

Stanford



Nolan Williams

Associate Professor of Psychiatry and Behavioral Sciences (Major Laboratories & Clinical Translational Neurosciences Incubator) and, by courtesy, of Radiology (Neuroimaging and Neurointervention)

CLINICAL OFFICE (PRIMARY)

- **Psychiatry and Behavioral Sciences**

401 Quarry Rd
MC 5719
Stanford, CA 94305
Tel (650) 498-9111 **Fax** (650) 724-9900

Bio

BIO

Dr. Williams is an Associate Professor within the Department of Psychiatry and Behavioral Sciences and the Director of the Stanford Brain Stimulation Lab. Dr. Williams has a broad background in clinical neuroscience and is triple board-certified in general neurology, general psychiatry, as well as behavioral neurology & neuropsychiatry. In addition, he has specific training and clinical expertise in the development of brain stimulation methodologies. Themes of his work include (a) examining the use of spaced learning theory in the application of neurostimulation techniques, (b) development and mechanistic understanding of rapid-acting antidepressants, and (c) identifying objective biomarkers that predict neuromodulation responses in treatment-resistant neuropsychiatric conditions. Dr. Williams' work has resulted in an FDA clearance for the world's first non-invasive, rapid-acting neuromodulation approach for treatment-resistant depression. He has published papers in high-impact peer-reviewed journals including *Brain*, *American Journal of Psychiatry*, and the *Proceedings of the National Academy of Science*. Results from his studies have gained widespread attention in journals such as *Science* and *New England Journal of Medicine Journal Watch* as well as in the popular press and have been featured in various news sources including *Time*, *Smithsonian*, and *Newsweek*. Dr. Williams received two NARSAD Young Investigator Awards in 2016 and 2018 along with the 2019 Gerald L. Klerman Award. Dr. Williams received the National Institute of Mental Health Biobehavioral Research Award for Innovative New Scientists in 2020.

CLINICAL FOCUS

- Neurology
- Neuropsychiatry
- Interventional Psychiatry
- Psychiatry
- Behavioral Neurology

ACADEMIC APPOINTMENTS

- Associate Professor, Psychiatry and Behavioral Sciences
- Associate Professor (By courtesy), Radiology
- Member, Bio-X

- Member, Wu Tsai Human Performance Alliance
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Director, Stanford Interventional Psychiatry Clinical Research, (2019- present)
- Director, Stanford Brain Stimulation Laboratory, (2015- present)
- Chief Resident of Neuropsychiatry, Medical University of South Carolina, (2011-2014)
- Chief Resident of Neurology, Medical University of South Carolina, (2011-2012)

HONORS AND AWARDS

- A.E. Bennett Award, Society of Biological Psychiatry (2024)
- Leading Research Achievements, Brain & Behavior Research Foundation (2022)
- Leading Research Achievements, Brain & Behavior Research Foundation (2021)
- Biobehavioral Research Award for Innovative New Scientists, National Institute of Mental Health (2020)
- Bipolar Research Award, One Mind (2020)
- Leading Research Achievements, Brain & Behavior Research Foundation (2020)
- Chairman's Award for Advancing Science, Stanford University (2019)
- Gerald R. Klerman Award, Brain & Behavior Research Foundation (2019)
- NARSAD Young Investigator Award, Brain & Behavior Research Foundation (2018-2020)
- NARSAD Young Investigator Award, Brain & Behavior Research Foundation (2016-2018)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Director, Board of Directors, Clinical TMS Society (2021 - present)
- Member, American Neuropsychiatric Association Committee on Research (2016 - present)
- Diplomate, American Board of Psychiatry and Neurology (2014 - present)

PROFESSIONAL EDUCATION

- Board Certification, United Council for Neurologic Subspecialties , Behavioral Neurology & Neuropsychiatry (2020)
- Board Certification: Neurology, American Board of Psychiatry and Neurology (2019)
- Board Certification: Psychiatry, American Board of Psychiatry and Neurology (2014)
- NIH R25 Research Fellowship, Medical University of South Carolina , Human Neuroscience (2014)
- Clinical Fellowship, Medical University of South Carolina , Invasive and Non-Invasive Neuromodulation (2014)
- Residency, Medical University of South Carolina , Psychiatry (2014)
- Residency, Medical University of South Carolina , Neurology (2014)
- Internship, Medical University of South Carolina , Internal Medicine (2009)
- MD, Medical University of South Carolina , Medicine (2008)

