

## WAKE FOREST SCHOOL OF MEDICINE CURRICULUM VITAE

**NAME:** Sean L. Simpson, PhD.

**CURRENT ACADEMIC TITLE:** Associate Professor

**ADDRESS:** Wake Forest School of Medicine  
Division of Public Health Sciences  
Department of Biostatistical Sciences  
Medical Center Boulevard  
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### EDUCATION:

2002 Harvard University  
Cambridge, MA  
BA with honors in Applied Mathematics, subfield Medical Sciences

2008 University of North Carolina  
Chapel Hill, NC  
Ph.D. in Biostatistics  
Dissertation Title: Linear models with a generalized AR(1) covariance structure for longitudinal and spatial data.  
Advisor: Lloyd J. Edwards, PhD.

### EMPLOYMENT:

#### Academic Appointments:

*Wake Forest School of Medicine, Wake Forest University:*

2008-2015 Assistant Professor (tenure-track), Division of Public Health Sciences, Department of Biostatistical Sciences

2008-Present Affiliate, Maya Angelou Center for Health Equity

2009-Present Member, Laboratory for Complex Brain Networks (LCBN)

2009-Present Graduate Faculty, Wake Forest University

2009-Present Joint Appointment, WFSM Translational Science Institute

2010-Present Member, Center for Bioethics, Health, and Society

2013-2015 Affiliate Faculty, School of Biomedical Engineering and Sciences

2015-Present Core Faculty, School of Biomedical Engineering and Sciences

2015-Present Faculty, Neuroscience Program

2015-Present Associate Professor (tenured), Division of Public Health Sciences, Department of Biostatistical Sciences

*University of North Carolina at Chapel Hill:*

2013-Present Adjunct Assistant Professor, Department of Biostatistics

**Professional Experience:**

Summer 1997 NASA Intern  
Hampton, VA

1998-2001 Summer Intern, Virginia Power  
Department of Distribution Operations  
Richmond, VA

2001-2002 Undergraduate Research Assistant, Malaria Research  
School of Engineering and Applied Sciences  
Harvard University, Cambridge, MA

2003 Graduate Research Assistant  
Health Promotion and Disease Prevention Center  
University of North Carolina, Chapel Hill, NC

2003 Graduate Research Assistant  
UNC-Chapel Hill Medical School  
University of North Carolina, Chapel Hill, NC

2004-2007 Graduate Research Assistant, Medical Image Presentation  
Department of Biostatistics  
University of North Carolina, Chapel Hill, NC

2007-2008 Graduate Research Assistant  
Initiative for Maximizing Student Diversity (IMSD)  
Department of Biostatistics  
University of North Carolina, Chapel Hill, NC

## **OTHER PROFESSIONAL APPOINTMENTS AND INSTITUTIONAL SERVICE:**

### **Institutional Committee Service:**

2009-Present	Research Committee, Maya Angelou Center for Health Equity
2010-2012	Medical Student Research Program, Reviewer
2010-2012	Medical Student Research Day, Judge
2013	K Award Writers' Series, Guest Facilitator
2013-2014	Biomedical Informatics Program Taskforce Committee
2014-Present	High Performance Computing Advisory Committee
2014-Present	High Performance Computing Education Subcommittee

### **Departmental Committee Service:**

2008-Present	Custodial Staff Holiday Gift Organizer, Department of Biostatistical Sciences
2008-2010	Recruitment Committee, Department of Biostatistical Sciences, Section on Statistical Genetics and Bioinformatics
2010	Recruitment Committee, Department of Biostatistical Sciences
2010	Space Committee, Department of Biostatistical Sciences
2010	Staff Appreciation Committee, Department of Biostatistical Sciences
2010	Internal Pilot Projects Review Committee, Department of Biostatistical Sciences
2011	Imaging Strategic Planning Committee (Chair), Department of Biostatistical Sciences
2011	Strategic Planning Committee, Department of Biostatistical Sciences
2012	Computing Committee, Division of Public Health Sciences
2012	Computing Review Committee, Department of Biostatistical Sciences

2012-2013	Seminar Series/Committee Head, Department of Biostatistical Sciences
2012-2013	Executive Committee Member, Department of Biostatistical Sciences

### **EXTRAMURAL APPOINTMENTS AND SERVICE:**

#### **Journal Reviewer :**

Frontiers in Human Neuroscience  
PLoS ONE  
Computational Statistics and Data Analysis  
Journal of the American Statistical Association  
Journal of Applied Statistics  
Statistics in Medicine  
Frontiers in Computational Neuroscience  
NeuroImage  
Human Brain Mapping  
Biometrical Journal

#### **Funding Agency Reviewer:**

NIH, Challenge Grant Reviewer, 2009  
  
Netherlands Organization for Scientific Research (NWO, Dutch Research Council) External Reviewer, 2012  
  
NIH, Selected as a Participant in the Early Career Reviewer Program, Center for Scientific Review, 2013-Present

