

ELLYN BUTLER

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EDUCATION

Northwestern University, Evanston, IL GPA: 3.94 September 2021 - present
Doctor of Philosophy in Clinical Psychology — Master of Science in Applied Statistics
Concentration in Developmental Science

- Principal Investigators: Robin Nusslock, Ph.D., Noelle Samia, Ph.D. & Caterina Gratton, Ph.D.
- Research objective ⇒ Identify neuroimmune mechanisms connecting violence exposure with psychopathology across development, and determine important moderators of this association, including modifiable characteristics of the social environment.

Oberlin College & Conservatory, Oberlin, OH GPA: 3.96 August 2013 - May 2018
Bachelor of Arts in Psychology — Bachelor of Music in Flute Performance
Concentration in Statistical Modeling — Minor in Law & Society

GRANTS

National Science Foundation Graduate Research Fellowship September 2022 - present

- Title: Delineating Neuroimmune Mechanisms of Emotion Dysregulation in Maltreated Youth
- Funding: \$147,000

University of Michigan, Ann Arbor, Michigan June 2023

- Genomics for Social Scientists Epigenetics Workshop
- Funding: \$1,200

WORK EXPERIENCE

University of Pennsylvania, Philadelphia, PA June 2018 - August 2021
Data Analyst — Brain Behavior Laboratory

- Principal Investigator: Ruben Gur, Ph.D.
- Statistics, Visualization and Communication ⇒ Translate research questions into testable hypotheses, utilize machine learning and Bayesian methods for prediction, communicate results to investigators using informative graphics, and write methods and results sections for manuscripts.
- Neuroimaging ⇒ Pre-process T1-weighted, diffusion, and functional images using a variety of software packages, and build a series of Docker images to process longitudinal structural data.
- Psychometrics ⇒ Utilize factor analysis and item response theory to explore psychometric properties and score cognitive and clinical assessments, and assess the validity of various administration strategies for the Penn Computerized Neurocognitive Battery.
- Management ⇒ Organize weekly meetings to discuss data and teach junior staff about data analysis.
- Manuscript Preparation ⇒ Write manuscripts on the social, biological and psychopathological sequelae of childhood physical and sexual abuse, and measurement and statistics.

TECHNICAL SKILLS

Programming Languages	R, Python, Bash, MATLAB, L ^A T _E X
Version Control	GitHub, Docker, Singularity, Flywheel
Neuroimaging Software	fMRIPrep, Workbench, NiLearn, ANTs, FSL, AFNI, Freesurfer

