Michael S. Truong

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Education

Ph.D. in Psychology *(Quantitative Methods)* 2022 - Expected June 2027
York University
- Supervisor: *Dr. David B. Flora*
- Dissertation: *New Avenues in Machine Learning Structural Equation Modeling: IGSCA Trees*

M.A. in Psychology *(Developmental Sciences)* 2022
York University
- Supervisors: *Drs. Thanujeni Pathman & W. Dale Stevens*
- Thesis: *Transfer Success on the Linda Problem: A Re-Examination Using Dual Process Theory, Learning Material Characteristics, and Individual Differences*

H.B.Sc. in Neuroscience & Psychology 2020
University of Toronto
- Supervisors: *Dr. Morris Moscovitch & Nichole Bouffard*
- Project: *Temporal Order & Associative Memory*

A.R.C.T. in Piano Performance 2015
The Royal Conservatory of Music

Professional & Research Experience

R Package Contributor 2023 - Present
My GitHub
- cSEM R Package
  - Implementing Integrated Generalized Structured Component Analysis Trees
  - Harmonized GSCA-type modeling with overall infrastructure
  - Improved numerical stability and reduced runtime of GSCA-type estimation routines by 50%
  - Updated testing infrastructure
- SimDesign R Package
  - Quality assurance on package features via GitHub bug reports (credited in package NEWS)
  - Filed several successful feature requests
- blavaan R Package
  - Improved UX with new tidy *broom* methods
  - Improved UX with `brms`-style default arguments
- lavaan R Package
  - Filed bug for safe handling of likelihood-ratio test
  - Improved UX of multigroup models
- glmmTMB R Package
  - Identified cross-platform differences in handling of model convergence

Statistical Consultant 2023 - 2026
York University
- Statistical Consulting Service
- Advised graduate and faculty clients and gave weekly methods seminars, winning the Mirka Ondrack Award for contributions to statistical consulting

Doctoral Student 2022 - Present
York University
- Supervisor: *Dr. David B. Flora*

- Implemented novel machine learning structural equation modeling method in the R *cSEM* package called IGSCA Trees
  - Conducted extensive Monte Carlo simulation study to evaluate statistical properties with field experts (Drs. Ji Yeh Choi and Florian Schuberth)
  - Used Monte Carlo simulations to validate LLM-generated statistical software
  - Presented and shared research findings at scientific conferences
- Investigated the statistical performance of frequentist and Bayesian multilevel models when cluster size plays a causal role (academic breadth paper with Dr. Xijuan (Cathy) Zhang)
  - Conducted three simulation studies using more than 450 CPU core-years on Digital Research Alliance of Canada clusters

Research Assistant 2024 - 2025

York University

- Supervisor: *Dr. Michael Friendly*
- Reviewed Dr. Friendly's textbook on Multivariate Linear Models for typography, technical content and pedagogical style

Teaching Assistant and Guest Lecturer 2020 - Present

York University

- MATH6627: Practicum for Statistical Consulting
- PSYC6132: Univariate Analysis II: Regression
- PSYC3430: Behaviour in Groups
- PSYC2260: Cognition
- PSYC2240: Biological Basis of Behaviour
- PSYC2130: Personality
- PSYC2030: Introduction to Research Methods
- PSYC1010: Introduction to Psychology

