

WAKE FOREST SCHOOL OF MEDICINE
Curriculum Vitae

NAME Heather Marie Shappell, Ph.D.

ADDRESS Department of Biostatistics and Data Science
Wake Forest School of Medicine
525 Vine Street
Winston-Salem, NC 27101
(570) 621-8128
hshappel@wakehealth.edu

EDUCATION

2011 Arcadia University
Glenside, PA
Bachelor of Science/Mathematics and Computer Science

2013 Boston University
Boston, MA
Master of Arts/Biostatistics

2017 Department of Biostatistics
Boston University
Boston, MA
PhD

Research Advisor(s): Eric D. Kolaczyk, Ph.D.
Thesis: Methods for Longitudinal Complex Network Analysis in Neuroscience

POSTDOCTORAL TRAINING

2017 - 2020 Postdoctoral Fellow, Johns Hopkins University, Bloomberg School of Public Health, Department of Biostatistics, Baltimore, MD.
Research Advisor: Martin Lindquist, Ph.D., Brian Caffo, Ph.D.
Research Project: Methods for Analyzing Dynamic Functional Brain Networks

EMPLOYMENT

Academic Appointments

Wake Forest School of Medicine, Wake Forest University

2020 - Present Assistant Professor (tenure-track), Division of Public Health Sciences,
Department of Biostatistics and Data Science

- 2020 - Present Faculty Member, Laboratory for Complex Brain Networks (LCBN)
- 2020 - Present Affiliate Faculty, School of Biomedical Engineering and Sciences (Joint partnership between Virginia Tech and Wake Forest).

Professional Experience

- 2010 Researcher, NSF Research for Undergraduate Program, Johnson City, TN.
Research Projects: Conducted original research on two projects involving Poisson approximations and graph theory.
- 2010- 2011 Undergraduate Research Assistant, Arcadia University, Mathematics and Computer Science Department, Glenside, PA.
Research Project: Analyzed data pertaining to the impact of NSF Math Science Partnership grants on higher education faculty. Also designed and prototyped SunSPOT-based wireless sensor networks for environmental monitoring.
- 2011- 2013 Graduate Research Assistant, Boston University, Biostatistics Department, Boston, MA.
Research Project: Performed four semester long rotations as part of the training for the NIH Training Grant in Biostatistics. Rotations included Bioinformatics, Genetics, Clinical Trials, and Ethics.
- 2013- 2014 Teaching Assistant - Introduction to Statistical Computing, Applied Statistics in Clinical Trials I, and Analysis of Correlated Data. Department of Biostatistics, Boston University.
- 2013- 2017 Graduate Research Assistant, Boston University, Biostatistics Department, Boston, MA.
Research Project: Statistical consultant for the Boston University Center for Psychiatric Rehabilitation, as well as for numerous clinical trials, including the first ever clinical trials in Progeria.
- 2015- 2017 Graduate Research Assistant, Boston University, Department of Mathematics and Statistics, Boston, MA.
Research Project: Developed statistical models for the analysis of network data.
- 2017- 2020 Post-doctoral fellow, Johns Hopkins University, Department of Biostatistics, Baltimore, MD.
Research Project: Developed methods for analyzing dynamic functional brain networks in neuroscience.

ADMINISTRATIVE SERVICE

Departmental Service

- 2020 Planning Committee for annual retreat, Division of Public Health Sciences
- 2021 Faculty Recruitment Committee, Biostatistics and Data Science
- 2021-2022 Twitter and Social Networking Committee, Biostatistics and Data Science
- 2021-2023 Assistant Professor Representative, Executive Committee, Biostatistics and Data Science

- 2022- 2023 Data Science Interest Group Committee, Biostatistics and Data Science
- 2022- Present Seminar Series Committee, Biostatistics and Data Science

Institutional Service

- 2023 Poster Presentation Judge, Medical Student Research Day, Wake Forest University Medical School

EXTRAMURAL APPOINTMENTS AND SERVICE

Teaching

- 2018 - Present: Boston University Metropolitan College, Computer Science Department.
Online Course Instructor for Foundation of Analytics (CS 544) and Data Analysis and Visualization (CS 555).

