

# LAWRENCE GREGORY APPELBAUM

October 1, 2020

## Personal Information

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## Education

2004 Ph.D. Psychology, University of California, Irvine.  
Thesis advisor: Dr. George Sperling  
2002 M.S. Psychology, University of California, Irvine  
1995 B.A. Psychology, Emory University, Atlanta, GA

## Academic and Professional Experience

### Appointments

2017 – Present Associate Professor. Dept of Psychiatry and Behavioral Sciences, Duke University SoM, NC  
Secondary Appointment, Department of Psychology & Neuroscience, Duke University, NC  
Core Member, Center for Cognitive Neuroscience, Duke University, NC  
2011 – 2017 Assistant Professor. Dept of Psychiatry and Behavioral Sciences, Duke University SoM, NC  
2012 Visiting Faculty Fellow, University of Western Sydney, Sydney Australia.  
2007 – 2008 Instructor, Department of Psychology, University of North Carolina at Chapel Hill, NC  
2006 – 2011 Postdoctoral Fellow. Center for Cognitive Neuroscience, Duke University, NC  
2004 – 2006 NSRA Postdoctoral Fellow. Smith-Kettlewell Eye Research Institute, San Francisco, CA

### Center Directorships

2015 – Present Director, [Brain Stimulation Research Center](#), Duke University School of Medicine

### Research Laboratory

Head – [Human Performance Optimization Laboratory \(Opti Lab\)](#), Duke University School of Medicine

### Other Professional Activities

2019 – Present Board of Directors, International Sports Vision Association  
2018 – Present Consultant – RightEye LLC  
2016 – Present Advisory Board – NeuroPlus, LLC  
2015 – Present Founder and President – Psychometric Consulting, LLC,

## **Funding**

### **Active Research Support (Reverse chronologically by end date. Dollar amounts for direct costs only)**

- Title: Impact of Timing, Targeting and Brain State on rTMS of Human and Non-Human Primates  
Funding Source: RF1MH114253; BRAIN Initiative Award  
Role: Co-I (PI Mark Sommer)  
Grant Period: August 1, 2017 through July 31, 2021  
Total funding: \$1,936,033 (home department sub-award \$1,138,584)  
Summary: This project will test neuronal dose-response relationships of rTMS in human and non-human primates. A sub award for of this grant is managed by Psychiatry for the portions supervised by Drs. Appelbaum and Peterchev.
- Title: Transcranial Magnetic Stimulation with Enhanced Focality and Depth (fdTMS)  
Funding Source: RF1MH114268; BRAIN Initiative Award  
Role: Co-I (PI Angel Peterchev)  
Grant Period: July 21, 2017 through July 20, 2021  
Total funding: \$1,000,000  
Summary: This project will develop TMS coils with improved depth-focality tradeoff
- Title: Using fMRI-guided TMS to increase central executive function in older adults  
Funding Source: National Institute of Aging [U01 AG050618]  
Role: Corresponding PI (multi PI award with Roberto Cabeza)  
Grant Period: September 1, 2015 through March 31, 2021  
Total funding: \$2,483,010  
Summary: This NIA U01 investigates the capacity for fMRI-guided transcranial magnetic stimulation to produce lasting and generalizable enhancement of working memory in older adults.
- Title: Using fMRI-guided TMS to increase central executive function in older adults – Administrative Supplement  
Funding Source: National Institute of Aging [U01 AG050618-05S1]  
Role: Corresponding PI (multi PI award with Roberto Cabeza)  
Grant Period: June 15, 2019 through March 31, 2021  
Total funding: \$379,688  
Summary: This Administrative Supplement to our NIA U01 award extends fMRI-guided transcranial magnetic stimulation enhancement of working memory to adults with Mild Cognitive Impairments.
- Title: Sensorimotor function in elite soldiers and athletes  
Funding Source: United States Army Research Office [W911NF-15-1-0390]  
Role: PI  
Grant Period: July 10, 2015 through March 31, 2021, with additional option ending 3/31/2022  
Total funding: \$920,725  
Summary: This ARO proposal is investigate sensorimotor function in elite athletes and soldiers and relate this function to injury and achievement.
- Title: Quiet TMS: A Low-Acoustic-Noise Transcranial Magnetic Stimulation System  
Funding Source: NIH: R01 MH111865: BRAIN Initiative Award  
Role: Co-I (PI: Angel Peterchev)  
Grant period: September 26, 2016 through June 30, 2020  
Total funding: \$900,000

Summary: This award is to develop a novel quiet Transcranial Magnetic Stimulation coil that produces substantially less audible noise during operation.

Title: Identifying the Optimal Neural Target for Misophonia Interventions

Funding Source: REAM Foundation

Role: Co-I (PI Andrada Neacsiu)

Grant period: July 1, 2020 through June 30, 2022

Total funding: \$250,000

Summary: This research award is for dedicated physician time and experimental costs to support TMS interventional studies in adults with Misophonia.

### **Equipment Grants**

Equipment: BrainSight Neuronavigation System, Rogue Research

Funding Source: Duke University School of Medicine

Date: July 1, 2019

Total funding: \$51,678

### **Pending Research Support**

Title: Safety and Feasibility of Transcranial Direct Current Stimulation to Enhance Auditory Rehabilitation in Cochlear Implant Recipients

Funding Source: Duke MEDx

Role: Co-I (PIs: Howard Francis and Angel Peterchev)

Status: Notice of Award received, 9/1/2020

Total funding: \$49,691

Summary: This application is to test the safety and feasibility of home-based tDCS applied during audiological therapy in recent cochlear implant recipients.

Title: Using network-guided TMS to ameliorate memory deficits in early Alzheimer's disease

Funding Source: NIH R21 AG058161-01A1

Role: Co-I (PI: Simon Davis)

Status: Notice of Award received, 8/15/2020

Total funding: \$431,216

Summary: This application is for the development of network-guided TMS to alleviate memory decline associated with early Alzheimer's Disease

### **Completed Research Support**

Title: Effect of Connectivity-based rTMS and State-Dependency on Amygdala Activation

Funding Source: Duke Institute for Brain Sciences, Germinator Award

Role: Co-PI (with Lysianne Beynel and Nate Kimbrel)

Grant period: January 1, 2019 through December 31, 2019

Total funding: \$25,000

Summary: This award is to develop test fMRI connectivity targeting of Transcranial Magnetic Stimulation to modulate Amygdala activity as a potential therapeutic for PTSD.

Title: Attentional Mechanisms in Multisensory Environments

Funding Source: NIH: R01-NS051048-06

Role: Co-I (PI: Marty Woldorff)  
Grant period: September 1, 2012 through August 30, 2017  
Total funding: \$1,200,000  
Summary: This research utilizes simultaneously recorded EEG & fMRI to study the mechanisms of multisensory attention.

Title: Transcranial Magnetic Stimulation modulation of insula-based functional connectivity  
Funding Source: Duke University Institute for Brain Sciences  
Role: Co-PI (with Merideth Addicott)  
Grant period: July 1, 2016 through June 30, 2017  
Total funding: \$75,000  
Summary: This Duke University Institute for Brain Sciences Incubator award is to investigate the use of rTMS to change brain function and behaviors that could help support smoking cessation.

Title: Real-Time Workload Detection in Supervisory Control Applications using fNIRS  
Funding Source: Duke University Institute for Brain Sciences  
Role: Co-PI (with Missy Cummings)  
Grant period: July 1, 2014 through June 30, 2016 (in No-Cost Extension)  
Total funding: \$30,000  
Summary: This incubator award through the Duke University Institute for Brain Sciences is to develop functional Near-Infrared Spectroscopy measures of cognitive workload.

Title: Mapping the Semantic Structure of Neuroscience  
Funding Source: Duke University Institute for Brain Sciences  
Role: Co-PI (with Scott Huettel)  
Grant period: July 1, 2013 through August 30, 2015  
Total funding: \$25,000  
Summary: This incubator award through the Duke University Institute for Brain Sciences is to develop and apply quantitative methods for synthesizing the neuroscience literature

Title: Tracking Neurological Function in Warrior-Athletes: A Multidisciplinary Approach  
Funding Source: United States Army Special Operations Command/DARPA [H92236-14-P-5193]  
Role: Co-I (PI: Jason Mihalik, UNC)  
Grant Period: July 1, 2014 through June 30, 2015  
Sub-Contract: \$25,000  
Summary: This research sub-contract (prime contractor, UNC-Chapel Hill) is to develop a database of sensorimotor function before and after head trauma in US Special Operations soldiers.

Title: Self-Guided Parameter Fitting for Cochlear Implant Users  
Funding Source: Duke University Bass Connections  
Role: Co-PI  
Grant period: June 1, 2014 through May 30, 2015  
Total funding: \$12,500  
Summary: This award through the Duke University Bass Connections is to establish a user-end, self-guided system for the optimization of electronic parameters for cochlear implant users.

Title: Operational Neuroscience for Warfighter Performance  
Funding Source: Naval Health Research Center  
Role: Sub-Contract PI (Project PI: Chris Johnson, NHRC)  
Grant Period: May 1, 2014 through April 30, 2015

Sub-Contract: \$89,162  
Summary: This grant (NHRC BAA 13-001) is to assess the efficacy of visual training techniques for improving shooting performance and sensorimotor abilities in special operations soldiers.

Title: Identifying, Assessing, and Enhancing Human Perceptual and Cognitive Abilities  
Funding Source: DARPA: D12AP00025-002  
Role: Corresponding PI (multi PI award with Steve Mitroff)  
Grant period: October 1, 2012 through July 31, 2014  
Total funding: \$987,000  
Summary: This research studies how perceptual and visual-motor abilities vary across the population though large-scale psychometrics, neuroimaging, and genetics.

Title: The Neural Mechanisms of Texture Segmentation  
Funding Source: NIH: F32-EY14536  
Role: PI (NRSA Postdoctoral Fellow)  
Grant period: October 1, 2004 through June 30, 2006  
Total funding: \$92,347  
Summary: This NRSA award used EEG and fMRI to study the neural mechanisms underlying visual perception and volitional attention – Mentor, Dr. Tony Norcia.

#### **Grant Applications Currently Under Review:**

Title: Transcranial Direct Current Stimulation to Enhance Laparoscopic Technical Skill Acquisition  
Funding Source: NIH (R01)  
Role: PI  
Submitted: June 5, 2020  
Total funding: \$1,741,407  
Summary: This application is to fund a multi-site randomized clinical trial testing the efficacy of transcranial direct current stimulation to enhance laparoscopic surgical skill acquisition.