Research Assistant 2019 - 2020

Human Neuropsychology & Cognitive Science Lab, University of Toronto

- Supervisors: *Dr. Morris Moscovitch & Nichole Bouffard*

Awards and Scholarships

2026	York Academic Excellence Fund	**$1,200**
2026	York Conference Travel Fund	**$500**
2025	York Academic Excellence Fund	**$1,400**
2025	York Conference Travel Fund	**$500**
2025	SSHRC Doctoral Fellowship	**$80,000**
2025	Ontario Graduate Scholarship (Declined)	**$15,000**
2024	Mirka Ondrack Award for Contributions to Statistical Consulting	**NA**
2024	York Conference Travel Fund	**$500**
2024	Ontario Graduate Scholarship	**$15,000**
2024	York Academic Excellence Fund	**$1,200**
2023	Canadian Psychological Association: Quantitative Methods Student Presentation Award	**NA**
2023	York Academic Excellence Fund	**$158**
2022	Ontario Graduate Scholarship	**$15,000**
2021	Certificate of Teaching Excellence Nominee (CCDP)	**NA**
2021	York Research Cost Fund	**$1,600**
2021	York Academic Excellence Fund	**$2,000**
2017 - 2020	Dean's List Scholar	**NA**
2020	Master's Training Scholarship (VISTA)	**$20,000**
2019	James Morrow Scholarship	**$1,000**
2018	Gordon Westaway Hilborn Scholarship	**$1,000**
2016	University of Toronto Entrance Scholarship	**$2,000**

Publications

Exploring the Multiverse with Decision Trees Accepted, AMPPS
Truong, M. S., Crone, G., & Choi, J. Y.

Robust Recursive SEM with IGSCA Trees Under review
Truong, M. S., Schuberth, F., Choi, J. Y., & Flora, D. B.

What if Cluster Size is the Confound in Multilevel Models? In preparation
Truong, M. S., Zhang, X., & Flora, D. B.

Transfer of Learning to the Linda Problem Re-Examined: Explicit Versus Implicit Training Effects and Individual Differences as Predictors In preparation
Truong, M. S., Pathman, T., Stevens, W. D., & Toplak, M.

Presentations, Workshops & Posters

Robust Recursive SEM with IGSCA Trees 2026
International Meeting of the Psychometric Society 2026, Oral Presentation
Truong, M. S., Schuberth, F., Choi, J. Y., & Flora, D. B.

Exploring the Multiverse with Decision Trees 2026
International Meeting of the Psychometric Society 2026, Oral Presentation
Truong, M. S., Crone, G., & Choi, J. Y.

Reply to Paul E. Meehl: Machine Learning Structural Equation Modeling and Falsificatory Data Analysis 2025
York University Quantitative Methods Area Forum
Truong, M. S.

What Happens When Sample Size is the Confound in a Multilevel Model? 2025
International Meeting of the Psychometric Society 2025, Oral Presentation
Truong, M. S., Zhang, X., & Flora, D. B.

What Happens When Sample Size is the Confound in a Multilevel Model? 2025
York University Quantitative Methods Area Forum
Truong, M. S., Zhang, X., & Flora, D. B.

Machine Learning Structural Equation Modeling and Falsificatory Data Analysis 2024
Canadian Psychological Association Convention 2024, 12-Minute Talk
Truong, M. S., & Choi, J. Y.

Machine Learning Structural Equation Modeling and Falsificatory Data Analysis 2024
Modern Modeling Methods 2024, 30-Minute Talk
Truong, M. S., & Choi, J. Y.

Planting Decision Trees: Human-Friendly Interpretation of Monte Carlo Simulations, Multiverse Analyses and Multivariate Posterior Distributions 2024
Canadian Psychological Association Convention 2024, Poster
Truong, M. S., Crone, G., Alter, U., & Choi, J. Y.

Planting Decision Trees: Human-Friendly Interpretation of Monte Carlo Simulations, Multiverse Analyses and Multivariate Posterior Distributions 2024
Modern Modeling Methods 2024, Poster
Truong, M. S., Crone, G., Alter, U., & Choi, J. Y.

Regarding the Art and Science of Psychology: Psychometric Networks 2024
York University Quantitative Methods Area Forum
Truong, M. S.

Applications of Psychometric Networks 2024
York University Statistical Consulting Service Seminar
Truong, M. S.

Code Quality and Computational Reproducibility 2024
York University Statistical Consulting Service Seminar
Truong, M. S.

