

PROGRAM OF THE 75TH ANNUAL MEETING OF THE PSYCHOMETRIC SOCIETY

The 75th Annual Meeting and of the Psychometric Society (IMPS2010) was held at the University of Georgia, Athens, Georgia, USA, July 6–9, 2010.

**Tuesday, 6th July**  
PRESESSION WORKSHOPS

EQUATING OBSERVED-SCORES: THE PERCENTILE RANK, GAUSSIAN KERNEL, AND IRT OBSERVED-SCORE EQUATING METHODS. Facilitator: Alina von Davier

ANALYZING LARGE SCALE ASSESSMENT DATA WITH GENERALIZED LINEAR MIXED MODELS. Facilitators: Francis Tuerlinckx and Frank Rijmen

DIAGNOSTIC CLASSIFICATION MODELS: FROM START TO FINISH. Facilitator: Robert A. Henson

STRUCTURAL EQUATION MODELING WITH OPENMX. Facilitator: Steven Boker

**Wednesday, 7th July**  
MAHLER AUDITORIUM SESSIONS

CONFERENCE WELCOME AND INFORMATION  
Jonathan Templin, Jos ten Berge, and Klaas Sijtsma

INVITED LECTURE  
Frank Rijmen; *The Use of Graphs in the Social and Behavioral Sciences: Beyond Visualization.*

STATE-OF-THE-ART LECTURE  
Rob Meijer; *Modeling Typical Performance Data using Item Response Theory: An Overview.*

INVITED LECTURE  
Jean-Paul Fox; *Developments in Bayesian Item Response Modeling.*

STATE-OF-THE-ART LECTURE  
Sandip Sinharay, Shelby J. Haberman, and Gautam Puhani; *Use and Misuse of Diagnostic Scores.*

KEYNOTE LECTURE  
Alexander Shapiro; *What Optimization and Statistics Can Learn From Each Other.*

ROOM F/G SESSIONS

TEST EQUATING 1. Moderator: Cigdem Alagoz  
Robert L. Brennan; *First-Order and Second-Order Equity in Equating.*  
Safir Yousfi; *A Framework for Test Equating Based on the Concepts of Equity and Causal Effects.*

- Yuki Nozawa and Michael J. Kolen; *Investigation of Nonparametric IRT True and Observed Score Equating Methods under the Common-Item Nonequivalent Groups Design.*
- Won-Chan Lee and Brad Brossman; *Observed Score Equating for Mixed Format Tests Using a Simple-Structure Multidimensional IRT Model.*

#### STRUCTURAL EQUATION MODELING 1. Moderator: Hye-Jeong Choi

- Kenneth A. Bollen; *New Tests of Dimensionality using Instrumental Variables (IVs).*
- Keke Lai and Ken Kelley; *Accuracy in Parameter Estimation for Targeted Effects in Structural Equation Modeling: Sample Size Planning for Narrow Confidence Intervals.*
- Tammy J. Trierweiler; *An Evaluation of Robust Estimation Methods in Confirmatory Factor Analytic Models with Ordered Categorical Data in LISREL.*
- Roger E. Millsap and Margarita Olivera-Aguilar; *Statistical Power for a Simultaneous Test of Factorial and Predictive Invariance.*
- Ken Kelley and Keke Lai; *Sample Size, the Root Mean Square Error of Approximation, and an Approach to Planning Sample Size.*

#### BAYESIAN STATISTICAL INFERENCE 1. Moderator: Hye-Jeong Choi

- Joseph F. Lucke; *Bayesian Inference for the Squared Multiple Correlation Coefficient.*
- Larry R. Price; *Small Sample Properties of Bayesian Multivariate Autoregressive Models.*
- David Kaplan and Sarah Depaoli; *Bayesian Growth Mixture Modeling: Theory and Application.*
- Josine Verhagen and Jean-Paul Fox; *Large Cross-National Survey Analysis: Bayesian Testing for Measurement Invariance.*

### ROOM K SESSIONS

#### ITEM RESPONSE THEORY 1. Moderator: Aijun Wang

- Wilco Emons; *Person-Fit Analysis of Polytomous Item-Score Vectors and Profiles in Typical Performance Assessment.*
- Sebastien Beland, David Magis, and Gilles Raiche; *Using Snijders' Approach to Standardize Some Parametric Person Fit Indexes with Estimated Ability Levels: A Simulation Study.*
- J. Hendrik Straat, L. Andries van der Ark, and Klaas Sijtsma; *Conditional Association as a Powerful Tool for Assessing IRT Model Fit.*
- Natalia Alexeev, Jonathan Templin, and Allan Cohen; *Model Selection: Mixture Rasch Model versus Mixture 2PL.*
- Younyoung Choi, Hong Jiao, and Feiming Li; *The Effect of Model Misspecification on the Identification of Latent Class using Mixture Item Response Theory.*