Journal Reviewer

Journal of American Heart Association
Human Brain Mapping
Biometrics
Network Neuroscience
Neuroimage
Psychometrika
Journal of Mathematical Sociology
Nature Communications

PROFESSIONAL MEMBERSHIPS AND SERVICE

- 2015-2016 Boston University Student Chapter of the American Statistical Association (ASA)
President
Led the development of the first ever student chapter of the ASA.
- 2015-2017 Boston Chapter of the American Statistical Association
Committee Member for new college teaching award
- 2015-Present Member, American Statistical Association
- 2015-Present Member, Organization for Human Brain Mapping

PROFESSIONAL DEVELOPMENT

- 2021 K&R Writers Series, Clinical and Translational Sciences Institute, Wake Forest School of Medicine
- 2022 2022 Early Career Development Program for Women, Women in Medicine and Science, Wake Forest School of Medicine

2023-Present Clinical and Translational Science Institute Translational Research Academy,
Wake Forest School of Medicine

HONORS AND AWARDS

2007	Arcadia University Distinguished Scholarship Recipient
2010	Phi Kappa Phi Inductee
2010	Arcadia University Ellington Beavers Award for Intellectual Inquiry
2011	Arcadia University Charles E. Moulton Award in Mathematics
2011	NIGMS Biostatistics Training Grant Recipient
2013	Mu Sigma Rho Membership Inductee
2018	Johns Hopkin's University Provost Fellowship Winner

PROFESSIONAL INTERESTS

Network- and Complexity-Based Neuroimaging, Obesity and Exercise Science, and Alcohol and Substance Abuse.

GRANT FUNDING

Currently Active Grants

K25EB032903 (Shappell) NIBIB	03/1/2023 – 2/28/2027 \$581,961	9 calendar year
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Statistical Methods for Whole-Brain Dynamic Connectivity Analysis

My objective for the K25 award is to establish myself as an independent neuroimaging statistician, with expertise in whole-brain network analyses and an integral member of multidisciplinary research teams devoted to addressing diseases of the brain. Attaining these goals will require didactic training and research guidance. We will develop new methodology to improve whole-brain dynamic connectivity analyses of normal and abnormal brain function, which is vital for understanding various brain disorders, such as Alzheimer's Disease, and may help identify biomarkers and inform early prevention and treatment.

1R56AG081860 (Sai) NIA	09/30/2023 – 9/29/2028 \$4,631,945	.6 calendar year
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PET Imaging of Microtubules in Cognitively Normal and Impaired Older Adults

As amyloid beta and tau pathology accumulate in the brains of people with Alzheimer's disease (AD), microtubule (MT) stability is heavily compromised. We propose a clinical imaging study of a novel MT-based PET radioligand, [¹¹C]MPC-6827 in cognitively normal and mildly impaired/early AD older adults to determine its utility in imaging early stages of AD.

R01 DA047149 (Meade) NIH/NIDA	08/01/2023 - 04/30/2024 \$400,611 annual	.6 calendar year
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Role of cannabis on HIV-related cognitive impairment: a brain connectomics study

Marijuana, the mostly commonly abused drug among HIV-infected persons, may accelerate the development and progression of neurocognitive impairments. This study applies a connectomics approach to examine how HIV and marijuana interact to disrupt neural networks that underlie cognitive functioning, with implications for the development of improved diagnostics and treatments.

P50 AA026117-06 (Laurienti) NIAAA	12/1/2022 – 11/30/2027 \$1,688,015	.6 calendar year
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Dynamic functional brain network phenotypes associated with vulnerability to hazardous alcohol consumption

This project is a continuation of the human neuroimaging studies examining brain networks associated with drinking behaviors in the Wake Forest Translational Alcohol Research Center (WF-TARC). The overarching

hypothesis of this proposal that the vulnerability to develop hazardous drinking is manifest in dynamic network connectivity within and between the default mode network (DMN) salience network (SN) and the sensorimotor network (SMN).

P50 AA026117-06 (Hugenschmidt)
NIA

4/15/2022 – 3/31/2027
\$782,691.00

.6 calendar year in yr5

Establishing the optimal frequency of dance movement for neurocognitive and physical outcomes in people at risk of Alzheimer's disease. The goal is to assess outcomes of 1x/weekly, 2x/weekly, and 3x/weekly dance movement classes and 1x/week music appreciation class control at 4 time-points over 6 months to determine the time course of changes in cardiorespiratory fitness and cognition.