Chapters 16–17 of McElreath's *Statistical Rethinking* (2nd ed.) 2023
York University Statistical Consulting Service Seminar
- Summarized seminar readings
- Led seminar discussion with questions for discussion and actively encouraged participation from attendees
- *Truong, M. S.*

Analyzing Data with R: How Much do my Findings Depend on my Analytical Decisions? 2023
York University Quantitative Methods Workshop Series
- R workshop introducing the *multiverse* and *targets* packages for advancing scientific research (11 attendees)
- *Truong, M. S.*

Leveraging Machine Learning within a Structural Equation Modelling Context for the Development and Testing of Theories 2023
Canadian Psychological Association Convention 2023, 12-Minute Talk
Truong, M. S., & Choi, J. Y.

Summary and Reflection - A 2-part talk on my MA study where I studied the effects of learning on inhibiting biases 2022
York University Quantitative Methods Area Forum
Truong, M. S.

Does Visualizing Logical Relationships Help Inhibit Biased Judgments? 2022
CVR-VISTA Conference 2022, Poster
Truong, M. S., Pathman, T., & Stevens, W. D.

PSYC2260 - Cognition: Guest Lecture on Reverse Inference in Neuroimaging & Autobiographical Memory 2021
Course Instructor: *Dr. Agnieszka Kopinska*

Technical Skills

Programming	Advanced R, Stan, R Markdown, Quarto, Typst, LaTeX, Bash, Julia, Python
AI-Assisted Development	Claude Code, LLM output validation
Statistics	Structural Equation Modeling, Mixed-Effects/Hierarchical Modeling, Categorical Data Analysis, Causal Inference, Machine Learning, Computational Statistics, Longitudinal Data Analysis, Network Psychometrics
System Administration & Data Engineering	Git, Singularity/Docker, Slurm, Arrow, DuckDB, Linux
Stimulus Presentation	E-Prime, PsychoPy/PsychoJS
Online Studies & Surveys	Prolific, Qualtrics

Community Service

Tenure Review Committee 2024
- Reviewed and voted on tenure-track professor's tenure application as a student member

Open Science Reviewer 2022 - Present
- Neurocognitive aging data release with behavioral, structural and multi-echo functional MRI measures
- Peer-review for Advances in Methods and Practices in Psychological Science

Sick Kids Child Life Volunteer ***(234 hours)*** 2024 - 2026

- Supported staff and engaged in developmentally appropriate play with child patients and their families
- Restocked craft materials and cleaned play areas after use
- Identified and addressed non-medical needs of patients, caregivers and staff

Canadian Psychological Association Quantitative Methods Section Abstract Reviewer 2023

- Reviewed and rated submitted abstracts for the CPA2024 Ottawa Convention

Food Bank Volunteer Lead ***(210 hours)*** 2022 - Present

- Onboarded and supervised food-sorting volunteers to keep sorting safe, organized and accurate
- Engaged with volunteers throughout each shift to anticipate concerns and ensure a positive experience
- Maintained cleanliness of sorting and storage areas
- Volunteers came from local community groups (sports teams, schools, service clubs and faith-based groups) as well as corporate teams

Extracurricular Activities

Research Symposium, Psychology Graduate Student Association 2024 - 2025

- Helped graduate student members to organize a research symposium with two keynote speakers

Psychology Department Representative & Treasurer, Psychology Graduate Student Association 2023 - 2024

- Attended department meetings and disseminated discussions concerning graduate students to the graduate student body
- Managed graduate student association finances

Mentor, Psychology Undergraduate Mentorship Program ***(40 hours)*** 2020 - 2024

- Attended workshops and helped inform students on attending graduate school as a panelist
- Mentored several undergraduate students on career progression

Secretary, Psychology Graduate Student Association 2020 - 2021

- Created and distributed minutes at every meeting

Professional Development

Cognitive Diagnosis Models: Theory and Applications in R 2025

Network Winter School 2024