#### COMPUTERIZED ADAPTIVE TESTING 1. Moderator: Amanda Bramlett

- Haiyan Lin, Feiming Li, Linjun Shen, and Hua-Hua Chang; *An Adaptive Pretest Approach for a Linear Fixed-Length Computer-Based Licensure Exam.*
- Guangming Ling and Lixiong Gu; *A Comparison of the Anchored Computerized Adaptive Test, the Traditional Computerized Adaptive Test, and the Multistage Test.*
- Hua-Hua Chang, Jian Tao, and Chun Wang; *The Item-Weighted Likelihood Method for Computerized Adaptive Testing.*
- Wen-Chung Wang and Sheng-Yun Huang; *Computerized Classification Testing under the One-parameter Logistic Model with Ability-based Guessing.*

#### LONGITUDINAL DATA ANALYSIS 2. Moderator: Amanda Bramlett

- Nilufer Kahraman, Monica Cuddy, Polina Harik, and Brian Clauser; *Growth Curve Modeling for Response Times.*

Daniel Serrano; *A Second-Order Latent Trajectory Model for Longitudinal Item Response Data*.  
 Ji Hoon Ryoo; *Model Selection with the Linear Mixed Effects Model for Longitudinal Data*.  
 Nisha Gottfredson and Daniel Bauer; *Evaluating Latent Pattern Mixture Models for Handling Non-randomly Missing Longitudinal Data*.

#### ROOM L SESSIONS

DIFFERENTIAL ITEM FUNCTIONING 1. Moderator: Youn-jeng Choi  
 Pei-Ru Huang, Guo-Wei Sun, and Ching-Lin Shih; *Assessing Differential Item Functioning using Mantel–Haenszel Method with the Freeware EZDIF*.  
 Holmes Finch and Brian French; *Extension of the Mantel–Haenszel Statistic for DIF Detection with Multilevel Data*.  
 Jihye Kim and Chris T. Oshima; *Controlling Type I Error Rate in Evaluating Differential Item Functioning for Four DIF Methods: Use of Adjustment of Multiple Item Testing*.  
 Jyun-Hong Chen, Cheng-Te Chen, and Ching-Lin Shih; *Applying Constant Item Method on Hierarchical Generalized Linear Models to Assess Differential Item Functioning*.

CLASSICAL CLUSTERING AND MIXTURE MODELS 1. Moderator: Shanshan Qin  
 Douglas Steinley; *Principal Clusters: Preservation of Cluster Structure in the Presence of Data Reduction*.  
 April Galyardt; *Mixed Membership Models for Continuous Data*.  
 Makoto Sano; *Analyzing Test Content Using Latent Semantic Indexing and Hierarchical Clustering*.  
 Mariya P. Shiyko, Yuelin Li, and David Rindskopf; *Poisson Growth Mixture Modeling of Intensive Longitudinal Data: An Application to Smoking Cessation Behavior*.

APPLICATIONS 1. Moderator: Amanda Ferster  
 Brian P. Flaherty; *Identifiability and Model Selection in a Mixed Indicator Latent Class Model*.  
 Shao-qi Ma, Min-qiang Zhang, and Can Jiao; *A New Perspective of Psychology Research—Social Network Analysis*.  
 Jason Polak; *Detecting Global Features of High Dimensional Data Using Homology*.  
 Dmitry I. Belov; *A Poisson Trials Approach to Detect Answer Copying*.

#### ROOM Q SESSIONS

DIAGNOSTIC CLASSIFICATION MODELS 1. Moderator: Jongmin Ra  
 Rebecca Nugent, Nema Dean, and Elizabeth Ayers; *Empty K-Means: A Flexible Skill Set Profile Clustering Method*.  
 Laine Bradshaw and Jonathan Templin; *Combining Scaling and Classification: A Model for Scaling Ability and Diagnosing Misconceptions with Nominal Response Item Types*.  
 Megan E. Lutz, Susan E. Embretson, and John Poggio; *Assessing Mathematics Achievement Items Using Cognitive Diagnostic Modeling*.  
 Yun Jin Rho, James E. Corter, and Matthew S. Johnson; *Cognitive Skill Diagnosis in the Presence of Differential Strategy Choice: A Bayesian Approach*.

ITEM RESPONSE THEORY 2. Moderator: Sunbok Lee  
 Lihshing Leigh Wang and Shuyan Sun; *Effect of Modeling Rater Bias on Dichotomous Outcome Measurement and Inter-Rater Reliability in Personnel Evaluation*.  
 Catherine A. McClellan, Jillian N. Joe, and Douglas G. Baldwin; *Screening of Candidate Raters*.

