Tinashe Michael **Tapera**

Senior Neuroimaging Data Analyst

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I'm an aspiring graduate student seeking PhD opportunities at the intersection of passive sensing, mental health, and data science.

Education

Drexel University — *Philadelphia, PA*

Accelerated MSc. Psychology (Data Analysis Track) — *Sep 2017 — Sep 2018*

- Thesis: Advanced Data Mining Methods for Psychological & Behavioral Research
- GPA: 3.70 (cum laude)

Drexel University — *Philadelphia, PA*

BSc. Psychology — *Sep 2013 — Jul 2017*

- GPA: 3.52

Professional Experience

Penn Lifespan Informatics & Neuroimaging Center — *Philadelphia, PA*

Senior Neuroimaging Data Analyst — *Oct 2018 — Present*

- Develop data pipelines for ETL (extract-transform-load) of large-scale imaging data sets between data warehouses in Python, R, and Bash
- Preprocess and analyse neuroimaging data using cutting-edge software (fMRIPrep, XCPEngine, QSIPrep, ASLPrep)
- Actively maintain and support multiple data curation software packages in Python and R

Salesforce — *San Francisco, CA*

Data Science Intern — *May 2017 — Oct 2017*

- Focused on discovery of organizational insight using internal human resources data sets
- Developed a semi-supervised learning algorithm to track employee performance by matching topic models of continuous feedback and goal-setting data
- Investigated comorbidity of employees' insurance claims data to dynamically classify claim types and employee phenotypes

Arzoo LLC — *Philadelphia, PA*

Private Equity Intern — *Oct 2015 — Apr 2016*

- Developed data munging pipelines in Excel for scraping business profile data

Research Experience

Quantitative Psychology & Statistics Lab (Fengqing Zhang, PhD) — *Drexel University*

"Momentary Changes in Heart Rate Variability Can Detect Risk for Emotional Eating Episodes." — *2015 — 2019*

- Aim: predicting emotional eating episodes in disorded eating patients using a combination of heart rate variability data and self-report
- Outcome: Paper published in Appetite (2019)

Quantitative Psychology & Statistics Lab (Fengqing Zhang, PhD) — *Drexel University*

"Application of Advanced Data Mining Models to Identify Dietary Patterns Associated with Risk of Cardiovascular Disease." — *2015 — 2019*

- Aim: compare the performance of unsupervised feature selection (PCA/FA) against regularization (L1/L2) in predicting cardiovascular disease biomarkers from high-dimensional food and behaviour survey responses
- Outcome: Master's thesis topic (2018)

Quantitative Psychology & Statistics Lab (Fengqing Zhang, PhD) — *Drexel University*

"Improved Modelling of Smartphone-based Ecological Momentary Assessment Data for Dietary Lapse Prediction." — *2015 — 2019*

- Aim: predicting dietary adherance lapses in participants using self-reported EMA
- Outcome: Neighbourhood-Based Balancing — A Novel Semi-Supervised Classification Algorithm for Imbalanced Data ("5-Minute Thesis", themed talk at the Well Center Symposium 2018)

Quantitative Psychology & Statistics Lab (Fengqing Zhang, PhD) *Drexel University*

"Identifying Autism Diagnostic Interview: Revised Algorithm Items that Significantly Distinguish Autism Spectrum Disorder and Down Syndrome." *2015 — 2019*

- Aim: Identify phenotypic differences between children with autism spectrum disorder, down syndrome, and comorbid diagnoses using the Autism Diagnostic Interview-Revised (ADI-R)
- Outcome: Paper published in Research in Developmental Disabilities (2019)

Quantitative Psychology & Statistics Lab (Fengqing Zhang, PhD) *Drexel University*

"Modeling Zero-Inflated MVPA Bouts Using a Hierarchical Linear Modeling Framework" *2015 — 2019*

- Aim: predict participants' moderate-to-vigorous physical activity (MVPA) bouts at timepoint 3 from previous timepoints using a zero-inflated Tweedie Poisson regression model in a growth curve modeling context
- Outcome: Final paper submitted in CFTP758 — Dyadic Analysis and Longitudinal Causal Modeling

Statistical and Applied Mathematical Sciences Institute (SAMSI) *NC State University*

"Predicting multiple sclerosis (MS)" *2016*

- Aim: classify participant diagnosis (MS patient vs. control) using lesion count along the corpus callosum in a diffusion dataset
- Outcome: Successfully predicted MS diagnosis using 3 different logistic regression segmentation approaches with 81% classification accuracy

Laboratory for Innovations in Health-Related Behavior Change (Evan Forman, PhD) *Drexel University*

"A Companion Smartphone App to Enhance Dietary Adherence through Predictive Machine Learning" *2015*

- Aim: Data collection, cleaning, and summarization with Excel and SPSS

Publications

First-author

FlywheelTools: Data Curation and Manipulation on the Flywheel Platform *Frontiers in Neuroinformatics*

Tapera, T. M., Cieslak, M., Bertolero, M., Adebimpe, A., ..., Satterthwaite, T. D. *2021*

- https://doi.org/10.3389%2Ffninf.2021.678403

Middle-author

A simple permutation-based test of intermodal correspondence *Human Brain Mapping*

Weinstein, S. M., Vandekar, S. N., Adebimpe, A., Tapera, T. M., ..., Shinohara, R. T. *2021*