LINKS

- Stanford Brain Stimulation Lab: <http://med.stanford.edu/bsl.html>

Publications

PUBLICATIONS

- **Magnesium-ibogaine therapy in veterans with traumatic brain injuries.** *Nature medicine*
Cherian, K. N., Keynan, J. N., Anker, L., Faerman, A., Brown, R. E., Shamma, A., Keynan, O., Coetzee, J. P., Batail, J., Phillips, A., Bassano, N. J., Sahlem, G. L., Inzunza, et al
2024
- **Targeted neurostimulation reverses a spatiotemporal biomarker of treatment-resistant depression.** *Proceedings of the National Academy of Sciences of the United States of America*
Mitra, A., Raichle, M. E., Geoly, A. D., Kratter, I. H., Williams, N. R.
2023; 120 (21): e2218958120
- **Stanford Neuromodulation Therapy (SNT): A Double-Blind Randomized Controlled Trial.** *The American journal of psychiatry*
Cole, E. J., Phillips, A. L., Bentzley, B. S., Stimpson, K. H., Nejad, R., Barmak, F., Veerapal, C., Khan, N., Cherian, K., Felber, E., Brown, R., Choi, E., King, et al
2021: appiajp202120101429
- **Stanford Accelerated Intelligent Neuromodulation Therapy for Treatment-Resistant Depression.** *The American journal of psychiatry*
Cole, E. J., Stimpson, K. H., Bentzley, B. S., Gulser, M. n., Cherian, K. n., Tischler, C. n., Nejad, R. n., Pankow, H. n., Choi, E. n., Aaron, H. n., Espil, F. M., Pannu, J. n., Xiao, et al
2020: appiajp201919070720
- **Attenuation of antidepressant and antisuicidal effects of ketamine by opioid receptor antagonism.** *Molecular psychiatry*
Williams, N. R., Heifets, B. D., Bentzley, B. S., Blasey, C. n., Sudheimer, K. D., Hawkins, J. n., Lyons, D. M., Schatzberg, A. F.
2019
- **Attenuation of Antidepressant Effects of Ketamine by Opioid Receptor Antagonism.** *The American journal of psychiatry*
Williams, N. R., Heifets, B. D., Blasey, C., Sudheimer, K., Pannu, J., Pankow, H., Hawkins, J., Birnbaum, J., Lyons, D. M., Rodriguez, C. I., Schatzberg, A. F.
2018: appiajp201818020138
- **High-dose spaced theta-burst TMS as a rapid-acting antidepressant in highly refractory depression.** *Brain : a journal of neurology*
Williams, N. R., Sudheimer, K. D., Bentzley, B. S., Pannu, J. n., Stimpson, K. H., Duvio, D. n., Cherian, K. n., Hawkins, J. n., Scherrer, K. H., Vyssoki, B. n., DeSouza, D. n., Raj, K. S., Keller, et al
2018
- **Five Year Follow-Up of Bilateral Epidural Prefrontal Cortical Stimulation for Treatment-Resistant Depression** *BRAIN STIMULATION*
Williams, N. R., Short, E. B., Hopkins, T., Bentzle, B. S., Sahlem, G. L., Pannu, J., Schmidt, M., Borckardt, J. J., Korte, J. E., George, M. S., Takacs, I., Nahas, Z.
2016; 9 (6): 897-904
- **Deep brain stimulation (DBS) at the interface of neurology and psychiatry** *JOURNAL OF CLINICAL INVESTIGATION*
Williams, N. R., Okun, M. S.
2013; 123 (11): 4546-4556
- **Accelerated Theta Burst Stimulation: Safety, Efficacy, and Future Advancements.** *Biological psychiatry*
Cole, E., O'Sullivan, S. J., Tik, M., Williams, N. R.
2024; 95 (6): 523-535
- **Pilot study of stanford neuromodulation therapy (SNT) for bipolar depression.** *Brain stimulation*
Raj, K. S., Geoly, A. D., Veerapal, C., Ghalmieh, M., Toosi, P., Espil, F. M., Batail, J., Kratter, I. H., Williams, N. R.
2024
- **Sustained Efficacy of Stanford Neuromodulation Therapy (SNT) in Open-Label Repeated Treatment.** *The American journal of psychiatry*
Geoly, A. D., Kratter, I. H., Toosi, P., Cole, E. J., Sahlem, G. L., Williams, N. R.
2024; 181 (1): 71-73
- **A preliminary randomized controlled trial of repetitive transcranial magnetic stimulation applied to the left dorsolateral prefrontal cortex in treatment seeking participants with cannabis use disorder.** *Drug and alcohol dependence*
Sahlem, G. L., Kim, B., Baker, N. L., Wong, B. L., Caruso, M. A., Campbell, L. A., Kaloani, I., Sherman, B. J., Ford, T. J., Musleh, A. H., Kim, J. P., Williams, N. R., Manett, et al