#### **Editorial Boards:**

Host Co-Editor, *Frontiers Research Topic*, 2012-2014

### **PROFESSIONAL MEMBERSHIPS AND SERVICE:**

1998-2001	Member, Harvard Japan Society
1998-2002	Member, National Society for Black Engineers
2001-2002	Senior Representative (Board Member) Harvard Society for Black Scientists and Engineers
2006-Present	Member, American Statistical Association
2007-2008	Member, Minority Health Broadcast Committee, UNC School of Public Health
2008, 2012	Panelist, Eastern North American Region of the International Biometric Society (ENAR) Fostering Diversity in Biostatistics Workshop
2009-Present	Member, International Biometric Society/ENAR

2010-Present	Member, Organization for Human Brain Mapping
2010-Present	Member, Statistics Without Borders
2010, 2012, 2013	Participant, ENAR Fostering Diversity in Biostatistics Workshop
2012-2013	Organizing Committee, ENAR Junior Researcher's Workshop
2012	Chair, Session on High-Dimensional Data, International Biometric Conference
2013	Chair, Session on Functional Connectivity, Statistical and Applied Mathematical Sciences Institute (SAMSI)-Neuroimaging Data Analysis Workshop
2012, 2014, 2015	Mentor, JSM Mentoring Diversity Program
2014-2016	Appointed Member, ENAR Regional Advisory Board (RAB)
2014-2016	Judge, ENAR Poster Award Competition
2014-Present	Co-Chair, ENAR Fostering Diversity in Biostatistics Workshop
2014-Present	Member, ENAR Diversity Workshop Executive Committee

#### **PROFESSIONAL DEVELOPMENT:**

2009	Roundtable: Statistics in Medical Imaging International Biometric Society ENAR Meeting
2009	Short Course: Statistical Modeling and Analysis of Brain Imaging Data International Biometric Society ENAR Meeting
2009	Workshop for Junior Researchers International Biometric Society ENAR Meeting
2010	NetSci-Network Science School and Conference (Attendee)
2010	Translational Research Academy, Translational Science Institute Wake Forest School of Medicine
2010-2011	Statistical and Applied Mathematical Sciences Institute (SAMSI)- Program on Complex Networks (Participant)
2013	NBCF Nonlinear Analysis Summer Workshop (Participant)

## HONORS AND AWARDS:

1998	Awarded Scholarship from the National Action Council for Minorities in Engineering for Excellence in Mathematics and Engineering
1998-2002	Awarded Virginia Power/Dominion Power Scholarship for Excellence in Mathematics and Engineering
2002-2003	Awarded Julie Gatewood Latane Fellowship in Interdisciplinary Living
2002-2004	Awarded Fryer Fellowship/Merit Scholarship, Department of Biostatistics, University of North Carolina
2002-2007	Awarded Royster Fellowship/Merit Scholarship, Graduate School, University of North Carolina
2003-2006, 2007-2008	Recipient of NICHD Grant for Population Studies, Department of Biostatistics (Chirayath Suchindran), University of North Carolina
2004-2006	Recognized in The Chancellor's List (Honoring America's Outstanding Graduate Students)
2010-2015	Selected as a Translational Research Academy Scholar (Wake Forest School of Medicine)
2015	Selected as a Delta Omega Theta Chapter Member, Gillings School of Global Public Health, University of North Carolina

## PROFESSIONAL INTERESTS:

Network- and Complexity-Based Neuroimaging, Repeated Measures Analysis, Covariance Modeling, Cardiac Imaging, Health/Social Disparities

## INVITED PRESENTATIONS AND SEMINARS:

1. **Simpson SL** (2011). Modeling Whole-Brain Networks: A Brief Overview of Challenges and Potential Solutions. *Presented to the Department of Biostatistics and Bioinformatics, University of Colorado at Denver.*
2. **Simpson SL** (2012). Modeling Complex Functional Brain Networks: A Brief Overview of Challenges and Potential Solutions. Invited Session: Statistical Issues in Modeling fMRI Data. *Joint Statistical Meetings, San Diego, CA.*

