Fluid Dyn.* SEP (*chaired 2 proposal*)
- 2022 Ad Hoc Member: NIH *Human Complex Mental Functions* Study Section
- 2021 Ad Hoc Member: NIMH *Conte Center* Study Section
- 2021 Ad Hoc Member: NIH *Member Conflict: Human Complex Mental Functions*
- 2021 Ad Hoc Member: NIMH *Computational Psychiatry* Study Section
- 2021 Ad Hoc Member: NIH *Human Complex Mental Functions* Study Section
- 2020 Ad Hoc Member: NIMH *Computational Psychiatry* Study Section
- 2020 Ad Hoc Member: NIMH *Conte Center* Study Section
- 2019 Ad Hoc Member: NIH *Cognition and Perception* Study Section

Awards & Recognitions

2018	Early Career Award	Society for Psychophysiological Research
2013	Travel Award	COSYNE conference, Salt Lake City UT
2011	Travel Award	DEFD conference, Boulder CO
2010	Scholarship Award	UA Grad Council for College of Science
2010	Scholarship Award	UA Psychology Dept
2009	Tursky (Top Student Poster) Award	Society for Psychophysiological Research
2008	Travel Award	UA Graduate Student Council
2006	Travel Award	UA Graduate Student Council
2005	Pre-Doctoral Research Grant	UA Social & Behavioral Research Institute
2000	Graduated Cum Laude	Western Michigan University

DEI Training, Outreach, and Service

2023 National Research Mentoring Network workshops: unconscious bias
2023 Chair: NIH FIRST grant DEI-focused faculty search committee

Invited Colloquia Presentations

2023 University of South Dakota, Department of Neuroscience
2022 University of Iowa, Department of Psychology
2022 Cambridge University, Department of Psychiatry
2022 McLean Hospital, P50 Speaker Series
2019 Rutgers, Center for Molecular and Behavioral Neuroscience
2017 University of Maryland, Department of Psychology
2015 Columbia University, Department of Neurosurgery
2014 Yale University, J.B. Pearce Labs
2014 University of Iowa, Department of Neurology Grand Rounds

Conference Talks

Pirrung, C.J.H., Singh, G., Hogeveen, J., Quinn, D. & **Cavanagh, J.F.** (2023) MEG source estimation of the Reward Positivity. *Presented at the Society for Psychophysiological Research, 09/23.*

Cavanagh, J.F. (2023) Event-related EEG reflects prediction errors across the cortical hierarchy. *Presented at Breaking Expectations, Marburg Germany, 07/23*.

Cavanagh, J.F. (2022) The Reward Positivity is a nexus of multidimensional value. *Presented at the Society for Psychophysiological Research, 09/22.*

Singh, G., Campbell, E., Hogeveen, J., Witkiewitz, K., Claus, E. & **Cavanagh, J.F.** (2022) Alcohol imagery evokes a larger Reward Positivity in heavy drinkers. *Presented at the Society for Psychophysiological Research, 09/22.*

Cavanagh, J.F. (2022) A novel, fast, inexpensive biomarker of the ventral reward system. *Presented at the 10th conference of the Deep Brain Stimulation society, 08/22*.

Cavanagh, J.F. (2021) Using reinforcement prediction errors as a filter for information content in EEG recordings. *Presented at the Society for Psychophysiological Research, Virtual Conference, 10/21.*

Cavanagh, J.F. (2021) Best experiment ever! Puppies, milkshakes, and the neurobiology of anhedonia. *Presented at the Society for Affective Science, Virtual Conference, 04/21.*

Cavanagh, J.F., Coffman, B. & Dillon, D.E. (2019) Memento malum: Mistakes boost memory via fronto-hippocampal theta synchrony. *Presented at the Society for Psychophysiological Research, Washington, DC, 09/19.*

Cavanagh, J.F. (2019) Frontal theta as a mechanism for cognitive control: Application to psychiatric and neurological populations. *Presented at the Iowa Neuroscience Institute Workshop, Iowa City, IA, 09/19*

Cavanagh, J.F. (2018) Early Career Award: Electrophysiology as a theoretical and methodological hub in the neural sciences. *Presented at the Society for Psychophysiological Research, Quebec City, CA, 10/18*

Cavanagh, J.F. (2017) Open tools for EEG-based pattern classification of psychiatric and neurological disease. *Presented at the Society for Psychophysiological Research, Vienna, Austria, 10/17*

