

## James F. Cavanagh, PhD

Curriculum Vitae 05/30/2023

Google Scholar Stats: Citations=9277 H=40 M=2.35

### Biographical

Email: [jcavanagh@unm.edu](mailto:jcavanagh@unm.edu)  
 Phone: 415-867-0303  
 Web: <https://sites.google.com/site/crclunm/>  
 Data Sharing: [www.predictsite.com](http://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

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. Atypical resting aperiodic and periodic neural activity in Parkinson's disease.

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. Amphetamine increases motivation of humans and mice as measured by breakpoint, but does not affect a putative EEG biomarker.

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

Singh, G., Campbell, E., Hogeveen, J., Witkiewitz, K., Claus, E.D. & **Cavanagh, J.F.** Alcohol imagery boosts the Reward Positivity in heavy drinkers.

## Forthcoming Chapters

Hawkins, G.E., **Cavanagh, J.F.**, Brown, S.D. & Steyvers, M. Cognitive models as a tool for linking behavioral performance with EEG activity. In: *An Introduction to Model-based Neuroscience*, 2<sup>nd</sup> ed. Springer press, Eds: Forstmann, B.U. & Turner, B.

## Publications

Olguin, S.L., **Cavanagh, J.F.**, Young, J.W. & Brigman, J.L. (in press) 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. (in press) 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. 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 acquisition 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 Psychologica*, 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](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.** Buitengeweg, 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., Buitengeweg, 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

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%

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%

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%

## Completed Funding

- 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, 2020, 2021, 2022, 2023)
  - Public Relations Committee (2021, 2022)
  - Chair: Member Awards and Recognition Cmte (2023)
- 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 props)
- 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

- 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

**Cavanagh, J.F.** (2022) The Reward Positivity is a nexus of multidimensional value. *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 10<sup>th</sup> 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 4<sup>th</sup> 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 3<sup>rd</sup> 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 - Grants

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

## Ad-Hoc Reviewer - Journals

- |   |   |
|---|---|
| 1 American Journal of Psychiatry          | 32 eLife                                      |
| 2 Behavioural Brain Research              | 33 Emotion                                    |
| 3 Behavioral Neuroscience                 | 34 eNeuro                                     |
| 4 Biological Psychology                   | 35 Frontiers in Cognition                     |
| 5 Biological Psychiatry                   | 36 Frontiers in Decision Neuroscience         |
| 6 Biological Psychiatry: CNI              | 37 Frontiers in Human Neuroscience            |
| 7 Biomedical Signal Processing & Control  | 38 Frontiers in Neuroscience                  |
| 8 BMC Biology                             | 39 Human Brain Mapping                        |
| 9 Brain                                   | 40 International J. of Psychophysiology       |
| 10 Brain and Cognition                    | 41 Journal of Cognitive Neuroscience          |
| 11 Brain Imaging and Behavior             | 42 Journal of Child Psychiatry and Psychol.   |
| 12 Brain Research                         | 43 Journal of Economics in Psych. and Neuro.  |
| 13 Brain Stimulation                      | 44 JEP: General                               |
| 14 Brain Structure & Function             | 45 JEP: Learning, Memory & Cognition          |
| 15 Cell                                   | 46 JEP: Human Perception & Performance        |
| 16 Cell Reports                           | 47 Journal of Mathematical Psychology         |
| 17 Cerebral Cortex                        | 48 Journal of Neural Engineering              |
| 18 Clinical Neurophysiology               | 49 Journal of Neuropharmacology               |
| 19 Cog., Aff. & Beh. Neuroscience         | 50 Journal of Neurophysiology                 |
| 20 Cognition                              | 51 Journal of Neuroscience                    |
| 21 Cognition and Emotion                  | 52 Journal of Neurotrauma                     |
| 22 Cognitive Neurodynamics                | 53 Journal of Neurosci., Psychol. & Economics |
| 23 Communications Biology                 | 54 Journal of Personality                     |
| 24 Comp. Methods and Prog. in Biomed.     | 55 Journal of Psychophysiology                |
| 25 Computational Psychiatry               | 56 Journal of Physiology (Paris)              |
| 26 Cortex                                 | 57 Movement Disorders                         |
| 27 Current Biology                        | 58 npj Parkinson's Disease                    |
| 28 Current Opinion in Behavioral Sciences | 59 Nature Communications                      |
| 29 Drug & Alcohol Dependence              | 60 Nature Human Behavior                      |
| 30 European Journal of Neuroscience       | 61 Nature Neuroscience                        |
| 31 European Neuropsychopharmacology       | 62 Neuron                                     |

- 63 Neuroscience
- 64 NeuroImage
- 65 NeuroImage: Clinical
- 66 Neuropharmacology
- 67 Neuropsychopharmacology
- 68 Neuropsychologia
- 69 Neuroscience & Biobehavioral Reviews
- 70 Peer Community in Registered Reports
- 71 PNAS
- 72 PLoS Computational Biology
- 73 PLoS One
- 74 Prog NeuroPsychPharm & Bio Psychi
- 75 Psychological Review
- 76 Psychological Science
- 77 Psychology and Aging
- 78 Psychoneuroendocrinology
- 79 Psychophysiology
- 80 Scientific Reports
- 81 Social, Cognitive & Affective Neurosci.
- 82 Social Neuroscience
- 83 Trends in Cognitive Science