1. Scott, J.C.*, Moore, T.M.*, Roalf, D.R., Satterthwaite, T.D., Wolf, D.H., Port, A.M., **Butler, E.R.**, Ruparel, K., Nievergelt, C.M., Risbrough, V.B., Baker, D.G., Gur, R.E., & Gur, R.C. (2023). Development and application of novel performance validity metrics for computerized neurocognitive batteries. *Journal of the International Neuropsychological Society*, 29(8), 789-797.
2. Adebimpe, A., Bertolero, M., Douli, S., Cieslak, M., Murtha, K., Baller, E., **Butler, E.R.**, Cook, P., Colcombe, S., Covitz, S., Davatzikos, C., Davila, D., Flounders, M., Elliott, M.A., Franco, A., Gur, R.E., Gur, R.C., Jaber, B., McMillian, C., Milham, M., Mutsaerts, H., Oathes, D.J., Olm, D., Phillips, J., Tackett, W., Roalf, D.R., Tapera, T.M., Tisdall, M.D., Esteban, O., Poldrack, R., Detre, J.A., & Satterthwaite, T.D. (2022). ASLPrep: A generalizable workflow for processing of arterial spin labeled MRI and quantification of brain perfusion. *Nature Methods*, 19(6), 683-686. [bit.ly/3HHbqBK](https://doi.org/10.1038/s41592-022-1388-8)
3. Tapera, T.M., Cieslak, M., Bertolero, M., Adebimpe, A., Aguirre, G.K., **Butler, E.R.**, Cook, P.A., Davila, D., Elliott, M.A., Linguiti, S., Murtha, K., Tackett, W., Detre, J.A., & Satterthwaite, T. (2021). FlywheelTools: data curation and manipulation on the Flywheel platform. *Frontiers neuroinformatics*, 26. [bit.ly/3Mo0ZVq](https://doi.org/10.3389/fninf.2021.730000)
4. **Butler, E.R.**, Chen, A., Ramadan, R., Le, T.T., Ruparel, K., Moore, T.M., Satterthwaite, T.D., Zhang, F., Shou, H., Gur, R.C., Nichols, T.E.*, & Shinohara, R.T.* (2021). Pitfalls in brain age analyses. *Human brain mapping*. 42(13), 4092-4101. [https://bit.ly/2RdvVBd](https://doi.org/10.1002/hbm.24544)
5. Moore, T.M.*, Calkins, M.E.*, Rosen, A.F.G., **Butler, E.R.**, Ruparel, K., Fusar-Poli, P., Koutsouleris, N., McGuire, P., Cannon, T.D., Gur, R.C., & Gur, R.E. (2021). Development of a probability calculator for psychosis risk in children, adolescents, and young adults. *Psychological medicine*, 1-9. [http://bit.ly/38PHepB](https://doi.org/10.1017/S0033291721000000)
6. Moore, T.M., **Butler, E.R.**, Scott, J.C., Port, A.M., Ruparel, K., Njokweni, L.J., Gur, R.E., & Gur, R.C. (2020). When CAT is not an option: Complementary methods of test abbreviation for neurocognitive batteries. *Cognitive neuropsychiatry*, 26(1), 35-54. [https://bit.ly/3nAtV0Z](https://doi.org/10.1080/13803395.2020.1811111)
7. Gur, R.C., **Butler, E.R.**, Moore, T.M., Rosen, A.F.G., Ruparel, K., Satterthwaite, T.D., Roalf, D.R., Gennatas, E.D., Bilker, W.B., Shinohara R.T., Port, M., Elliott, M.A., Verma, R., Davatzikos, C., Wolf, D.H., Detre, J.A., & Gur, R.E. (2021). Structural and functional brain parameters related to cognitive performance across development: Replication and extension of the parieto-frontal integration theory in a single sample. *Cerebral cortex*, 31(3), 1444-1463. [https://bit.ly/3aEgN7Z](https://doi.org/10.1093/cercor/bnab111)
8. Morean, M.E. & **Butler, E.R.** (2019). The Medical Cannabis Expectancy Questionnaire: Adult medical marijuana users' expectancies associated with combustible, vaporized, and edible cannabis use for medical purposes. *Cannabis*, 2, 1-18. [https://bit.ly/2NTGLYX](https://doi.org/10.1016/j.cann.2019.01.001)
9. Morean, M.E., L'Insalata, A., **Butler, E.R.**, McKee, A., & Krishnan-Sarin, S. (2018). Age at drinking onset, age at first intoxication, and delay to first intoxication: Assessing the concurrent validity of measures of drinking initiation with alcohol use and related problems. *Addictive behaviors*, 79, 195-200. [https://bit.ly/30wIhoE](https://doi.org/10.1016/j.addbeh.2018.05.011)
10. Morean, M. E., **Butler, E. R.**, Bold, K. W., Kong, G., Camenga, D. R., Cavallo, D. A., Simon, P., & Krishnan-Sarin, S. (2018). Preferring more e-cigarette flavors is associated with e-cigarette use frequency among adolescents but not adults. *PloS one*, 13(1), e0189015. [https://bit.ly/2NyJBST](https://doi.org/10.1371/journal.pone.0189015)

HONORS AND AWARDS

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| 1. Honorable Mention from the NSF Graduate Research Fellowship Program | March 2021 |
| 2. Nominated member of Phi Beta Kappa | April 2018 |
| 3. Nominated member of Sigma Xi, The Scientific Research Society | March 2018 |
| 4. Nominated member of PI Kappa Lambda, The National Music Honor Society | February 2018 |

