Nathaniel D. Raley

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Education

9/2013 – present (expected 2018)

Ph.D., Educational Psychology — University of Texas at Austin
GPA: 3.9; concentration in Learning Sciences
Assistant Instructor certification (*398T: College Teaching Methodology*)
Portfolio in Scientific Computation (all but research project)
Student Representative—EDP Faculty Hiring Committee
See relevant coursework

9/2014 – 5/2016

M.S., Statistics — University of Texas at Austin
Department of Statistics & Data Science.
See relevant coursework; Master's report

9/2008 – 5/2012

B.A., Biology — Reed College
GPA in major: 3.7; Commendation for Academic Excellence (highest honors awarded)
See relevant coursework; senior thesis project

Online Coursework & Workshops
See all online coursework and certificates

Research Experience

7/2016 – present

Graduate Assistant Editor — Journal of Applied Research in Memory & Cognition
Copy-editing page proofs from the journal's action editors (for style, formatting)

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, using log data from 25,000 students in 150 schools across the country (Supervisor: Dr. Sales)

9/2013 – present

Graduate Research Assistant — *Dept. of Educational Psychology, UT Austin*
Currently researching processes of feedback, error detection, and memory encoding/retrieval under the guidance of Dr. Andrew Butler and colleagues in the newly formed Memory Dynamics Lab. Representative work: *"Retrieving and Applying Knowledge to Different Examples Promotes Transfer of Learning"* (in press, JEP 2017; PI: Dr. Butler). Previous projects include *"Achievement Goal Orientations in Cooperative Classroom Contexts: Predicting Student Enjoyment, Community, and Group Processing"* (PI: Dr. Svinicki)

5/2011 – 8/2011

Research Assistant — *Dept. of Biology, Reed College, Portland OR*
Received a grant from the M. J. Murdock Charitable Trust to do research in the laboratory of Suzy Renn, professor of Biology at Reed College; I became proficient with modern laboratory techniques of molecular biology (qPCR, SDS-PAGE, cloning, blots, microarrays)

Teaching Experience

5/2015 – present	**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).
8/2016 -12/2016 1/2017 - present (1/2015-5/2015)	**Teaching Assistant** (Undergraduate-Level) — *UT Austin* *Myths and Mysteries of Memory* (Prof. Andrew Butler) *Cognition, Human Learning, and Motivation* (Prof. Butler; see student evaluations) Large (30-70+ student) upper-division undergraduate courses. Held office hours and provided individual tutoring for students leading up to exams. Assisted the instructor in developing course materials. Provided detailed, individualized feedback on all student submissions (3-5 assignments per week). Attended class each day and was permitted by the instructor to design and deliver a lecture of my own.
1/2016 - 5/2016 8/2015 -12/2015 8/2014 -12/2014	**Teaching Assistant** (Graduate-Level) — *UT Austin* *Instructional Psychology* (Prof. Andrew Butler) *Complex Cognitive Processes* (Prof. Andrew Butler) *Seminar in Social Psychology* (Prof. Toni Falbo) Small (∼15-20 student) graduate-level courses. Responsibilities included grading all midterm and final exam papers, meeting with students individually, and providing students with written feedback on their work in the course.
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** — *SDS, 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 from primary school up to college undergraduates 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, developing a rapport with students and faculty alike. I held a long-term substitute position (>2 weeks) for Engineering, Microbiology, and Pathophysiology courses at the Birdville Center for Technology and Advanced Learning while the instructor was on leave.
8/2011 – 5/2012	**Library Reference Assistant & Tutor** — *Reed College, Portland OR* Answered writing/research/technology queries in person, over the phone, and online

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

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	**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	**Educational Psychology 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*"
2011	**Literature Review in Animal Physiology** "Enhancing LTP Through Actions on AMPA Receptor Initiation and CREB Consolidation"
2011	**Independent Research Project in Animal Physiology** "The Effect of Voluntary Exercise on Adiposity, Stomach Ghrelin, and GHSR1a Expression"
2010	**Literature Review & Website** — "Complex Cognition in Corvidae"

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*)

SAT: 2290/2400

- Critical Reading: 790 (99^{th} %ile); Math: 760 (98^{th} %ile); Writing: 740 (98^{th} %ile)

Publications & Conference Presentations

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 Educational Psychology, (in press).

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

Raley, N.D. (submitted). *Optimizing Retrieval Practice In Large College Courses through Factor Analysis of Frequent Quizzes.* Poster; Technology, Instruction, Cognition, & Learning SIG; 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; Psychonomic Society Annual Meeting , Boston, MA.

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.

Raley, N.D. (November, 2011). *The Influence of Metabolic Regulation on Brood Care Motivation in the African Cichlid 'Astatotilapia burtoni'.* Murdock Science Research Conference, Seattle, WA.

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

Fellowships & Grants

Texas New Scholar Award for Doctoral Students, 2013-2014

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

Representative Graduate Coursework (2013–2016)

Psychology/Education Courses	***Statistics & Computing Courses***
Psychology of Learning	*Experimental Design & Statistical Inference*
Current Topics in Learning & Instruction	*Regression Analysis*
Psychometrics: Theory & Methods	*Bayesian Statistical Methods*
Seminar in Social Psychology	*Mathematical Statistics I & II*
Motivation & Emotion	*Survey of Multivariate Methods*
Complex Cognitive Processes	*Introduction to Scientific Programming*
Research Design/Methods for Ed. Psych	*Scientific and Technical Computing*
Instructional Psychology	*Calculus III (Multivariable)*
College Teaching Methodology (398T)	*Design/Analysis of Experiments*
Lit. & Research Synthesis	*Numerical Analysis: Linear Algebra*
Applied Psychometrics	*Item Response Theory*
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Undergraduate Coursework:

Animal Behavior (Renn), Behavioral Neuroscience (Currie), Comparative Cognition (Hackenberg), Developmental Psychology (Henderlong-Corpus), Animal Physiology (Arch), Probability & Statistics (Jones), Calculus I & II (Roberts), Intro to Analysis (Perkinson), Genetics (Russell), Population Ecology & Evolution (Kaplan), Greco-Roman Humanities, Early Modern Europe, Chinese I & II (Gibas), ...