Jilliam Joe and Catherine McClellan; *Examining the Psychometric Properties of Rater Certification Tests.*

Kathryn Ricker-Pedley; *Does Calibration Select the Right Raters?*

ITEM RESPONSE THEORY 4. Moderator: Cigdem Alagoz

Youn-jeng Choi, Natalia Alexeev, Allan S. Cohen, and Seock-Ho Kim; *Identifying a Mixture 3-Parameter Model.*

Iwin Leenen, Vicente Ponsoda, Jimmy de la Torre, and Sonia Romero; *Markov Chain Monte Carlo Estimation of Person and Item Parameters for the Multi-Unidimensional Pairwise Preference Model.*

Matthew S. Johnson; *Maximum Likelihood Estimation of the Non-parametric IRT Model for Binary Responses.*

Jongmin Ra and Seock-Ho Kim; *The Sensitivity of Prior in Testlet IRT Model.*

#### ROOM R SESSIONS

LONGITUDINAL DATA ANALYSIS 1. Moderator: Shanshan Qin

Rinke Klein Entink, Jean-Paul Fox, and Ardo van den Hout; *Statistical Models for Individual Health Assessment: Towards Personalized Model-Based Predictions.*

Can Jiao, Min-ping Xiong, and Min-qiang Zhang; *The Application of Functional Data Analysis in Analyzing Psychological Data.*

Bart Jacobs, Francis Tuerlinckx, and Filip Raes; *Fitting Cross-Lagged Panel Models with Random Effects: A Linear Mixed Modeling Approach.*

Andrea E. Lamont, Patrick S. Malone, and Cheri J. Shapiro; *Differential Development of Delinquent Behavior between a Matched Sample of Gang and Nongang Affiliated Youth.*

ITEM RESPONSE THEORY 3. Moderator: Natalia Alexeev

Norman Rose, Matthias von Davier, and Xueli Xu; *Modeling Non-ignorable Missing Data with Item Response Theory.*

Nuo Xi and Michael W. Browne; *Applications of the Sample Average Method for Estimating Nonlinear Latent Variable Models.*

Lianghua Shu; *When Guessing Parameter Cannot be Estimated Under a Three-Parameter Model.*

Feiming Li and Linjun Shen; *Are Multimedia Items Less Secure?*

Prathiba Natesan, Ratna Nandakumar, Tom Minka, Xiaoyu Qian, and Jonathan Rubright; *Parameter Estimation of 1-PL and 2-PL models: A Comparison of Marginal Maximum Likelihood, Bayesian and Variational Bayesian Approximation Estimation Methods Using Infer.Net, SAS and WINBUGS.*

COMPUTERIZED ADAPTIVE TESTING 2. Moderator: Tugba Karadavut

EunYoung Lim, Hua-Hua Chang, and Jiming Zhang; *The Effectiveness of Using Multiple Item Pools to Increase Test Security in Computerized Adaptive Testing.*

Chia-Ling Hsu and Wen-Chung Wang; *On-line Controlling in Item Exposure and Test Overlap under Variable Length Computerized Adaptive Testing.*

Laura Hurst; *Estimation of IRT Parameters Using Subject Matter Expert Ratings.*

#### HILL ATRIUM SESSIONS

POSTER SESSION

Ruth E. Mathiowetz, Michael Shanahan, and Daniel J. Bauer; *Comparing Direct and Indirect Approaches for Identifying Classes of Personality Traits.*

- Ching-Yi Chiang, Kuo-Shu Yang, and Li-Chiao Huang; *Evaluating the Constructs of the Chinese Big Seven Personality.*
- Bridget V. Dever, Kristen L. Mays, Randy W. Kamphaus, and Erin Dowdy; *The Factor Structure of the BASC-2 Behavioral and Emotional Screening System Teacher Form, Child/Adolescent.*
- Chiu-Hsia Huang; *To Investigate Learning Effects of Preferral-Word-Recognition Intervention for 1st Graders with Word-Recognition Difficulties.*
- Brandy Brown; Cindy Pury; Fred Switzer; Christina Rossi; *Solving for the Situation: Development of a Situational Taxonomy.*
- Stephen France, Wen Chen, and Yumin Deng; *ADCLUS and INDCLUS: Analysis, Experimentation, and Meta-Heuristic Algorithm Extensions.*
- Patrick J. Rosopa, Amber N. Schroeder, and Jessica Doll; *Are All Heteroscedasticity Detection Procedures Created Equal?: Recommendations for Diagnosing Heteroscedasticity when Testing for Slope Differences.*
- Bryan Keller; *Randomization Tests: Why, When and How?*
- Taketoshi Sugisawa; *Effects of Two-stage Sampling on the Test for Correlation Coefficients.*
- Sarah Depaoli; *Bayesian Mixture-CFA: A Study of Mixture Class Recovery.*
- Guangming Li and Min-qiang Zhang; *Using Adjusted Bootstrap to Improve the Estimation of Variance Components and Their Variabilities for Generalizability Theory.*
- Diane Losardo, Sy-Miin Chow, A. T. Panter, Melissa Burkley, and Edward Burkley; *Optimal Designs for Daily Diary Studies: Do We Really Need All of Those Data Points?*
- Su-Young Kim and Jee-Seon Kim; *Investigating Stage-Sequential Growth Mixture Models with Multiphase Longitudinal Data.*
- Yun Tang and Feifei Ye; *Interaction Effect between Crossed Factors in Two-Level Cross-Classified Random Effects Modeling.*
- Lee Hsiang Ling; *Improving Test Security through Implementing General Test Overlap Control in the Modified Progressive and Proportional CAT.*
- Aijun Wang and Allan S. Cohen; *Examination of the Sampling Requirements of the Cross-Classified IRT Model.*
- Carrie R. Houts and Michael C. Edwards; *The Performance of LD Measures with Psychological Data.*
- Vanessa M. Thompson and James S. Roberts; *Item Information in the Multidimensional Generalized Graded Unfolding Model.*
- Caio L. N. Azevedo and Dalton F. de Andrade; *CADEM: A Conditional EM Algorithm for Fitting Rasch Models.*
- Amanda Ferster and Seock-Ho Kim; *Compatibility of IRT Parameter Estimates.*
- Stephen Cubellotti and Ying Liu; *An in Depth Comparison of the Shared Features of Multiple IRT Programs: The IRT Program Showdown.*
- Chris T. Oshima, Nick White, and Keith Wright; *Differential Item Functioning Among Multiple Groups Using Raju's DFIT.*
- Jungkyu Park and Soonmook Lee; *Comparisons among Three Methods for Detecting Differential Item Functioning.*
- Christine DiStefano, Bridget V. Dever, and Erin Dowdy; *Measurement Equivalence of a Teacher-Report Behavioral and Emotional Screener for Students with Limited English Proficiency.*
- Miloš Kankaraš, Jeroen Vermunt, and Guy Moors; *Measurement Equivalence of Ordinal Items: A Comparison of Factor Analytic, Item Response Theory, and Latent Class Approaches.*
- Liang-Ting Tsai and Chih-Chien Yang; *Using LVQ-ESW Method to Interpolate Missing Stratum Weights in Assess of Measurement Invariance.*
- Norikazu Iwama and Hideki Toyoda; *The Study of Two Stage ADF3 Methods to Analyze Structural Models with More Variables.*
- Shu-Ping Chen and Chung-Ping Cheng; *Model Specification for Latent Interactive and Quadratic Effects in Matrix Form.*