Title: PARC N3 Centaur Subaward Proposal  
Funding Source: DARPA N6523619C8014  
Role: Co-PI (with Kevin LaBar)  
Submitted: January 29, 2020  
Total funding: \$1,705,205  
Summary: This subaward application is to test the effectiveness of focused ultrasound to modulate amygdala function and associated behavioral threat sensitivity.

Title: Neuroimaging correlates and feasibility of transcranial magnetic stimulation (TMS) to improve smoking cessation outcomes in individuals with posttraumatic stress disorder (PTSD)  
Funding Source: Duke Institute for Brain Sciences – Germinator Award  
Role: Co-I (with Jonathan Young and Jean Beckham)  
Submitted: August 1, 2020  
Total funding: \$24,030  
Summary: This application is to fund a study testing the feasibility of fMRI connectivity-based targeting of TMS as a treatment of tobacco use disorder in veterans with PTSD.

Title: Testing the frequency tuning of connectivity-based rTMS on the amygdala.  
Funding Source: NIH R03  
Role: Co-I (PI: Lysianne Beynel)  
Submitted: Revised submission submitted on October 16, 2020  
Summary: The goal of this NIH R01 application is to test connectivity-based TMS effect on amygdala activity as a treatment for patients with PTSD.

Title: Changing transdiagnostic emotional dysregulation with neurostimulation enhanced cognitive restructuring  
Funding Source: NIH R01  
Role: Co-I (PI: Andrada Neacsiu)  
Submitted: January 24, 2020 – scored at 56th percentile, in revision for 10/2020 submission  
Total funding: \$3,963,117  
Summary: This R01 application is to test the effectiveness of TMS with cognitive restructuring for improving emotional regulation in a transdiagnostic sample of emotionally dysregulated adults

Title: Maximizing Access to Research Careers at Duke University  
Funding Source: NIH MARC program  
Role: Mentor (PI: Dorian Canelas)  
Submitted: June 10, 2020  
Summary: The goal of the MARC program is to develop a diverse pool of undergraduates who complete their baccalaureate degree, and transition into and complete biomedical, research-focused higher degree programs.

Title: A High-Performance 3T MRI Scanner for Brain Imaging  
Funding Source: NIH HEI program (<https://grants.nih.gov/grants/guide/pa-files/PAR-19-177.html>)  
Role: Major User  
Submitted: Revised submission on June 2020, initial submission Impact Score = 30  
Total funding: \$2,100,000  
Summary: This High-End Instrumentation application is for Premier Ultrahigh Performance 3T GE MRI scanner to add cutting-edge brain imaging capabilities to the Duke Brain Imaging and Analysis Center.

Title: Control of Memory Performance Using Closed-loop TMS in Normal Aging and Dementia  
Funding Source: NIH (R01)  
Role: Co-I (PI: Simon Davis)  
Submitted: Impact Score of 52 received on Feb 26, 2020  
Total funding: \$3,130,463  
Summary: This application is for the development of therapeutic, closed loop rTMS techniques to alleviate memory decline associated with Mild Cognitive Impairments and Alzheimer's Disease

Title: Efficacy of External Trigeminal Nerve Stimulation for Treatment of ADHD  
Funding Source: NIH (R01)  
Role: Co-I (PI: Scott Kollins)  
Submitted: Submitted July 14, 2020  
Total funding: \$2,225,000  
Summary: This application will test clinical and EEG measures of the effectiveness of TNS for treatment of ADHD in a large multi-center clinical trial.

Title: Spatial and Temporal Control of Memory Performance Using Closed-loop TMS

Funding Source: NIH (R01)  
Role: Co-I (PI: Simon Davis)  
Submitted: Revised submission on October 5, 2020  
Total funding: \$2,101,330  
Summary: This application will develop and test bilateral closed-loop rTMS using fMRI in a large cohort of health younger and older adults.

## Honors and Awards

2018	Finalist, MIT Sloan Sports Analytics research paper competition
2017 - present	Faculty Associate of the Duke Initiative for Science & Society
2017	Senior Honors, Honoree, Duke University
2012	Duke University, Dean's Service Recognition for Teaching: top 5% course evaluations
2012 - 2013	Australian International Research Initiatives, U. Western Sydney, Visiting Faculty Fellow
2003	Jack I. Yellow Graduate Student Fellowship, U.C. Irvine
2001 - 2003	University of California Regent's Fellowship
2002	University of California Regent's Pre-Dissertation Fellowship
2001 - 2004	University of California Irvine Dean's Service Award for excellence in teaching

## Publications

### Refereed Journal Articles (in reverse chronological order)

**H-Index = 25/18, Citations = 2477/1509 (Google Scholar/Scopus) – As of August 4, 2020**

1. Powers, J., Davis, S.W., Neacsu, A.D., Beynel, L., Appelbaum, L.G. & LaBar, K.S., (in press) Examining the Role of Lateral Parietal Cortex in Emotional Distancing Using TMS. **Cognitive, Affective, and Behavioral Neuroscience**.
2. Gamboa Arana, O. L., Palmer, H., Dannhauer, M., Hile, C., Liu, S., Hamdan, R., Brito, A., Cabeza, R., Davis, S.W., Peterchev, A. V., Sommer, M., & Appelbaum, L.G. (2020) Intensity- and Timing-dependent modulation of motion perception with transcranial magnetic stimulation of visual cortex. **Neuropsychologia**. 147(1)
3. Beynel, L., Deng, L., Crowell, C.A., Dannhauer, M., Palmer, H., Hilbig, S., Peterchev, A.V., Luber, B., Lisanby, S.H. Cabeza, R., Appelbaum, L.G., and Davis, S.W. (in press) Structural controllability predicts functional patterns and neuromodulatory benefits associated with working memory. **Journal of Neuroscience**.
4. Liu, S., Ferris, L.M., Hilbig, S., Asamo, E., LaRue, J.L., Lyon, D., Connolly, K., Port, N., & Appelbaum, L.G., (2020) Dynamic vision training transfers positively to batting performance among collegiate baseball batters. **Psychology of Sports and Exercise**. 51(1)
5. Liu, S., Edmunds, F., Burris, K., & Appelbaum, L.G., (2020). Visual and oculomotor abilities predict professional baseball batting performance. **International Journal of Performance Analysis in Sport**. 20(4). 683-700. [doi 10.1080/24748668.2020.1777819]
6. Crowell, C.A., Davis, S.W., Beynel, L., Deng, L., Lakhani, D., Hilbig, S.A., Palmer, H., Brito, A., Wang, J., Peterchev, A.V, Luber, B., Lisanby, S.H., Appelbaum, L.G., and Cabeza, R. (2020) Older adults benefit from more widespread brain network integration during working memory. **NeuroImage**. 218, 116959
7. Gamboa Arana, O. L., Brito, A., Abzug, Z., D'Arbeloff, T., Beynel, L., Wing, E., Dannhauer, M., Palmer, H., Hilbig, S.A., Crowell, C.A., Liu, S.L., Donaldson, R., Cabeza, R., Davis, S.W., Peterchev, A.V.,

- Sommer, M., & Appelbaum, L.G. (2020) Application of long-interval paired-pulse transcranial magnetic stimulation to motion-sensitive visual cortex does not lead to changes in motion discrimination. **Neuroscience Letters**. 730(21).
8. Beynel, L., Davis, S., Crowell, C., Dannhauer, M., Lim, W., Palmer, H., Hilbig, S., Brito, A., Hile, C., Luber, B., Lisanby, S., Peterchev, A., Cabeza, R., & Appelbaum, L.G. (2020) Site-specific effects of online rTMS during a working memory task in healthy older adults. **Brain Sciences**. 10(5), 255; <https://doi.org/10.3390/brainsci10050255>.
  9. Cox, M.L., Deng, Z-D, Palmer, H., Beynel, L., Watts, A., Young, J.R., Lisanby, S.H., Migaly, J. & Appelbaum, L.G. (2020) Utilizing Transcranial Direct Current Stimulation to Enhance Laparoscopic Technical Skills Training: A Randomized Controlled Trial. **Brain Stimulation**. 13(3). 863-872. [PMID: 32289719].
  10. Young, J.R., Smani, S.A., Kritzer, M.D., Mischel, N.A., Appelbaum, L.G., and Patkar, A.A. (2020) Non-invasive brain stimulation modalities for the treatment and prevention of opioid use disorder: a systematic review of the literature. **Journal of Addictive Diseases**. 38(2). DOI: 10.1080/10550887.2020.1736756
  11. Beynel, L., Powers, J.P. & Appelbaum, L.G. (2020) Effects of repetitive transcranial magnetic stimulation on resting state connectivity A qualitative and mapping review. **NeuroImage**, 211(1) <https://doi.org/10.1016/j.neuroimage.2020.116596>
  12. Luber, B., Jangraw, D.C., Appelbaum, L.G., Harrison, A., Hilbig, S., Beynel, L., Jones, T., Sajda, P. and Lisanby, S.H. (2020) Using Transcranial Magnetic Stimulation to Test a Network Model of Perceptual Decision Making in the Human Brain. **Frontiers in Human Neuroscience**. 14(4). DOI=10.3389/fnhum.2020.00004.
  13. Burris, K., Liu, S., & Appelbaum, L.G., (2020). Visual-motor expertise in athletes: Insights from semiparametric modeling of 2317 athletes tested on the Nike SPARQ Sensory Station. **Journal of Sports Sciences**. 38(3). DOI 10.1080/02640414.2019.1698090
  14. Wilkins, L. and Appelbaum, L.G., (2020) An Early Review of Stroboscopic Visual Training: Insights, Challenges and Accomplishments to Guide Future Studies. **International Review of Sport and Exercise Psychology**. 13(1)
  15. Beynel, L., Appelbaum, L.G., Luber, B., Crowell, C.A., Hilbig, S.A., Lim, W., Nguyen, D., Chrapliwy, N., A., Davis, S.W., Cabeza, R. Lisanby, S.H., & Deng, Z-D. (2019). Effects of Online Repetitive Transcranial Magnetic Stimulation (rTMS) on Cognitive Processing: A Meta-Analysis and Recommendations for Future Studies. **Neuroscience & Biobehavioral Reviews**. 107: 47-58 [PMID: 31473301]
  16. Beynel, L., Davis, S., Crowell, C., Hilbig, S., Lim, W., Palmer, H., Brito, A., Peterchev, A., Luber, B., Lisanby, S., Cabeza, R., & Appelbaum, L. (2019). Online repetitive transcranial magnetic stimulation during working memory in younger and older adults: a randomized within-subject comparison. **PLoS ONE**. 14(3):e0213707.
  17. Addicott MA, Luber B, Nguyen D, Palmer H, Lisanby SH, Appelbaum LG (2019). Low and high frequency rTMS effects on resting-state functional connectivity between the postcentral gyrus and the insula. **Brain Connectivity**. 9(4): 322-328 [PMID: 30773890]
  18. Addicott, M.A., Daughters, S.B., Strauman, T.J., and Appelbaum, L.G. (2018). Distress tolerance to auditory feedback and functional connectivity with the auditory cortex. **Psychiatry Research: Neuroimaging**. 282(30), 1-10.
  19. Teel, E.F., Marshall, S.W., Appelbaum, L.G., Battaglini, C.L., Carneiro, K.A., Guskiewicz, K.M., Register-Mihalik, J.K., & Mihalik, J.P. (2019) A randomized controlled trial investigating the feasibility and adherence to an aerobic training program in healthy individuals. **Journal of Sports Rehabilitation**. 28(7). doi: 10.1123/jsr.2018-0007.



