

# TYSON S. BARRETT, PhD

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## EDUCATION

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PH.D. QUANTITATIVE PSYCHOLOGY	<i>Feb 2018</i> <i>Utah State University</i> <i>Dissertation: Marginal Mediation Analysis: A New Framework for Interpretable Mediated Effects</i>
B.S. ECONOMICS	<i>May 2014</i> <i>Utah State University</i> <i>Cum Laude</i>
B.S. PSYCHOLOGY	<i>May 2014</i> <i>Utah State University</i> <i>Cum Laude</i>

## RESEARCH AREAS

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PRIMARY: Model Interpretability, Mediation Analysis, R Programming

SECONDARY: Rhythm Perception and Entrainment, Machine Learning

## RESEARCH EXPERIENCE

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<b>Research Assistant Professor</b> , Kinesiology and Health Sciences, Utah State University <i>Managing Director of the Data Science &amp; Discovery Unit</i> <i>Supervisor: Jamison Fargo, PhD, Associate Dean for Research</i>	2018-Present
<b>Research Assistant</b> , Prevention Science Lab, Utah State University <i>Advisor: Ginger Lockhart, PhD</i>	2016-2018
<b>Statistical and Data Science Consultant</b> , Utah State University <i>Advisors: Sarah Schwartz, PhD and Jamison Fargo, PhD</i>	2016-2018
<b>WOC Research Assistant</b> , Veteran Affairs SLC <i>Advisors: Vanessa Stevens, PhD and Richard Nelson, PhD</i>	2016-2018

## PUBLISHED WORKS IN REFEREED JOURNALS

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\* Denotes that I was the project methodologist or data scientist

Barrett, T.S., Wylie, A., Vogel, B., Sanghavi, K., Raspa, M., Aveni, K.P., Tullis, K., Caggana, M., White, K.R., & Bodurtha, J. (in press). Where Do We Go From Here? The Need for

- Genetic Referrals in Patients who are Deaf or Hard of Hearing: Findings from a Regional Survey. *Journal of Early Hearing Detection and Intervention*.  
 – Code and Data: doi: 10.17605/OSF.IO/8THWF
- Borrie, S.A., Lansford, K.L., & **Barrett, T.S.** (in press). Understanding dysrhythmic speech: When rhythm doesn't matter and learning doesn't happen. *Journal of the Acoustical Society of American Express Letters*.
- \*Leopold, S., Healy, E. W., Youngdahl, C., **Barrett, T.S.**, & Apoux, F. (In press). Speech-material and talker effects in speech band importance. *Journal of the Acoustical Society of America*.
- Barrett, T.S.** & Brignone, E. (2017). Furniture for Quantitative Scientists. *R Journal*, 9(2), 142-146.
- Borrie, S.A., Lansford, K.L., & **Barrett, T.S.** (2017). Generalized Adaptation to Dysarthric Speech. *Journal of Speech, Language, and Hearing Research*, 60, 3110-3117. doi: 10.1044/2017\_JSLHR-S-17-0127.
- Barrett, T.S.** & White, K.R. (2017). Trends in Hearing Loss Among Adolescents. *Pediatrics*, 140(6), e20170619. doi: 10.1542/peds.2017-0619.
- Fargo, J.D., Brignone, E., Metraux, S., Peterson, R., Carter, M.E., **Barrett, T.**, Palmer, M., Redd, A., Samore, M.H., & Gundlapalli, A.V. (2017). Homelessness Following Disability-Related Discharges from Active Duty Military Service in Afghanistan and Iraq. *Disability and Health Journal*, 10, 592-599. doi: 10.1016/j.dhjo.2017.03.003.
- \*Brown, L.T., Mohr, K.A.J., Wilcox, B.R., & **Barrett, T.S.** (2017). The effects of dyad reading and text difficulty on third-graders' reading achievement. *Journal of Educational Research*. doi: 10.1080/00220671.2017.1310711
- Brignone, E., Gundlapalli, A.V., Blais, R.K., Kimerling, R., **Barrett, T.S.**, Nelson, R.E., Carter, M.E., Samore, M.A., & Fargo, J.D. (2017). Increased Health Care Utilization and Costs among Veterans with a Positive Screen for Military Sexual Trauma. *Medical Care*, 55, S70-S77. doi: 10.1097/MLR.0000000000000767
- Long, E., **Barrett, T.S.**, & Lockhart, G. (2017). Network-behavior dynamics of adolescent friendships, alcohol use, and physical activity. *Health Psychology*, 36(6), 577-586. doi: 10.1037/hea0000483
- Borrie, S.A., Lansford, K.L., & **Barrett, T.S.** (2017). Rhythm perception and its role in perception and learning of dysrhythmic speech. *Journal of Speech, Language, and Hearing Research*, 60(3), 1-10. doi: 10.1044/2016\_JSLHR-S-16-0094
- Behl, D., White, K., **Barrett, T.**, Blaiser, K., Callow-Heusser, C., & Croshaw, T. (2017). A Multisite Study Evaluating the Benefits of Early Intervention via Telepractice. *Infant and Young Children*, 30(2), 147-161.
- Barrett, T.S.** & White, K. R. (2016). Prevalence and Trends of Childhood Hearing Loss Based on Federally-funded National Surveys: 1994–2013. *Journal of Early Hearing Detection and Intervention*, 1(2), 8-16.
- Doutré, S. M., **Barrett, T.S.**, Greenlee, J. & White, K. R. (2016). Losing Ground: Awareness of Congenital Cytomegalovirus in the United States. *Journal of Early Hearing Detection and Intervention*, 1(2), 39-48.
- Munoz, K., Rusk, S.E.P., Nelson, L., Preston, E., White, K.R., **Barrett, T.S.** & Twohig, M.P. (2016). Pediatric Hearing Aid Management: Parent Reported Needs for Learning Support. *Ear and Hearing Journal*. 37(6), 703-709.
- Borgogna, N., Lockhart, G., Grenard, J, **Barrett, T.**, Shiffman, S. & Reynolds, K. (2015). Ecological Momentary Assessment of Urban Adolescents' Technology Use and Cravings for Unhealthy Snacks and Drinks: Differences by Ethnicity and Sex. *Journal of the Academy of Nutrition and Dietetics*, 115(5), 759-766.

