

Curriculum Vitae
Lawrence Gregory Appelbaum
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Personal Information

Department of Psychiatry and Behavioral Science
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Education

Ph.D., October 2004, Psychology, University of California, Irvine.
Thesis advisor: Dr. George Sperling
M.S., August 2002, Psychology, University of California, Irvine
B.A., June 1995, 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
Affiliate, 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
2017 – Present Co-Director, Duke Sports Vision Center, Duke University School of Medicine

Research Laboratory

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

Other Professional Activities

2015 – Present Founder and President – Psychometric Consulting, LLC,
2018 – Present Consultant – RightEye LLC
2018 – Present Advisory Board – NeuroPlus, LLC
2018 – Present Scientific Advisor – NeuroTrainer, 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 (department sub-award \$1,138,584)
Summary: This project will test dose-response relationships in rTMS coils in human and non-human primates
- 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 July 9, 2020 (2 year extension pending)
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: 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: Co-PI (with Roberto Cabeza)
Grant Period: September 1, 2015 through August 31, 2020
Total funding: \$2,483,010
Summary: This NIA R01 investigates the capacity for fMRI-guided transcranial magnetic stimulation to produce lasting and generalizable enhancement of working memory in older adults.
- 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: Effect of Connectivity-based rTMS and State-Dependency on Amygdala Activation
Funding Source: Duke Institute for Brain Sciences, Germinator Award
Role: Co-I (PI: Lysianne Beynel)
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.

Completed Research Support

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: Co-PI (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 through 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.

Equipment Grants

Equipment: BrainSight Neuronavigation System, Rogue Research
Funding Source: Duke University School of Medicine
Date: November 30, 2018
Total funding: \$51,678

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 U. Western Sydney, International Research Initiatives, 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

Referred Journal Articles (in reverse chronological order)

1. Davis, S.W., Crowell, C.A., Beynel, L., Deng, L., Lakhlani D., Hilbig, S.A., Lim, W., Palmer, H., Nguyen, D., Peterchev, A. V., Luber, B., Lisanby, S.H., Appelbaum, L.G., Cabeza, R. (in press) Complementary topology of maintenance and manipulation brain networks in working memory. **Nature Scientific Reports**
2. Addicott, M.A., Daughters, S.B., Strauman, T.J., and Appelbaum, L.G. (in press). Distress tolerance to auditory feedback and functional connectivity with the auditory cortex. **Psychiatry Research: Neuroimaging**.

3. 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. (in press). Randomized controlled trial evaluating effectiveness of aerobic training on common sport-related concussion outcomes in healthy participants. (2018). **Journal of Athletic Training**.
4. 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. A randomized controlled trial investigating the feasibility and adherence to an aerobic training program in healthy individuals. **Journal of Sports Rehabilitation**. (Epub ahead of print).
5. 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.
6. 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**. ePub available Feb 12, 2018. DOI: 10.3389/fpsyg.2018.00058
7. 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.
8. 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.
9. 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.
10. Appelbaum, L.G. & Erickson, G. (2016). Sports Vision Training: a review of the state-of-the-art in digital training techniques. **International Review of Sport and Exercise Psychology**. Published online Dec 21, 2016. [<http://dx.doi.org/10.1080/1750984X.2016.1266376>]
11. 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]
12. 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]
13. 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.
14. 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]
15. 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]
16. Norcia, A.M., Appelbaum, L.G., Ales, J.M., Cottureau, B., & Rossion, B. (2015). The steady state visual evoked potential in vision research: a review. **Journal of Vision**. 15(4). [PMID: 26024451]
17. 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]