20. Davis, S.W., Crowell, C.A., Beynel, L., Deng, L., Lakhiani D., Hilbig, S.A., Lim, W., Palmer, H., Nguyen, D., Peterchev, A. V., Luber, B., Lisanby, S.H., Appelbaum, L.G., Cabeza, R. (2018) Complementary topology of maintenance and manipulation brain networks in working memory. **Nature Scientific Reports**. 8:17827 | DOI:10.1038/s41598-018-35887-2
21. Teel, E.F, Register-Mihalik, J.K., Appelbaum, L.G., Battaglini, C.L., Carneiro, K.A., Guskiewicz, K.M., Marshall, S.W., & Mihalik, J.P. (2018). Randomized controlled trial evaluating effectiveness of aerobic training on common sport-related concussion outcomes in healthy participants. **Journal of Athletic Training**. 53(12):1156-1165. doi: 10.4085/1062-6050-7-18.
22. Wang, W-C., DeLang, M.D., Vittetoe, K., Ramger, B. & Appelbaum, L.G. (2018) Laterality Preferences in Athletes: Insights from a Database of 1770 Male Athletes. **American Journal of Sports Science**; 6(1): 20-25.
23. Rao, H.M., Khanna, R., Zielinski, D.J., Lu, Y., Clements, J.M., Potter, N.D., Sommer, M.A., Kopper, R. & Appelbaum, L.G. (2018) Sensorimotor learning during a marksmanship task in immersive virtual reality. **Frontiers in Psychology**. 9(58). [PMID: 29467693]
24. Burris, K., Vittetoe, K., Ramger, B., Suresh, S., Tokdar, S.T., Reiter, J.P. & Appelbaum, L.G. (2018) Sensorimotor abilities predict on-field performance in professional baseball. **Nature Scientific Reports**. 8(116), 1-9.
25. Klemish, D., Ramger, B., Vittetoe, K., Reiter, J.P., Tokdar, S. & Appelbaum, L.G (2018). Visual Abilities Distinguish Pitchers from Hitters in Professional Baseball. **Journal of Sports Sciences**. 36(2), 171-197. DOI: 10.1080/02640414.2017.1288296.
26. Appelbaum, L.G. & Erickson, G. (2018). Sports Vision Training: a review of the state-of-the-art in digital training techniques. **International Review of Sport and Exercise Psychology**. 11(1). DOI:10.1080/1750984X.2016.1266376.
27. Devyatko, D., Appelbaum, L.G., & Mitroff, S.R. (2017). A common mechanism for perceptual reversals in motion-induced blindness, the Troxler effect, and perceptual filling-in. **Perception**. Vol. 46(1) 50-77.
28. van den Berg, B., Appelbaum, L.G., Clark, K., Lorist, M.M., & Woldorff, M.G, (2016). Visual search performance is predicted by both prestimulus and poststimulus electrical brain activity. **Nature Scientific Reports**. Published online Nov 30, 2016 [doi: 10.1038/srep37718]
29. Appelbaum, L.G., Lu, Y., Khanna, R., & Detwiler, K.R. (2016). The effects of sports vision training on sensorimotor abilities in collegiate softball athletes. **Athletic Training and Sports Health Care**. 8(4), 154-163. [DOI: 10.3928/19425864-20160314-01]
30. Krasich, K., Ramger, B., Holton, L., Wang, L., Mitroff, S.R., & Appelbaum, L.G. (2016). Perceptual and visual-motor learning in a computerized training battery. **Journal of Motor Behavior**. 48(5), 401-412.
31. Donahue, S., Appelbaum, L.G., McKay, C.C., & Woldorff, M.G. (2016). The neural dynamics of stimulus and response conflict processing as a function of response complexity and task demands. **Neuropsychologia**. 84, 14-28. [PMID: 26827917]
32. San Martín, R., Appelbaum, L.G., Pearson, J.M., Huettel, S.A, & Woldorff, M.G., (2016). Cortical brain activity reflecting attentional biasing toward reward-predicting cues covaries with economic decision-making performance. **Cerebral Cortex**. 26(1): 1-11. [PMID: 25139941]
33. Norcia, A.M., Appelbaum, L.G., Ales, J.M., Cottareau, B., & Rossion, B. (2015). The steady state visual evoked potential in vision research: a review. **Journal of Vision**. 15(4). [PMID: 26024451]
34. Grooms, D., Appelbaum, L.G., & Onate, J. (2015) The Implication of Visual-Motor Processing in Anterior Cruciate Ligament Injury and Rehabilitation. **Journal of Orthopaedic & Sports Physical Therapy**. 45(5): 381-393. [PMID: 25579692]

35. Wang, L.L., Krasich, K., Bel-Bahar, T., Hughes, L., Mitroff, S.R., & Appelbaum, L.G. (2015). Mapping the Structure of Perceptual and Visual-Motor Abilities in Healthy Young Adults. **Acta Psychologica**. 157, 74-84. [PMID: 25747573]
36. Clark, K., Appelbaum, L.G., Mitroff, S.R., & Woldorff, M.G. (2015) Improvement in visual search with practice: Mapping learning-related changes in neurocognitive stages of processing. **Journal of Neuroscience**. 35(13): 5351-5359. [PMID: 25834059]
37. McClintock, S.M., Choi, J., Deng, Z.D., Appelbaum, L.G., Krystal, A.D., & Lisanby, S.H. (2014) Multifactorial determinants of the neurocognitive effects of electroconvulsive therapy. **Journal of Electroconvulsive Therapy**. 30(2): 165-176. [PMID: 24820942]
38. Beam, E.\*\*, Appelbaum, L.G.\*\*, Jack, J., Moody, J., & Huettel, S.A., (2014). Mapping the semantic structure of cognitive neuroscience. **Journal of Cognitive Neuroscience**. 26(6): 1949-1965. [\*\*Authors Contributed Equally]. [PMID: 24666126]
39. Appelbaum, L.G., Boehler, C.N., Won, R.J., Davis, L.A., & Woldorff, M.G. (2014). The dynamics of proactive and reactive cognitive control processes in the human brain. **Journal of Cognitive Neuroscience**. 26(5): 1021-1038. [PMID: 24345171]
40. Mills, D.L., Dai, L., Yam A., Fishman, I., U. Bellugi, U., A. L. Reiss, A.L., Appelbaum, L.G. & Korenberg, J.R. (2013). Genetic mapping of brain activity in Williams Syndrome: ERP markers of face and language processing are stable across development. **Developmental Neuropsychology** 38(8): 613-642. [PMID: 24219698]
41. Appelbaum, L.G., Donahue, S., Park, C.J., & Woldorff, M.G. (2013). Is one is enough? The case for non-additive influences of visual cues on cross-modal Stroop interference. **Frontiers in Perception Science** 4(799). [PMID: 24198800]
42. Appelbaum, L.G., Cain, M.S., Darling, E.F., & Mitroff, S.R., (2013). Action video game playing is associated with improved visual sensitivity, but not alterations in visual sensory memory. **Attention, Perception and Psychophysics**. 75(6): 1161-1167. [PMID: 23709062]
43. Donahue, S., Appelbaum, L.G., Park, C.J., Roberts, K.C., & Woldorff, M.G. (2013). Cross-modal stimulus conflict: The effects of stimulus input timing in a visual-auditory Stroop task. **PLoS ONE** 8(4). [PMID: 23638149]
44. San Martín, R., Appelbaum, L.G., Pearson, J.M., Huettel, S.A, & Woldorff, M.G., (2013). Rapid brain responses independently predict gain-maximization and loss-minimization during economic decision-making. **Journal of Neuroscience**, 33(16): 7011-7019. [PMID: 23595758]
45. Ales, J.M., Appelbaum, L.G., Cottureau, B., & Norcia, A.M., (2013). The time course of shape discrimination in the human brain. **NeuroImage** 67, 77-88. [PMID: 23116814]
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51. Appelbaum, L.G., Cain, M.S., Darling, E.F., Stanton, S.J., Nguyen, M.T., & Mitroff, S.R., (2012). What is the identity of a sports spectator? **Personality and Individual Differences**. 52, 422–427. doi:10.1016/j.paid.2011.10.048.
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55. Jack, J & Appelbaum, L.G. (2010). This is your brain on rhetoric: research direction for neuroretorics. Special issue on Neuroretorics in **Rhetoric Society Quarterly**. 40: 5, 411-437.
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62. Appelbaum, L.G., Lu, Z-L., & Sperling, G. (2007). Contrast amplification in global texture orientation discrimination. **Journal of Vision**, 7(10), 13 11-19. [PMID: 17997682]
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## Book Chapters

1. Beynel, L., Appelbaum, L.G., & Kimbrel, N. A. (2020). Neurobiology and neuromodulation of emotion in posttraumatic stress disorder. In M.T. Tull and N.A. Kimbrel (Eds.). *Emotion in Posttraumatic Stress Disorder*. Academic Press, Cambridge, MA.
2. Jack, J., Appelbaum, L.G., Beam, E., Huettel, S.A., & Moody, J. (2017). "Mapping Rhetorical Topologies in Cognitive Neuroscience." *Persuasive Topologies: Equipment for a Post-Critical Rhetoric of Technoscience, Media, and Culture*. Eds. Walsh, L. and Boyle, C. New York: Palgrave Macmillan.
3. Mills, D.L.; Alvarez, T.D.; St George, M.; Appelbaum, L.G.; Bellugi, U.; & Neville, H. (2001). Neurophysiological markers of face processing in Williams syndrome. *Journey from cognition to brain to gene: Perspectives from Williams syndrome*. 73-104. MIT Press.