Submitted (Pending) Grant Proposals

Analytical tools for assessing and predicting longitudinal vulnerability and resilience in Alzheimer's Disease studies leveraging the Multi-Ethnic Study of Atherosclerosis (MESA)

Total Funding Requested: \$3,645,273.00

The goals of this project are to (a) develop and disseminate statistical tools to fill critical methodological gaps in identifying spatial, temporal, and dynamic brain network correlates of vulnerability and resilience to AD/ADRD; and (b) explicitly address the recommendations of the NIH ADRD Summits by leveraging an ongoing longitudinal cohort study of incident dementia in diverse populations incorporating detailed clinical assessments and neuroimaging (Multi-Ethnic Study of Atherosclerosis), and improving assessment tools and assessing risk factors for cognitive decline and resilience in the context of ADRD among disparities populations.

Principal Investigator: Sean Simpson/ Role: Co-Investigator (Start Date: 12/1/2024, 20% Effort Yrs1-5)

Analytical Tools for Human Connectome Project (HCP) Data

Total Funding Requested: \$3,175,267.00

This project will (a) demonstrate the utility of new tools for relating phenotypic traits to brain network organization in Human Connectome Project (HCP) data—engendering deeper insights into the complex neurobiological interactions and changes that occur in brain health and disease, and (b) disseminate these tools with corresponding tutorials via the NIMH Data Archive (NDA) cloud environment to enhance rigor and reproducibility.

Principal Investigator: Sean Simpson/ Role: Co-Investigator (Start Date: 7/1/2024, 25% Effort Yrs1-5)

Multidimensional role of bilingualism on cognition in Hispanic and Chinese older adults; Bilingualism and Cognition Ancillary Study

Total Funding Requested: \$3,962,351

In this study, we propose to leverage comprehensive, longitudinal data from the Multi-Ethnic Study of Atherosclerosis (MESA) to understand the longitudinal, multidimensional patterns of individual-, household-, and neighborhood-level bilingualism on cognition, AD/ADRD biomarkers, and brain structure and function in a population-based sample of older adults.

Principal Investigator: Dr. Sandra Albrecht/ Role: Co-Investigator (Start Date: 4/1/2024, 10% Effort Yrs1-5)

Past Grant History

T32 GM74905 Sebastiani (PI)
NIGMS

9/1/11 – 7/1/13

Interdisciplinary Training Grant for Biostatisticians

1R01NS095369 Kolaczyk (PI)

9/1/15 – 5/12/17

NIH NINDS

CRCNS: Dynamic network analysis of human seizures for therapeutic intervention – A multi-disciplinary study focused on developing and using tools from dynamic network analysis to characterize epileptic seizures and examine the extent to which seizure characteristics may be used to inform and predict therapeutic interventions.

2R01EB016061-05A1 Lindquist (PI)

7/1/17 – 7/31/20

NIH/NIBIB

Causal Inference for Neuroimaging- The goal of this project is to develop a general framework for causal inference in functional magnetic resonance imaging (fMRI) research using the potential outcomes approach widely utilized in the statistical literature.

110156-0818 Van Zijl (PI)

7/1/17 – 7/31/20

NIH/NIBIB

Resource for Quantitative Functional FMRI - The goal of this Biomedical Technology Resource Center, now in its 15th year, is to develop technologies that allow quantitative measurement of MRI biomarkers for tracking changes in brain anatomy, function, metabolism and physiology and to provide reference brain atlases for such markers.

1R01AG058571 (Espeland)

08/01/20 - 05/31/22

NIA

Long-Term Impact of Random Assignment to Intensive Lifestyle Intervention on Alzheimer's Disease and Related Dementias: The Action for Health in Diabetes ADRD Study (Look AHEAD-MIND)

Type 2 diabetes mellitus and obesity in combination nearly double one's risk for Alzheimer's disease and related dementias. Our study will examine the legacy of a successful 10-year behavioral intervention designed to induce and maintain weight loss on the cognitive health of older individuals. We propose to collect additional cognitive assessments; adjudicate cognitive status in large, well-characterized cohort; and conduct laboratory analyses of existing blood specimens to examine mechanisms that may explain the potential benefits and harm of intentional weight loss on late-life cognitive health in overweight and obese individuals.