3. **Simpson SL** (2012). Keynote Speaker. Diversity Mentor Lunch (DML) Series for the NIH Sponsored Initiative for Maximizing Student Diversity (IMSD) Program. *University of North Carolina at Chapel Hill*.
4. **Simpson SL** (2013). Analyzing Complex Functional Brain Networks: Fusing Statistics and Network Science to Understand the Brain. *Presented to the Department of Biostatistics, University of North Carolina at Chapel Hill*.
5. **Simpson SL** (2013). Analyzing Resting-State fMRI Brain Networks: Fusing Statistics and Network Science to Understand the Brain. (Invited Talk) Topic-Contributed Session: Challenges and Statistical Approaches of Resting-State fMRI. *Joint Statistical Meetings, Montreal, Canada*.
6. Edwards LJ, **Simpson SL** (2013). Analysis of 24-Hour Ambulatory Blood Pressure Monitoring Data using Orthonormal Polynomials in the Linear Mixed Model. *Presented to the Department of Epidemiology and Population Health, Albert Einstein College of Medicine*.
7. **Simpson SL** (2013). Analyzing Complex Functional Brain Networks: Fusing Statistics and Network Science to Understand the Brain. *Presented to the Department of Biostatistics and Epidemiology, University of Pennsylvania*.
8. **Simpson SL** (2014). Analyzing fMRI Whole-Brain Networks: Fusing Statistics and Network Science to Understand the Brain. Late Breaking Invited Session: Statistical Science and the President's Brain Initiative. *Joint Statistical Meetings, Boston, MA*.
9. **Simpson SL** (2014). A Two-Part Mixed-Effects Modeling Framework for Analyzing Whole-Brain Network Data. (Invited Talk) Topic-Contributed Session: The Graphical Modelling and Longitudinal Analysis of fMRI Data. *Joint Statistical Meetings, Boston, MA*.
10. **Simpson SL** (2015). A Two-Part Mixed-Effects Modeling Framework for Analyzing Whole-Brain Network Data. *Presented to the Department of Biostatistics, Columbia University*.
11. **Simpson SL**, Laurienti PJ (2015). Disentangling Brain Graphs: The Conflation of Network and Connectivity Analyses. (Invited Talk) Topic-Contributed Session: Statistical Methods for Improved Processing and Analysis of fMRI Data. *Joint Statistical Meetings, Seattle, WA*.
12. **Simpson SL**, Laurienti PJ (2016). Disentangling Brain Graphs: The Conflation of Network and Connectivity Analyses. Invited Talk Session: Inference for Brain Networks. *International Biometric Society ENAR Meeting, Austin, TX*.

## **GRANTS:**

### **CURRENT AND PENDING:**

#### **Current:**

K25EB012236-01A1 (**Simpson, PI, 75% effort**)

09/01/2012 – 08/31/2017

Statistical Methods for Whole-Brain Connectivity Networks \$150,357 (Current Year)  
My goal for the K25 award is to establish myself as an independent neuroimaging researcher with expertise in brain network analysis and an integral member of multidisciplinary research teams devoted to addressing diseases of the brain.

### **PAST GRANT HISTORY:**

WFU Translational Scholar Award, Age-Related Whole-Brain Analyses via Exponential Random Graph Modeling Methods, (Simpson, PI), 07/01/2010 - 06/30/2012, \$221,513

NHLBI, Jackson Heart Study MRI, (Carr, PI; Simpson Co-Investigator), 09/15/2007 – 08/31/2012, \$412,796.

NCMHD, The Native Proverbs 31 Health Project, (Bell, PI; Simpson, Co-Investigator), 11/01/2010 – 10/31/2012, \$275,000.

NHLBI, The Coronary Artery Risk Development in Young Adults (CARDIA), (Carr, PI; Simpson, Biostatistician ) 09/01/2009 - 09/30/2009, \$308,135

### **BIBLIOGRAPHY:**

#### **Peer-Reviewed Journal Articles:**

##### METHODOLOGICAL JOURNAL ARTICLES

1. Muller KE, Edwards LJ, **Simpson SL**, Taylor DJ (2007). Statistical Tests with Accurate Size and Power for Balanced Linear Mixed Models. *Statistics in Medicine* 26, 3639-3660.
2. Johnson JL, Muller KE, Slaughter JC, Gurka MJ, Gribbin MJ, **Simpson SL** (2009). POWERLIB: SAS/IML Software for Computing Power in Multivariate Linear Models. *Journal of Statistical Software* 30, 1-27. PMID: PMC4228969.
3. **Simpson SL**, Edwards LJ, Muller KE, Sen PK, Styner MA (2010). A Linear Exponent AR(1) Family of Correlation Structures. *Statistics in Medicine* 29, 1825-1838. PMID: PMC4020183.
4. **Simpson SL** (2010). An Adjusted Likelihood Ratio Test for Separability in Unbalanced Multivariate Repeated Measures Data. *Statistical Methodology* 7, 511-519.
5. **Simpson SL**, Hayasaka S, Laurienti PJ (2011). Exponential Random Graph Modeling for Complex Brain Networks. *PLoS ONE* 6(5), e20039. PMID: PMC3102079.
6. Telesford QK, **Simpson SL**, Burdette JH, Hayasaka S, Laurienti PJ (2011). The Brain as a Complex System: Using Network Science as a Tool for Understanding the Brain. *Brain Connectivity* 1(4), 295-308. PMID: PMC3621511.
7. **Simpson SL**, Moussa MN, Laurienti PJ (2012). An Exponential Random Graph Modeling Approach to Creating Group-Based Representative Whole-Brain Connectivity Networks. *NeuroImage* 60, 1117-1126. PMID: PMC3303958.