## Book Sections

1. Appelbaum, L.G. & Harris, J.A., (2012). "Attention and the processing of visual scenes". In Norbert, M. (Ed.) *Science of Learning*. Springer.
2. Appelbaum, L.G. (2011) The influence of attention on figure-ground processing. *The Encyclopedia of the Sciences of Learning*, Springer Press.
3. Appelbaum, L.G. (2009). "Perceptual Segregation". In B. Goldstein (Ed.), *Encyclopedia of Perception* (pp. 793-796): SAGE Press.

## Refereed Conference Papers

1. Appelbaum, L.G., Deng, Z-D, Palmer, H., Beynel, L., Watts, A., Young, J.R., Lisanby, S.H., Migaly, J. & Cox, M.L., (2019) Proceedings #2: Transcranial Direct Current Stimulation to Enhance Laparoscopic Technical Skill Learning: A Preregistered Randomized Controlled Trial. **Brain Stimulation**. 12(2) e57-e59.
2. Clements, J. M., Kopper, R., Zielinski, D. J., Rao, H., Sommer, M. A., Kirsch, E., Mainsah, B. O., Collins, L. M., and Appelbaum, L. G. (2018) Neurophysiology of visual-motor learning during a simulated marksmanship task in immersive virtual reality. In **Proceedings of the 25th IEEE Conference on Virtual Reality and 3D User Interfaces**, March 18-22, 2018, Reutlingen, Germany.
3. Burris, K & Appelbaum, L.G. (2018) Eye on the ball: the relationship between sensorimotor abilities and on-field performance in professional baseball. **MIT Sloan Sports Analytics**, Boston MA. \*Research paper competition finalist.
4. Zielinski, D., Rao, H.M., Potter, N., Appelbaum, L.G., and Kopper, R. (2016). Evaluating the effects of image persistence on dynamic target acquisition in low frame rate virtual environments. In **IEEE Symposium on 3D User Interfaces (3DUI)**.

## Publicly Available Pre-Print Papers

1. Beynel, L., Davis, S., Crowell, C., Hilbig, S., Lim, W., Nguyen, D., Peterchev, A., Luber, B., Lisanby, S., Cabeza, R., & Appelbaum, L. (2018) Effects of 5Hz repetitive transcranial magnetic stimulation to dorsolateral prefrontal cortex on working memory manipulation abilities. **BioRxiv preprint**. <https://www.biorxiv.org/content/early/2018/03/08/278655>
2. Luber, B., Jangraw, D.C., Appelbaum, L.G., Harrison, A., Hilbig, S., Beynel, L., Jones, T., Sajda, P., & Lisanby, S.H. (2018) Transcranial magnetic stimulation identifies spatially and temporally localized causal networks underlying perceptual decision making in the human brain. **BioRxiv preprint**. <https://www.biorxiv.org/content/early/2018/04/18/304063>

3. Appelbaum, L.G., Deng, Z-D, Palmer, H., Beynel, L., Watts, A., Young, J.R., Lisanby, S.H., Migaly, J. & Cox, M.L., (2018) Utilizing Transcranial Direct Current Stimulation to Enhance Laparoscopic Technical Skills Training: A Randomized Controlled Trial. **BioRxiv preprint.** <https://www.biorxiv.org/content/early/2018/10/30/455329.article-info>
4. Davis, S.W., Crowell, C.A., Beynel, L., Deng, L., Lakhiani D., Hilbig, S.A., Palmer, H., Wang, J., Peterchev, A. V., Luber, B., Lisanby, S.H., Appelbaum, L.G., Cabeza, R. (2019) Older adults benefit from more widespread brain network integration during working memory. **BioRxiv preprint.** <https://www.biorxiv.org/content/10.1101/642447v1>
5. Gamboa Arana, O. L, Brito, A., Abzug, Z., D'Arbeloff, T., Beynel, L., Palmer, H., Dannhauer, M., Hilbig, S.A., Crowell, C.A., Wing, E., Sommer, M., Cabeza, R., Davis, S.W., Peterchev, A. V., & Appelbaum, L.G. (2019) Application of long-interval paired-pulse transcranial magnetic stimulation to motion-sensitive visual cortex does not lead to changes in motion perception. **BioRxiv preprint.** <http://biorxiv.org/cgi/content/short/766428v1>
6. Liu, S., Edmunds, F., Burris, K., & Appelbaum, L.G., (2020) Visual and oculomotor abilities predict professional batting performance. **BioRxiv preprint.** <https://www.biorxiv.org/content/10.1101/2020.01.21.913152v1>
7. Gamboa Arana, O. L, Palmer, H., Dannhauer, M., Hile, C., Liu, S., Hamdan, R., Brito, A., Cabeza, R., Davis, S.W., Peterchev, A. V., Sommer, M., & Appelbaum, L.G. (2020) Dose-dependent enhancement of motion direction discrimination with transcranial magnetic stimulation of visual cortex. **BioRxiv preprint.** <https://www.biorxiv.org/content/10.1101/2020.06.14.151118v1>
8. Liu, S., Donaldson, R., Subramaniam, A., Palmer, H., Champion, C., Cox, M., & Appelbaum, L.G. (2020) Skill acquisition and gaze behavior during laparoscopic surgical simulation. **BioRxiv preprint.** <https://www.biorxiv.org/content/10.1101/2020.07.17.206763v1>

### **Textbook Contributions**

1. Appelbaum, L.G. (2013). "Deriving Event Related Potentials" In Visual Psychophysics: From Theory to Laboratory, by Lu, Z-L. MIT Press.
2. Appelbaum, L.G. (2009). Figure 1.6 "Retinotopy". In Functional Magnetic Resonance Imaging, 2nd Ed. By Huettel S.A., Song, A.W., and McCarthy, G. Sinauer.

### **Pre-Registered Clinical and Research Trials**

1. Appelbaum, L.G., (2016) Using TMS to Increase Executive Function in Older Adults (WMTMS). Identification No. NCT02767323. Available at: <https://clinicaltrials.gov/ct2/show/NCT02767323>.
2. Appelbaum, L.G., (2017) Effects of rTMS on Human Brain Activity Measured with EEG and fMRI. Identification No. NCT03259568. Available at: <https://clinicaltrials.gov/ct2/show/NCT03259568>.
3. Appelbaum, L.G., (2018) Utilizing Transcranial Direct Current Stimulation to Enhance Laparoscopic Technical Skills Training. Identification No. NCT03083483. Available at: <https://clinicaltrials.gov/ct2/show/NCT03083483>
4. Appelbaum, L.G., (2017) Utilizing Gaze Training to Enhance Laparoscopic Skills Training. Identification No. NCT03413943. Available at: <https://clinicaltrials.gov/ct2/show/NCT03413943>
5. Appelbaum, L. G., Liu, S., Hilbig, S., Rankin, K., Naclario, M., Asamo, E., ... Burris, K. (2018). Sports Vision Training in Collegiate Baseball Batters. doi: 10.17605/OSF.IO/496RX.
6. Liu, S., Folstein, J., Appelbaum, L. G., & Tenenbaum, G. (2019). The mechanism of controlling unwanted intrusive thoughts. Retrieved from [osf.io/ydmsv](https://osf.io/ydmsv)

## **Pre-Registered Meta Analyses and Reviews**

1. Beynel, L., Appelbaum, L.G., Davis, S. W., Luber, B., Hilbig, S., and Deng, Z.-D. (2016) Effects of online repetitive transcranial magnetic stimulation (rTMS) on cognitive processes: a systematic review and meta-analysis. PROSPERO #CRD42016038981. Available at: [www.crd.york.ac.uk/PROSPERO/display\\_record.php?ID=CRD42016038981](http://www.crd.york.ac.uk/PROSPERO/display_record.php?ID=CRD42016038981)
2. Beynel, L., & Appelbaum, L.G., (2019) Effects of repetitive transcranial magnetic stimulation (rTMS) on resting state connectivity: a qualitative review. PROSPERO #CRD42019119982. Available at: [http://www.crd.york.ac.uk/PROSPERO/display\\_record.php?ID=CRD42019119982](http://www.crd.york.ac.uk/PROSPERO/display_record.php?ID=CRD42019119982)

## **Invited Talks and Colloquia**

Feb 2020	Palo Alto Research Company, Xerox	Palo Alto, CA
Feb 2020	International Sports Vision Assoc.	San Diego, CA
Feb 2019	International Sports Vision Assoc.	Park City, UT
Nov 2018	Duke University	Future of Surgery Symposium
Apr 2018	U. Waterloo Sports Vision Club	Waterloo Canada
Feb 2018	International Sports Vision Assoc.	Park City, UT
Sept 2017	Duke University	Center for Cognitive Neuroscience
June 2017	Triangle Assessment Network Grp	NetApps Headquarters, Apex NC
Apr 2017	Sports Vision Consortium	Vision Service Providers, National HQ, Sacramento CA.
Oct 2016	Duke Sports Sciences Institute	Bassett Society Annual Meeting
June 2015	Duke University	Society for Philosophy and Psychology
Mar 2015	NIMBioS, Knoxville TN	Neurobiology of Expertise Workshop
Feb 2015	Womack Army Medical Hospital	Grand Rounds
Jan 2015	Duke University	Data Visualization Workshop – Perkins Library
Mar 2014	U. North Carolina, Chapel Hill	Department of Psychology
Mar 2014	Duke Medical Center	Brain Stimulation and Neurophysiology Division Meeting
Jan 2014	University of California, Irvine	Department of Cognitive Sciences
Dec 2013	System Planning Corp. (DARPA)	Quantifying Warriors Workshop
Apr 2013	Duke Medical Center	Department of Psychiatry
Dec 2012	University of New South Wales	Sydney Perception Group
Dec 2012	University of Western Sydney	MARCS Auditory Institute Workshop
Nov 2012	Duke University	Digital Scholarship Series – Perkins Library
Oct 2012	Duke University	Center for Cognitive Neuroscience
Mar 2012	Duke University	Computer Science - Visualization Technology Group
Apr 2012	Duke University	Sawyer Seminar Series
Feb 2011	University of Arizona at Tucson	Department of Psychology
Nov 2010	Reed College	Department of Psychology
Sept 2009	Osher Lifelong Learning Institute	Cognitive Neuroscience Lecture Series
Feb 2008	U. North Carolina, Chapel Hill	Department of Psychology
July 2006	Stanford University	Department of Psychology
Feb 2006	Smith-Kettlewell Institute	Brown Bag Talk Series
Jan 2006	Duke University	Center for Cognitive Neuroscience
Apr 2005	U. California San Francisco	Cognitive Neuroscience & Neuroimaging Working Group