18. 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]
19. 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]
20. 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]
21. 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]
22. 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]
23. 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]
24. 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]
25. 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]
26. 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]
27. 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]
28. 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]
29. Krebs R.M., Boehler C.N., Appelbaum L.G., Woldorff M.G. (2013) Reward Associations Reduce Behavioral Interference by Changing the Temporal Dynamics of Conflict Processing. **PLoS ONE** 8(1). [PMID: 23326530]
30. Appelbaum, L.G., Cain, M.S., Schroeder, J.E., Darling, E.F., & Mitroff, S.R. (2012). Stroboscopic visual training improves information encoding in short-term memory. **Attention, Perception, and Psychophysics**. 74(8), 1681-1691. [PMID: 22810559]
31. Appelbaum, L.G., Boehler, C.N., Davis, L.A., Won, R.J., & Woldorff, M.G. (2012). Strategic allocation of attention reduces temporally predictable stimulus conflict. **Journal of Cognitive Neuroscience**. 24:1834-1848. [PMID: 22360623]
32. Appelbaum, L.G., Ales, J.M., & Norcia, A.M. (2012). The time course of segmentation and cue-selectivity in the human visual cortex. **PLoS ONE** 7(3): e34205. [PMID: 22479566]

33. Boehler, C.N., Appelbaum, L.G., Krebs, R.M., Hopf, J.M., & Woldorff, M.G. (2012). The influence of different Stop-signal response time estimation procedures on behavior-behavior and brain-behavior correlations. **Behavioral Brain Research**. 229, 123-130. [PMID: 22245527]
34. 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.
35. Appelbaum, L.G., Schroder, B, J., Cain, M.S., & Mitroff, S.R., (2011). Improved visual cognition through stroboscopic training. **Frontiers in Perception Science**. 2(276), 1-13. [PMID: 22059078]
36. Boehler, C.N., Appelbaum, L.G., Krebs, R.M., Hopf, J.M., & Woldorff, M.G. (2011). The role of stimulus salience and attentional capture across the neural hierarchy in a stop-signal task. **PLoS ONE**, 6(10), 1-10. [PMID: 22022611]
37. Appelbaum, L.G., Smith, D.V., Boehler, C.N., Chen, W.D., & Woldorff, M.G. (2011). Rapid modulation of sensory processing induced by stimulus conflict. **Journal of Cognitive Neuroscience**. 23(9), 2620-2628. [PMID: 20849233]
38. 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.
39. Appelbaum, L.G., Ales, J.M., Cottureau, B., & Norcia, A.M. (2010). Configural specificity of the lateral occipital cortex. **Neuropsychologia**, 48, 3323-3328. [PMID: 20638395]
40. Boehler, C.N., Appelbaum, L.G., Krebs, R.M., Hopf, J.M., & Woldorff, M.G. (2010). Pinning down response inhibition in the brain - conjunction analyses of the Stop-signal task. **NeuroImage**, 52(4), 1621-1632. [PMID: 20452445]
41. Appelbaum, L.G., Meyerhoff, K.L., & Woldorff, M.G. (2009). Priming and backward influences in the human brain: processing interactions during the Stroop interference effect. **Cerebral Cortex**, 19(11), 2508-2521. [PMID: 19321654]
42. Appelbaum, L.G., Liotti, M., Perez, R., Fox, S.P., & Woldorff, M.G. (2009). The temporal dynamics of implicit processing of non-letter, letter, and word-forms in the human visual cortex. **Frontiers in Human Neuroscience**, 3:56. [PMID: 20046826]
43. Appelbaum, L.G., & Norcia, A.M. (2009). Attentive and pre-attentive aspects of figural processing. **Journal of Vision**, 9(11), 18 11-12. [PMID: 20053081]
44. Appelbaum, L.G., Wade, A.R., Pettet, M.W., Vildavski, V.Y., & Norcia, A.M. (2008). Figure-ground interaction in the human visual cortex. **Journal of Vision**, 8(9), 8 1-19. [PMID: 18831644]
45. 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]
46. Appelbaum, L.G., Wade, A.R., Vildavski, V.Y., Pettet, M.W., & Norcia, A.M. (2006). Cue-invariant networks for figure and background processing in human visual cortex. **Journal of Neuroscience**, 26(45), 11695-11708. [PMID: 17093091]
47. Mervis, C.B., Morris, C.A., Klein-Tasman, B.P., Bertrand, J., Kwitny, S., Appelbaum, L.G., & Rice, C.E. (2003). Attentional characteristics of infants and toddlers with Williams Syndrome during triadic interactions. **Developmental Neuropsychology**, 23(1-2), 243-268. [PMID: 12730027]
48. Mills, D.L., Alvarez, T.D., St George, M., Appelbaum, L.G., Bellugi, U., & Neville, H. (2000). Electrophysiological studies of face processing in Williams syndrome. **Journal of Cognitive Neuroscience**, 12 1, 47-64. [PMID: 10953233]