8. **Simpson SL**, Edwards LJ (2013). A Circular LEAR Correlation Structure for Cyclical Longitudinal Data. *Statistical Methods in Medical Research* 22, 296-306.
9. **(Invited Review) Simpson SL**, Bowman FD, Laurienti PJ (2013). Analyzing Complex Functional Brain Networks: Fusing Statistics and Network Science to Understand the Brain. *Statistics Surveys* 7, 1-36. PMID: PMC4189131.
10. **Simpson SL**, Lyday RG, Hayasaka S, March AP, Laurienti PJ (2013). A Permutation Testing Framework to Compare Groups of Brain Networks. *Frontiers in Computational Neuroscience* 7, 171. PMID: PMC3839047.
11. **Simpson SL**, Edwards LJ, Muller KE, and Styner MA (2014). Kronecker Product Linear Exponent AR(1) Correlation Structures for Multivariate Repeated Measures Data. *PLoS One* 9(2), e88864. PMID: PMC3931642.
12. Edwards LJ, **Simpson SL** (2014). An Analysis of 24-Hour Ambulatory Blood Pressure Monitoring Data using Orthonormal Polynomials in the Linear Mixed Model. *Blood Pressure Monitoring* 19, 153-163. PMID: PMC4058995.
13. **Simpson SL**, Edwards LJ, Muller KE, and Styner MA (2014). Separability Tests for High-Dimensional, Low Sample Size Multivariate Repeated Measures Data. *Journal of Applied Statistics* 41, 2450-2461. PMID: PMC4203479.
14. **Simpson SL**, Laurienti PJ (2015). A Two-Part Mixed-Effects Modeling Framework For Analyzing Whole-Brain Network Data. *NeuroImage* 113, 310-319. PMID: PMC4433821.
15. Ip EH, Zhang Q, Sowinski T, **Simpson SL** (2015). Analysis of Feedback Mechanisms With Unknown Delay Using Sparse Multivariate Autoregressive Method. *PLoS One*, 10 (8): e0131371.
16. **Simpson SL**, Laurienti PJ (2015). Disentangling Brain Graphs: A Note on the Conflation of Network and Connectivity Analyses. *Brain Connectivity*, In Press.

#### APPLICATIONS JOURNAL ARTICLES

17. Lark RK, Williams CL, Stadler D, **Simpson SL**, Henderson RC, Samson-Fang L, Worley G (2005). Serum Prealbumin and Albumin Concentrations Do Not Reflect Nutritional State in Children With Cerebral Palsy. *Journal of Pediatrics* 147, 695-697.
18. Thomas KB, **Simpson SL**, Tarver WL, Gwede CK (2010). Is social support from family associated with PSA testing in a sample of men? An exploratory analysis using the Health Information National Trends Survey (HINTS) 2005. *American Journal of Men's Health* 4, 50-59.
19. Slager RE, **Simpson SL**, LeVan TD, Poole JA, Sandler DP, Hoppin JA (2010). Rhinitis Associated With Pesticide Exposure Among Private Pesticide Applicators in the Agricultural Health Study. *Journal of Toxicology and Environmental Health, Part A* 73: 20, 1382-1393. PMID: PMC2964833.

20. Telesford Q, Morgan AR, Hayasaka S, **Simpson SL**, Barret W, Kraft RA, Mozolic JL, Laurienti PJ (2010). Reproducibility of graph metrics in fMRI Networks. *Frontiers in Neuroinformatics* 4, 117. PMID: PMC3002432.
21. Webb BC, **Simpson SL**, Hairston KG (2011). From Politics to Parity: Using a Health Disparities Index to Guide Legislative Efforts for Health Equity. *American Journal of Public Health* 101, 554-560. PMID: PMC3036688.
22. Bruce MA, Beech BM, Crook ED, Sims M, Griffith DM, **Simpson SL**, Ard J, Norris KC (2013). Sex, Weight Status, and Chronic Kidney Disease Among African Americans: The Jackson Heart Study. *The Journal of Integrative Medicine* 61, 701-707.
23. Vaughan L, Leng I, Dagenbach D, Resnick SM, Rapp SR, Jennings JM, Brunner RL, **Simpson SL**, Beavers D, Coker LH, Gaussoin SA, Sink K, Espeland MA (2013). Intra-Individual Variability in Domain-Specific Cognition and Risk of MCI and Dementia. *Current Gerontology and Geriatrics Research*, Article ID 495793. PMID: PMC3881440.
24. McCrory MC, Gower EW, **Simpson SL**, Nakagawa TA, Mou SS, Morris PE (2014). Off-Hours Admission to Pediatric Intensive Care and Mortality. *Pediatrics* 134, e1345-e1353.
25. Moussa MN, **Simpson SL**, Mayhugh RE, Grata ME, Burdette JH, Porrino LJ, Laurienti PJ (2015). Long-Term Moderate Alcohol Consumption Does Not Exacerbate Age-Related Cognitive Decline in Healthy, Community-Dwelling Older Adults. *Frontiers In Aging Neuroscience*, 6, 341. PMID: PMC4283638.
26. Fetterhoff D, Opris I, **Simpson SL**, Deadwyler SA, Hampson RE, Kraft RA (2015). Multifractal Analysis of Information Processing in Hippocampal Neural Ensembles during Working Memory under  $\Delta$ 9-Tetrahydrocannabinol Administration. *Journal of Neuroscience Methods* 244, 136-153.
27. Stanley ML, **Simpson SL**, Dagenbach D, Lyday RG, Burdette JH, Laurienti PJ (2015). Changes in Brain Network Efficiency and Working Memory Performance in Aging. *PLoS One* 10(4), e0123950. PMID: PMC4395305.
28. Paolini BM, Laurienti PJ, **Simpson SL**, Burdette JH, Lyday RG, Rejeski WJ (2015). Global Integration of the Hot-State Brain Network of Appetite Predicts Short Term Weight Loss in Older Adults. *Frontiers In Aging Neuroscience* 7, 70. PMID: PMC4423432.