Cavanagh, J.F., Meyer, A. & Hajcak, G. (2017) Error-specific cognitive control alterations in General Anxiety Disorder. *Presented at the Society for Psychophysiological Research, Vienna, Austria, 10/17.*

Smith, E.E., **Cavanagh, J.F.** & Allen, J.J.B. (2017) Intracranial source activity related to scalp-level asymmetry scores and depression status. *Presented at the Society for Psychophysiological Research, Vienna, Austria, 10/17.*

Cavanagh, J.F., Coffman, B. & Dillon, D.E. (2017) Memento malum: Mistakes boost memory via fronto-hippocampal theta synchrony. *Presented at the Organization for Human Brain Mapping, Vancouver, Canada, 06/17.*

Cavanagh, J.F. (2016). Dissociated Circuit Motifs: Multiple Mechanisms for Control. *Presentation at the Computational and Systems Neuroscience Society (Workshop: "Computations of the Dorsomedial Prefrontal Cortex"), Salt Lake City, UT, 03/16*.

Cavanagh, J.F. (2015). E-Phys is the Basis: A Translational Model of Adaptive Control. *Presentation at Society for Psychophysiological Research, Seattle, WA, 09/15*.

Cavanagh, J.F. (2015). Is There a General Theory for PFC/ACC Function? *Presentation at the 4th Workshop on Computational Properties of Prefrontal Cortex, Washington, DC, 05/15*.

Cavanagh, J.F. (2015). Dynamic Thresholds in Decision Making. *Presentation at the Computational and Systems Neuroscience Society (Workshop: "Random Walk Models Across Decision-Making Domains"), Salt Lake City, UT, 03/15*.

Cavanagh, J.F. (2014). Frontal Theta as a Mechanism for Cognitive Control. *Presentation at the 3rd Workshop on Computational Properties of Prefrontal Cortex, Whistler, BC, Canada, 10/14*.

Cavanagh, J.F. (2014). Frontal Theta as a Mechanism for Affective and Effective Control. *Presentation at the Society for Psychophysiological Research, Atlanta, GA, 09/14*.

Cavanagh, J.F. (2014). Synchrony in the Subthalamic Nucleus: Adaptive and Maladaptive Patterns in Health and Disease. *Presentation at the Computational and Systems Neuroscience Society (Workshop: "Rogue States: Altered Dynamics of Neural Circuit Activity in Brain Disorders"), Salt Lake City, UT, 03/14*.

Cavanagh, J.F. (2013). Theta as a Common Language for Mediofrontal Cortical Operations. *Presentation at Neural Circuits for Adaptive Control of Behavior, Paris, France, 9/13*.

Cavanagh, J.F. (2009). Allostatic Load and the Brain. *Presentation at the Opinions and Discussions on Cognitive Neuroscience: Amsterdam workshop, Amsterdam, Netherlands, 10/09.*

Cavanagh, J.F., Gründler, T.O.J., Frank, M.J. & Allen, J.J.B. (2009). Damned if you do, Damned if you don't: Dissociating Error Monitoring Systems in OCD. *Presentation at the Society for Psychophysiological Research, Berlin, Germany, 10/09.*

Cavanagh, J.F., Frank, M.J. & Allen, J.J.B. (2008). Social Stress Alters Cognitive Control in Vulnerable Individuals: Implications for Reinforcement Learning. *Presentation at the Action Monitoring and Behavioral Adjustment workshop, Aachen, Germany, 03/08*

Kemeny, M.E., **Cavanagh, J.F.,** & Foltz, C.A. (2008). Cognitive Response Determines Autonomic and Endocrine Response to Social Threat. *Presentation at the Society for Personality and Social Psychology, Albuquerque, NM, 01/08*

Teaching Experience

Instructor:	Psy 641: Cognition, Brain & Behavior Seminar, *UNM* Psy 650: Human Decision Making, *UNM* Psy 450: Principles of Psychophysiology, *UNM* Psy 650: Functions of Prefrontal Cortex, *UNM* Psy 644: Advanced EEG Analysis in Matlab, *UNM* Psy 240: Brain and Behavior, *UNM* Psy 443: Psychobiology of Emotion, *UNM* LAEL-LE94: Psychobiology of Emotion, *RI School of Design* Psy 200: Intro to Psychology, *SFSU* Psy 371: Intro to Statistics, *SFSU* Psy 400: Research Methods, *SFSU*
Lab Instructor:	Psy 501b: Psychophysiology Lab, *University of Arizona* Psy 297a: Research Methods, *University of Arizona* Psy 571: Psychophysiology Lab, *SFSU* Psy 400: Research Methods, *SFSU* Psy 371: Intro to Statistics, *SFSU*