- Po-Hsien Huang and Li-Jen Weng; *Multilevel Factor Model with Serial Correlation Structure*.  
 Ehri Ryu and Stephen G. West; *The Effect of Skewness and Kurtosis on Normal Theory Based Test Statistic in Multilevel Structural Equation Modeling*.  
 Libo Li and Peter M. Bentler; *Quantified Choice of RMSEAs for Evaluation and Power Analysis of Small Differences between Structural Equation Models*.  
 Jolynn Pek and Robert C. MacCallum; *Diagnostics in Structural Equation Modeling: Outliers versus Good and Bad Influential Cases*.  
 Kosuke Fukunaka and Hideki Toyoda; *Unique Factor Structural Analysis for Factor Analysis*.

### Thursday, 8th July

#### MAHLER AUDITORIUM SESSIONS

##### INVITED LECTURE

Herbert Hoijtink; *Objective Bayes Factors for Inequality Constrained Hypotheses*.

##### STATE-OF-THE-ART LECTURE

Hsiu-Ting Yu; *Modeling Dynamic Discrete Change Process*.

##### STATE-OF-THE-ART LECTURE

Carolyn Anderson; *Advances in Models for Multivariate Nominal or Ordinal Response Variables with Latent Variables*.

##### KEYNOTE LECTURE

Michael Browne; *Some Facets of Factor Analysis*.

#### ROOM F/G SESSIONS

STRUCTURAL EQUATION MODELING SYMPOSIUM (Population Heterogeneity in SEM and IRT). Organizer: Dylan Molenaar

Dylan Molenaar and Conor Dolan; *Overdispersion in the Graded Response Model*.

Peter F. Halpin and Paul De Boeck; *A Geometric Approach to Diagnosing Local Dependence*.

Paul De Boeck, Rianne Janssen, and Jorge Gonzalez; *A Double-Structure Structural Equation Model for Test Data*.

Frans J. Oort, M. T. Barendse, C. S. Werner, R. Ligtvoet, and K. Schermelleh-Engel; *A Simulation Study of Measurement Bias Detection through Factor Analysis*.

STRUCTURAL EQUATION MODELING 2. Moderator: Shanshan Qin

Taehun Lee, Robert C. MacCallum, and Michael M. Browne; *Fungible Parameter Estimates in Structural Equation Modeling*.

Levent Dumenci and Phillip D. Yates; *Nonconvergent/Improper Solutions in the Correlated-Trait Correlated-Method (CTCM) Parameterization of Multitrait-Multimethod Matrix*.

Patrick S. Malone, J. B. Lubansky, and Amanda J. Fairchild; *Modeling Mediation by a Latent Class Variable*.

Henk Kelderman; *Partial Measurement Invariance: Experimental Artifacts and the Meaningfulness of Quantitative Empirical Statements*.

Fang Jie Min-qiang Zhang; *Testing 2-1-1 Multilevel Moderated Mediation Using Three Models*.