#### OTHER ARTICLES

29. **(Invited-Editorial Board Reviewed) Simpson SL**, Burdette JH, Laurienti PJ (2015). The Brain Science Interface. *Significance (Magazine of the Royal Statistical Society)* 12(4), 34-39.
30. Telesford QK, **Simpson SL**, Kolaczyk ED (2015). Editorial: Complexity and Emergence in Brain Network Analyses. *Frontiers in Computational Neuroscience* 9, 65.

### **Invited Book Chapters:**

1. Bowman FD, **Simpson SL**, Drake DF (2015). Joint fMRI and DTI Models for Brain Connectivity. In *Handbook of Modern Statistical Methods: Neuroimaging Data Analysis*. To Appear.

### **Miscellaneous (Non-Refereed):**

1. **Simpson SL**, Edwards LJ, Muller KE, Styner MA (2009). A Kronecker Product Linear Exponent AR(1) Family of Correlation Structures for Multivariate Repeated Measures Data. In *JSM Proceedings*, ENAR Section. Alexandria, VA: American Statistical Association, 1302-1316.
2. **Simpson SL**, Hayasaka S, Laurienti PJ (2010). Selecting an Exponential Random Graph Model for Complex Brain Networks. arXiv:1007.3230v1 [stat.AP].

### **Manuscripts in Preparation:**

1. Casanova R, Saldana S, **Simpson SL**, Lacy MB, Subauste AR, Blackshear C, Wagenknecht L, Bertoni AG. Predictions of Incident Diabetes in the Jackson Heart Study Using High-Dimensional Machine Learning. *Submitted*.
2. Moussa MN, **Simpson SL**, Mayhugh RE, Lyday RG, Burdette JH, Porrino LJ, Laurienti PJ. Long-Term Moderate Alcohol Consumption in Older Adults is Associated with Altered Brain Network Community Structure. *Submitted*.
3. Terry JG, **Simpson SL**, Vasu S, Yeboah J, Buxbaum SG, Sims M, Vitek T, Smith C, GE Y, Entrikin D, Hundley G, Carr JJ, Taylor HA. Role of Intermediary Cardiometabolic Risk Factors in the Association of Subclinical Atherosclerosis and Left Ventricular Dysfunction in African Americans: The Jackson Heart Study. *In Process*.
4. McClain J, **Simpson SL**, Ding J, Terry JG, Smith C, Yeboah J, Taylor HA, Carr JJ. Pericardial Adipose Tissue and Cardiac Strain in African Americans: The Jackson Heart Study. *In Process*.
5. Terry JG, **Simpson SL**, Smith C, Hairston K, Ding J, Register T, Wojczynski M, Borecki IB. Association of Visceral Adipose Tissue with Calcification of The Coronary and Abdominal Aorta Arteries: The Family Heart Study. *In Process*.
6. Carr JJ, **Simpson SL**, Evans GW, Terry JG. Determinants of Coronary Artery Calcified Plaque in African Americans: The Jackson Heart Study. *In Process*.
7. Carr JJ, **Simpson SL**, Ge Y, Terry JG. Computed Tomography (CT) Methods in the Jackson Heart Study. *In Process*.
8. Carr JJ, Entrikin D, **Simpson SL**, Taylor H, Terry JG, Hamilton C, et al. Cardiac Magnetic Resonance Imaging (cMRI) methods in the Jackson Heart Study. *In Process*.