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., (in press) Transcranial Direct Current Stimulation to Enhance Laparoscopic Technical Skill

Learning: A Preregistered Randomized Controlled Trial. **Brain Stimulation**. Presented at NYC Neuromodulation Conference & NANS Summer Seminar Series, August 24, 2018. New York, NY.

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)**.

Publically 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>

Book Chapters and Sections

1. 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.
2. Appelbaum, L.G. & Harris, J.A., (2012). "Attention and the processing of visual scenes". In Norbert, M. (Ed.) *Science of Learning*. Springer.
3. Appelbaum, L.G. (2011) The influence of attention on figure-ground processing. *The Encyclopedia of the Sciences of Learning*, Springer Press.
4. Appelbaum, L.G. (2009). "Perceptual Segregation". In B. Goldstein (Ed.), *Encyclopedia of Perception* (pp. 793-796): SAGE Press.
5. 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.

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. Retrieved from <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. Retrieved from <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. Retrieved from <https://clinicaltrials.gov/ct2/show/NCT03083483>
4. Appelbaum, L.G., (2017) Utilizing Gaze Training to Enhance Laparoscopic Skills Training. Identification No. NCT03413943. Retrieved from <https://clinicaltrials.gov/ct2/show/NCT03413943>
5. Appelbaum, L. G., Liu, S., Hilbig, S., Rankin, K., Naclario, M., Asamo, E., ... Burriss, K. (2018). Sports Vision Training in Collegiate Baseball Batters. doi: 10.17605/OSF.IO/496RX.

Invited Talks and Colloquia

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

Selected Conference Abstracts (12 out of 79)

1. **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.

2. 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.
3. **Appelbaum, L.G.**, Cain, M.S., Schroeder, J.E., Darling, E.F., & Mitroff, S.R. Improving visual cognition through stroboscopic training. Vision Sciences Society, Naples, FL. May, 2013.
4. **Appelbaum, L.G.**, Boehler, C.N., & Woldorff, M.G., Proactive and reactive cognitive control in the human brain. Cognitive Neuroscience Society. Chicago, IL. April 2012.
5. Beam, E., **Appelbaum, L.G.**, Jack, J., Moody, J., & Huettel, S.A., Mapping the Intrinsic Structure of Cognitive Neuroscience. Society for Neuroscience, Washington DC, 2011.
6. Mitroff, S.R., **Appelbaum, L.G.**, Schroder, B, J., & Cain, M.S., Improved Visual Cognition Through Stroboscopic Training. Annual Meeting of the Psychonomic Society, Seattle WA, November 2011.
7. **Appelbaum, L.G.**, Boehler, C.N., Won, R., Davis, L., & Woldorff, M.G., Strategic orientation of attention reduces temporally predictable stimulus conflict. Cognitive Neuroscience Society, San Francisco, April 2011.
8. **Appelbaum, L.G.**, Boehler, C.N., Woldorff, M.G., 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. 2010.
9. **Appelbaum, L.G.**, Meyerhoff, K., Chen, W.D., Woldorff, M.G. "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. 2008. [Abstract].
10. **Appelbaum, L.G.**, Vildavski, V.Y., Pettet, M.W., Wade, A.R., & Norcia, A.M. "Voluntary attention: the influence of feedback on figural processing." Society for Neuroscience, San Diego, CA. 2007.
11. **Appelbaum, L.G.**, Pettet, M.W., Vildavski, V., Wade, A., Norcia, A.M. "Cue-invariant Networks for Figure and Background Processing in Human Visual Cortex." Annual Interdisciplinary Conference, Jackson, WY, Feb 2006. [Abstract].
12. **Appelbaum, L.G.**, Lu, Z.-L., & Sperling, G. "Amplifying Contrast: Example from Motion and Texture." Annual Interdisciplinary Conference, Jackson, WY, Jan 2002. [Abstract].

