Nathaniel Woodward

(*né* Raley[1])

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Education

9/2013–8/2018	**Ph.D., Educational Psychology — University of Texas at Austin** Concentration in Learning Sciences Dissertation: "Educational Practices in Large College Courses and Their Effects on Student Outcomes" (Advisor: Andrew C. Butler)
9/2014–5/2016	**M.S., Statistics — University of Texas at Austin** Portfolio in Scientific Computation (all coursework) Thesis: "Learning Analytics in Large College Courses: Facilitating Retention and Transfer Through Targeted Retrieval Practice" (Advisor: Tasha Beretvas)
9/2008–5/2012	**B.A., Biology — Reed College** Commendation for Academic Excellence (highest honors) Thesis; undergraduate coursework
	Online Coursework & Workshops See all online coursework and certificates

Consulting & Editorial Experience

7/2016–present	**Graduate Assistant Editor** — Journal of Applied Research in Memory & Cognition Copyediting page proofs of all manuscripts accepted for publication by JARMAC.
1/2017–9/2017	**Graduate Statistical Consultant**— *Dept. of Statistics & Data Sciences* Assisting clients with experimental design, cleaning/formating data, performing statistical analyses, troubleshooting software, and interpreting/reporting results.

Research Experience

9/2017-5/2018	**Graduate Research Assistant** — *Project 2021, UT Austin* Worked on the Research and Measurement arm of Project 2021, an educational innovation initiative at UT Austin investigating teaching effectiveness, curriculum redesign, and student pathways. (Supervisor: Dr. Huk; Dr. Wegner, Dr. Pennebaker)
6/2016–9/2016	**Graduate Research Assistant** — *College of Education, UT Austin* Developed, ran, and reported hierarchical Bayesian models estimating the item-level causal effect of Cognitive Tutor usage via principal stratification, with log data from 25,000 students in 150 schools across the country (Supervisor: Dr. Sales)
9/2013–9/2017	**Graduate Research Assistant** — *Dept. of Educational Psychology, UT Austin* Researched processes of feedback, error detection, and memory encoding/retrieval under Dr. Andrew Butler, Dr. Veronica Yan, and colleagues

[1] Prior to 2018, my legal name was Nathaniel David Raley

Teaching Experience

8/2017–present	**Instructor** — *Dept. of Statistics & Data Sciences, UT Austin* SDS 348: *Computational Biology and Bioinformatics* SDS 328M: *Biostatistics* SDS 302: *Data Analysis for the Health Sciences*
5/2018–present	**Instructor** — *UT Austin Summer Statistics Institute* Introduction to Causal Inference, Introduction to Bayesian Statistics
5/2015–6/2018	**GRE & GMAT Tutor** — *NextStep Test Prep, Austin TX* Currently providing tutoring for graduate exam preparation on a contract basis. Scored in the 99^{th} percentile on the GRE (official) as well as on the GMAT, LSAT, and MAT (unofficial).
8/2014-5/2017	**Teaching Assistant**— *UT Austin* *Myths and Mysteries of Memory* (Prof. Andrew Butler) *Cognition, Human Learning, and Motivation* (Prof. Butler; see student evaluations) *Instructional Psychology* (Prof. Andrew Butler) *Complex Cognitive Processes* (Prof. Andrew Butler) *Seminar in Social Psychology* (Prof. Toni Falbo)
2/2014 -12/2014	**Mathematics Instructor** — *Mathnasium, Austin TX* Certified Mathnasium instructor; helped teach K-12 students a lifelong "number sense" using an individualized curriculum that emphasizes proportional thinking, part/whole relationships, and number theory. Tutored students individually on an as-needed basis for test preparation and homework help. Subject matter begins with basic arithmetic and goes up through calculus and linear algebra.
8/2016 – present	**Short Course Assistant** — *Dept. of Statistics & Data Sciences, UT Austin* Served as an aide in six software short-courses (Introduction to Stata, Introduction to R) offered through the Department of Statistics and Data Science. Handled attendance, course supplies, technology/software issues, certificates, etc.
6/2012 – 8/2013	**SAT & ACT Exam Prep Tutor** — *Huntington Learning Center, Arlington TX* Individually tutored high school students in preparation for the SAT and ACT; also tutored students in subjects ranging from 2^{nd} grade phonics/writing, through STAAR Biology and World Geography, up to to AP Calculus, AP Physics, AP World History, and college-level mathematics.
9/2012 – 5/2013	**High School Substitute Teacher** — *Birdville & Grapevine-Colleyville ISDs* Instructed numerous classes at both the middle and high school level; held a long-term substitute positions (>2 weeks) for Engineering, Microbiology, and Pathophysiology courses at the Birdville Center for Technology and Advanced Learning.