1RF1AG054068 Chen (PI)

08/01/20 – 06/30/21

Alzheimer's Disease & Related Dementias: Geography, Environments, and Mechanisms

The long-term goal of this project is to better understand the neuropsychological processes, environmental determinants, and mechanistic pathways leading to geographic disparities in the risk of late-onset Alzheimer's disease (AD) of vulnerable populations.

P30 AG072947 Espeland (PI)

09/01/21 – 09/30/22

NIA

Wake Forest Alzheimer's Disease Core Center: Data Management and Statistical Core

This application seeks to establish a new Alzheimer's Disease Core Center (ADCC) at Wake Forest School of Medicine that will provide a comprehensive infrastructure for translational, interdisciplinary research on the pathophysiology, prevention, and treatment of AD and related disorders.

P30AG049638-04S1 Craft (PI)

07/01/21 – 05/31/22

NIH/NIA

Multi-modal Imaging in a Diverse Cohort: The Wake Forest ADCC Neuroimaging Core

This establishes a new Alzheimer's Disease Core Center (ADCC) at Wake Forest School of Medicine that provides a comprehensive infrastructure for translational, interdisciplinary research on the pathophysiology, prevention, and treatment of AD and related disorders. Our ADCC focuses on the transition from normal aging to mild cognitive impairment and then to AD and other dementias and understanding the contribution of metabolic and vascular factors to these transitions.

BIBLIOGRAPHY

Professional Meeting Abstracts

- 1) McIntyre CC, Khodaei M, Lyday RG, Laurienti PJ, **Shappell HM**. Sex specific relationship between network dynamics and alcohol consumption in adolescents. Presented at Research Society on Alcohol - Sex & Gender & Alcohol Satellite; June 2024; Minneapolis, MN.
- 2) McIntyre CC, Khodaei M, Lyday RG, Laurienti PJ, **Shappell HM**. Patterns of dynamic functional brain connectivity related to hazardous drinking risk in adolescents. Presented at Research Society on Alcohol; June 2024; Minneapolis, MN.

Peer-Reviewed Publications

- 3) Sebastiani, P., Farrell, J.J., Alsultan, A., Wang, S., Edward, H.L., **Shappell, H.**, et al. BCL11A enhancer haplotypes and fetal hemoglobin in sickle cell anemia. *Blood Cells, Molecules, and Diseases*. 2015;54(3):224-230. doi: 10.1016/j.bcmd.2015.01.001.
- 4) Vathipadiekal, V., Farrell, J., Shuai, Z., Edward, H., **Shappell, H.**, et al. A Candidate Trans-Acting Modulator of Fetal Hemoglobin Gene Expression in the Arab-Indian Haplotype of Sickle Cell Anemia. *Blood*. 2015;126(23):409-409. doi: 10.1002/ajh.24527.
- 5) Gordon, L.B., Kleinman, M.E., Massaro, J.M., D'Agostino, R.B., **Shappell, H.**, et al. Clinical Trial of Protein Farnesylation Inhibitors Lonafarnib, Pravastatin and Zoledronic Acid in Children with Hutchinson-Gilford Progeria Syndrome. *Circulation*. 2016;134(2):114-125. doi: 10.1161/CIRCULATIONAHA.116.022188.
- 6) Burke, G. M., Genuardi, M., **Shappell, H.**, D'Agostino Sr, R. B., & Magnani, J. W. Temporal associations between smoking and cardiovascular disease, 1971 to 2006 (from the Framingham Heart Study). *The American journal of cardiology*. 2017;120(10):1787-1791. doi: 10.1016/j.amjcard.2017.07.087.
- 7) Maru, M., Rogers, E. S., Hutchinson, D., **Shappell, H.** An Integrated Supported Employment and Education Model: Exploratory Study of an Innovative Approach Designed to Better Meet the Needs of Young Adults with Psychiatric Conditions. *The journal of behavioral health services & research*. 2018; 45(3):489-498. doi: 10.1007/s11414-018-9595-x.
- 8) Russinova, Z., Bloch, P., Wewiorski, N., **Shappell, H.**, Rogers, E. S. Predictors of sustained employment among individuals with serious mental illness: findings from a 5-year naturalistic longitudinal study. *The Journal of nervous and mental disease*. 2018;206(9):669-679. doi: 10.1097/NMD.0000000000000876.
- 9) Gordon, L. B., **Shappell, H.**, Massaro, J., D'Agostino, R. B., Brazier, J., Campbell, S. E., et al. Association of lonafarnib treatment vs no treatment with mortality rate in patients with Hutchinson-Gilford progeria syndrome. *JAMA*. 2018;319(16):1687-1695. doi: 10.1001/jama.2018.3264.
- 10) **Shappell, H.**, Caffo, B. S., Pekar, J. J., Lindquist, M. A. Improved state change estimation in dynamic functional connectivity using hidden semi-Markov models. *NeuroImage*. 2019;191:243-257. doi: 10.1016/j.neuroimage.2019.02.013.
- 11) **Shappell, H.**, Tripodis, Y., Killiany, R., Kolaczyk, E.D., A Paradigm for Longitudinal Complex Network Analysis over Patient Cohorts in Neuroscience. *Network Science (Cambridge University Press)*. 2019;7(2):196. doi: 10.1017/nws.2019.9.
- 12) **Shappell, H.**, Duffy, K., Rosch, K., Pekar, J., Mostofsky S., Lindquist M., Cohen J. Children with attention-deficit/hyperactivity disorder spend more time in hyperconnected network states and less