2023; 254: 111035

- **An Avenue for Optimization of Theta Burst Stimulation Protocols? Comments on the FOUR-D Randomized Noninferiority Clinical Trial.** *The American journal of psychiatry*
Batail, J. V., Feyder, M. T., Bentzley, B. S., Williams, N. R.
2023: appajp20230236
- **Responsive deep brain stimulation guided by ventral striatal electrophysiology of obsession durably ameliorates compulsion.** *Neuron*
Nho, Y. H., Rolle, C. E., Topalovic, U., Shivacharan, R. S., Cunningham, T. N., Hiller, S., Batista, D., Feng, A., Espil, F. M., Kratter, I. H., Bhati, M. T., Kellogg, M., Raslan, et al
2023
- **Concurrent TMS/fMRI reveals individual DLPFC dose-response pattern.** *NeuroImage*
Tik, M., Vasileiadis, M., Woletz, M., Linhardt, D., Schuler, A. L., Williams, N., Windischberger, C.
2023: 120394
- **Transcranial Magnetic Stimulation-Induced Heart-Brain Coupling: Implications for Site Selection and Frontal Thresholding-Preliminary Findings.** *Biological psychiatry global open science*
Dijkstra, E., van Dijk, H., Vila-Rodriguez, F., Zwienenberg, L., Rouwhorst, R., Coetze, J. P., Blumberger, D. M., Downar, J., Williams, N., Sack, A. T., Arns, M.
2023; 3 (4): 939-947
- **Treatment-resistant depression: definition, prevalence, detection, management, and investigational interventions.** *World psychiatry : official journal of the World Psychiatric Association (WPA)*
McIntyre, R. S., Alsuwaidan, M., Baune, B. T., Berk, M., Demyttenaere, K., Goldberg, J. F., Gorwood, P., Ho, R., Kasper, S., Kennedy, S. H., Ly-Uson, J., Mansur, R. B., McAllister-Williams, et al
2023; 22 (3): 394-412
- **A Preliminary Investigation Of Repetitive Transcranial Magnetic Stimulation Applied To The Left Dorsolateral Prefrontal Cortex In Treatment Seeking Participants With Cannabis Use Disorder.** *medRxiv : the preprint server for health sciences*
Sahlem, G. L., Kim, B., Baker, N. L., Wong, B. L., Caruso, M. A., Campbell, L. A., Kaloani, I., Sherman, B. J., Ford, T. J., Musleh, A. H., Kim, J. P., Williams, N. R., Manett, et al
2023
- **Network effects of Stanford Neuromodulation Therapy (SNT) in treatment-resistant major depressive disorder: a randomized, controlled trial.** *Translational psychiatry*
Batail, J., Xiao, X., Azeez, A., Tischler, C., Kratter, I. H., Bishop, J. H., Saggar, M., Williams, N. R.
2023; 13 (1): 240
- **No place in France for repetitive transcranial magnetic stimulation in the therapeutic armamentarium of treatment-resistant depression?** *Brain stimulation*
Batail, J. M., Gaillard, R., Haffen, E., Poulet, E., Sauvaget, A., Szekely, D., Brunelin, J., Bulteau, S., Bubrovszky, M., Smadja, J., Bourla, A., Bouaziz, N., Januel, et al
2023
- **Accelerated Repetitive Transcranial Magnetic Stimulation to Treat Major Depression: The Past, Present, and Future.** *Harvard review of psychiatry*
Chen, L., Klooster, D. C., Tik, M., Thomas, E. H., Downar, J., Fitzgerald, P. B., Williams, N. R., Baeken, C.
2023; 31 (3): 142-161
- **Repetitive Transcranial Magnetic Stimulation for Treatment-Resistant Depression: Mismatch of Evidence and Insurance Coverage Policies in the United States.** *The Journal of clinical psychiatry*
Weissman, C. R., Bermudes, R. A., Voigt, J., Liston, C., Williams, N., Blumberger, D. M., Fitzgerald, P. B., Daskalakis, Z. J.
2023; 84 (3)
- **Real-Time Semi-Automated and Automated Voxel Placement using fMRI Targets for Repeated Acquisition Magnetic Resonance Spectroscopy.** *Journal of neuroscience methods*
Bishop, J. H., Geoly, A., Khan, N., Tischler, C., Krueger, R., Keshava, P., Amin, H., Baltusis, L., Wu, H., Spiegel, D., Williams, N., Sacchet, M. D.
2023: 109853
- **Time for Brain Medicine.** *The Journal of neuropsychiatry and clinical neurosciences*
Brown, J. C., Dainton-Howard, H., Woodward, J., Palmer, C., Karamchandani, M., Williams, N. R., George, M. S.
2023: appineuropsych21120312