**Abstracts/Scientific Exhibits/Presentations at national and international meetings:**

1. Gribbin MJ, Johnson JL, **Simpson SL**, Muller KE (2005). Free Power Software for Repeated Measures, MANOVA, and Some Mixed Linear Models Using SAS/IML. *International Biometric Society ENAR Meeting*, Austin, TX (Poster).
2. **Simpson SL**, Muller KE, Coffey CS (2005). Repeated Measures Power for Gaussian Multivariate Linear Models: A Tutorial. *International Biometric Society ENAR Meeting*, Austin, TX (Poster).
3. Thomas KB, **Simpson SL**, Gwede CK (2007). Family Influence and Black Men's Prostate Cancer Screening Behaviors. *Health Information National Trends Survey (HINTS) Conference* (Poster).
4. **Simpson SL**, Edwards LJ, Muller KE, Sen PK (2008). Linear Models With a Generalized AR(1) Covariance Structure. *International Biometric Society ENAR Meeting*, Arlington, VA (Talk).
5. **Simpson SL**, Edwards LJ, Muller KE (2009). Kronecker Product Linear Exponent AR(1) Correlation Structures for Multivariate Repeated Measures. *International Biometric Society ENAR Meeting*, San Antonio, TX (Talk).
6. **Simpson SL**, Edwards LJ, Muller KE (2009). Kronecker Product Linear Exponent AR(1) Correlation Structures for Multivariate Repeated Measures. *Joint Statistical Meetings*, Washington, DC (Poster).
7. **Simpson SL**, Edwards LJ (2010). A Circular LEAR Correlation Structure for Cyclical Longitudinal Data. *International Biometric Society ENAR Meeting*, New Orleans, LA (Talk).
8. Espeland MA, Dagenbach D, Jennings JM, Brunner RL, Resnick SM, Beavers D, **Simpson SL**, Coker LH, Gaussoin SA, Sink K, and Rapp SR (2010). Variability in Domain-Specific Cognitive Function and Incident Dementia: The Women's Health Initiative Study of Cognitive Aging. *Presented at the North Carolina Cognition Group Meeting*, Winston-Salem, NC (Talk).
9. **Simpson SL**, Hayasaka S, Laurienti PJ (2010). Exponential Random Graph Modeling for Complex Brain Networks. *Organization for Human Brain Mapping Meeting*, Barcelona, Spain (Poster).
10. Telesford Q, Hayasaka S, **Simpson SL**, Morgan AR, Laurienti PJ (2010). Reproducibility of Graph Metrics in the At-Rest fMRI Network. *Organization for Human Brain Mapping Meeting*, Barcelona, Spain (Poster).
11. Entrikin DW, Carr JJ, Taylor HA, **Simpson SL**, Fox ER, Terry JG (2010). Global LV Function by Cardiac MRI: Comparison of a Planimetric and Mathematical Model-Based Approach for Image Analysis in the Jackson Heart Study. *Jackson Heart Study Scientific Conference—Special Invitation*, Jackson, MS (Poster).

12. Carr JJ, **Simpson SL**, Terry JG, Gordy B, Liu J, Ding J, Harman JL, Hundley GW, Taylor HA (2010). Pericardial Adipose Tissue and Left Ventricular Dysfunction in African Americans: The Jackson Heart Study. *Jackson Heart Study Scientific Conference—Special Invitation*, Jackson, MS (Poster).
13. Carr JJ, **Simpson SL**, Terry JG, Sims M, Taylor HA (2010). Metabolic Syndrome and Diabetes are Associated with a High Prevalence of Subclinical Atherosclerosis in African Americans: The Jackson Heart Study. *Jackson Heart Study Scientific Conference—Special Invitation*, Jackson, MS (Poster).
14. Terry JG, **Simpson SL**, Carr JJ, Buxbaum SG, Sims M, Hundley G, Entrikin DW, Vitek TR, Taylor HA (2010). Association of Traditional Risk Factors and Coronary Artery Calcified Plaque with Regional Left Ventricular Function by Myocardial Tagging MRI in African Americans: The Jackson Heart Study. *Jackson Heart Study Scientific Conference—Special Invitation*, Jackson, MS (Poster).
15. Terry JG, **Simpson SL**, Carr JJ, Buxbaum SG, Sims M, Hundley G, Entrikin DW, Vitek TR, Taylor HA (2010). Association of Traditional Risk Factors and Coronary Artery Calcified Plaque with Regional Left Ventricular Function by Myocardial Tagging MRI in African Americans: The Jackson Heart Study. *Radiological Society of North America*, Chicago, IL (Talk).
16. **Simpson SL**, Hayasaka S, Laurienti PJ (2010). Exponential Random Graph Modeling for Complex Brain Networks. *International Biometric Conference*, Florianopolis, Brazil (Poster).
17. Carr JJ, **Simpson SL**, Terry JG, Gordy B, Liu J, Ding J, Harman JL, Hundley GW, Taylor HA (2011). Pericardial Adipose Tissue and Left Ventricular Dysfunction in African Americans: The Jackson Heart Study. *American Heart Association EPI/NPAM*, Atlanta, GA (Moderated Poster).
18. Carr JJ, **Simpson SL**, Terry JG, Sims M, Smith C, Taylor HA (2011). Metabolic Syndrome and Diabetes are Associated with a High Prevalence of Subclinical Atherosclerosis in African Americans: The Jackson Heart Study. *American Heart Association EPI/NPAM*, Atlanta, GA (Poster).
19. Terry JG, **Simpson SL**, Smith CL, Carr JJ, Hairston KG, Register TC, Ding J, North KE, Feitosa MF, Wojczynski MK, Borecki IB (2012). Race and Sex Influence the Associations of Subcutaneous and Visceral Adipose Tissues with Calcified Plaque of the Coronary and Abdominal Aortic Arteries: The Family Heart Study. *American Heart Association EPI/NPAM*, San Diego, CA (Talk).
20. Espeland MA, Dagenbach D, Jennings JM, Brunner RL, Resnick SM, Beavers D, **Simpson SL**, Coker LH, Gaussoin SA, Sink K, Rapp SR (2012). Relative Deficits in Domain-Specific Cognitive Function and Risk of Dementia. *Society for Behavioral Medicine*, New Orleans, LA.
21. Espeland MA, Dagenbach D, Jennings JM, Brunner RL, Resnick SM, Beavers D, **Simpson SL**, Coker LH, Gaussoin SA, Sink K, Rapp SR (2012). Relative Deficits in Domain-Specific Cognitive Function and Risk of Dementia. *Women's Health Initiative Investigator Meeting*, Washington, DC.