time in segregated network states as revealed by dynamic connectivity analysis. *NeuroImage*. 2021;117753. Doi: 10.1016/j.neuroimage.2021.117753.

- 13) Sarhane, K., Slavin, B., Hricz, N., Malapati, H., Guo, Y., Grzelak, M., Chang, I., **Shappell, H.**, et al. Defining the relative impact of muscle versus Schwann cell denervation on functional recovery after delayed nerve repair. *Experimental Neurology*. 2021;339:113650. doi: 10.1016/j.expneurol.2021.113650
- 14) **Shappell, H.**, Simpson, S., Discussion on "Distributional independent component analysis for diverse neuroimaging modalities" by Ben Wu, Subhadip Pal, Jian Kang, and Ying Guo. 2021. *Biometrics*. 2022 Sep;78(3):1106-1108. doi: 10.1111/biom.13589. Epub 2022 Mar 15.
- 15) Bahrami, M, Laurienti, PJ, **Shappell, H.**, Dagenbach, D., Simpson, SL. A Mixed-Modeling Framework for Whole-Brain Dynamic Network Analysis. *Network Neuroscience*. 6.2 (2022): 591-613.
- 16) Bahrami, M, Laurienti PJ, **Shappell HM**, Simpson SL. Brain Network Analysis: A Review on Multivariate Analytical Methods. *Brain Connectivity*. 2022: DOI: <https://doi.org/10.1089/brain.2022.0007>.
- 17) Zhu, X.*, **Shappell, H.***, Kramer, M., Chu, C.J., Kolaczyk, E.D., Inferring the Type of Phase Transitions Undergone in Epileptic Seizures Using Random Graph Hidden Markov Models for Percolation in Noisy Dynamic Networks. *PLOS Computational Biology*. In Press. 2023. ***These authors contributed equally.**
- 18) Hayden, K. M., Evans, J. K., Culkin, M. C., Molina-Henry, D. P., Marcovina, S., **Shappell, H. M.**, ... & Espeland, M. A. The association between Alzheimer's disease blood-based biomarkers and cognitive impairment and probable dementia in Look AHEAD MIND. *Alzheimer's & Dementia*. 2023. 19, e063408.
- 19) (Invited Review) Simpson, S.L., **Shappell, H.M.**, Bahrami M. Statistical Brain Network Analysis. *Annual Review of Statistics and Its Application*, In Press. 2023.

Papers Under Review

- 1) **Shappell, H.**, Kramer, M., Chu, C., Kolaczyk, E.D. Accounting for Edge Uncertainty in Stochastic Actor Oriented Models for Dynamic Network Analysis. In Revision Stage at *Network Neuroscience*.
- 2) Sachs, B., Bateman, J., Cleveland, MJ., Espeland, M., Fischer, E., Gaussoin, S., Latham, L., ..., **Shappell, H.**, Williams, B., Yang, M., Craft S. Feasibility of Remote Administration of a Cognitive Battery for Assessment of Mild Cognitive Impairment and Alzheimer's Disease. In Revision Stage at *The Archives of Clinical Neuropsychology*.
- 3) McIntyre CC, Bahrami M, **Shappell H**, Lyday RG, Fish J, Boltt EM, Laurienti PJ. Correlation meets causation: contrasting topologies of two types of functional brain networks. Under review (*Aperture Neuro*).