- **Taking modern psychiatry into the metaverse: Integrating augmented, virtual, and mixed reality technologies into psychiatric care.** *Frontiers in digital health*
Ford, T. J., Buchanan, D. M., Azeez, A., Benrimoh, D. A., Kaloiani, I., Bandeira, I. D., Hunegnaw, S., Lan, L., Gholmeh, M., Buch, V., Williams, N. R. 2023; 5: 1146806
- **Appetitive Mapping of the Human Nucleus Accumbens.** *Biological psychiatry*
Parker, J. J., Rolle, C. E., Shivacharan, R. S., Barbosa, D. A., Feng, A., Huang, Y., Kakusa, B. W., Prieto, T., Jaffe, R. A., Williams, N. R., Halpern, C. H. 2022
- **Aberrant impulse control circuitry in obesity.** *Molecular psychiatry*
Barbosa, D. A., Kuijper, F. M., Duda, J., Wang, A. R., Cartmell, S. C., Saluja, S., Cunningham, T., Shivacharan, R. S., Bhati, M. T., Safer, D. L., Lock, J. D., Malenka, R. C., de Oliveira-Souza, et al 2022
- **Hypnotic predictors of agency: Responsiveness to specific suggestions in hypnosis is associated with involuntariness in fibromyalgia.** *Consciousness and cognition*
Faerman, A., Stimpson, K. H., Bishop, J. H., Neri, E., Phillips, A., Gulser, M., Amin, H., Nejad, R., Fotros, A., Williams, N. R., Spiegel, D. 2021; 96: 103221
- **Unraveling the opioid actions of S-ketamine and R-ketamine: comment on Bonaventura et al.** *Molecular psychiatry*
Heifets, B. D., Bentzley, B. S., Williams, N., Schatzberg, A. F. 2021
- **Accelerated Neuromodulation Therapy for Obsessive-Compulsive Disorder.** *Brain stimulation*
Williams, N. R., Sudheimer, K. D., Cole, E. J., Varias, A. D., Goldstein-Piekarski, A. N., Stetz, P. n., Lombardi, A. n., Filippou-Frye, M. n., van Roessel, P. n., Anderson, K. n., McCarthy, E. A., Wright, B. n., Sandhu, et al 2021
- **The Future of Training and Practice in Neuromodulation: An Interventional Psychiatry Perspective.** *Frontiers in psychiatry*
Trapp, N. T., Williams, N. R. 2021; 12: 734487
- **Lather, Rinse, Repeat? Breaking Repetitive Behaviors With Repetitive Stimulation.** *The American journal of psychiatry*
Lissemore, J. I., Williams, N. R. 2021; 178 (5): 378–80
- **Synchronized Cervical VNS With Accelerated Theta Burst TMS For Treatment Resistant Depression.** *Brain stimulation*
George, M. S., Caulfield, K. A., O'Leary, K., Badran, B. W., Short, E. B., Huffman, S. M., Li, X., Kerns, S. E., Williams, N. R. 2020
- **Transcranial Magnetic Stimulation Parameter Space: Wide Open for Exploration.** *Biological psychiatry*
Bentzley, B. S., Williams, N. R. 2020; 87 (5): 384–85
- **Deep Brain Stimulation Results in Greater Symptomatic Improvement in Tourette Syndrome than Conservative Measures: A Meta-Analysis.** *Stereotactic and functional neurosurgery*
Mahajan, U. V., Purger, D. A., Mantovani, A. n., Williams, N. R., Epsil, F. M., Han, S. S., Stein, S. C., Halpern, C. H. 2020; 1–8
- **Evidence for the role of the dorsal ventral lateral posterior thalamic nucleus connectivity in deep brain stimulation for Gilles de la Tourette syndrome.** *Journal of psychiatric research*
Kakusa, B. n., Saluja, S. n., Barbosa, D. A., Cartmell, S. n., Espil, F. M., Williams, N. R., McNab, J. A., Halpern, C. H. 2020; 132: 60–64
- **Brain-Responsive Neurostimulation for Loss of Control Eating: Early Feasibility Study.** *Neurosurgery*
Wu, H. n., Adler, S. n., Azagury, D. E., Bohon, C. n., Safer, D. L., Barbosa, D. A., Bhati, M. T., Williams, N. R., Dunn, L. B., Tass, P. A., Knutson, B. D., Yutsis, M. n., Fraser, et al 2020
- **Multimodal characterization of the human nucleus accumbens** *NEUROIMAGE*
Cartmell, S. D., Tian, Q., Thio, B. J., Leuze, C., Ye, L., Williams, N. R., Yang, G., Ben-Dor, G., Deisseroth, K., Grill, W. M., McNab, J. A., Halpern, C. H.