22. **Simpson SL**, Moussa MN, Laurienti PJ (2012). An Exponential Random Graph Modeling Approach to Creating Group-Based Representative Whole-Brain Connectivity Networks. *Organization for Human Brain Mapping Meeting*, Beijing, China (Poster).
23. **Simpson SL**, Edwards LJ, Muller KE (2012). Kronecker Product Linear Exponent AR(1) Correlation Structures and Separability Tests for Multivariate Repeated Measures Data. *International Biometric Conference*, Kobe, Japan (Talk)
24. Bruce MA, Whitt-Glover M, Beech BM, Griffith D, Sims M, **Simpson SL**, Ard J, Norris K (2012). Gender, Weight Status, and CKD Among African Americans: The Jackson Heart Study. *Obesity*, San Antonio, TX (Poster).
25. McGowin IV, Peiffer AM, Bourland JD, **Simpson SL**, Rawley JB, Godwin DW, Rowland JA (2013). MEG: Quantitative Comparison of Oscillations and Synchronization Differences/Similarities in Post-Surgery/Pre-Irradiation Patients and Control Subjects. *The American Association of Physicists in Medicine Meeting*, Indianapolis, IN (Poster).
26. McCrory MC, Gower EW, **Simpson SL**, Nakagawa TA, Mou SS, Morris PE (2014). Off-Hours Admission and Mortality in Pediatric Intensive Care. *Society of Critical Care Medicine (SCCM)*, San Francisco, CA (Poster).
27. Casanova R, Saldana S, **Simpson SL**, Lacy MB, Subauste AR, Blackshear C, Wagenknecht L, Bertoni A (2015). Prediction of Incident Diabetes in the Jackson Heart Study Cohort Using Random Forests. *American Diabetes Association (ADA)*, Boston, MA (Poster).

### **Non-Conference Presentations:**

1. **Simpson SL**, Muller KE, Ray S. (2006). Correlation as a Function of Distance for Discrete M-Rep Features. *Presented to the Medical Image Display and Analysis Group, Shape Statistics Meeting, University of North Carolina at Chapel Hill.*
2. **Simpson SL**, Muller KE, Jeong JY (2006). Tangent Variable Representation in M-Rep Analysis. *Presented to the Medical Image Display and Analysis Group, Shape Statistics Meeting, University of North Carolina at Chapel Hill.*
3. **Simpson SL** (2007). Medical Image Analysis. *Presented to the Royster Society of Fellows, University of North Carolina at Chapel Hill.*
4. **Simpson SL**, Edwards LJ, Muller KE, Sen PK, Styner MA (2008). Linear Models With a Generalized AR(1) Covariance Structure for Longitudinal And Spatial Data. *Presented to the Division of Biostatistics, Department of Epidemiology and Health Policy Research, University of Florida at Gainesville.*
  - *Department of Biostatistics, University of Alabama at Birmingham.*
  - *Department of Biostatistics, Bioinformatics, and Epidemiology, Medical University of South Carolina.*
  - *Department of Biostatistics and Bioinformatics, Duke University.*
  - *Department of Biostatistics, Virginia Commonwealth University.*
  - *Department of Biostatistical Sciences, Wake Forest School of Medicine.*

- *Medical Image Display and Analysis Group, Shape Statistics Meeting, University of North Carolina at Chapel Hill.*
  - *Neuroimaging Research Group, Neuroimaging Seminar Series, University of North Carolina at Chapel Hill.*
  - *Advanced Neuroscience Imaging Research Laboratory, Wake Forest School of Medicine.*
5. **Simpson SL** (2009). Exponential Random Graph Models. *Presented to the Laboratory for Complex Brain Networks, Wake Forest University.*
  6. **Simpson SL** (2009). An Overview of the LEAR Correlation Model and its Adaptations for Within-Subject Covariance Modeling. *Presented to the Department of Biostatistical Sciences, Wake Forest School of Medicine.*
  7. **Simpson SL** (2010). Whole-Brain Networks: A Brief Overview of Challenges and a Potential Solution. *Presented to the Division of Public Health Sciences, Wake Forest School of Medicine.*
  8. Telesford Q, Hayasaka S, **Simpson SL**, Morgan AR, Laurienti PJ (2010). Reproducibility of Graph Metrics in the At-Rest fMRI Network. *Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences Research Symposium, Winston-Salem, NC.*
  9. **Simpson SL** (2010). Modeling Whole-Brain Networks: A Brief Overview of Challenges and Potential Solutions. *Presented to the Department of Biostatistics and Bioinformatics, Emory University.*
  10. **Simpson SL** (2010). Modeling Whole-Brain Networks: A Brief Overview of Challenges and Potential Solutions. *Presented to the Department of Biostatistical Sciences, Wake Forest School of Medicine.*
  11. Edwards LJ, **Simpson SL** (2011). Analysis of 24-Hour Ambulatory Blood Pressure Monitoring Data using Orthonormal Polynomials in the Linear Mixed Model. *Presented to the NC TraCS Institute's Biostatistics Core, University of North Carolina at Chapel Hill.*
  12. **Simpson SL** (2011). Modeling Whole-Brain Networks: A Brief Overview of Challenges and Potential Solutions. *Presented to the Translational Research Academy (TRAc), Wake Forest School of Medicine.*
  13. **Simpson SL** (2014). Analyzing Complex Functional Brain Networks: Fusing Statistics and Network Science to Understand the Brain. *Presented to the Department of Biostatistical Sciences, Wake Forest School of Medicine*