Papers In Preparation

- 1) **Shappell, H.**, Khodaei, M., Laurienti., P., Fanning, J., Rejeski, J., Burdette, J. Dynamic Connectivity Patterns Differ Among Successful Weight loss versus Unsuccessful Weight loss Groups.
- 2) **Shappell, H.**, Bahrami, M., Simpson, SL., Caffo, B., Lindquist, M., A Mixed Effects Hidden Semi-Markov Model for dynamic functional connectivity analysis.

- 3) Sarhane, K., Qui, C., **Shappell, H.**, Tuffaha, S. Elucidating the Effects of Delayed Nerve Repair on Motor vs. Sensory Functional Recovery: A Systematic Review and Meta-Analysis.

Miscellaneous Publications

- 1) Kaplan, W., Sharma, Abhishek., **Shappell, H.**, Kolaczyk, E.D. Insulin Trade Profile Technical Report. *Health Action International*. 2016.
- 2) Godbole, H., Grzesik, K., **Shappell, H.**, Poisson Approximations for the Number of kI-Scans. *Handbook of Scan Statistics*. 2017;1-8.
- 3) Chang L, Manning J, Baldassano C, de la Vega A, Fleetwood G, Geerligs L, Haxby J, Lahnakoski J, Parkinson C, **Shappell H**, Shim W, Wager T, Yarkoni T, Yeshurun Y, Finn E. naturalistic-data-analysis/naturalistic_data_analysis: Version 1.0. [Internet]. Zenodo; 2020 July. Available from: <https://doi.org/10.5281/zenodo.3937849>. DOI: 10.5281/zenodo.3937849.

PRESENTATIONS AT PROFESSIONAL MEETINGS

- 2011 Planarized Pascal's Triangle mod a general prime p graphs and their properties, Joint Mathematics Meeting, New Orleans, LA.
- 2015 Dynamic Network Analysis in Resting-State fMRI for Alzheimer's Disease, Joint Statistics Meeting, Seattle, WA.
- 2016 Poster: A Paradigm for Longitudinal Network Analysis over Patient Cohorts in Neuroscience, Workshop hosted by Columbia University Department of Statistics.
- 2016 Poster: Update on Impact of Farnesylation Inhibitors on Survival in Hutchinson-Gilford Progeria Syndrome, Progeria Research Foundation 8th International Scientific Workshop, Boston, MA.
- 2016 Poster: A Paradigm for Longitudinal Network Analysis over Patient Cohorts in Neuroscience, New England Statistics Symposium, Yale University.
- 2016 Dynamic Network Analysis in Resting-State fMRI for Alzheimer's Disease, Joint Statistics Meeting, Chicago, IL.
- 2017 Accounting for Uncertainty in Stochastic Actor Oriented Models, International Conference on Computational and Methodological Statistics, London, England.
- 2017 Accounting for Uncertainty in Stochastic Actor Oriented Models, New England Statistics Symposium, University of Connecticut.
- 2018 Methods for Longitudinal Complex Network Analysis in Neuroscience. Eastern North American Region Spring Meeting, Atlanta, Georgia.
- 2018 Methods for Longitudinal Complex Network Analysis in Neuroscience. Statistical Methods in Imaging Conference, Philadelphia, PA.
- 2018 Poster: Likelihood Based Dynamic Connectivity Analysis using Hidden Semi-Markov Models, Organization for Human Brain Mapping Conference, Singapore.
- 2018 Likelihood Based Dynamic Connectivity Analysis using Hidden Semi-Markov Models, Joint Statistics Meeting, Vancouver, British Columbia.
- 2019 A Simulation-Based Comparison of Dynamic Connectivity Methods in fMRI, Joint Statistics

Meeting, Denver, CO.

- 2019 Poster: A Simulation-Based Comparison of Dynamic Connectivity Methods, Organization for Human Brain Mapping Conference, Rome, Italy.
- 2023 Poster: Using Dynamic Networks to Study the Brain: New Methods and an Application to a Weight-loss Study. Training Grantees Meeting, National Institute of Health, Bethesda, Maryland.

