Modern Modeling Methods – 2024 Preliminary Schedule

Monday, June 24th

Pre-Conference Workshop
9:00 am – 5:00 pm

Network Psychometrics with psychonetrics in R
Sacha Epskamp

Continental Breakfast and Registration 8:00 – 9:00 am
McHugh Atrium

Pre-Conference Workshop 9:00 am – 5:00 pm

The freely available psychonetrics package for R provides an encompassing framework for psychometric network modeling, combining typical practices in Structural Equation Modeling (SEM) with undirected network modeling now commonly used in network psychometrics. The psychonetrics package can be used for various types of data (cross-sectional, time-series and panel data), and not only allows researchers to explore relations between observed and latent variables through the use of network models, but also allows researchers to perform confirmatory tests on given network structures and to test for homogeneity in (latent) network structures across groups. This workshop will introduce participants to the psychonetrics package and will teach participants to:

- interpret undirected multivariate network models
- understand differences between within- and between-person effects and cross-sectional and longitudinal data
- install, load and use the psychonetrics package
- use psychonetrics for exploratory network estimation (from cross-sectional, N=1 time-series and panel data)
- use psychonetrics for confirmatory network testing
- use psychonetrics to combine latent variable models with network models
- use psychonetrics for multi-group invariance and homogeneity testing

Familiarity with R and having R and the psychonetrics package installed are recommended for attending the workshop.

Bio: Sacha Epskamp is an associate professor at the National University of Singapore, Department of Psychology. Previously, he worked at the University of Amsterdam in the Department of Psychology and the Centre for Urban Mental Health. In addition, Sacha Epskamp is a former research fellow at the Amsterdam Institute for Advanced Studies and has been a visiting researcher at the Complexity Institute of Nanyang Technological University. In 2016, Sacha Epskamp completed his seminal PhD on network psychometrics—estimating network models from psychological datasets and equating these to established psychometric modeling techniques. This dissertation laid the groundworks for the field of Network Psychometrics. He has implemented these methods in several software packages now routinely used in diverse fields of psychological research. Sacha Epskamp teaches multivariate statistics and data science, and his research interests involve (network) psychometrics, meta-science, reproducibility, complexity, time-series modeling, and dynamical systems modeling. Sacha Epskamp has received several awards for his research, including the Leamer-Rosenthal Prize of the Berkeley Initiative for Transparency in the Social Sciences, the dissertation prize of the psychometric society, and the junior scientific award of the Complex Systems Society.

Tuesday, June 25th

Continental Breakfast and Registration 7:30 – 8:30 am
McHugh Hall Atrium

Opening Keynote – Denny Borsboom 8:40 – 10:10 am
McHugh Hall 102

The Nature of the Measurement Game: Psychological Constructs as Complex Systems

Denny Borsboom

McHugh Hall 102
8:40 – 10:10 am

In psychology, the relation between observables and theoretical constructs has traditionally been conceptualized in terms of measurement: observables (e.g., symptoms like self-reproach and suicidal ideation) are viewed as noisy measures of a latent psychological construct that acts as a common cause (e.g., major depression). Important psychometric models, such as the Item Response Theory model and the Factor Analysis model, represent this hypothesis in a statistical structure, which allows researchers to evaluate the tenability of their measurement hypothesis by fitting the model to data. In the past decade, I have investigated an alternative way of thinking, in which observables are not indicators of a latent construct, but interact with one another in a complex system; for instance, the symptom of self-reproach may facilitate suicidal ideation quite independently of whether any latent construct of depression exists or not. Such interactions can statistically be represented in a network model, which allows one to translate the abstract theory into a concrete statistical structure. The development of these models has accelerated in the past decade, and they have become popular in various subdomains of psychology. In this talk, I will discuss these models from a psychometric perspective, and evaluate their plausibility as alternatives to traditional measurement models. I will argue that network approaches fundamentally change the nature of the measurement game, and that we have only just begun to evaluate the consequences of these changes.