## TEACHING ACTIVITIES:

- 2004 Teaching Assistant  
Survival and Categorical Data Analysis  
Department of Biostatistics  
University of North Carolina, Chapel Hill, NC
- 2007 Co-taught biostatistics short course to biomedical graduate students and post-docs.  
University of North Carolina, Chapel Hill, NC

- 2009 Standardized Patient Assessment Exam Evaluator (5.4 hours)  
Wake Forest School of Medicine, Winston-Salem, NC
- 2009 CPTS 730: Introduction to Statistics (Guest Lecturer-11/3)  
Wake Forest School of Medicine, Winston-Salem, NC
- 2010 Co-teacher, Imaging Analysis Workshop, Jackson Heart Study Scientific Conference.
- 2010 Standardized Patient Assessment Exam Evaluator (8.6 hours)  
Wake Forest School of Medicine, Winston-Salem, NC
- 2012 CPTS 732: Applied Linear Models (Course Director/Instructor)  
Wake Forest School of Medicine, Winston-Salem, NC
- 2012 PREP Program Journal Club (Faculty Evaluator)  
Wake Forest School of Medicine, Winston-Salem, NC
- 2013 BMES 7085: Nonlinear Dynamics – Directed Study (Course Co-Director/Co-Instructor)  
Wake Forest School of Medicine, Winston-Salem, NC
- 2014 BMES 3304: Multifractal Analysis of Time Series Data – Directed Study  
(Course Co-Director/Co-Instructor)  
Wake Forest School of Medicine, Winston-Salem, NC
- 2014- Present Founding Co-Director, Biomedical Informatics Program, Wake Forest University Graduate  
School of Arts and Sciences, Winston-Salem, NC

**GRADUATE STUDENTS/RESIDENTS/FELLOWS ADVISED:**

- 2009 Mentee: Bryant Cameron Webb  
Topic: Using a Health Disparities Index to Evaluate the Efficacy of Minority Health  
Legislation  
Maya Angelou Center for Health Equity, Wake Forest School of Medicine
- 2010- 2013 Karen Joyce  
Dissertation Committee Member  
PhD student, Biomedical Engineering,  
Wake Forest Graduate School of Arts and Sciences
- 2012- 2014 Michael McCrory  
Thesis Committee Member  
CPTS Student, Wake Forest Graduate School of Arts and Sciences
- 2012 – 2015 Brielle Paolini  
(Chair) Dissertation Committee



- MD/PhD Student, Neuroscience,  
Wake Forest Graduate School of Arts and Sciences
- 2012 - Present     Satria Sajuthi  
Dissertation Committee Member  
PhD Student, Molecular Genetics and Genomics,  
Wake Forest Graduate School of Arts and Sciences
- 2013- 2014       Pelbreton Balfour  
Thesis Committee Member  
CPTS Student, Wake Forest Graduate School of Arts and Sciences
- 2014 -2015       Malaak Moussa  
Dissertation Committee  
PhD Student, Neuroscience, Wake Forest Graduate School of Arts and Sciences
- 2014 - Present     Rhiannon Mayhugh  
(Chair) Dissertation Committee  
PhD Student, Neuroscience, Wake Forest Graduate School of Arts and Sciences
- 2015-Present     Ioannis Gkigkitzis  
Co-Advisor  
PhD Student, Neuroscience, Wake Forest Graduate School of Arts and Sciences
- 2015-Present     Mohsen Bahrami  
Co-Advisor  
PhD Student, Biomedical Engineering,  
Wake Forest Graduate School of Arts and Sciences

**COMMUNITY ACTIVITIES AND SERVICE:**

- 2000-2002        Dearborn Middle School Tutoring/Mentoring Program  
Boston, MA
- 2006-2008        Orange Correctional Community Volunteer  
Hillsborough, NC
- 2012                Cook Elementary School Science Fair Mentor
- 2013-Present     EquityRX, Inc. Health Disparities Index Leadership Team.
- 2014-2015        Senior Academy Drop-Out Prevention Mentor, Winston-Salem Chamber of  
Commerce and Winston-Salem/Forsyth County Schools