- https://doi.org/10.1002%2Fhbm.25577

Mobile Footprinting: Linking Individual Distinctiveness in Mobility Patterns to Mood, Sleep, and Brain Functional Connectivity *Under Review*

Xia, C. Huchuan, Barnett, I., Tapera, T., Cui, Z., ..., Satterthwaite, T. D *2021*

- https://doi.org/10.1101%2F2021.05.17.444568

QSIPrep: an integrative platform for preprocessing and reconstructing diffusion MRI data *Nature Methods*

Cieslak, M., Cook, P. A., He, X., Yeh, F., Dhollander, T., Adebimpe, A., Aguirre, G. K., Bassett, D. S., Betzel, R. F., Bourque, J., Cabral, L. M., Davatzikos, C., Detre, J. A., Earl, E., Elliott, M. A., Fadnavis, S., Fair, D. A., Foran, W., Fotiadis, P., Garyfallidis, E., Giesbrecht, B., Gur, R. C., Gur, R. E., Kelz, M. B., Keshavan, A., Larsen, B. S., Luna, B., Mackey, A. P., Milham, M. P., Oathes, D. J., Perrone, A., Pines, A. R., Roalf, D. R., Richie-Halford, A., Rokem, A., Sydnor, V. J., Tapera, T. M., ..., Satterthwaite, T. D. *2021*

- https://doi.org/10.1038%2Fs41592-021-01185-5

Developmental coupling of cerebral blood flow and fMRI fluctuations in youth *Under Review*

Baller, E. B., Valcarcel, A. M., Adebimpe, A., Alexander-Bloch, A., Cui, Z., Gur, R. C., Gur, R. E., Larsen, B. L., Linn, K. A., O'Donnell, C. M., Pines, A. R., Raznahan, A., Roalf, D. R., Sydnor, V. J., Tapera, T. M., ..., Satterthwaite, T. D. *2021*

- https://doi.org/10.1101%2F2021.07.28.454179

Mapping Physiology-Function Coupling in Youth *Biological Psychiatry*

Baller, E., Adebimpe, A., Valcarel, A., Alexander-Bloch, A., Cui, Z., Detre, J., Gur, R., Gur, R., Larsen, B., Linn, K., O{\textquotesingle}Donnell, C., Raznahan, A., Roalf, D., Tapera, T., ..., Satterthwaite, T. *2021*

- https://doi.org/10.1016%2Fj.biopsych.2021.02.445

ASLPrep: A Generalizable Platform for Processing of Arterial Spin Labeled MRI and Quantification of Regional Brain Perfusion — *Under Review*

Adebimpe, A., Bertolero, M., Dolui, S., Cieslak, M., Murtha, K., Baller, E. B., Boeve, B., Boxer, A., Butler, E. R., Cook, P., Colcombe, S., Covitz, S., Davatzikos, C., Davila, D. G., Elliott, M. A., Flounders, M. W., Franco, A. R., Gur, R. E., Gur, R. C., Jaber, B., McMillian, C., Milham, M., Mutsaerts, H. J.M.M., Oathe, D. J., Olm, C. A., Phillips, J. S., Tackett, W., Roalf, D. R., Rosen, H., Tapera, T. M., ..., and, T. D. Satterthwaite — *2021*

- https://doi.org/10.1101%2F2021.05.20.444998

Momentary changes in heart rate variability can detect risk for emotional eating episodes — *Appetite*

Juarascio, A. S., Crochiere, R. J., Tapera, T. M., Palermo, M., Zhang, F. — *2020*

- https://doi.org/10.1016%2Fj.appet.2020.104698

Autism spectrum disorder (ASD) symptom profiles of children with comorbid Down syndrome (DS) and ASD: A comparison with children with DS-only and ASD-only — *Research in Developmental Disabilities*

Godfrey, M., Hepburn, S., Fidler, D. J., Tapera, T., ..., Lee, N. Raitano — *2019*

- https://doi.org/10.1016%2Fj.ridd.2019.03.003

Application of a new dietary pattern analysis method in nutritional epidemiology — *BMC Medical Research Methodology*

Zhang, F., Tapera, T. M., Gou, J. — *2018*

- https://doi.org/10.1186%2Fs12874-018-0585-8

Software & Project Contributions

FlywheelTools — *10.5281/zenodo.4752798*

A suite of software tools for curating your neuroimaging data into BIDS on Flywheel — *2021*

- R, Python, MongoDB, RMarkdown Reports, Docker

PC Dashboard — *10.5281/zenodo.5721127*

An interactive analytics dashboard for the Drexel University Peer Counseling Helpline — *2017*

- R, Shiny, Qualtrics API

Teaching Experience

Teaching Assistant

2018	MSc. Psychology — Statistics I & II	*Drexel University*

Service

2013 to Present	Member, Alumni Mentor	*Drexel University Gospel Choir*
2013 to 2018	Peer Counselor, VP of Scheduling & Communications	*Drexel University Peer Counseling Helpline*

Skills

Analytical

Data Science, Statistical Modelling, Reproducible Research, Parameterized & Interactive Reports, Plotting & Visualisation, Object-Oriented Programming

Programming languages

R, Python, Bash

Packages

Tidyverse, RMarkdown, ggplot2, Github Pages, nilearn

Tools

Git, Docker, Singularity, RStudio, VSCode, Jupyter Notebooks