2019; 198: 137–49

● **Rigorous Trial Design Is Essential to Understand the Role of Opioid Receptors in Ketamine's Antidepressant Effect** *JAMA PSYCHIATRY*

Heifets, B. D., Williams, N. R., Bentzley, B. S., Schatzberg, A. F.

2019; 76 (6): 657–58

● **Attenuation of Anti-Suicidal Effects of Ketamine by Opioid Receptor Antagonism**

Williams, N., Heifets, B., Bentzley, B., Blasey, C., Sudheimer, K., Lyons, D., Schatzberg, A.

ELSEVIER SCIENCE INC.2019: S113

● **Stanford Accelerated Intelligent Neuromodulation Therapy for Suicidal Ideation (SAINT-SI)**

Williams, N.

ELSEVIER SCIENCE INC.2019: S28

● **The Effects of Cortisol Administration on Emotion, Stress Reactivity, and Brain Activity in Depression**

Sudheimer, K., Duvio, D., James, D., Heinemeyer, E., Pirog, S., Williams, N., Schatzberg, A.

ELSEVIER SCIENCE INC.2019: S267

● **Rigorous Trial Design Is Essential to Understand the Role of Opioid Receptors in Ketamine's Antidepressant Effect.** *JAMA psychiatry*

Heifets, B. D., Williams, N. R., Bentzley, B. S., Schatzberg, A. F.

2019

● **Rigorous Translational Models Are Key to Studying Ketamine's Antidepressant Mechanism: Response to Wang and Kaplin** *AMERICAN JOURNAL OF PSYCHIATRY*

Heifets, B. D., Williams, N. R., Blasey, C., Sudheimer, K., Rodriguez, C. I., Schatzberg, A. F.

2019; 176 (5): 412

● **Robust clinical benefit of multi-target deep brain stimulation for treatment of Gilles de la Tourette syndrome and its comorbidities** *BRAIN STIMULATION*

Kakusa, B., Saluja, S., Tate, W. J., Espil, F. M., Halpern, C. H., Williams, N. R.

2019; 12 (3): 816–18

● **Rigorous Translational Models Are Key to Studying Ketamine's Antidepressant Mechanism: Response to Wang and Kaplin.** *The American journal of psychiatry*

Heifets, B. D., Williams, N. R., Blasey, C., Sudheimer, K., Rodriguez, C. I., Schatzberg, A. F.

2019; 176 (5): 412

● **Case Studies in Neuroscience: The electrophysiology of a human obsession in nucleus accumbens.** *Journal of neurophysiology*

Miller, K. J., Prieto, T., Williams, N. R., Halpern, C. H.