MANUSCRIPTS: OTHER

1. **Butler, E.R.**, Samia, N., White, S., Gratton, C. & Nusslock, R.N. (under review). Neuroimmune mechanisms connecting violence with internalizing symptoms: A high-dimensional multi-modal mediation analysis.
2. Calkins, M.E., **Butler, E.R.**, Moore, T.M., Taylor, J., Barzilay, R., Ruparel, K., Larsen, B., Wolf, D.H., Satterthwaite, T.D., Gur, R.C., & Gur, R.E. (under review). Longitudinal Trajectories of Psychosis Spectrum Symptoms in Community Youth: Findings from the Philadelphia Neurodevelopmental Cohort (PNC). <https://psyarxiv.com/57hrv/>

CONFERENCE POSTER PRESENTATIONS

1. **Butler, E.R.**, Chen, R., Miller, G.E., & Nusslock, R. (July 2023). Sex differences in response to violence: potential role of the ventral attention network. Poster presented at the annual meeting of the Organization for Human Brain Mapping, Montreal, Canada.
2. **Butler, E.R.**, Miller, G.E., Samia, N., & Nusslock, R. (June 2022). Violence and internalizing symptoms association explained by inflammation and amygdala connectivity. Poster presented at the annual meeting of the Organization for Human Brain Mapping, Glasgow, Scotland.
3. Adebimpe, A., Bertolero, M., Douli, S., Cieslak, M., Murtha, K., Baller, E., **Butler, E.R.**, Cook, P., Colcombe, S., Covitz, S., Davatzikos, C., Davila, D., Flounders, M., Elliott, M.A., Franco, A., Gur, R.E., Gur, R.C., Jaber, B., McMillian, C., Milham, M., Mutsaerts, H., Oathes, D.J., Olm, D., Phillips, J., Tackett, W., Roalf, D.R., Tapera, T.M., Tisdall, M.D., Esteban, O., Poldrack, R., Detre, J.A., & Satterthwaite, T.D. (June 2021). ASLPrep: A generalizable workflow for processing of arterial spin labeled MRI and quantification of brain perfusion. Poster presented at the annual meeting of the Organization for Human Brain Mapping, Virtual.
4. Calkins, M.E., **Butler, E.R.**, Moore, T.M., Ruparel, K., Wolf, D.H., Satterthwaite, T.D., Gur, R.C., & Gur, R.E. (April 2021). Longitudinal trajectories of psychosis spectrum symptoms in community youth: findings from the Philadelphia Neurodevelopmental Cohort (PNC). Poster presented at the annual meeting of the Society of Biological Psychiatry, Virtual.
5. Scott, J.C., Moore, T.M., Roalf, D.R., Satterthwaite, T.D., Wolf, D.H., Port, A.M., **Butler, E.R.**, Ruparel, K., Nievergelt, C.M., Risbrough, V.B., Baker, D.G., Gur, R.E., & Gur, R.C. (February 2021). Development and application of novel, data-driven performance validity metrics for computerized neurocognitive batteries. Talk presented at the International Neuropsychological Society Annual Conference, San Diego, CA (virtual).
6. **Butler, E.R.**, Chen, A., Ramadan, R., Ruparel, K., Moore, T.M., Zhang, F., Shou, H., Gur, R.C., Nichols, T.E.*, & Shinohara, R.T.* (June 2020). Statistical pitfalls in brain age analyses. Poster presented at the annual meeting of the Organization for Human Brain Mapping, Virtual.
7. Morean, M.E., **Butler, E.R.**, Bold, K., Kong, G., Camenga, D., Cavallo, D., Simon, P. & Krishnan-Sarin, S. (March 2017). Preference for more e-cigarette flavors is associated with e-cigarette use frequency among youths but not adults. Poster presented at the annual meeting of the Society for Research on Nicotine and Tobacco.
8. Morean, M.E., **Butler, E.R.**, Bold, K., Kong, G., Camenga, D., Cavallo, D., Simon, P. & Krishnan-Sarin, S. (November 2016). Preference for more e-cigarette flavors is associated with e-cigarette use frequency among youths but not adults. Poster presented at the annual Tobacco Regulatory Science Conference.