## Conference Presentations

### 2020

1. Sommer, M., Appelbaum, L.G., Cabeza, R., Davis, S., Peterchev, A., Gamboa-Arana, O-L., Brito, A., Goswami, N., Camalier, C. R., Crowell, C.A., Dannhauer, M., D'Arbeloff, T., Hamdan, R., Palmer, H., Liu, S., & Wang, F., Impact of Timing, Targeting, and Brain State on rTMS of Human and Non-Human Primates. (2020) BRAIN Initiative Investigators Meeting, June 2020, Washington DC.
2. Neacsiu, A.D., Beynel, L., Szabo, S.A, Appelbaum, L., Smoski, M., & LaBar, K. (2020). Establishing a Neural Target for Neuromodulation Enhanced Cognitive Therapy for Transdiagnostic Emotion Dysregulation. Poster to be presented at the presented at the 51st annual convention of the Society of Biological Psychiatry. New York, NY. (Conference Canceled due to COVID).
3. Vander Vegt CB, Appelbaum LG, Mihalik JP, Guskiewicz KM, Register-Mihalik JK. Pupillary Responses Indicate Working Memory Processing Differences: Implications For Healthy And Clinical Populations. ACSM, San Francisco, CA May 2020
4. Vander Vegt CB, Appelbaum LG, Mihalik JP, Guskiewicz KM, Register-Mihalik JK. Pupillary Responses Indicate Neurocognitive Processing Differences in Working Memory Following Concussion. NATA, Atlanta, GA June 2020

### 2019

5. Young, J. R., Smani, S. A., & Appelbaum L.G. (2019, October). Non-Invasive Brain Stimulation (NIBS) modalities for the treatment of Opioid Use Disorder (OUD): a qualitative review of the literature. Poster presented at the Addiction Medicine Essentials Conference, Durham, NC
6. Beynel, L., Davis, S.W., Crowell, C.A., Hilbig, S.A., Palmer, H., Brito, A., Hile, C., Lim, W., Nguyen, D., Dannhauer, M., Peterchev, A.V., Cabeza, R., Lisanby, S.H., Luber. B., & Appelbaum, L.G. (October 2019) Site-, timing-, and load-specific effects of online repetitive transcranial magnetic stimulation (RTMS) on working memory (WM). Special nanosymposium "The Use of Transcranial Magnetic Stimulation to Modulate Human Memory", Society for Neuroscience, Chicago, Ill
7. Ferris LM, Liu S., Hilbig S., Port N.L., Applebaum L.G. Enhancing Performance through Vision: Sports Vision Training in Collegiate Baseball Hitters. In: Military Health Systems Readiness Symposium; Kissimmee, FL: Kissimmee, FL; 2019
8. Edmunds, F.R., Liu, S., Appelbaum, L.G. (2019, October) Predictive Assessments in Hitting Performance in Professional Baseball. Poster presentation at the 3rd World Congress of Optometry, Orlando, FL.
9. Beynel, L., Davis, S.W., Crowell, C.A., Dannhauer, M., Lim, W., Palmer, H., Hilbig, S.A., Brito, A., Hile, C., Luber. B., Lisanby, S.H., Peterchev, A.V., Cabeza, R., Appelbaum, L.G. (2019). Testing the feasibility and efficacy of a new dosing approach for rTMS. Carolina Neurostimulation Conference, Chapel Hill, NC, USA.
10. Dannhauer, M., Gomez, L., Lim, W., Beynel, L., Crowell, C.A., Davis, S.W., Palmer, H., Hilbig, S.A., Brito, A., Hile, C., Luber, B., Lisanby, S.H., Cabeza, R., Appelbaum, L.G., Peterchev, A.V. (2019). Computational approaches for targeting brain areas in transcranial magnetic stimulation to brain areas across subjects. Carolina Neurostimulation Conference, Chapel Hill, NC, USA.
11. Gamboa, OL, Camalier, C. R., Dannhauer, M., Hamdan R., Connor Hile, C., Crowell, C., Wing, E., Beynel, L., Hilbig, S. A., Palmer, H., Wang, F., Appelbaum, L.G, Roberto Cabeza, R., Davis, S.W., Peterchev, A., Sommer, M. Impact of timing, targeting, and brain state on rTMS of human and non-human primates. (2019) Carolina Neurostimulation Conference, June 2019, Chapel Hill, NC.



12. Crowell, C.A., Beynel, L., Palmer, H., Hilbig, S.A., Brito, A., Lubner, B., Lisanby, S.H., Peterchev, A.V., Appelbaum, L.G., Cabeza, R., & Davis, S.W., (2019). Connectivity-based predictions of age-related response to rTMS. Carolina Neurostimulation Conference, Chapel Hill, NC, USA.
13. Sommer, M., Appelbaum, L.G., Cabeza, R., Davis, S., Peterchev, A., Gamboa-Arana, O-L., Brito, A., Camalier, C. R., Crowell, C.A., Dannhauer, M., D'Arbeloff, T., Hamdan, R., Hile, C., Hilbig, S., Palmer, H., & Wang, F., Impact of Timing, Targeting, and Brain State on rTMS of Human and Non-Human Primates. (2019) BRAIN Initiative Investigators Meeting, April 2019, Washington DC.
14. Liu, S., Folstein, J. R., Appelbaum, L. G., & Tenenbaum, G. (2019, June). Time, control strategy, and working memory capacity affect thinking a recalled experience of choking under pressure in student athletes. Presentation at the annual conference of the North American Society for the Psychology of Sport and Physical Activity (NASPSPA), Baltimore, MD.
15. Appelbaum, L.G., (2018) Sports Vision Training: A Research Perspective. Presented at the International Sports Vision Association Feb 10, 2019. Park City, UT.
16. Beynel, L., Appelbaum, L.G., Lubner, B., Crowell, C.A., Hilbig, S., Lim, W., Nguyen, D., Chrapliwy, N., Davis, S.W., Cabeza, R., Lisanby, S.H., & Deng, Z.D. (2019) Effects of online repetitive transcranial magnetic stimulation (rTMS) on cognition: a meta-analysis and recommendations for future studies. 3rd International Brain Stimulation Conference, Vancouver.
17. Beynel, L., Davis, S.W., Crowell, C.A., Hilbig, S., Palmer, H., Brito, A., Hile, C., Lim, W., Nguyen, D., Dannhauer, M., Peterchev, A.V., Cabeza, R., Lisanby, S.H., Lubner, B., Appelbaum, L.G. (2019). Site-specific effects of online repetitive transcranial magnetic stimulation (rTMS) on working memory (WM). 3rd International Brain Stimulation Conference, Vancouver.

## 2018

18. Appelbaum, L.G., Deng, Z-D, Palmer, H., Beynel, L., Watts, A., Young, J.R., Lisanby, S.H., Migaly, J. & Cox, M.L., (2018) Transcranial Direct Current Stimulation to Enhance Laparoscopic Technical Skill Learning: A Preregistered Randomized Controlled Trial. NYC Neuromodulation Conference & NANS Summer Seminar Series, New York, NY.
19. Crowell, C.A., Davis, S.W., Beynel, L., Lakhani D., Hilbig, S.A., Brito, A., Palmer, H., Peterchev, A. V., Lubner, B., Lisanby, S.H., Appelbaum, L.G., Cabeza, R. Older adults benefit from more widespread network integration during working memory functioning. Society for Neuroscience, 2018, "Human Cognition and Behavior: Working Memory II" Nanosymposium.
20. Beynel, L., Deng, L., Crowell, C.A., Hilbig, S.A., Brito, A., Palmer, H., Lim, W., Peterchev, A.V., Lubner, B., Lisanby, S.H., Cabeza, R., Appelbaum, L.G., & Davis, S.W. (2018). Network controllability predicts rTMS-induced benefits to working memory ability. Society for Neuroscience, San Diego.
21. Beynel, L., Davis, S.W., Crowell, C.A., Hilbig, S.A., Lim, W., Palmer, H., Brito, A., Peterchev, A.V., Lubner, B., Lisanby, S.H., Cabeza, R., & Appelbaum, L.G. (2018). 5Hz repetitive transcranial magnetic stimulation to enhance working memory and neural factors underlying the rTMS-induced behavioral plasticity in old and young adults. Society for Neuroscience, San Diego.
22. Beynel, L., Davis, S.W., Crowell, C.A., Hilbig, S.A., Lim, W., Palmer, H., Brito, A., Peterchev, A.V., Lisanby, S.H., Cabeza, R., Appelbaum, L.G., & Lubner, B. (2018). Online repetitive transcranial magnetic stimulation enhances working memory performance in younger and older adults. American College of NeuroPsychoPharmacology Conference, Florida.
23. Cox, M.L., Deng, Z-D, Palmer, H., Watts, A., Beynel, L., Young, J.R., Migaly, J. & Appelbaum, L.G., (2018) tDCS accelerates learning of laparoscopic surgical skills in a pre-registered, double-blind, randomized control design. Carolina Neurostimulation Conference, Chapel Hill, NC.
24. Brito, A., Abzug, Z., D'Arbeloff, T., Arana, O.L.G., Beynel, L., Crowell, C., Dannhauer, M., Hamdan, R., Hilbig, S.A., Palmer, H., Wing, E.A., Sommer, M., Cabeza, R., Davis, S.W., Peterchev, A.V., & Appelbaum, L.G. (2018) Online Paired-Pulse Transcranial Magnetic Stimulation (TMS) Alters Motion



Perception in an Individually-Titrated Motion Discrimination Task. Carolina Neurostimulation Conference, Chapel Hill, NC.