Ad-Hoc Reviewer - Journals

1 Advances in Medical Sciences
2 Acta Psychologica
3 American Journal of Psychiatry
4 Behavioural Brain Research
5 Behavioral Neuroscience
6 Biological Psychology
7 Biological Psychiatry
8 Biological Psychiatry: CNNI
9 Biomedical Signal Processing & Control
10 BMC Biology
11 Brain
12 Brain and Cognition
13 Brain Imaging and Behavior
14 Brain Research
15 Brain Stimulation
16 Brain Structure & Function
17 Cell
18 Cell Reports
19 Cerebral Cortex
20 Clinical Neurophysiology
21 Cog., Aff. & Beh. Neuroscience
22 Cognition
23 Cognition and Emotion
24 Cognitive Neurodynamics
25 Communications Biology
26 Comp. Methods and Prog. in Biomed.
27 Computational Psychiatry
28 Cortex
29 Current Biology
30 Current Opinion in Behavioral Sciences
31 Drug & Alcohol Dependence
32 European Journal of Neuroscience
33 European Neuropsychopharmacology
34 eLife
35 Emotion
36 eNeuro
37 Frontiers in Cognition
38 Frontiers in Decision Neuroscience
39 Frontiers in Human Neuroscience
40 Frontiers in Neuroscience
41 Human Brain Mapping
42 Imaging Neuroscience
43 International J. of Psychophysiology
44 Journal of Cognitive Neuroscience
45 Journal of Child Psychiatry and Psychol.
46 Journal of Economics in Psych. and Neuro.
47 JEP: General
48 JEP: Learning, Memory & Cognition
49 JEP: Human Perception & Performance
50 Journal of Mathematical Psychology
51 Journal of Neural Engineering
52 Journal of Neuropharmacology
53 Journal of Neurophysiology
54 Journal of Neuroscience
55 Journal of Neurotrauma
56 Journal of Neurosci., Psychol. & Economics
57 Journal of Personality
58 Journal of Psychopathol. and Clin. Science
59 Journal of Psychophysiology
60 Journal of Physiology (Paris)
61 Learning and Memory
62 Movement Disorders
63 npj Parkinson's Disease
64 Nature Communications
65 Nature Human Behavior
66 Nature Neuroscience
67 Neuron
68 Neuroscience
69 NeuroImage
70 NeuroImage: Clinical
71 Neuropharmacology
72 Neuropsychopharmacology
73 Neuropsychologia
74 Neuroscience & Biobehavioral Reviews
75 Peer Community in Registered Reports
76 PNAS
77 PLoS Computational Biology
78 PLoS One
79 Prog NeuroPsychPharm & Bio Psychi
80 Psychological Medicine
81 Psychological Review
82 Psychological Science
83 Psychology and Aging
84 Psychoneuroendocrinology
85 Psychopharmacology
86 Psychophysiology
87 Scientific Reports
88 Schizophrenia Bulletin
89 Social, Cognitive & Affective Neurosci.
90 Social Neuroscience
91 Trends in Cognitive Science

Ad-Hoc Reviewer - Grants

1. Army Research Laboratory (ARL – USA)
2. Austrian Science Fund (FWF – Austria)
3. Binational Science Foundation (BSF – US / Israel)
4. Deutsche Forschungsgemeinschaft (Germany)
5. European Research Council (ERC – Europe)
6. Health Research Council of New Zealand (HRC – NZ)
7. Medical Research Council (MRC – UK)
8. National Institute of Health (NIH - USA)
9. National Research Agency (ANR - France)
10. National Science Center (NCN – Poland)
11. National Science Foundation (NSF – USA)
12. National Sciences and Engineering Res. Council (NSERC - Canada)
13. Netherlands Org. for Health Research and Devel. (ZonMw - Netherlands)
14. Netherlands Organization for Sci. Research (NWO – Netherlands)
15. Research Foundation – Flanders (FWO - Belgium)
16. Swiss National Science Foundation (FNSNF - Switzerland)
17. UK Research and Innovation (UKRI – United Kingdom)
18. Welcome Trust (United Kingdom)