* Denotes equal contribution

INVITED TALKS

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| 1. <i>Clinical Psychology Research</i> for undergraduate Research Methods course | January 2023 |
| 2. <i>Neuroimmune mechanisms: violence and internalizing symptoms</i> for ADAPT lab | January 2023 |
| 3. <i>Statistical Computing in R</i> for The Emory-Tibet Science Initiative | October 2022 |

REVIEWING EXPERIENCE

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| 1. Ad hoc reviewer for the <i>Journal of the American Statistical Association</i> | March 2023 |
| 2. Ad hoc reviewer for <i>eLife</i> | March 2023 |
| 3. Ad hoc reviewer for <i>Brain and Behavior</i> | June 2022 |
| 4. Ad hoc reviewer for <i>Human Brain Mapping</i> | February 2022 |
| 5. Ad hoc reviewer for <i>Neurobiology of Aging</i> | August 2021 |
| 6. Ad hoc reviewer for <i>Biological Psychiatry</i> | February 2021 |
| 7. Ad hoc reviewer for <i>The American Journal of Psychiatry</i> | January 2021 |
| 8. Ad hoc reviewer for <i>Substance Use and Misuse</i> | November 2017 |

MENTORSHIP

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| Kang Hyun Ki
<i>Northwestern University undergraduate student</i> | July 2022 - February 2023 |
| <ul style="list-style-type: none">• Working on managing and pre-processing fMRI data. | |
| Bukola Ajanaku
<i>BS, University of Pennsylvania — MD PhD student, Mount Sinai</i> | September 2020 - June 2021 |
| <ul style="list-style-type: none">• Worked on cleaning medical data from the Philadelphia Neurodevelopmental Cohort using R. | |

GRADUATE TEACHING EXPERIENCE

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| Northwestern University, Evanston, IL
<i>Teaching Assistant — Psychopathology</i> | March 2022 - June 2022 |
| <ul style="list-style-type: none">• Supervisor: Vijay Mittal, Ph.D.• Responsibilities: Graded/provided feedback on papers/tests, and held office hours/review sessions. | |
| Northwestern University, Evanston, IL
<i>Teaching Assistant — Evaluating Evidence</i> | January 2022 - March 2022 |
| <ul style="list-style-type: none">• Supervisors: Onnie Rogers, Ph.D., & Mary McGrath, Ph.D.• Responsibilities: Graded/provided feedback on lecture questions, quizzes, and qualitative and quantitative data collection and analysis. | |
| Northwestern University, Evanston, IL
<i>Teaching Assistant — Statistical Methods in Psychology</i> | September 2021 - December 2021 |
| <ul style="list-style-type: none">• Supervisor: Michael Bailey, Ph.D.• Responsibilities: Graded, provided feedback on, and helped with statistics and JMP. | |

GRADUATE COURSEWORK

Neuroscience & Psychology

Biological and Cognitive Bases of Behavior, Clinical Assessment, Health Bases of Psychology, Responsible Conduct of Research, Cognitive Neuroscience of Memory, Psychopathology, Personality, Psychotherapy, Research Methods in Clinical Psychology

Statistics

Statistical Theory and Methods I-III, Regression, Psychometric Theory, Generalized Linear Models, Causal Inference, Nonparametrics, Social Network Analysis

CLINICAL WORK

The Family Institute, Northwestern University

September 2023 - present

Child Cognitive Behavioral Therapy Practicum

- Supervisor: Benjamin Rosen, Ph.D.
- Implement Cognitive Behavioral Therapy for children and adolescents.

The Family Institute, Northwestern University

September 2022 - present

Adult Cognitive Behavioral Therapy Practicum

- Supervisor: Jonathan Sutton, Ph.D.
- Implement the Unified Protocol for cases of anxiety and depression.