ITEM RESPONSE THEORY 7. Moderator: Hye-Jeong Choi

Michael C. Edwards; *Minimum Detectable Change in an IRT Framework*.

Hong Jiao, Akihito Kamata, and Salih Binici; *The Effects of Item and Person Clustering on Ability Estimation and Proficiency Classification*.

Daniel M. Bolt and Joseph R. Newton; *Across-Scale Measurement of Extreme Response Style: A Latent Variable Approach.*

David Thissen; *Blurring Boundaries in Test Linking: The Use of Multidimensional IRT Calibration as Projection.*

#### STATE-OF-THE-ART LECTURE

Sun-Joo Cho; *Item Response Models with Random Item Parameter(s) and Their Parameter Estimation Methods.*

#### ROOM K SESSIONS

MULTIDIMENSIONAL SCALING/OPTIMAL/DUAL SCALING 1. Moderator: Shanshan Qin  
Kojiro Shojima; *Asymmetric Triangulation Scaling: A Symmetric MDS for Extracting Inter-Item Dependency Structure from Test Data.*

Tomoya Okubo, Kensuke Okada, and Shin-ichi Mayekawa; *A Bayesian Solution for a Mixed Vector Model.*

Kensuke Okada and Shin-ichi Mayekawa; *Post-processing of MCMC Output in Order to Remove the Rotational Indeterminacy.*

Daniel R. Lawrence; *Constrained Dual Scaling: The Analysis of Ordered-Choice Data Subject to a Polychotomous Incidence Item.*

MULTIVARIATE ANALYSIS 1. Moderator: Tugba Karadavut

Hye Won Suk and Heungsun Hwang; *Lasso Generalized Structured Component Analysis.*

Kwanghee Jung, Yoshio Takane, and Heungsun Hwang; *A Naïve versus Non-Naïve Bootstrap Method for Testing Regression Coefficients in Multivariate Data Analysis.*

Yoshio Takane and Lixing Zhou; *Block Diagonal Data Matrices in Multivariate Analysis.*

Yoshio Takane; *A New Breed of CPCA (Constrained Principal Component Analysis).*

FACTOR ANALYSIS 1. Moderator: Adeya Powell

Johnny Lin and Peter Bentler; *A Moment Based Approximation of the Likelihood Ratio Test Statistic in Confirmatory Factor Analysis.*

Joost R. van Ginkel and Henk A. L. Kiers; *Constructing Bootstrap Confidence Intervals for Principal Component Loadings in the Presence of Missing Data: a Multiple-Imputation Approach.*

Chun-Ting Lee, Guangjian Zhang, and Michael C. Edwards; *Standard Error of Exploratory Factor Analysis with Ordinal Variables.*

Edgar Merkle; *Data Augmentation as a Substitute for Multiple Imputation in Factor Analysis.*

Sho Hashimoto; *Bayesian Factor Analysis for Estimating a Simple Loading Matrix with Its Unknown Target.*

#### ROOM L SESSIONS

TEST EQUATING 2. Moderator: Hye-Jeong Choi

Kei Miyazaki, Takahiro Hoshino, and Kazuo Shigemasu; *A Bayesian Equating Method for Non-equivalent Group Design under Nonrandom Assignment via Data Augmentation Algorithm.*

Lihua Yao; *Multidimensional Linking for Common-person Design and Random Equivalent Group Design.*

Zhan Shu, Devdass Sunnasee, and Andrew Dallas; *Ellipse-Arc Equating Method for Small Sample Size Tests.*

Yingchen Wang, Zhan Shu, and Kinge Mbella; *Stability of Linking Functions across Small Subsamples—A Cross-validation of New Small Sample Equating Methods.*

Sarah Wang Gallimore and Gary Skaggs; *Estimating Minimal Sample Size on Accurate IRT Equating of Uni-dimensional Multiple-Choice Only Tests in the Random Groups Design.*

## ITEM RESPONSE THEORY 6. Moderator: Sedat Sen

Johan Braeken; *An Alternative to Random Effect Testlet Models: Mixing Boundary Distributions*.  
 Gilles Raiche, David Magis, and Sebastien Beland; *Multidimensional Fluctuation, Pseudo-Guessing and Carelessness IRT Person Parameters with Polytomous Item Response Models*.  
 Sunbok Lee and Jongmin Ra; *The Effect of Violating Unidimensional Assumption in IRT Models*.  
 Kristian E. Markon; *Quantifying Global Information in Item Response Theory*.

## APPLICATIONS 3. Moderator: Amanda Ferster

Maria Elena Oliveri and Matthias von Davier; *Investigation of Model Fit and Score Scale Comparability in International Assessments*.  
 Casey B. Nixon, Selcuk Acar, Laine Bradshaw, Amanda Bramlett, Yi Fu Chen, Albert Jimenez, Sunbok Lee, Katherine Raczynski, Sedat Sen, and Seock-Ho Kim; *Analyses of Items with Multiple Choices*.  
 Charles H. Atwood, Kimberly D. Schurmeier, Carrie G. Shepler, Derek A. Behmke, and Gary J. Lautenschlager; *Application of IRT to Large General Chemistry Assessments at UGA*.  
 Sui Huang and Jerome V. D'Agostino; *Demystifying the Response Patterns of Graduate and Undergraduate Students in SEI (Student Evaluation Information)*.