2019

● **Comparative effectiveness of neuroablation and deep brain stimulation for treatment-resistant obsessive-compulsive disorder: a meta-analytic study** *JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY*

Kumar, K. K., Appelboom, G., Lamsam, L., Caplan, A. L., Williams, N. R., Bhati, M. T., Stein, S. C., Halpern, C. H.

2019; 90 (4): 469–73

● **Robust clinical benefit of multi-target deep brain stimulation for treatment of Gilles de la Tourette syndrome and its comorbidities.** *Brain stimulation*

Kakusa, B., Saluja, S., Tate, W. J., Espil, F. M., Halpern, C. H., Williams, N. R.

2019

● **Interpreting Ketamine's Opioid Receptor Dependent Effect: Response to Sanacora** *AMERICAN JOURNAL OF PSYCHIATRY*

Heifets, B. D., Williams, N. R., Blasey, C., Sudheimer, K., Rodriguez, C. I., Schatzberg, A. F.

2019; 176 (3): 249–50

● **Target Population, Dose, and Timing Considerations for Understanding Naltrexone's Subjective Effect: Response to Amiaz.** *The American journal of psychiatry*

Heifets, B. D., Williams, N. R., Blasey, C., Sudheimer, K., Rodriguez, C. I., Schatzberg, A. F.

2019; 176 (3): 251–52

● **Interpreting Ketamine's Opioid Receptor Dependent Effect: Response to Sanacora.** *The American journal of psychiatry*

Heifets, B. D., Williams, N. R., Blasey, C., Sudheimer, K., Rodriguez, C. I., Schatzberg, A. F.

2019; 176 (3): 249–50

- **Target Population, Dose, and Timing Considerations for Understanding Naltrexone's Subjective Effect: Response to Amiaz** *AMERICAN JOURNAL OF PSYCHIATRY*
Heifets, B. D., Williams, N. R., Blasey, C., Sudheimer, K., Rodriguez, C. I., Schatzberg, A. F.
2019; 176 (3): 251–52
- **Multimodal characterization of the human nucleus accumbens.** *NeuroImage*
Cartmell, S. C., Tian, Q. n., Thio, B. J., Leuze, C. n., Ye, L. n., Williams, N. R., Yang, G. n., Ben-Dor, G. n., Deisseroth, K. n., Grill, W. M., McNab, J. A., Halpern, C. H.
2019
- **Adjunctive repetitive transcranial magnetic stimulation delivers superior quality of life for focal epilepsy compared to anti-epileptic drugs: A meta-analytic utility prediction study.** *Brain stimulation*
Mahajan, U. V., Parker, J. J., Williams, N. R., Bhati, M. T., Ku, S. n., Grant, G. n., Fisher, R. S., Stein, S. C., Halpern, C. H.
2019
- **Comparative effectiveness of neuroablation and deep brain stimulation for treatment-resistant obsessive-compulsive disorder: a meta-analytic study.** *Journal of neurology, neurosurgery, and psychiatry*
Kumar, K. K., Appelboom, G. n., Lamsam, L. n., Caplan, A. L., Williams, N. R., Bhati, M. T., Stein, S. C., Halpern, C. H.