25. Beynel, L., Appelbaum, L.G., Luber, B., Crowell, C.A.C., Hilbig, S.A., Lim, W., Nguyen, D., Chrapliwy, N., Davis, S.W., Cabeza, R., Deng, Z.-D. (2018). Effects of online repetitive transcranial magnetic stimulation on cognitive processes: a meta-analysis. Carolina Neurostimulation Conference, Chapel Hill, NC.
26. Burris, K & Appelbaum, L.G. (2018) Eye on the ball: the relationship between sensorimotor abilities and on-field performance in professional baseball. MIT Sloan Sports Analytics, Boston MA. \*Research paper competition finalist.
27. Cox, M. L., Palmer, H., Watts, A., Beynel, L., Deng, Z.-D., Migaly, J., & Appelbaum, L. G. (2018). Utilizing Brain Stimulation to Enhance Laparoscopic Technical Skills Training: A Randomized Controlled Trial. Paper presented at the American College of Surgeons, Surgical Simulation Summit, Chicago, IL. [Clinical Trials #NCT03083483].
28. Teel EF, Register-Mihalik JK, Appelbaum LG, Battaglini CL, Carneiro KA, Guskiewicz KM, Marshall SP, & Mihalik JP (2018, June). The Effect of a Brief Aerobic Training Program on Concussion-Like Symptoms in Healthy University Students. To be presented at the National Athletic Trainer's Association Annual Meeting, New Orleans, Louisiana.
29. Sommer, M., Davis, S., Appelbaum, L.G., Cabeza, R., Peterchev, A., Beynel, L., Hamdan, R., Wing, E., & Abzug Z., Impact of Timing, Targeting, and Brain State on rTMS of Human and Non-Human Primates. (2018) BRAIN Initiative Investigators Meeting, April 2018, Washington DC
30. Appelbaum, L.G., Clements, J., Kirsch, E., Rao, H., Potter, N., Kopper, R. & Sommer, M. Psychophysiology of Visual-Motor Learning during a Simulated Marksmanship Task in Immersive Virtual Reality. (2018) Vision Science Society Annual Meeting, St. Pete Beach, FL.
31. Appelbaum, L.G., Visual hardware or software? What is the root of perceptual expertise in elite athletes and can it be trained? (2018) presented at the International Sports Vision Association Feb 9, 2018. Park City, UT.
32. Teel, E.F., Register-Mihalik, J.K., Appelbaum, L.G., Battaglini, C.L., Carneiro, K.A., Guskiewicz, K.M., Marshall, S.P., Mihalik, J.P. The Effect of a Brief Aerobic Training Program on Concussion-Like Symptoms in Healthy University Students. (2018) National Athletic Trainers' Association, New Orleans, LA.

## 2017

33. Beynel, L., Davis, S.W., Crowell, C., Hilbig, S.A., Lim, W., Nguyen, D., Peterchev, A.V., Lisanby, S.H., Cabeza, R., Appelbaum, L.G., Luber, B. (2017) fMRI- and computationally-guided rTMS enhances performance in working memory manipulation. Presented at the 56th annual meeting of the American College of Neuropsychopharmacology.
34. Hilbig, S, Appelbaum, L.G., Jangraw, D, Harrison, A, Jones, T, Sajda, P, Lisanby, S.H., Luber, B. TMS selectively modulates cortical networks underlying perceptual decision making (2017). Human Brain Mapping conference, Poster number 4335.
35. Crowell, C., Davis, S.W., Beynel, L., Hilbig, S. Peterchev, A.V., Luber, B., Lisanby, S.H., Appelbaum, L.G., Cabeza, R. Dissociating maintenance and manipulation operations in working memory. (2017) Human Brain Mapping conference, Poster number 4367.
36. Beynel, L., Davis, S.W., Crowell, C., Hilbig, S.H., Lim, W., Nguyen, D., Peterchev, A.V., Luber, B., Lisanby, S.H., Cabeza, R., Appelbaum, L.G. Neuroimaging factors predicting benefits in working memory accuracy associated with rTMS. (2017) Human Brain Mapping conference, Vancouver Canada. Poster number 4368.
37. Appelbaum, L.G., Clements J, Rao HM, Khanna R, Zielinski DJ, Lu Y, Vittatoc K, Potter ND, Kopper R, Sommer MA. Changes in EEG and movement kinematics accompany sensorimotor learning in

immersive virtual reality. 2017, 24th Annual Meeting of the Cognitive Neuroscience Society, San Francisco, CA.

38. Luber, B., Appelbaum, L.G., Beynel, L., & Lisanby, S.H. Individualized alpha-band rTMS to the inferior frontal junction selectively enhances visual search performance. 2017, 24th Annual Meeting of the Cognitive Neuroscience Society, San Francisco, CA.

## 2016

39. Appelbaum, L.G., Clements, J., Lu, Y., Rao, H.M., Khanna, R., Zielinski, D.J., Vittatoe, K., Potter, N.D., Kopper, R., and Sommer, M.A. (November 2016). Sensorimotor orienting in immersive virtual reality: EEG correlates of skill learning. Society for Neuroscience, San Diego, CA.
40. Rao, H.M., Khanna, R., Zielinski, D.J., Lu, Y., Potter, N.D., Kopper, R., Sommer, M.A., and Appelbaum, L.G. (November 2016). Sensorimotor learning during a marksmanship task in immersive virtual reality. Society for Neuroscience, San Diego, CA.
41. Zielinski, D., Rao, H.M., Potter, N., Appelbaum, L.G., and Kopper, R. (March, 2016). Evaluating the effects of image persistence on dynamic target acquisition in low frame rate virtual environments. In IEEE Symposium on 3D User Interfaces. Greenville South Carolina. Honorable Mention for Best Poster Award
42. Sakraney, N., Morgan, J., Huettel, S.A., Moody, J., & Appelbaum, L.G. (April, 2016) The Semantics of Cognitive Neuroscience: Mapping Structure and Evolution. Cognitive Neuroscience Society. New York.
43. Morgan, J., Sakraney, N., Moody, J., Huettel, S.A., & Appelbaum, L.G. (April, 2016) Bridges and Communities: The Impact of Shared Concepts in Cognitive Neuroscience. Cognitive Neuroscience Society. New York.
44. Ruzic, L., Ngo, L., Appelbaum, L.G., De Brigard, F., & Huettel, S.A. (April, 2016) The neural components of cognition. Rethinking the Taxonomy of Psychology Conference. Rotman Annual Conference, Ontario, CA

## 2015

45. Appelbaum, L.G. (June, 2015) Neurorhetoric: Mapping the semantic evolution of cognitive neuroscience. Society for Philosophy and Psychology. Durham NC.
46. Teel, E.F., Lynall, R.C., Appelbaum, L.G., & Mihalik, J.P., (June, 2015) The Effect of Sex, Sport, and Concussion History on Vision and Sensorimotor Performance in Healthy College Athletes. National Athletic Trainers' Association, St. Louis, MO.

## 2014

47. van den Berg, B., Appelbaum, L.G., Clark, K., Mitroff, S.R., & Woldorff, M.G. (November 2014). The neural cascade of processing underlying response time variability in visual search. Society for Neuroscience, Washington D.C.

## 2013

48. Appelbaum, L.G., Bel-Bahar, T., Wang, L., Krasich, K., Hughes, L. & Mitroff, S.R. (November 2013). Mapping the Core Factors of Visual Perceptual Performance. Psychonomic Society, Toronto CA.
49. Bel-Bahar, T., Gentzler, E., Adamo, S., Wang, L., Krasich, K., Hughes, L. Mitroff, S.R., & Appelbaum, L.G., (November 2013). Visuomotor performance is predicted by ERP amplitudes in a rapid serial visual presentation (RSVP) protocol. Psychonomic Society, Toronto CA.
50. Krasich, K., Hughes, L., Wang, L., Bel-Bahar, T., Mitroff, S.R., & Appelbaum, L.G., (November 2013). Visual Perception and Motor Skills Across the Day. Psychonomic Society Satellite – Objects, Perception, Attention, and Motion. Toronto CA.
51. Appelbaum, L.G., Cain, M.S., Schroeder, J.E., Darling, E.F., & Mitroff, S.R. (May, 2013). Improving visual cognition through stroboscopic training. Vision Sciences Society, Naples, FL. [Abstract].

52. Devyatko, D., Appelbaum, L.G., & Mitroff, S.R. (May, 2013). A common mechanism for perceptual reversals in motion-induced blindness, the Troxler effect, and perceptual filling-in. Vision Sciences Society, Naples, FL. [Abstract].
53. Appelbaum, L.G., Beam, E., Jack, J., Moody, J., & Huettel, S.A. (April, 2013). NeuroRhetoric: Mapping the Semantic Structure of Cognitive Neuroscience. Cognitive Neuroscience Society. San Francisco, CA.
54. Donohue, S.E., Appelbaum, L.G. & Woldorff, M.G. (April, 2013). The Effects of Response Number and Task on the Electrophysiological Correlates of Conflict Processing. Cognitive Neuroscience Society. San Francisco, CA.
55. San Martin, R., Appelbaum, L.G. Huettel, S.A., & Woldorff, M.G. (April, 2013). Neural signatures of value-driven attentional capture predict individual differences in economic choice. Cognitive Neuroscience Society. San Francisco, CA.

## 2012

56. Appelbaum, L.G., Clark, K., Mitroff, S.R., & Woldorff, M.G. (October 2012). Cognitive and Neural Plasticity due to Visual Search Training. Society for Neuroscience, New Orleans, LA.
57. Krebs, R., Boehler, C.N., Appelbaum, L.G. & Woldorff, M.G. (May 2012). Reward increases early attentional control in the Stroop task and modulates interference-related ERP components. European Society for Cognitive and Affective Neuroscience. Marseille, France.
58. Clark, K., Appelbaum, L.G., Mitroff, S.R., & Woldorff, M.G. (May 2012). Neural correlates of learning during a visual search task. Vision Sciences Society, Naples, FL.
59. Appelbaum, L.G., Boehler, C.N., & Woldorff, M.G. (April 2012). Proactive and reactive cognitive control in the human brain. Cognitive Neuroscience Society. Chicago, IL.

## 2011

60. Beam, E., Appelbaum, L.G., Jack, J., Moody, J., & Huettel, S.A. (November, 2011). Mapping the Intrinsic Structure of Cognitive Neuroscience. Society for Neuroscience, Washington, D.C.
61. San Martín, R., Appelbaum, L.G., Pearson, J.M., Huettel, S.A., & Woldorff, M.G. (November, 2011). Feedback-related activity predicts individual differences in Gain maximizing and Loss minimizing in a probabilistic decision-making task. Society for Neuroscience, Washington, D.C.
62. Mitroff, S.R., Appelbaum, L.G., Schroder, B, J., & Cain, M.S. (November 2011). Improved Visual Cognition Through Stroboscopic Training. Annual Meeting of the Psychonomic Society, Seattle, WA. [Abstract].
63. Appelbaum, L.G., Boehler, C.N., Won, R., Davis, L., & Woldorff, M.G. (April 2011). Strategic orientation of attention reduces temporally predictable stimulus conflict. Cognitive Neuroscience Society, San Francisco, CA. [Abstract].
64. Schroder, B, J., Appelbaum, L.G., Cain, M.S., & Mitroff, S.R. (May, 2011). Examining the Effects of Stroboscopic Vision. Vision Science Society, Naples, FL. [Abstract].
65. Appelbaum, L.G., Chen, W.D., Smith, D.S. Boehler, C.N., Woldorff, M.G. (November, 2011). Functional dynamics of stimulus conflict resolution in the human brain. Society for Neuroscience, San Diego, CA.