Publications & Conference Presentations

Woodward, N.R. "Instructor Communication and Teaching Practices in Large College Courses"; Poster, 2019 Psychonomic Society Annual Meeting.

Butler, A.C., & **Woodward**, N.R. (2018). Towards Consilience in the Use of Feedback to Promote Learning: A Review of the Literature. Psychology of Learning and Motivation, 69(1).

Woodward, N.R., Davidson, O.A., Corliss, S.B., & Butler, A.C. Educational Practices in Large College Courses: What Really Goes On? Poster; 2018 AERA Annual Meeting, New York, NY

Butler, A.C., Black-Maier, A.C., **Raley, N.D.**, & Marsh, E.J. (2017). Retrieving and Applying Knowledge to Different Examples Promotes Transfer of Learning. Journal of Experimental Psychology: Applied, 23(4)

Raley, N.D., Sales, A., & Pane, J. *Using Principal Stratification to Assess Intervention Effectiveness at the Item Level.* 2017 NCME Annual Meeting; San Antonio, TX.

Raley, N.D. *Optimizing Retrieval Practice In Large College Courses through Factor Analysis of Frequent Quizzes.* Poster; Technology, Instruction, Cognition, & Learning SIG; 2017 AERA Annual Meeting, San Antonio, TX.

Raley, N.D., Cantor, A.D., Butler, A.C, & Marsh, E.J. Retrieval Practice and Contextual Variability Improve Transfer of Learning. Poster; 2016 Psychonomic Society Annual Meeting , Boston.

Butler, A.C. & **Raley, N.D.** A New Framework for Understanding How Feedback Promotes Learning. Poster; 2016 Psychonomic Society Annual Meeting , Boston.

Wang, L., **Raley, N.D.**, & Butler, A.C. Investigating Transfer-Appropriate Processing as a Theoretical Account for the Testing Effect. Poster; 2016 Psychonomic Society Annual Meeting, Boston.

Butler, A.C. & **Raley**, N.D. (2015) Commentary: *The Future of Medical Education: Assessing the Impact of Interventions on Long-Term Retention and Clinical Care.* Journal of Graduate Medical Education, 7(3), 483-485.

Raley, N.D., Cantor, A.D., Butler, A.C., & Marsh, E.J. (October, 2015) *Variability During Study and Retrieval Promotes Transfer of Learning* Poster; 24^{th} Annual Armadillo Southwest Cognition Conference, Waco, TX. (*Runner-up: Best Graduate Poster*)

Raley, N.D., Jung-in, K., Hyewon, C., & Svinicki, M. (April, 2015). *Achievement Goal Orientations in Cooperative Classroom Contexts: Predicting Student Enjoyment, Community, and Group Processing.* Poster; Motivation SIG session: AERA Annual Meeting, Chicago, IL.

Raley, N.D. (March, 2014). *Group-level Achievement Goal Orientations* Presented at the Consortium for Reasearch in Teacher Education's Annual Teacher Education Symposium, Austin, TX.

Invited Talks

Woodward, N.R. (2018, August) *The Science Behind Effective Learning in The Classroom* UT Sanger Center Supplemental Instructor Training Sessions, Austin, TX.

Woodward, N.R. (2018, February) *How Learning Works: Evidence-Based Practices from Lab and Classroom Studies.* Combined Sections (National) Meeting of the American Physical Therapy Association, New Orleans, LA.

Woodward, N.R. (2017, September) *Studying for success in college: how to make yourself better learner.* Talk presented to a University of Texas First-Year Interest Group Seminar, Austin, TX.