## Under Review/In Revision

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- Willi, M., Borrie, S.A., **Barrett, T.S.**, Tu, M. & Berisha, V. (under review). A Discriminative Acoustic-Prosodic Approach for Measuring Local Entrainment. *Interspeech 2018*.  
— ArXiv Pre-Print: 1804.08663
- Borrie, S.A., **Barrett, T.S.**, Willi, M., & Berisha, V. (under review). Syncing up for a good conversation: A Multidimensional framework for quantifying entrainment *JSHLR*.
- Barrett, T.S.** & Lockhart, G. (in revision). Efficient Exploration of Many Variables and Interactions Using Regularized Regression. *Prevention Science*.

## OTHER PUBLICATIONS

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- R for the Health, Behavioral, and Social Sciences** — A primer on using R for researchers in health, behavioral, and social sciences including importing data, data manipulation, data modeling, and data visualization. Currently published online at [tysonstanley.github.io/Rstats/](https://tysonstanley.github.io/Rstats/).
- The furniture R package (Published on CRAN and GitHub)** — Contains functions to help with several aspects of research in the health, behavioral, and social sciences. The main functions—`table1()` and `tableC()`—produce descriptive statistics and correlations in well-formatted tables (as commonly seen as the “Table 1” of academic journals). Over 8,000 downloads (see [tysonbarrett.com/furniture](https://tysonbarrett.com/furniture)).
- The MarginalMediation R package (Published on CRAN and GitHub)** — Contains functions to perform Marginal Mediation. Papers discussing the method and software are forthcoming (see [tysonbarrett.com/MarginalMediation](https://tysonbarrett.com/MarginalMediation)).
- The anteo R package (Published on GitHub)** — Contains functions to help in interpreting machine learning models. Still under active development.

## SELECTED PRESENTATIONS

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- Barrett, T.S.**, & Lockhart, G. (2017). Enhancing the Exploration and Communication of Big Data in Prevention Science. Poster presented at the Annual Meeting of the Society of Prevention Research, Washington, DC. Received “*Distinguished Poster Award*” and “*Abstract of Distinction*.”
- Barrett, T.S.**, & Lockhart, G. (2017). Exploring the Predictors of Marijuana Use Among Adolescents with Asthma. Oral presentation at the Utah State University Research Symposium, Logan, UT.
- Sanghavi, K., White, K., **Barrett, T.S.**, Wylie, A., Raspa, M., Cashman, D., Vogel, B. Caggana, M. & Bodurtha, J. (2017). Poster presented at the Early Hearing Detection and Intervention Conference, Atlanta, GA. Received “*Outstanding Poster Award*.”
- Brignone, E., Gundlapalli, A.V., **Barrett, T.S.**, Blais, R.K., Nelson, R.E., Carter, M.E., Kimerling, R., Samore, M.H., Fargo, J.D. (2016). Cost of Care among Male and Female Veterans with

a Positive Screen for Military Sexual Trauma. Poster presented at the 2016 Annual Meeting of the International Conference of Psychology, Yokohama, Japan.