10:10 – 10:30 am Break – McHugh Hall Atrium

Concurrent Paper Session 1 **Tuesday 10:30 am – 12:00 pm**

Session 1A: Disaggregating Level-Specific Effects and Quantifying Explained Variance in Cross-Classified Multilevel Models
Room TBA

Paper	Authors
Disaggregating Level-Specific Effects and Quantifying Explained Variance in Cross-Classified Multilevel Models	Jason D. Rights

Session 1B: Modeling Spatial Data
Room TBA

Paper	Authors
A New Way of Analyzing Malaria Data: A Non-Stationary Geostatistical Modeling Approach	Bedilu Alamirie Ejigu Paula Moraga
Modern Spatial Path Analytic Tools to Investigate the Geography of Medical Debt across a US State	Emil Coman Samuel Bruder Corey Grantham
Investigating the Life Expectancies Differences in the US by Comparing Naïve and Spatial Analytic Methods across Census Tracts, Counties, and States	Emil Coman Jason Byers Blair Johnson Sandro Steinbach Peter (Xiang) Chen Stewart Fotheringham

Session 1C: Measurement Invariance and Moderation
Room TBA

Symposium	Authors
Invariance: What Does Measurement Invariance Allow Us to Claim?	John Protzko
A Simulation Study of Alignment Structure Equation Modeling in Assessing Measurement Invariance with Bi-factor Models	Qingzhou Shi Joni M. Lakin Chunhua Cao
Modeling Construct Change Over Time Amidst Potential Changes in Construct Measurement: A Longitudinal Moderated Factor Analysis Approach	Siyuan Marco Chen Daniel J. Bauer

Concurrent Paper Session 1 **Tuesday 10:30 am – 12:00 pm**

Session 1D: Advances in Mixture Modeling
Room TBA

Paper	Authors
Bias-Correction and Robustness for the Latent Profile Transition Analysis with Random Intercepts and Auxiliary Variables: Simulation and Empirical Analyses	Hawjeng Chiou Ming-Chi Tseng Pi-Fang Lin
Signals of Uncertainty and Misspecification in Latent Class Analysis	Zachary Collier Joshua Sukumar
Evaluating Bayesian Transition Diagnostic Classification Models for Reporting Within-Year Progress	Jeffrey C. Hoover W. Jake Thompson

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Lunch **Tuesday 12:00 – 1:10 pm**

Student Union Ballroom
3rd floor, Student Union

Concurrent Paper Session 2 **Tuesday 1:10 – 2:10 pm**

Session 2A: Multilevel R-squared Effect Size Measures and Bootstrapped Confidence Intervals
Room TBA

Paper	Authors
Multilevel R-squared Effect Size Measures and Bootstrapped Confidence Intervals	Mairead Shaw Jason D. Rights Jessica Kay Flake

Session 2B: Refining Mediation Analysis in Latent Growth Models
Room TBA

Paper	Authors
Refining Mediation Analysis in Latent Growth Models with Sensitivity to Omitted Confounders	Davood Tofighi

Concurrent Paper Session 2 **Tuesday 1:10 – 2:10 pm**

Session 2C: nMAX: Restoring Caution and Integrity to the Power Analysis Process
Room TBA

Paper	Authors
nMAX: Restoring Caution and Integrity to the Power Analysis Process	Greg Hancock Yi Feng

Session 2D: Dealing with Missing Data
Room TBA

Paper	Authors
Comparing Alternatives to the Three-Form Planned Missing Data Design	Alexander M. Schoemann E. Whitney Moore Emily M. Meier Kelly L. Reburn Mark C. Bowler
Estimating the Average Treatment Effect in Longitudinal Randomized Controlled Trials with Missing Data: Will It Help to Add a Quadratic Term?	Manshu Yang Lijuan Wang Scott E. Maxwell

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2:10 – 2:30 pm Break – McHugh Hall Atrium