2019
- **Attenuation of Antidepressant Effects of Ketamine by Opioid Receptor Antagonism**
Williams, N. R., Heifets, B. D., Blasey, C., Sudheimer, K., Pannu, J., Pankow, H., Hawkins, J., Birnbaum, J., Lyons, D. M., Rodriguez, C. I., Schatzberg, A. F.
AMER PSYCHIATRIC PUBLISHING, INC.2018: 1205–15
- **KETAMINE'S ANTIDEPRESSANT EFFECT IS BLOCKED BY A MU-OPIOID RECEPTOR ANTAGONIST IN HUMANS AND MICE**
Heifets, B. D., Williams, N., Sudheimer, K., Pankow, H., Blasey, C., Lyons, D., Schatzberg, A. F.
LIPPINCOTT WILLIAMS & WILKINS.2018: 343
- **Closing the loop on impulsivity via nucleus accumbens delta-band activity in mice and man.** *Proceedings of the National Academy of Sciences of the United States of America*
Wu, H. n., Miller, K. J., Blumenfeld, Z. n., Williams, N. R., Ravikumar, V. K., Lee, K. E., Kakusa, B. n., Sacchet, M. D., Wintermark, M. n., Christoffel, D. J., Rutt, B. K., Bronte-Stewart, H. n., Knutson, et al
2018; 115 (1): 192–97
- **Transcranial Magnetic Stimulation for Disorders Other Than Depression** *TRANSCRANIAL MAGNETIC STIMULATION: CLINICAL APPLICATIONS FOR PSYCHIATRIC PRACTICE*
Pannu, J., DeSouza, D. D., Samara, Z., Raj, K. S., Williams, N. R., Lanocha, K. I., Bermudes, R. A., Lanocha, K. I., Janicak, P. G.
2018: 157–72
- **Influence of gender on inpatient treatment for bipolar disorder: An analysis of 60,607 hospitalisations** *JOURNAL OF AFFECTIVE DISORDERS*
Fellinger, M., Waldhoer, T., Blueml, V., Williams, N., Vyssoki, B.
2018; 225: 104–7
- **Modulation of the Neural Circuitry Underlying Trait Hypnotizability With Spaced Continuous Theta-Burst Stimulation**
Williams, N., Sudheimer, K., Stimpson, K., Duvio, D., Chung, C., DeSouza, D., Jo, B., Williams, L., Yeomans, D., Spiegel, D.
NATURE PUBLISHING GROUP.2017: S508–S509
- **It takes time to tune** *ANNALS OF TRANSLATIONAL MEDICINE*
Bentzley, B. S., Pannu, J., Badran, B. W., Halpern, C. H., Williams, N. R.
2017; 5 (7): 171
- **Unilateral ultra-brief pulse electroconvulsive therapy for depression in Parkinson's disease** *ACTA NEUROLOGICA SCANDINAVICA*
Williams, N. R., Bentzley, B. S., Sahlem, G. L., Pannu, J., Korte, J. E., Revuelta, G., Short, E. B., George, M. S.
2017; 135 (4): 407–411
- **Neuroversion: using electroconvulsive therapy as a bridge to deep brain stimulation implantation** *NEUROCASE*
Williams, N. R., Sahlem, G., Pannu, J., Takacs, I., Short, B., Revuelta, G., George, M. S.
2017; 23 (1): 26–30
- **It Takes Time to Tune** *Annals of Translational Medicine*
Bentzley, B. S., Pannu, J., Badran, B. W., Halpern, C. H., Williams, N. R.