## ROOM Q SESSIONS

## DIAGNOSTIC CLASSIFICATION MODELS 2. Moderator: Laine Bradshaw

Youngmi Cho, Matthias von Davier, Hong Jiao, and George Macready; *A Comparison of Classification Consistency Obtained with Unidimensional Mixture IRT Models and Mixture Generalized Diagnostic Models*.  
 Hyun Seok Kim, Mee-Ae Kim-O, and Susan Embretson; *Bayesian Inference for Diagnostic Assessment Using the Beta Distribution*.  
 Ding Shuliang, Wang Wenyi, Yang Shuqun, Zeng Lingyan, and Chen Ping; *A Scheme to Increase Classification Accuracy in Cognitive Diagnostic Testing*.

## APPLICATIONS 2. Moderator: Sunbok Lee

Jennifer K. Gilbert, Donald L. Compton, Sun-Joo Cho, Lynn S. Fuchs, Douglas Fuchs, and Devin M. Kearns; *Doubly Explanatory Item Response Model with a Random Item Parameter: Word and Person Effects on Decoding Accuracy*.  
 Samantha Bouwmeester and Peter P.J.L. Verkoijen; *Latent Variable Modeling of Cognitive Processes in True and False Memory*.  
 Elayne Livote and Jay Verkuilen; *Assessing Invariance of a Symptom Assessment Scale with Multidimensional Item Response Theory: Comparing Development and Operational Contexts*.  
 Jisung Cha and Matthew S. Johnson; *Application of Ordered Latent Class Regression in Educational Assessment*.

## MATHEMATICAL MODELS FOR COGNITION, EMOTION, AND OTHER PSYCHOLOGICAL PROCESSES 1. Moderator: Natalia Alexeev

Jay Verkuilen, Michael J. Smithson, Julie J. Chen, and T.-Y. Hatori; *Wait, Probabilities Add to One... Don't They? Resolving Sample Space Ambiguity in Subjective Probabilities Using Finite Mixture Models*.  
 Gregory Brown, Daniel Mathalon, Hal Stern, Judith Ford, Bryon Mueller, Doug Greve, Jim Voyvodic, Gary Glover, Michele Diaz, Elizabeth Yetter, Burak Ozyurt, Kasper W. Jorgensen, Cynthia Wible, Jessica Turner, Wesley K. Thompson, and Steven Potkin; *Variance Components Analysis of Functional Magnetic Resonance Imaging Data: An Exercise in Neuropsychometrics*.



Clinton Davis-Stober; *Changing Minds: Estimation of Multiple Preference States Via Normalized Maximum Likelihood.*

#### ROOM R SESSIONS

ITEM RESPONSE THEORY 5. Moderator: Aijun Wang

James Gambrell; *A Multidimensional IRT Approach to Estimation of Item-Level Practice Effects on Fluid Reasoning Test Items.*

Kentaro Kato and Yiping Zhang; *An Item Response Model for Probability Testing.*

Gunter Maris; *Mathematical Psychology Meets Psychometrics (Again).*

Hongwook Suh and William P. Skorupski; *An Investigation of Response Speed and Item/Examinee Parameter Estimates: Comparison of Response Time Models in IRT.*

CATEGORICAL DATA ANALYSIS 1. Moderator: Cigdem Alagoz

Jie-ting Zhang Min-qiang Zhang and Can Jiao; *Appropriate Application of Criteria in Selecting Multilevel Latent Class Model.*

Daniël W. van der Palm, Jeroen K. Vermunt, and L. Andries van der Ark; *A Comparison of Two Multiple Imputation Methods for Categorical Data: Multivariate Imputation by Chained Equations and Latent Class Analysis.*

Min-qiang Zhang, Yan-hong Gao, Jie-ting Zhang, and Can Jiao; *Application of Latent Class Analysis: Identify Flawed Survey Questions.*

Can Jiao, Jie-ting Zhang, Yan-hong Gao, and Min-qiang Zhang; *Application of Latent Class Model in Binominal Ability Test Analysis.*

DIFFERENTIAL ITEM FUNCTIONING 2. Moderator: Jongmin Ra

David Magis and Paul De Boeck; *Outlier Identification of Differential Item Functioning in Multiple Groups.*

Karen M. Samuelsen and S. Amanda Bramlett; *A Comparison of DIF Detection Procedures for Complex Data.*

Carol Woods and Kevin Grimm; *Identification of Nonuniform Differential Item Functioning Using Multiple Indicator Multiple Cause Models.*

Soonmook Lee and Soochel Yun; *Comparison of MACS and MIMIC Models in Detecting Differential Item Functioning.*