Concurrent Paper Session 3 **Tuesday 2:30 – 3:30 pm**

Session 3A: Innovations in Longitudinal Analysis
Room TBA

Paper	Authors
An Estimation Approach for Time-Varying Effect Models Using Cubic Splines	Jingwei Li Donna Coffman Megan E. Piper
Deriving Models of Change with Interpretable Parameters: Linear Estimation with Nonlinear Inference	Ethan McCormick

Concurrent Paper Session 3 **Tuesday 2:30 – 3:30 pm**

Session 3B: Machine Learning and Modeling
Room TBA

Paper	Authors
Machine Learning Structural Equation Modeling and Falsificatory Data Analysis	Michael Truong Ji Yeh Choi
Unsupervised Survey Bot Detection: In Search of High Classification Accuracy	Carl F. Falk Amaris Huang Michael J. Ilagan

Session 3C: Multilevel Modeling in Stata: A Teaching Demonstration
Room TBA

Paper	Authors
Multilevel Modeling in Stata: A Teaching Demonstration	Meghan Cain

Session 3D: Understanding Composite-Based Methods via Regression Component Analysis
Room TBA

Symposium	Authors
Understanding Composite-Based Methods via Regression Component Analysis	Edward Rigdon

Session 3E: Issues in Factor Analysis
Room TBA

Paper	Authors
How Many Factors? Comparing Factor Retention Criteria in Exploratory Factor Analysis	Briana Oshiro D. Betsy McCoach Jessica Kay Flake
Fitting CFA Models with a Mixture of Continuous and Categorical Observed Variables	Christine DiStefano Dexin Shi Guyin Zhang

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3:30 – 3:50 pm Break

Concurrent Paper Session 4 **Tuesday 3:50 – 4:50 pm**

Session 4A: A Framework for Modeling Dyadic Discrepancy
Room TBA

Paper	Authors
A Framework for Modeling Dyadic Discrepancy	Robert E. Wickham Kathryn S. Macia

Session 4B: Graphical Modeling
Room TBA

Paper	Authors
EDA-graph: Graph Signal Processing of Electrodermal Activity for Emotional States Detection	Luis Roberto Mercado Diaz Yedukondala Rao Veeranki Fernando Marmolejo-Ramos Hugo F. Posada-Quintero
Application of Gaussian Graphical Models to Visualization and Prediction of Assessment Outcomes	James J. Thompson

Session 4C: Factor Models for Dynamics
Room TBA

Paper	Authors
Factor Analysis for Topological Equivalence (FATE): Innovating Factor Analysis for Dynamic Constructs	Pascal Deboeck Jonathan E. Butner Ascher K. Munion Brian R.W. Baucom R. Chris Fraley Omri Gillath
Bayesian Estimation of Factor Models characterizing Dynamics	Ascher Munion Pascal Deboeck Jonathan Butner

Session 4D: Advances in Modeling for Causal Inference
Room TBA

Paper	Authors
Exploring Model-Based Causes for Effect-Size Shrinkage in Educational Research	M. Shane Tutwiler Michael Carlozzi Zoe Kao

Evaluating the Impact of Analytic Approaches in a Multilevel Regression Discontinuity Application	Jason Schoeneberger Christopher Rhoads Faeze Safari

Session 4E: Tools for Teaching Multilevel Modeling

Paper	**Authors**
Using R to enhance shared understanding of linear mixed effect models with and without data across disciplines	Katherine Zavez Ofer Harel
A Communication-focused Approach to Building Path Diagrams for Multilevel Models	Jeffrey M. Girard

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Poster Session and Reception

Student Union Ballroom
5:00 – 7:00 pm
Tuesday, June 25th
Third Floor, Student Union