INVITED EXTRAMURAL PRESENTATIONS AND SEMINARS

- 2010 Sierpinski Gasket Graphs mod p , Southeastern REU Minisymposium, UNC, Asheville.
- 2016 Poster: A Paradigm for Longitudinal Network Analysis over Patient Cohorts in Neuroscience, Boston University/ Keio University Probability and Statistics Workshop, Boston, MA.
- 2018 Methods for Longitudinal Complex Network Analysis in Neuroscience. Mathematics and Statistics Department at East Tennessee State University, Johnson City, TN.
- 2019 Methods for Longitudinal Complex Network Analysis in Neuroscience. Duke Network Analysis Center at Duke University, Durham, NC.
- 2021 Improved State Change Estimation in Dynamic Functional Connectivity using Hidden semi-Markov Models. Neural Systems Analysis Laboratory, Johns Hopkins University, Baltimore, MD.
- 2021 Improved State Change Estimation in Dynamic Functional Connectivity using Hidden semi-Markov Models. Metropolitan College, Boston University, Boston, MA.
- 2021 Improved State Change Estimation in Dynamic Functional Connectivity using Hidden semi-Markov Models. Department of Biostatistics and Epidemiology, University of Kentucky, Lexington, KY
- 2022 Improved State Change Estimation in Dynamic Functional Connectivity using Hidden semi-Markov Models. IPAM Workshop "Reconstructing Network Dynamics from Data: Applications to Neuroscience and Beyond." Los Angeles, CA.
- 2023 Using Dynamic Networks to Study the Brain: New Methods and an Application to a Weight-loss Study. Yale University, New Haven, CT.
- 2024 Using Dynamic Networks to Study the Brain: New Methods and an Application to a Weight-loss Study. Biomedical Research Imaging Center, University of North Carolina at Chapel Hill, NC.
- 2024 Using Dynamic Networks to Study the Brain: New Methods and an Application to a Weight-loss Study. University of North Carolina at Chapel Hill, EPIC Course.

INVITED LOCAL TALKS

- 2021 Improved State Change Estimation in Dynamic Functional Connectivity using Hidden semi-Markov Models. Translational Science Center, Wake Forest University Reynolda Campus.
- 2021 Improved State Change Estimation in Dynamic Functional Connectivity using Hidden semi-Markov Models. Network Group Meeting, Wake Forest University School of Medicine, Department of Radiology.
- 2023 Using Dynamic Networks to Study the Brain: New Methods and an Application to a Weight-loss Study. Public Health Sciences Grand Rounds, Wake Forest University School of Medicine.

- 2023 Poster: Using Dynamic Networks to Study the Brain: New Methods and an Application to a Weight-loss Study. Translational and Learning Health Scholar Showcase, Clinical and Translational Science Institute, Wake Forest University School of Medicine

DIDACTIC/SYSTEMATIC INSTRUCTION

Wake Forest University, Division of Public Health Sciences
Guest Lecturer, CPTS 742 Clinical Trials,
2021, 2023

Boston University, Department of Biostatistics
Instructor, BS 805 Introduction to Statistical Computing
2014, 2017

MENTORING

Current mentees:

Mohammadreza Khodaei PhD Student 2022-present
School of Biomedical Engineering and Sciences Graduate Student at Wake Forest University. Dr. Shappell serves as his PhD co-advisor along with Dr. Sean Simpson and Dr. Paul Laurienti, while he studies the use of multivariate models to examine relationships between brain networks and human intelligence.

Clayton McIntyre PhD Student 2023-present
Neuroscience Graduate Program at Wake Forest University Graduate School of Arts and Sciences. Dr. Shappell is a dissertation committee member for Clayton while he studies the relationship between functional brain network dynamics and alcohol consumption in adolescents.

Hope Peterson Post-doctoral fellow 2023-present
The University of North Carolina at Chapel Hill. Dr. Shappell serves as her fellowship co-advisor along with Dr. Jessica Simpson, while she studies the use of multivariate models to examine relationships between brain networks and autism.

PUBLIC OUTREACH

2021 Winston Salem Journal
Editorial Writer
Co-author on article about Covid-19 vaccine safety

COMMUNITY ACTIVITIES AND SERVICE

2015 Gorgeous Culture Chinese Summer Camp
Instructor for student leadership summer camp, Boston, MA.
Prepared lesson plans to build leadership skills and taught a weeklong leadership course.

2017 Pottsville Area High School
Presented "What I Do" to high school math courses to foster interest in mathematics and statistics careers.