## 2010

66. Appelbaum, L.G., Boehler, C.N., Woldorff, M.G. (April, 2010). Priming and backward interference in the human brain: stimulus onset asynchrony manipulations reveal processing interactions during the Stroop and reverse Stroop tasks. Cognitive Neuroscience Society, Montreal, Canada. [Abstract].
67. Boehler, C. N., Appelbaum, L.G., Krebs, R. M., Hopf, J.M., & Woldorff, M.G. (April, 2010). Pinning down response inhibition in the brain - conjunction analyses of the Stop-signal task. Cognitive Neuroscience Society, Montreal, Canada. [Abstract].

68. Ales, J., Appelbaum, L.G., Norcia, A.M. (May, 2010). Neural signatures of shape discrimination decisions at threshold. Vision Science Society, Naples, FL. [Abstract].

## 2009 and earlier

69. Appelbaum, L.G., Chen, W.D., Meyerhoff, K., Davis, L.A., Won, R.J., Woldorff, M.G. (May, 2009). Priming and backward interference in the human brain: SOA manipulations reveal processing interactions during the Stroop and reverse Stroop tasks. Vision Science Society, Naples FL. [Abstract].
70. Appelbaum, L.G., Meyerhoff, K., Chen, W.D., Woldorff, M.G. (October, 2008). Automaticity and information integration in the human brain: EEG insights from SOA variants of the Stroop and reverse Stroop tasks. Optical Society of America, Fall Vision Meeting, Rochester NY. [Abstract].
71. Meyerhoff, K.L., Appelbaum, L.G., and Woldorff, M.W. (April, 2008). The Temporal Sensitivity of the Stroop Color-Word Interference Effect. Cognitive Neuroscience Society, San Francisco, CA. [Abstract].
72. Appelbaum, L.G., Vildavski, V.Y., Pettet, M.W., Wade, A.R., & Norcia, A.M. (November, 2007). Voluntary attention: the influence of feedback on figural processing." Society for Neuroscience, San Diego, CA.
73. Norcia, A.M., Appelbaum, L.G., Pettet, M.W., Vildavski, V.Y., & Wade, A.R. (November, 2007). Neural correlates of temporal attention: anticipatory responses in the human visual cortex to periodic stimuli." Society for Neuroscience, San Diego, CA.
74. Palomares, M., Norcia, A.M., Wade, A.R., Pettet, M.W., Vildavski, V.Y., Appelbaum, L.G. (October, 2007). On the differences and similarities between real and implied motion: a high-density EEG study. Optical Society of America, Fall Vision Meeting, Berkeley, CA. [Abstract].
75. McKee, S., Wade, A.R., Pettet, M.W., Vildavski, V.Y., Appelbaum, L.G., Norcia, A.M. (October, 2007). Disparity processing in the human brain imaged with high density EEG. Optical Society of America, Fall Vision Meeting, Berkeley, CA. [Abstract].
76. Appelbaum, L.G., Vildavski, V.Y., Pettet, M.W., Wade, A.R., & Norcia, A.M. (May, 2007). Neural dynamics of visual scene segmentation. Vision Science Society, Sarasota FL. [Abstract].
77. Norcia, A.M., Wade, A.R., Pettet, M.W., Vildavski, V. and Appelbaum, L.G. (February, 2007). Periodic Visual Stimuli Lead to Anticipatory Responses in Human Prefrontal and Occipital Cortex: Results from EEG Source Imaging. Annual Interdisciplinary Conference, Jackson, WY. [Abstract].
78. Norcia, A.M., Wade, A.R., Vildavski, V.Y., Pettet, M.W., Appelbaum, L.G. (August, 2007). "Anticipatory responses in human visual cortex to predictable stimuli: An EEG source-imaging study. Perception 36. European Conference on Visual Perception [Abstract].
79. Appelbaum, L.G., Pettet, M.W., Vildavski, V., Wade, A., Norcia, A.M. (February, 2006). Cue-invariant Networks for Figure and Background Processing in Human Visual Cortex. Annual Interdisciplinary Conference, Jackson, WY. [Abstract].
80. Appelbaum, L.G., Pettet, M.W., Vildavski, V., Wade, A., Norcia, A.M. (November, 2006). Cortical networks underlying visual scene segmentation. Society for Neuroscience, Atlanta GA.
81. Appelbaum, L.G., Vildavski, V.Y., Pettet, M.W., Wade, A.R., & Norcia, A.M. (October, 2006). Dynamics of scene segmentation: The role of boundary information. Journal of Vision, 6(13):42. Optical Society of America, Fall Vision Meeting, Rochester NY. [Abstract].
82. Norcia, A.M., Pettet, M.W., Vildavski, V.Y., Wade, A.R., & Appelbaum, L.G. (October, 2006). Regions of human visual cortex sensitive to small vernier offsets as determined by EEG source-imaging. Journal of Vision, 6(13):21. Optical Society of America, Fall Vision Meeting, Rochester, NY. [Abstract].
83. Appelbaum, L.G., Vildavski, V.Y., Pettet, M. W., Wade, A. R., & Norcia, A. M. (May, 2006). Cortical networks underlying scene segmentation." Journal of Vision, 6(6):475. Vision Science Society, Sarasota, FL. [Abstract].

84. Norcia, A.M., Han, Y., Pettet, M.W., Vildavski, V.Y., Wade, A.R., & Appelbaum, L.G. (May, 2006). Modulation of local and global motion responses by sustained visual attention." *Journal of Vision*, 6(6):588. Vision Science Society, Sarasota, FL. [Abstract].
85. Appelbaum, L.G., Wade, A.R., Pettet, M., Vildavski, V., & Norcia, A. M. (October, 2005). Dynamics of texture segmentation." *Journal of Vision*, 5(12):12. Optical Society of America, Fall Vision Meeting, Tempe AZ. [Abstract]
86. Sperling, G., Appelbaum, L.G., & Lu, Z-L. (August, 2005). Amplifying the effective perceptual contrast of a grating." *Perception* 34. European Conference on Visual Perception, Coruna, SP. [Abstract].
87. Hou, C., Pettet, M., Vildavski, V., Appelbaum, L.G., & Norcia, T. (May, 2005). The Temporal Order of Border and Surface Processing: Illusory Contours and Salient Regions. Association of Research in Vision and Ophthalmology, Ft. Lauderdale, FL.
88. Appelbaum, L.G., Lu, Z-L., & Sperling, G. (May, 2005). Neuromagnetic responses to first- and second-order motion. *Journal of Vision*, 5(8):926. Vision Science Society, Sarasota, FL. [Abstract]
89. Appelbaum, L.G., Pettet, M.W., Vildavski, V., Wade, A., Norcia, A.M. (November, 2005). Dynamics of Texture Segmentation. Society for Neuroscience, Washington, DC.
90. Appelbaum, L.G. and Srinivasan, R. (November, 2003). Neural Correlates of Figure-Ground Segregation during Bistable Perception of the Rubin Face-Vase Illusion." Society for Neuroscience, New Orleans, LA.
91. Appelbaum, L.G., Lu, Z-L., & Sperling, G. (January, 2002). Amplifying Contrast: Example from Motion and Texture. Annual Interdisciplinary Conference, Jackson, WY [Abstract].
92. Appelbaum, L.G., Lu, Z-L., & Sperling, G., (May, 2001). Contrast Amplification in a Texture Discrimination Task." Association of Research in Vision and Ophthalmology, Ft. Lauderdale, FL.
93. Appelbaum, L.G., Lu, Z-L., & Sperling, G. (October, 2001). Facilitation of Subthreshold Contrasts by Means of Texture-Slant Discrimination." Optical Society of America, Fall Vision Meeting, Irvine, CA. [Abstract].
94. Adamson, A. Mills, D. and Appelbaum, L.G. (April, 1999). Sentence Processing in Adults and Children: Evidence from ERPs. Cognitive Neuroscience Society, San Francisco, CA. [Abstract].
95. Mervis, C.B., Klein, B.P., Bertrand, J., Kwitny, S., & Appelbaum, L.G., (April, 1998). Attention to faces in infancy: Comparison of an infant with Williams syndrome to typically developing infants." 11th International conference on infant studies, Atlanta, GA [Abstract]

## **Teaching**

### **Instructor of Record Undergraduate Courses**

Neuroplasticity and Expertise (Psych/Neuro 351)	Duke University	2016, Spring
Neural Basis of Cognitive Plasticity (Psych/Neuro 290)	Duke University	2015, Spring
Neural Basis of Cognitive Plasticity (Psych/Neuro 290)	Duke University	2012, Spring
Introduction to Cognitive Psychology (Psych 230)	UNC, Chapel Hill	2008, Summer
Introduction to Cognitive Psychology (Psych 230)	UNC, Chapel Hill	2008, Spring
Sensation and Perception (Psych 225)	UNC, Chapel Hill	2007, Summer
Biological Psychology (Psych 498)	San Francisco State University	2006, Fall
Biological Psychology (Psych 498)	San Francisco State University	2006, Spring
Learning and Memory (Psych 491)	San Francisco State University	2005, Spring
Cognitive Neuroscience (Psych 160)	University of California, Irvine	2004, Summer
Sensation and Perception (Psych 130)	University of California, Irvine	2003, Summer

## **Team Taught Graduate Courses**

Principles in Cognitive Neuroscience (Graduate)	Duke University	Annually 2009-present
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## **Continuing Medical Education Courses**

Visiting Fellowship in Transcranial Magnetic Stimulation	Duke University SOM	Quarterly 2017-19
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## **Research Supervision**

### **Faculty Supervision**

Noreen Bukhari-Parlakturk, MD PhD	Duke Neurology	2018 – present	Duke KL2 Career Development Mentor
Andrada Neacsiu, Ph.D.	Duke Psychiatry	2017 – 2020	Duke KL2 Career Development Mentor
Andrada Neacsiu, Ph.D.	Duke Psychiatry	2016 – 2018	NARSAD Young Investigator Award Mentor