**Barrett, T.S.**, Munoz, K. & White, K. (2016). How well do parent report hearing loss in their children? Poster presented at the Early Hearing Detection and Intervention Conference, San Diego, CA.

**Barrett, T.S.**, Munoz, K. & White, K. (2016). Accounting for Temporary Loss in National Studies on Hearing Loss. Poster presented at the Early Hearing Detection and Intervention Conference, San Diego, CA.

**Barrett, T.S.**, Munoz, K. & White, K. (2016). An Evaluation of Early Intervention delivered via Video Conferencing. Poster presented at the Early Hearing Detection and Intervention Conference, San Diego, CA.

Stevens, V., **Barrett, T.S.** & Nelson, R. (2016). Distribution and Daily Cost of Care in a Pediatric Hospital. Oral presentation to the Pediatric Guidance Council of Intermountain Healthcare, Salt Lake City, UT.

**Barrett, T.S.**, Munoz, K. & White, K. (2015). Refinements to estimating prevalence of hearing loss in children. Poster presented at the Utah State University Research Symposium, Logan, UT.

**Barrett, T.S.**, Prante, M., Peterson, R., Fargo, J.D., Pyle, N. (2014). Predictors of employability among homeless youth. Poster presented at the Psi-Chi Undergraduate Research Conference at Idaho State University, Pocatello, ID. *Best Undergraduate Poster Presentation Award*.

**Barrett, T.S.**, Holland, D. (2014). Nascent Entrepreneurship, Impulsivity, and Self- Efficacy. Poster presented at the Research on Capitol Hill, Salt Lake City, UT.

Holland, D., **Barrett, T.S.** (2013). Impulsivity in young entrepreneurs. Round table discussion at the Babson Business Conference, Paris, France.

## AWARDS

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- Abstract of Distinction (Annual Meeting of the Society of Prevention Research)
- Distinguished Poster Award (Annual Meeting of the Society of Prevention Research)
- Outstanding Poster Award (Annual Meeting of EHDI)
- Dean's Scholarship (full tuition for two years)
- Best Poster Presentation (Psi-Chi Undergraduate Conference)

## TEACHING INTERESTS

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### Primary Interest: Quantitative Methods

- Undergraduate and Graduate Statistics (ANOVA and Regression [OLS, GLM])
- Multilevel Modeling (Hierarchical Linear Modeling, GEE, Mixed Effects)
- Mediation Analysis (Marginal Mediation, Moderated Mediation)
- Reproducible Research (Research Methods, Open Science Framework)
- R for the Social Sciences (Undergraduate and Graduate Level)
- Exploratory Data Analysis
- Structural Equation Modeling (Psychometrics and Measurement Models, Mixture Modeling)
- Research Methods (Undergraduate and Graduate Level)

## Secondary Interest: Public Health

- Research in Public Health
- Disabilities (Hearing Loss, Developmental Disabilities)

## TEACHING EXPERIENCE

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### Instructor

- **Applied Statistical Analysis (EDUC 6050)**
  - Spring 2018
  - Graduate-level applied statistics course for non-research degrees
  - Most Recent Student-Responded Ratings:
    - \* Overall:
    - \* Teaching:
- **Research Design & Analysis I (EDUC 6600)**
  - Spring 2018
  - Graduate-level applied statistics course for PhD students
  - Most Recent Student-Responded Ratings:
    - \* Overall:
    - \* Teaching:
- **R for the Health, Behavioral, Educational, and Social Sciences I and II**
  - 2016 - Present
  - Created, Developed, and Taught
  - Graduate Level
  - Most Recent Student-Responded Ratings:
    - \* Overall: 4.5 out of 5.0
    - \* Teaching: 4.9 out of 5.0

### Teaching Assistant

- **Econometrics I (Graduate Level)**
  - Fall 2016
- **Psychological Statistics (Undergraduate Level)**
  - 2014 – 2015

## METHODOLOGICAL TRAINING

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- Regression, Generalized Linear Models
- Mixed Effects, Generalized Linear Models
- Machine Learning
  - CART
  - Random Forest
  - Regularized Regression
  - Boosting/Bagging
  - Cross-Validation
- Social Network Analysis
- Data Visualization
  - Static and Dynamic Visuals

## SOFTWARE AND PROGRAMMING EXPERIENCE

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1. **R and RMarkdown: Expert (4 years of daily use)**
  - Database Queries, Creation, and Management
  - Data Analytics
  - Website Creation
  - Program Development and Deployment
2. **REDCap: Moderate Experience (1 year of weekly use)**
  - Database Creation
  - Data Entry and Survey Creation and Deployment
  - Data Management via REDCap API
3. **SQL: Some Experience (4 years of occasional use)**
  - Database Queries and Database Management Python: Minor Experience (1 year of occasional use)
  - Data Analytics