Various Projects

Summer 2016	**Online Short Course: Intro to Bayesian Statistics** — Developed my own week-long blended/flipped online course introducing applied Bayesian statistics. Wrote a full lesson plan, including video lectures/screencasts for pre-class viewing to bring all students up to the same level and to save classtime for guided practice with analysis I've also been working on a Shiny app to illustrate how Bayes rule works when observations are iterated; I plan to create several more apps like this for my course
Spring 2016	**Master's Report** "Learning Analytics in Large College Courses: Facilitating Retention and Transfer of Learning Through Targeted Retrieval Practice"
2015-present	**Memory Dynamics Lab (PI: Dr. Andrew Butler)** — Currently researching feedback effectiveness and retrieval-practice manipulations for improved retention
Fall 2015	**Statistical Consulting** — Worked with group on long-term project involving growth curve/mixed-model analysis of panel data for faculty member client; presented results
2014–2015	**NumberLand Tutoring System (c++)** — Programmed a command-line tutoring system for teaching basic arithemetic skills; models student knowledge based on variables accuracy and latency in order to address difficulties. Higher levels good for adult mental math training. Watch a video demonstration.
2013 & 2014	**Motivation Research (PI: Dr. Marilla Svinicki)**— "Achievement Goal Orientations in Cooperative Classroom Contexts: Predicting Student Enjoyment, Community, and Group Processing"
Fall 2013	**Literature Review** — "Intelligent Tutoring Systems"
8/2011 – 5/2012	**Undergraduate Thesis** — "Feeding Regulation in the Maternal Mouthbrooder *Astatotilapia burtoni*"

Skills

Experimental Design, Academic Tutoring, Test Preparation, Statistics, Applied Math, Cognitive Psychology, Psychometrics, , Linux (Debian, Red Hat), LaTeX, Version control (Git), Web services (HTML/CSS, SQL, AWS), Adobe Creative Suite

Statistical Software: R, JAGS/Stan, SAS, SPSS, JMP, Matlab/GNU Octave, Stata
Programming Languages: Python, C(++), Fortran 95/2003, Lisp (Scheme)

Test Scores

Graduate Record Examination (GRE): 337/340

- Verbal Reasoning: 170/170 (99^{th} %ile — *760-800 old scale*)
- Quantitative Reasoning: 167/170 (94^{th} %ile — *800 old scale*)

Workshops, Online Coursework, & Certifications

12/2015	Bayesian Data Analysis Workshop (Prof. John Kruschke)
8/2015	Scalable Machine Learning (UC BerkeleyX) Cluster computing using Apache Spark with an emphasis on large-scale machine learning.
6/2014	Machine Learning (Coursera) — Stanford University (Prof. Andrew Ng) 10-week course covering logistic regression, support vector machines, kernels, neural networks, clustering, dimensionality reduction, recommender systems, deep learning, bias/variance theory.
6/2014	Linear Algebra (edX: ID Verified) — UT Austin (Prof. Robert van de Geijn) 16-week course covering all standard topics in linear algebra
2/2014	Computing for Data Analysis (Coursera) — Johns Hopkins (Prof. Roger Peng) 4-week course in R programming: cleaning data, writing functions, graphics, packages, debugging

Volunteer Experience

5/2016 – 6/2016 5/2015 – 6/2015 5/2017 – 6/2017	**Instructor's Assistant** — *UT Summer Statistics Institute (SSI), Austin TX* For 3 years, served as an aide to Dr. Mahometa in the Introduction to Regression week-long course offered through the Summer Statistics Institute at UT. Handled attendance, course supplies, technology/software issues, and certificates
5/2017	**Competition Proctor/Grader** — *MATHCOUNTS, Austin TX* Assissted with proctoring and grading duties during the 2017 Texas State Competition of MATHCOUNTS, a nationwide program that promotes math excellence for 6th, 7th and 8th grade students
9/2012 – 7/2013	**Web Developer and Technology Liason** — *First Book, Tarrant County* Maintained a website for the Tarrant County advisory board of First Book, a non-profit organization devoted to promoting literacy in underpriviledged schools
1/2012 – 5/2012	**Exhibit Guide: "The Wonder of Learning"** — *Portland Children's Museum* Provided information and assistance to museum guests as they explored the exhibit; explained the finer points of the Reggio Emilia approach to early-childhood education

Professional Affiliations

- American Educational Research Association (AERA); Div C - Learning and Instruction
- National Council on Measurement in Education (NCME)
- Society for Applied Research in Memory and Cognition (SARMAC)
- Psychonomic Society

Professional References

- Dr. Andrew C. Butler. Associate Professor of Psychological & Brain Sciences, WUSTL. (andrew.butler@wustl.edu; 314-935-8954)
- Dr. Michael Mahometa. Lead Consultant: Statistics & Data Science, UT Austin. (michael.mahometa@austin.utexas.edu; 512-471-4542)
- Dr. Yeronica Yan. Assistant Professor of Educational Psychology, UT Austin. (veronicayan@austin.utexas.edu)
- Dr. S Natasha Beretvas. John L. and Elizabeth G. Hill Centennial Professor of Educational Psychology, UT Austin (tberetvas@austin.utexas.edu)