### **Supervised Postdoctoral Fellows**

Sicong (“Zone”) Liu, PhD	Duke Psychiatry	2018 – present
Olga Lucia Gamboa Arana, PhD	Duke Psychiatry	2018 – 2019
Lysianne Beynel, PhD	Duke Psychiatry	2016 – present
Lingling Wang, PhD	Duke Psychiatry	2013 – 2014
Tarik Bel-Bahar, PhD	Duke Psychiatry	2012 – 2013

### **Supervised Residents**

Jonathan Young (Psychiatry)	Duke Psychiatry	2016 – 2020
Morgan Cox (Surgery)	Duke Surgery	2015 - 2018

### **Supervised Clinical Research Coordinators/Specialists (Duke University SOM)**

Ethan Campbell	May 2019 - present
Connor Hile	June 2018 – Jun 2019
Alexandra Brito	June 2017 – May 2018
Hannah Palmer	May 2017 – present
Duy Nguyen	August 2016 – June 2017
Courtney Crowell	June 2016 – July 2019
Susan Hilbig	November 2015 – present
Kristina Krasich	November 2012 – July 2014
Lauren Hugens	November 2012 – October 2013

### **Ph.D. Thesis Supervision**

Christina Vander Vegt	UNC Exercise and Sports Sciences	Advancement, July 2019	Committee member
Kyle Burris	Duke, Department of Statistics	Defended, July 2019	Committee member
Jillian Clements	Duke, Engineering	Defended, May 2019	Co-Chair

Liz Teel	UNC Exercise and Sports Sciences	Defended, April 2017	Committee member
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**Master's Thesis Supervision**

Taryn Gilrein	UNC Exercise and Sports Sciences	Defended, April 2014	Committee member
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**Supervised Graduate Research (Duke University)**

Tracy d'Arbaloff	Ph.D. Practicum	Spring, 2018
Lifu Deng	Ph.D. Lab Rotation	Spring, 2018
Matthew DeLang	DPT Lab Rotation	2016 - 2017

**Undergraduate Honors Thesis Supervision (Duke University)**

Edem Asamoah	Defending, April 2021	Primary advisor
Erikson Nichols	Defended, April 2020	Primary advisor
Rachel Donaldson	Defended, April 2020	Primary advisor
Joyce Wang	Defended, April 2019	Primary advisor
Elayna Kirsch	Defended, April 2018	Primary advisor
Jordan Cohen	Defended, April 2017	Committee member
McKenzie Middlebrooks	Defended, April 2017	Committee member
Natasha Sakraney	Defended, April 2016	Primary advisor
Yvonne Lu	Defended, April 2016	Primary advisor
Annie Apple	Defended, April 2016	Primary advisor
Garland Austin	Defended, April 2016	Primary advisor
Peter Cangialosi	Defended, April 2016	Committee member
Delaney Lagrew	Defended, April 2016	Committee member
Sheetal Hedge	Defended, April 2015	Committee member
April Ratliff	Defended, April 2015	Committee member
Daniela De Albuquerque	Defended, April 2015	Committee member
Eliza Gentzler	Defended, April 2014	Primary advisor
Christopher Mazis	Defended, April 2014	Committee member
Elizabeth Beam	Defended, April 2013	Committee member

**Supervised Undergraduate Research (Duke University)**

Shailen Parmar	2019 – present	Garland Austin	2015 – 2016
Jessica Ho	2019 – present	Chrislyn Choo	2014 – 2015
J.T. Gala	2019 – present	Sheetal Hedge	2014 – 2015
Ashwin Subramaniam	2019 – present	Natasha Sakraney	2014 – 2016
Angikar Ghosal	2019 – present	Kelly Vittetoe	2014 – 2017
Erikson Nichols	2018 – present	Rajan Khanna	2014 – 2017
Edem Asamoah	2018 – present	Clara Colombatto	2013
Rachel Donaldson	2017 – present	Annie Apple	2013 – 2016
Maria Naclerio	2017 – present	Ben Ramger	2013 – 2016
Elayna Kirsch	2016 – 2018	Laura Holton	2013 – 2016
Amanda Watts	2016 – 2018	Yvonne Lu	2013 – 2016

Wesley Lim	2016 – 2018	Eliza Gentzler	2013 – 2014
Joyce Wang	2015 – 2019	Floyd Wilks	2013 – 2014
Eliane Schinder	2015 – 2016	Gabriela Asturias	2013 – 2014

### **Supervised Mentee Research Fellowships and Awards:**

2020 Rhodes Information Initiative DATA+ program lead.  
2020 American Society of Clinical Psychopharmacology, Early Career Research Award - Dr. Jonathan Young.  
2020 Chair's Choice Travel Award, Society of Biological Psychiatry – Awarded to Dr. Jonathan Young  
2019 NIH K99/R01 Award (mentoring consultant) – Awarded to Dr. Luis Gomez  
2019 Summer Neuroscience Program fellowship - Awarded to Mr. Edem Asamoah  
2019 Stanford University Research Conference Travel Award – Awarded to Joyce Wang  
2018 Duke University Psychology and Neuroscience Travel Award – Awarded to Joyce Wang  
2018 DIBS Germinator Award – Awarded to Dr. Lysianne Beynel  
2018 Duke Undergraduate Research Office Travel Award – Awarded to Ms. Sade Abiodun  
2018 IEEE Doctoral Consortium Travel Award - Awarded to Ms. Jillian Clements  
2017 Summer Neuroscience Program fellowship - Awarded to Ms. Elayna Kirsch  
2016 Duke Undergraduate Research Office Travel Award – Awarded to Ms. Natasha Sakraney  
2016 Duke Neuroscience Program in Research - Awarded to Ms. Kelly Vittetoe  
2015 Pitzer College Summer Research Fellowship - Awarded to Ms. Sage Lachman  
2013 Duke Student Science Education Outreach Grant - Awarded to Mr. Jonathan Winkle & Ms. Pinar Yoldas  
2013 Duke Psychology Vertical Integration Program - Awarded to Ms. Clara Colombatto and Ms. Kait Clark  
2013 Duke Neuroscience Program in Research - Awarded to Ms. Eliza Gentzler and Mr. Stephen Adamo

### **Undergraduate Student Advising**

Undergraduate Neuroscience Major Advisor, Duke University Classes of 2015, 2016, 2017, 2018

### **Training and Certifications**

#### **Professional Training**

Visiting Fellowship in Transcranial Magnetic Stimulation – Duke University Medical Center

#### **Certifications**

Transcranial Magnetic Stimulation Operators Certification - Duke University Medical Center  
Duke Immersive Virtual Environment Operator Certificate  
Basic Life Saving  
U.S. Coast Guard - Operator Uninspected Passenger Vessel (OUPV) License  
Nike SPARQ Sensory Performance Certified Trainer  
NAUI Scuba Diving Instructor

### **Professional Service and Outreach**

#### **Organizational Duties**

Search Committee, 2019-2020, Associate Dean of Education for the Section of Surgical Disciplines  
Co-Chair, 2018-19 Psychiatry and Behavioral Sciences Faculty Search Committees  
Center for Cognitive Neuroscience Colloquium Organizer, 2012-13 & 2017-18  
Conference Section Chair, Fall Vision Meeting - Optical Society of America, 2006-2009



UC Irvine Neuroscience Symposium, Co-Chair, 2003

### **Human Subjects Research Oversight**

Data Safety Monitor – NIH 1R03HD094614-01A1 – “Realistic measurements of tDCS-modulated activity and electric fields in the human brain in vivo”, PI Pratik Chhatbar.

Data Safety Monitor – Industry Sponsored Trial – “Optimizing parameters of low intensity of focused ultrasound stimulation for stroke patients”, PI Wayne Feng.

### **Grant Review**

NIH Special Emphasis Panel/Scientific Review Group 2019/05 ZRG1 BBBP-X (02) M

NIH Special Emphasis Panel/Scientific Review Group 2017/05 ZRG1 BDCN-J (51) S

Army Research Office (2016, 2018, 2020)

National Science Foundation, USA (2018)

Netherlands Organisation for Scientific Research (2016)

Manitoba Medical Service Foundation, Canada (2017)

Ontario Physicians' Services Incorporated Foundation, Resident Research Award (2020)

### **Book Reviewer**

Cambridge University Press

### **Journal Review Board**

Brain Topography (2017-2021)

Frontiers in Perception Science

Frontiers in Cognitive Neuroscience

### **Ad hoc Journal Reviewer**

Proceedings of the National Academy of Science

Journal of Neuroscience

Journal of Neurophysiology

Journal of Cognitive Neuroscience

Human Brain Mapping

Neuropsychologia

Cognitive, Affective, & Behavioral Neuroscience

Perceptual and Motor Skills

Acta Psychologica

Journal of Sports and Exercise Psychology

Brain Topography

International Journal of Sports Physiology and Performance

Journal of Science and Medicine in Sports

eNeuro

Frontiers in Human Neuroscience

Vision Research

PLoS One

Experimental Brain Research

BMC Neuroscience

Brain Research

Journal of Vision

Cortex

Motor Control

Nature, Scientific Reports

Journal of Cognitive Enhancement

International Journal of Sports Science and Coaching

BrainFacts.org (publication of the Society for Neuroscience)

Brain and Behavior

International Review of Sports and Exercise  
Psychology  
Sport Sciences for Health

Journal of Sports Science  
Quest  
Brain Sciences

### **Professional Society Membership**

Sigma Xi	Member, 2002 – Present
Vision Science Society	Member, 2004 – Present
Society for Neuroscience	Member, 2005 – Present
Cognitive Neuroscience Society	Member, 2009 – Present
Psychonomic Society	Member, 2013 – 2015
Optical Society of America	Member, 2005-2009

### **Scientific Outreach**

BOOST: Building Opportunities & Overtures in Science & Technology, instructor, 2019  
InnoJam: development program for URM in science. guest instructor, 2019  
Brain Stimulation Working Group, Organizer: Biannual symposium for brain stimulation at Duke and surrounding universities. 2018 - present  
Summer Symposia in Neuroscience and Philosophy, instructor, 2016, 2017, 2018  
Duke Accelerated STEM High School Program, instructor, 2016, 2017, 2018, 2019  
Duke Brain Bee, Shadow a Neuroscientist Volunteer, 2011, 2013, 2014, 2015, 2016  
Duke University Outreach; Brain Awareness Week Organizer/Presenter, 2010, 2011, 2012, 2013, 2016  
North Carolina Museum of Life and Science, Heroes and Villains Event Presenter, 2012  
North Carolina Museum of Life and Science, BRAINS! Event Presenter, 2013  
Carolina Science Café Presenter, 2013  
North Carolina Science Festival, The Science of Sports Presenter, 2014, 2016