The Family Institute, Northwestern University

August 2022 - September 2023

Assessment Practicum

- Supervisors: Richard Zinbarg, Ph.D., Vijay Mittal, Ph.D.
- Diagnose mental disorders according to the Diagnostic and Statistical Manual; interpret the MMPI-2-RF; assess for psychosis risk using the Structured Interview for Psychosis-Risk Syndromes; and conduct neurocognitive tests (i.e., WRAT4, HVLIT, BACS).

PROFESSIONAL SERVICE

Northwestern University, Evanston, IL

September 2022 - present

Volunteer - Psychology Department

- Supervisor: Jennifer Tackett, Ph.D.
- Responsibilities: Organize social events among graduate students and postdoctoral fellows to foster a sense of community for the Clinical Area Social Engagement Committee, and provide mentorship to Clinical Psychology PhD students through the First Year Mentorship program.

Northwestern University, Evanston, IL

September 2021 - June 2022

Member - Developmental Science Research Resources Workgroup

- Supervisor: Lauren Wakschlag, Ph.D.
- Responsibilities: Collaborate with students, postdocs and faculty across departments working on developmental science to identify research resources that will help foster interdisciplinary research.

Northwestern University, Evanston, IL

April 2022

Reviewer - Sneak Peak

- Supervisor: Jennifer Tackett, Ph.D.
- Responsibilities: Review applications for the Psychology Department's Sneak Peak program, a program designed to provide information and access to resources that will be helpful in pursuing graduate programs in psychology.

Application Statement Feedback Program, Remote

September 2021

Editor

- Supervisor: Peter Sokol-Hessner, Ph.D.
- Responsibilities: Provide feedback on under-represented students' statements for applications to Ph.D. programs in psychology and neuroscience.

COMMUNITY SERVICE

RefugeeOne, Chicago, IL

February 2022 - present

Mentor

- Supervisor: Jamie Corliss, M.A.
- Responsibilities: 1) Mentor teenagers who are refugees from Afghanistan and Sudan by introducing them to Chicago, helping with homework, and integrating them into the community; 2) Organized a panel for Ukrainian refugees on graduate school spanning clinical psychology, medicine, statistics, engineering and computer science; and 3) Provide mentorship to refugees as they are considering whether to attend graduate school.

Oberlin College, Oberlin, OH

October 2018 - present

Alumni Volunteer

- Responsibilities: Interview prospective students, attend recruitment events, and provide career counseling for current students.

Tutoring Chicago, Chicago, IL

September 2021 - November 2021

Mentor

- Supervisor: Greer Hengesbaugh, M.Ed.
- Responsibilities: Help a low-income minority student in 5th grade develop studying skills across disciplines, and to learn essential social and emotional skills.

Collective Success Network, Philadelphia, PA

October 2020 - December 2020

Mentor

- Supervisor: Alice Ginsberg
- Responsibilities: Help a low-income, first-generation college student achieve their academic and career aspirations through providing advice and resources on preparing for graduate school.

Mighty Writers, Philadelphia, PA

October 2018 - June 2021

Mentor

- Supervisor: Christina Rissell
- Responsibilities: Help a student from 7th through 9th grade develop writing and studying skills, and thrive through the transition to high school by helping with applications, and new social situations.

Oberlin Community Services, Oberlin, OH

February 2014 - May 2018

Tutor — America Counts

- Responsibilities: Tutored a student from 4th through 8th grade in mathematics, and provided mentorship for the student through difficult peer and familial circumstances.

UNDERGRADUATE RESEARCH EXPERIENCE

Temple University, Philadelphia, PA

June 2017 - August 2017

Research Assistant — Ellman Lab

- Principal Investigator: Lauren Ellman, Ph.D.
- Responsibilities: Worked on a project to document associations between childhood trauma, social support and psychosis symptoms.