2017; In Press

- **Optimization of epidural cortical stimulation for treatment-resistant depression.** *Brain stimulation*
Williams, N. R., Bentzley, B. S., Hopkins, T. n., Pannu, J. n., Sahlem, G. L., Takacs, I. n., George, M. S., Nahas, Z. n., Short, E. B.
2017
- **Description of a Novel, Surgically Implanted Neuromodulatory Technique Known as Bilateral Epidural Prefrontal Cortical Stimulation (EpCS) for Treatment-Resistant Depression (TRD)** *Journal of Visualized Experiments*
Williams, N. R., Pannu, J., Bentzley, B. B., Hopkins, T., Badran, B. W., Short, E., George, M. S., Takacs, I., Nahas, Z.
2017; In Press
- **Unilateral ultra-brief pulse electroconvulsive therapy for depression in Parkinson's disease.** *Acta neurologica Scandinavica*
Williams, N. R., Bentzley, B. S., Sahlem, G. L., Pannu, J., Korte, J. E., Revuelta, G., Short, E. B., George, M. S.
2016
- **Stimulating Across the Frontostriatal Circuitry to Treat Parkinson's Disease**
Williams, N. R., Short, E., Bentzley, B., Pannu, J., Sahlem, G., Hanlon, C., Korte, J., Revuelta, G., George, M.
ELSEVIER SCIENCE INC.2016: 402S–403S
- **Neuroversion: Using Electroconvulsive Therapy as a Bridge to Deep Brain Stimulation Implantation**
Williams, N. R., Sahlem, G., Jeffey, B., Pannu, J., Takacs, I., Revuelta, G., George, M.
ELSEVIER SCIENCE INC.2016: 127S–128S
- **Reward circuit DBS improves Parkinson's gait along with severe depression and OCD** *NEUROCASE*
Williams, N. R., Hopkins, T. R., Short, E. B., Sahlem, G. L., Snipes, J., Revuelta, G. J., George, M. S., Takacs, I.
2016; 22 (2): 201-204
- **NMDA antagonist treatment of depression.** *Current opinion in neurobiology*
Williams, N. R., Schatzberg, A. F.
2016; 36: 112-117
- **Beyond Neural Cubism: Promoting a Multidimensional View of Brain Disorders by Enhancing the Integration of Neurology and Psychiatry in Education** *ACADEMIC MEDICINE*
Taylor, J. J., Williams, N. R., George, M. S.
2015; 90 (5): 581-586
- **Oscillating Square Wave Transcranial Direct Current Stimulation (tDCS) Delivered During Slow Wave Sleep Does Not Improve Declarative Memory More Than Sham: A Randomized Sham Controlled Crossover Study** *BRAIN STIMULATION*
Sahlem, G. L., Badran, B. W., Halford, J. J., Williams, N. R., Korte, J. E., Leslie, K., Strachan, M., Breedlove, J. L., Runion, J., Bachman, D. L., Uhde, T. W., Borckardt, J. J., George, et al
2015; 8 (3): 528-534
- **Adjunctive triple chronotherapy (combined total sleep deprivation, sleep phase advance, and bright light therapy) rapidly improves mood and suicidality in suicidal depressed inpatients: An open label pilot study** *JOURNAL OF PSYCHIATRIC RESEARCH*
Sahlem, G. L., Kalivas, B., Fox, J. B., Lamb, K., Roper, A., Williams, E. N., Williams, N. R., Korte, J. E., Zuschlag, Z. D., El Sabbagh, S., Guille, C., Barth, K. S., Uhde, et al
2014; 59: 101-107
- **Role of functional imaging in the development and refinement of invasive neuromodulation for psychiatric disorders.** *World journal of radiology*
Williams, N. R., Taylor, J. J., Lamb, K., Hanlon, C. A., Short, E. B., George, M. S.
2014; 6 (10): 756-778
- **Interventional Psychiatry: Why Now?** *JOURNAL OF CLINICAL PSYCHIATRY*
Williams, N. R., Taylor, J. J., Kerns, S., Short, E. B., Kantor, E. M., George, M. S.
2014; 75 (8): 895-897
- **Interventional Psychiatry: How Should Psychiatric Educators Incorporate Neuromodulation into Training?** *ACADEMIC PSYCHIATRY*
Williams, N. R., Taylor, J. J., Snipes, J. M., Short, E. B., Kantor, E. M., George, M. S.
2014; 38 (2): 168-176
- **STN vs. GPi Deep Brain Stimulation: Translating the Rematch into Clinical Practice.** *Movement disorders clinical practice*

- Williams, N. R., Foote, K. D., Okun, M. S.
2014; 1 (1): 24-35
- **Incidence of sport-related traumatic brain injury and risk factors of severity: a population-based epidemiologic study** *ANNALS OF EPIDEMIOLOGY*
Selassie, A. W., Wilson, D. A., Pickelsimer, E. E., Voronca, D. C., Williams, N. R., Edwards, J. C.
2013; 23 (12): 750-756
 - **Unique Case of "Post-Lumbar Puncture Headache"** *HEADACHE*
Patel, B. A., Williams, N. R., Pritchard, P. B.
2013; 53 (9): 1479-1481
 - **Sports-Related Concussions** *PEDIATRIC EMERGENCY CARE*
Upshaw, J. E., Gosserand, J. K., Williams, N., Edwards, J. C.
2012; 28 (9): 926-935
 - **High school coaches perceptions of physicians' role in the assessment and management of sports-related concussive injury.** *Frontiers in neurology*
Williams, N., Sas, A., Madey, J., Bodle, J., Scovel, L., Edwards, J.
2012; 3: 130-?
 - **Diagnosis, Treatment, and Long-Term Outcomes of Late-Onset (Type III) Multiple Acyl-CoA Dehydrogenase Deficiency** *JOURNAL OF CHILD NEUROLOGY*
Pollard, L. M., Williams, N. R., Espinoza, L., Wood, T. C., Spector, E. B., Schroer, R. J., Holden, K. R.
2010; 25 (8): 954-960
 - **Relapse rates with long-term antidepressant drug therapy: a meta-analysis** *HUMAN PSYCHOPHARMACOLOGY-CLINICAL AND EXPERIMENTAL*
Williams, N., Simpson, A. N., Simpson, K., Nahas, Z.
2009; 24 (5): 401-408