Teaching

Instructor of Record Courses Taught

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 Courses

Principles in Cognitive Neuroscience (Graduate)	Duke University	Annually 2009-16
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Research Supervision

Faculty Supervision

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

Supervised Postdoctoral Fellows

Sicong (“Zone”) Liu, PhD	March 2018 - present
Olga Lucia Gamboa Arana, PhD	February 2018 – present
Lysianne Beynel, PhD	January 2016 – present
Lingling Wang, PhD	January 2013 – March 2014
Tarik Bel-Bahar, PhD	November 2012 – October 2013

Supervised Graduate / Medical Residency Research

Jonathan Young (resident)	2016 - Present
Matthew DeLang (Doctor of Physical Therapy)	2016 - 2017
Morgan Cox (resident)	2015 - 2018

Supervised Clinical Research Coordinators/Specialists

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

Ph.D. Thesis Supervision

Jillian Clements	Preliminaries, May 2017	Co-Chair
Liz Teel (UNC)	Defended, April 2017	Committee member
Christina Vander Vegt (UNC)	Advanced, September 2018	Committee member

Master’s Thesis Supervision

Taryn Gilrein (UNC)	Defended, April 2014	Committee member
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Undergraduate Honors Thesis Supervision (Duke University)

Joyce Wang	Upcoming, 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 Graduate Research (Duke University)

Tracy d'Arbaloff	Practicum	Spring, 2018
Lifu Deng	Lab Rotation	Spring, 2018

Supervised Undergraduate Research (Duke University)

Erikson Nichols	2018 – Present	Sheetal Hedge	2014 – 2015
Edem Asamoah	2018 – Present	Natasha Sakraney	2014 – 2016
Rachel Donaldson	2017 – Present	Kelly Vittetoe	2014 – 2017
Maria Naclerio	2017 – Present	Rajan Khanna	2014 – 2017
Elayna Kirsch	2016 – 2018	Clara Colombatto	2013
Amanda Watts	2016 – Present	Annie Apple	2013 – 2016
Wesley Lim	2016 – 2018	Ben Ramger	2013 – 2016
Joyce Wang	2015 – Present	Laura Holton	2013 – 2016
Eliane Schinder	2015 – 2016	Yvonne Lu	2013 – 2016
Garland Austin	2015 – 2016	Eliza Gentzler	2013 – 2014
Chrislyn Choo	2014 – 2015	Floyd Wilks	2013 – 2014
		Gabriela Asturias	2013 – 2014

Supervised Mentee Research Fellowships and Awards:

2018 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

Chair, Psychiatry and Behavioral Sciences Faculty Search Committee, 2018-19
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

Journal Review Board

Brain Topography (2017-2021)

Ad hoc Journal Reviewer

Proceedings of the National Academy of Science	Frontiers in Human Neuroscience
Journal of Neuroscience	Vision Research
Journal of Neurophysiology	PLoS One
Journal of Cognitive Neuroscience	Experimental Brain Research
Human Brain Mapping	BMC Neuroscience
Neuropsychologia	Brain Research
Cognitive, Affective, & Behavioral Neuroscience	Journal of Vision
Perceptual and Motor Skills	Cortex
Acta Psychologica	Motor Control
Journal of Sports and Exercise Psychology	Nature, Scientific Reports
Brain Topography	Journal of Cognitive Enhancement
Learning and Instruction	Sports Medicine - Open
International Journal of Sports Physiology and Performance	

Ad hoc Grant Reviewer

NIH Special Emphasis Panel/Scientific Review Group 2017/05 ZRG1 BDCN-J (51) S
Army Research Office
National Science Foundation, USA
Netherlands Organisation for Scientific Research
Manitoba Medical Service Foundation, Canada

Book Reviewer

Cambridge University Press

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
Optical Society of America

Member, 2013 – 2015
Member, 2005-2009

Scientific Outreach

Summer Symposia in Neuroscience and Philosophy, instructor, 2016, 2017, 2018
Duke Neuro Camp presenter, 2016, 2017
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