#### PLENARY ACTIVITIES

Lake Herrick Social Event

**Friday, 9th July**

MAHLER AUDITORIUM SESSIONS

DISSERTATION AWARD

Rinke Klein Entink; *Statistical Models for Responses and Response Times.*

INVITED LECTURE

Peter Hoff; *Hierarchical Multilinear Models for Multiway Data.*

KEYNOTE LECTURE

Susan Embretson; *Item Generation Revisited: Psychometric Issues and Models in 2010.*

PRESIDENTIAL ADDRESS

Jos ten Berge; *Simplicity and Typical Rank of Three-way Arrays.*

## ROOM F/G SESSIONS

## COMPUTERIZED ADAPTIVE TESTING 3.

Qiwei He and Bernard P. Veldkamp; *Including Unstructured Textual Information in CAT Prior Selection.*

Yi Zheng, Chih-Hung Chang, and Hua-Hua Chang; *Content-balancing Strategy in Computerized Adaptive Patient-Reported Outcomes Measurement.*

Hsiu-Yi Chao and Jyun-Hong Chen; *Using New Stratification Strategies in CAT Design.*

Chun Wang and Hua-Hua Chang; *Item Selection in Multidimensional Computerized Adaptive Testing—the New Application of Kullback–Leibler Information.*

Usama S. Ali and Hua-Hua Chang; *Developing Item Selection Methods for Polytomous CAT (PCAT).*

## STATE-OF-THE-ART LECTURE

Li Cai; *A Two-tier Full-information Item Factor Analysis Model with Applications.*

## DIAGNOSTIC CLASSIFICATION MODELS 4. Moderator: Laine Bradshaw

André A. Rupp and Olga Kunina-Habenicht; *Sensitivity of Item and Respondent Parameter Estimation to Model Misspecification of Diagnostic Classification Models.*

Hye-Jeong Choi and Jonathan Templin; *Missing Data in Diagnostic Classification Models (DCMs): A Monte Carlo Study.*

Cigdem Alagoz; *An Investigation of Goodness-of-fit Indexes for DINA Model.*

Jimmy de la Torre; *The Partial-Credit DINA Model.*

Andrew Izsák, Joanne Lobato, Bridget Druken, Chandra Orrill, Erik Jacobson, and Laine Bradshaw; *Applying Cognitive Diagnosis Models to Measure Middle Grades Teachers' Multiplicative Reasoning.*

## LONGITUDINAL DATA ANALYSIS 3. Moderator: Laine Bradshaw

Derek Briggs; *Why Aren't States with Developmental Score Scales Measuring Growth?*

Jonathan P. Weeks, Benjamin W. Domingue, and Derek C. Briggs; *Unidimensional versus Multidimensional Vertical Scaling: An Examination of Growth Distortions.*

Jennifer Koran; *Estimation Intensity in Item Response Growth Models.*

Tim Ozechowski, Derek Briggs, and Francis Tuerlinckx; *Item Response Transition Models for Sequentially Coded Observational Data.*

## ROOM K SESSIONS

## ITEM RESPONSE THEORY 8. Moderator: Shanshan Qin

Fumiko Samejima; *Expanding Ways of Application of Graded Response Model.*

Xiao-zhu Jean and Min-qiang Zhang; *The Examinee Ability was Underestimated and Overestimated Under Graded-response Model.*

James S. Roberts and Hi Shin Shim; *Multidimensional Unfolding With Item Response Theory: The Multidimensional Generalized Graded Unfolding Model.*

Shiu-Lien Wu and Wen-Chung Wang; *Extensions of the Generalized Graded Unfolding Model.*

## CLASSICAL CLUSTERING AND MIXTURE MODELS 2. Moderator: Shanshan Qin

Eric Loken and Beau Abar; *Blatant Class Analysis: Identified and Non-identified Latent Class Models.*

Kazuya Ikehara and Hideki Toyoda; *An Improvement of k-means with an Estimation of the Number of Clusters Considering the Relations Between Several Variables.*

Heungsun Hwang and Hye Won Suk; *A Finite Mixture Functional Linear Model for Scalar Responses.*

Matthias von Davier, Bobby Naemi, and Richard Roberts; *Comparing Typological and Factorial Models of Personality Using Latent Structure Models.*

FACTOR ANALYSIS 2. Moderator: Adeya Powell

Kohei Adachi; *A New Formulation of Factor Analysis with Fixed Common and Specific Factors.*

Hongwei Yang and Hamparsum Bozdogan; *Unifying Exploratory and Confirmatory Factor Analysis Using Information Complexity and the Genetic Algorithm.*

Takashi Murakami; *Horseshoe Effect, Difficulty Factors, and Rotation of Factors Obtained from Binary Data.*

#### ROOM L SESSIONS

APPLICATIONS 4. Moderator: Casey Nixon

Peter M. Kruyen, Wilco H. M. Emons, and Klaas Sijtsma; *Test Length and Decision Quality in Personnel Selection.*

Marjan Bakker and Jelte Wicherts; *The (mis)Reporting of Statistical Results in Psychology Journals.*