Wednesday, June 26th

Continental Breakfast
8:30 – 9:00 am
McHugh Hall Atrium

Concurrent Paper Session 5 Wednesday 9:00 – 10:00 am

Session 5A: Dealing with Daily Data
Room TBA

Paper	Authors
How We Cycle: A Tutorial on Combining Day-to-Day Dynamics with Day-of-Week Effects and Weekly Dynamics	Mohammadhossein (Manuel) Haqiqatkhah Ellen L. Hamaker
Generalizability Theory Applied to Daily Relationship Quality: Substantive and Statistical Directions	Madison Shea Smith Susan C. South

Session 5B: Variable Selection in Building Generalized Linear Mixed Models
Room TBA

Paper	Authors
A New Algorithm for Variable Selection in Building Generalized Linear Mixed Models	Yutian T. Thompson Yaqi Li Hairong Song David E. Bard
A New Method for Variable Selection in Building GLMMs with Incomplete Data	Yutian T. Thompson Yaqi Li David E. Bard

Session 5C: Simplifying SEM with Shortcut Wizardry
Room TBA

Paper	Authors
Simplifying SEM with Shortcut Wizardry	Laura Castro-Schilo

Concurrent Paper Session 5 **Wednesday 9:00 – 10:00 am**

Session 5D: Disentangling Person-Dependent and Item-Dependent Causal Effects
Room TBA

Paper	Authors
Disentangling Person-Dependent and Item-Dependent Causal Effects: Applications of Item Response Theory to the Estimation of Treatment Effect Heterogeneity	Joshua Gilbert Luke Miratrix Mridul Joshi Benjamin Domingue

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10:00 – 10:20 am Break –McHugh Hall Atrium

Concurrent Paper Session 6 **Wednesday 10:20 – 11:50 am**

Session 6A: Bayesian Models
Room TBA

Paper	Authors
Comparing the Accuracy of Three Predictive Information Criteria for Bayesian Linear Multilevel Model Selection	Sean Devine Carl F. Falk Ken A. Fujimoto
Modeling Misspecification as a Parameter in Bayesian Structural Equation Models	James Uanhoro
Bayesian Semiparametric Item Response Theory Models: A Methodological Illustration	Meng Qiu Sally Paganin

Concurrent Paper Session 6 **Wednesday 10:20 – 11:50 am**

Session 6B: Novel Applications of Latent Variable Modeling
Room TBA

Paper	Authors
Decomposing the Effects of Suffering on Depression Using a Reparameterized SEM and Penalized Maximum Likelihood	Noah Padgett Richard Cowden Tyler J. VanderWeele
Intensive Longitudinal Modeling of Big Social Media Data	Jeffrey M. Girard
Validation of the Evidence-Based Practices Attitudes Scale (EBPAS) using Dynamic Fit Index Cutoffs	Julian M. Hernandez-Torres Natalia Giraldo-Santiago Daniel McNeish

Session 6C: Reproducibility, Replicability, and Registration of Simulation Studies
Room TBA

Paper	Authors
Why Do Reproducibility and Replicability of Simulation Studies Matter?	Jessica Kay Flake
Replicating Simulation Research: A Case Study	Tristan D. Tibbe
Registered Reports for Simulation Studies	Amanda Kay Montoya
How to Register Your Simulation Study: Our Lessons Learned	Lindsay Alley Mairead Shaw

Session 6D: Missing Data: Problems and Solutions
Room TBA

Paper	Authors
Evaluating the Effect of Change on Change in Cross-Domain Latent Growth Curve Analysis with Missing Data	Parisa Rafiee Manshu Yang
A Solution for Including Auxiliary Variables with Categorical Dependent Variable Estimation in SEM	Mallory R. Kroeck Brian T. Keller Nicholas A. Smith
Dummy Variable Adjustment Technique: An Alternative to Maximum Likelihood and Multiple Imputation	Roula Aldib Lee Branum-Martin

Lunch **Wednesday 12:00 – 1:00 pm**

Student Union

Please be sure to return your lunch card!

Please note: Dining cards can be used *only* on Wednesday, June 26th and *only* at the Union Street Marketplace. When you return your dining cards, be sure to hand them to a member of the conference staff so they can cross your name off the list. Please do not just leave it on the registration table—those who return their cards will be entered in a raffle to win a free conference registration for the 2025 conference.