Children's Hospital of Philadelphia, Philadelphia, PA

June 2016 - August 2016

REU Intern — Center for Injury Research and Prevention

- Principal Investigator: Joel Fein, M.D., M.P.H.
- Responsibilities: Conducted research with Dr. Nancy Kassam-Adams on parent-child PTSD symptom agreement and severity. Shadowed Violence Intervention Program case managers and reviewed surveillance data to identify incidents of assaults on school property. Wrote a blog post on the mental health needs of children with incarcerated parents: <https://bit.ly/3bkgU5V>.

Oberlin College, Oberlin, OH

October 2015 - May 2018

Research Assistant — Substance Use in Adolescence

- Principal Investigator: Meghan Morean, Ph.D.
- Responsibilities: Designed surveys for experience with and expectations of substance use; performed psychometric and statistical analyses for publication; and assisted in manuscript preparation.

University of Denver, Denver, CO

May 2015 - July 2015

Research Assistant — The Relationship Lab

- Principal Investigator: Wyndol Furman, Ph.D.
- Responsibilities: Conducted background research, ran analyses, and edited articles for publication on adolescent romantic relationships.

University of Chicago, Chicago, IL

May 2014 - August 2014

Research Assistant — Child Neurosuite

- Principal Investigator: Jean Decety, Ph.D.
- Responsibilities: Recruited and applied electroencephalographic caps to infants, and maintained their focus during tasks evaluating pro-social behavior.

Oberlin College, Oberlin, OH

January 2014 - December 2014

Research Assistant — Continuity of Close Relationships Project

- Principal Investigator: Nancy Darling, Ph.D.
- Responsibilities: Micro- and macro-coded videos of adolescent and adult couples engaging in conflict resolution and social support tasks. This included marking and coding specific utterances, and evaluating couples on dimensions such as anxiety, affection and cohesion.

RELEVANT UNDERGRADUATE COURSEWORK

Mathematics, Statistics & Computer Science

Multivariable Calculus, Discrete Mathematics, Linear Algebra, Statistical Modeling, Probability, Mathematical Statistics, Introduction to Bayesian Data Analysis, Introduction to Computer Science

Neuroscience

Introduction to Neuroscience, Cognitive Neuroscience, Advanced Methods in Human Psychophysiology

Psychology

Clinical and Counseling, Child Psychopathology and Treatment, Abnormal, Developmental, Social, Cultural, Seminar in Social Conflict, Advanced Methods in Psychometrics

UNDERGRADUATE CLINICALLY RELEVANT EXPERIENCE

Oberlin College, Oberlin, OH

August 2017 - December 2017

Peer Advising Leader — Office of the Dean of Students

- Supervisor: Dana Hamdan, M.Ed., Executive Director, Career Development Center
- Responsibilities: Advised freshmen on course selection, study habits, and career opportunities.

Oberlin College, Oberlin, OH

November 2014 - May 2018

Peer Listener and Board Member — Peer Support Center

- Supervisor: Matthew Hayden, M.A., Associate Dean of Students
- Responsibilities: Listened to and supported peers during periods of stress, and troubleshooted logistics of launching a peer-to-peer support center.

UNDERGRADUATE TEACHING EXPERIENCE

Oberlin College, Oberlin, OH

August 2017 - December 2017

Grader — Introduction to Biostatistics, Mathematics Department

- Supervisor: Jeffrey Witmer, Ph.D.
- Responsibilities: Graded and provided feedback on biostatistics homework.

Oberlin College, Oberlin, OH

August 2017 - December 2017

Drop-In Tutor — Mathematics Department

- Responsibilities: Assisted students with comprehension of calculus and statistics.

Oberlin College, Oberlin, OH

February 2016 - May 2016

Teaching Assistant — Research Methods II, Psychology Department

- Supervisor: Travis Wilson, Ph.D.
- Responsibilities: Held office hours, graded daily quizzes, and assisted students during lab.

Oberlin College, Oberlin, OH

October 2015 - December 2017

Tutor — Student Academic Services

- Courses: Introduction to Neuroscience, Statistical Modeling, Calculus I-III, Research Methods I-II, Aural Skills 1-IV, Music Theory I-IV