Kentaro Nakamura; *Development of Scales that Consist of Multiple Subscales using a Genetic Algorithm.*

Rien van der Leeden and Rosa Remmerswaal; *Merits of Multilevel Exploratory Factor Analysis.*

APPLICATIONS 5. Moderator: Casey Nixon

Sevim Sevgi; *Modeling Students Characteristics with Teacher Characteristics.*

Sui Huang; *Contrasting the College Student Engagement Performance of International Students and American Students: A DIF Analysis.*

Valerie J. H. Powell and Jay C. Powell; *A Mastery-Based Approach to Assess Students' Knowledge and Skills Acquisition using Response Spectrum Evaluation (RSE).*

Jay C. Powell and Allan P. Clapp; *Do Profoundly Informed Students Choose Wrong Answers, Lowering Their Scores?*

Gabriela Gonzalez Marin, Samantha Bouwmeester, and Jeroen K. Vermunt; *Detecting Verbal and Visual Memory Strategies in Children using a Latent Variable Approach.*

ITEM RESPONSE THEORY 11. Moderator: Jongmin Ra

Marika Polak, Mark De Rooij, and Willem J. Heiser; *Diagnostics for Single-Peakedness of Item Responses with Ordered Conditional Means (OCM).*

Mark Hansen, Li Cai, and Ji Seung Yang; *Alternative Bifactor Model Specifications: Estimation, Diagnosis, and Consequences of Model Choice.*

Michael T. McGill and Edward W. Wolfe; *Assessing Unidimensionality in Item Response Data via Principal Component Analysis of Residuals from the Rasch Model.*

Jesper Tijmstra, David J. Hessen, Peter G.M. van der Heijden, and Klaas Sijtsma; *Testing Manifest Monotonicity using Order Constrained Statistical Inference.*

#### ROOM Q SESSIONS

DIAGNOSTIC CLASSIFICATION MODELS 3. Moderator: Natalia Alexeev

Yeongyu Lim, Susan Embretson, and John Poggio; *Providing Diagnostic Sources Using Rule Space Model on a State Accountability Test.*

Roofia Galeshi and Gary Skaggs; *Retrofitting TIMSS 2007 Mathematics Test into Cognitive Diagnostic Model by Fusion Model.*

Ping Chen, Tao Xin, Chun Wang, and Hua-Hua Chang; *A Comparative Study on On-line Calibration in Cognitive Diagnostic Computerized Adaptive Testing.*

Elizabeth Ayers and Sophia Rabe-Hesketh; *Latent Regression of Skill Knowledge Parameters in Cognitive Diagnosis Models.*

OTHER PRESENTATIONS 1. Moderator: Sunbok Lee

Satoshi Usami; *Statistical Power of Experimental Research with Hierarchical Data.*

Jee-Seon Kim and Christopher M. Swoboda; *Multiple Imputation Methods for Multilevel Data Using R.*

Todd C. Headrick; *Characterizing Power Method Transformations through the Method of L-Moments.*

Yen Lee and Chung-Ping Cheng; *A Procedure for Simulating Non Normal-Approximated Discrete Distributions.*

ITEM RESPONSE THEORY 10. Moderator: Tugba Karadavut

Leslie Hendrix and Brian Habing; *PPMC for IRT Model Fit using a Fast Discrete Posterior Approximation.*

J. Patrick Meyer; *jMetrik: Open Source Psychometric Software.*

Werner Wothke; *Open Source Estimation Toolkit for Item Response Modeling.*

## ROOM R SESSIONS

STRUCTURAL EQUATION MODELING 3. Moderator: Youn-jeng Choi

Ruud J. H. van Keulen and Klaas Sijtsma; *Some Remarks on Bollen's Conceptualization of Validity Using a SEM Approach.*

Jennifer R. Case and Keith A. Markus; *Identifying Construct Under-Representation.*

Ben Goodrich; *Choosing the Number of Latents with the Indirect Rank-Minimization Algorithm.*

Myrsini Katsikatsou and Fan Yang-Wallentin; *A Review of Thurstonian Models for Ranking Data—What Can We Actually Estimate?*

Anna Brown and Alberto Maydeu-Olivares; *Item Response Modeling of Forced-Choice Questionnaires.*

ITEM RESPONSE THEORY 9. Moderator: Sedat Sen

M. Michele Athay, Sun-Joo Cho, and Leonard Bickman; *Using a Mixture Rating Scale Model with Youth Psychological Treatment Outcome Data: Investigating Prediction Bias for Clinical and Non-Clinical Symptom Severities.*

Pei-Hua Chen and Po Chen; *A Sampling and Classification Approach to Construct Parallel Tests Based on a Multi-dimensional Item Response Theory Model.*

Ying Liu and Jay Verkuilen; *An Item Response Model for Filter Questions with Mixed Response Types.*

Young Yee Kim and Tao Jiang; *Application of Multidimensional Item Response Theory Approach to NAEP.*

## PLENARY ACTIVITIES

Banquet

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