Concurrent Paper Session 7 **Wednesday 1:00 – 2:30 pm**

Session 7A: Modeling Individual Differences
Room TBA

Paper	Authors
Measurement Invariance of the Big Five across Socioeconomic Background: Multigroup Confirmatory Factor Analysis and Alignment Optimization	Emilija Meier-Faust Sandra Bohmann
Examining Response Styles and Their Impact on Psychological Testing Outcomes: A Mixture IRT Modeling Approach	Fatih Ozkan
Applying SEM Based Person-Fit to the Wechsler Adult Intelligence Scale IV Demonstrate the Validity of Measurement at the Individual Level	Jared Block Steven Reise

Session 7B: Network Applications
Room TBA

Paper	Authors
Exploring the Emotional Well-Being of Young Adults through Network Psychometrics	Daniel Hernández-Torrano
Exploring the Dynamics of Motivation in Physical Activity among Older Adults Through Panel Network Approach	Tommaso Palombi Denny Borsboom René Freichel Elisa Cavicchiolo Fabio Lucidi Fabio Alivernini
Estimating the Group Differences of Longitudinal Network Analysis: An Example of Eating Disorder Psychopathology	Jihong Zhang Jinbo He

Concurrent Paper Session 7 **Wednesday 1:00 – 2:30 pm**

Session 7C: Advances in Multilevel Mixture Modeling
Room TBA

Paper	Authors
Examining the Effect of Nested Data on Class Enumeration and Model Fit in Latent Profile Analysis	Angela Starrett Katherine Masyn
Application of a Multilevel Latent Class Analysis with Cross-Classified Data	Audrey Leroux Katherine Masyn
Moderated Nonlinear Mixture Analysis for Longitudinal Invariance Testing in Latent Transition Analyses	Katherine Masyn Boshi Wang

Session 7D: Structural Equation Modeling Methods
Room TBA

Paper	Authors
Comparing Approaches to Examine Multiple Binary Moderators in Latent Variable Models	Kaylee Litson Amanda Kay Montoya Yiwei Wang
Quantile Structural Equation Modeling: Testing a Novel Distance Based Approach	Jeffrey Shero Zhixin Zhu Jessica Logan

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2:30 – 3:00 pm Break – Ice Cream in McHugh Atrium

Concurrent Paper Session 8 **Wednesday 3:00 – 4:00 pm**

Session 8A: Innovations in Mixed Modeling
Room TBA

Paper	Authors
Model Selection of GLMMs in the Analysis of Count Data in SCEDs: A Monte Carlo Simulation	Haoran Li
Latent Class Clustering of Random Coefficient Estimates Obtained from a Multilevel Analysis	Jay Magidson Jeroen Vermunt

Concurrent Paper Session 8 **Wednesday 3:00 – 4:00 pm**

Session 8B: Restructuring Basic Statistical Curricula: Mixing Older Analytic Methods with Modern Software Tools in Psychological Research
Room TBA

Paper	Authors
Restructuring Basic Statistical Curricula: Mixing Older Analytic Methods with Modern Software Tools in Psychological Research	Emil Coman James Jaccard Sabrina Uva Ana-Maria Cazan

Session 8C: Advancing Research on Methodology: A Panel Discussion on the Creation of a Minority-Centered Methodological conference, InclusiMetrics
Room TBA

Paper	Authors
Advancing Research on Methodology: A Panel Discussion on the Creation of a Minority-Centered Methodological Conference, InclusiMetrics	Marcus Harris Zachary Collier

Session 8D: Innovations in Structural Equation Modeling
Room TBA

Symposium	Authors
Introducing the Deleted One Covariance Residual Measure to the Structural Equation Modeling	Fathima Jaffari Jennifer Koran
Ruling Out Latent Time Varying Confounders in Two-Variable Multi-wave Studies	David Kenny D. Betsy McCoach