

THE NEBRASKA CENTER FOR RESEARCH ON CHILDREN, YOUTH, FAMILIES AND SCHOOLS

Is Pleased to Present the Spring, 2007 Research Methodology Series

Jim Bovaird received his PhD in Quantitative Psychology from the University of Kansas in 2002. He is currently an Assistant Professor of Quantitative, Qualitative and Psychometric Methods in Educational Psychology at UNL and Co-Director of the CYFS Statistics and Research Methodology Unit. His research interests involve determining the proper use of latent variable methods - including structural equation modeling, item response theory, and multilevel modeling - and applying these methods to advance substantive research in the social and behavioral sciences.

Andy Dwyer obtained his master's degree in Statistics from the University of Nebraska-Lincoln in 2004 and is a doctoral student in Quantitative, Qualitative, and Psychometric Methods in Educational Psychology at UNL. He currently works as a statistical consultant in the Nebraska Evaluation and Research (NEAR) Center. His research interests involve item response theory, subscale estimation methods, and multi-level modeling.

Michael Toland obtained his master's degree in Quantitative and Qualitative Methods in Education from the University of Nebraska-Lincoln in 2002. He is currently a statistics and measurement consultant for the CYFS SRM Unit and Director of the Nebraska Evaluation and Research Center. His research interests involve test development, item response theory, and statistical modeling.

Kevin Kupzyk received his master's degree in Quantitative Psychology from the University of Kansas in 2005. He is now a statistics and measurement consultant for the CYFS SRM Unit and a doctoral student in Quantitative, Qualitative, and Psychometric Methods in Educational Psychology at UNL. His research interests include educational measurement, multilevel modeling, and latent variable growth models.

James Peugh received his PhD in Educational Psychology from the University of Nebraska-Lincoln in 2006. He is currently an Assistant Research Professor in the Department of Psychology at UNL. His research interests include missing data handling techniques, specification search methods, and the impact of assumption violations in advanced statistical analysis techniques (i.e., multilevel SEM, HLM, and latent growth models).

Todd Glover received his PhD in Educational Psychology from the University of Wisconsin-Madison in 2002. He is currently a Research Assistant Professor at CYFS where he conducts large-scale, federally-funded academic and behavioral intervention research.

The Research Methodology Series is an ongoing effort by the Nebraska Center for Research on Children, Youth, Families and Schools (CYFS) to provide information to social science researchers about important and cutting-edge research methodology and statistical approaches. Series presenters include personnel from the CYFS Statistics and Research Methodology Unit, along with invited guests.

The CYFS Statistics and Research Methodology Unit

The CYFS Statistics and Research Methodology Unit provides support to CYFS Faculty Affiliates in the conceptualization of research designs and methodology and the selection and execution of data analyses. Unit personnel are experienced statisticians who specialize in experimental, quasi-experimental, and correlational design methodology; measurement; and cross-sectional, longitudinal, and correlational data analytic approaches (e.g., regression, analysis of variance, structural equation modeling, growth modeling, hierarchical linear modeling). For more information about CYFS or the CYFS Statistics and Research Methodology Unit, contact the CYFS Center Director, Dr. Susan Sheridan, at ssheridan2@unl.edu.



So Your Data Are Not Normal – What’s New?

Friday, January 19, 11:30 AM - 1:00 PM

242 Mabel Lee Hall

Jim Bovaird, PhD, Assistant Professor, Department of Educational Psychology and Co-Director, CYFS Statistics and Research Methodology Unit

Andy Dwyer, MS, Consultant, NEAR Center

Although most standard analytic procedures are based on the notion that the dependent variable is “normally” distributed, the normality assumption is frequently violated in practice. Numerous methods have been developed to help the researcher overcome this assumption violation, including the use of robust standard errors and resampling procedures. The increasing prevalence of nested data structures in education and social science research (students within schools, time points within persons, etc.) has also led to a need for estimating models with nested non-normally distributed data. This presentation will (a) discuss and illustrate the use of robust standard errors and bootstrapping as a means of adjusting for non-normal outcomes, and (b) present specific examples of alternative modeling approaches for count and censored data.

Approaches for Evaluating Measurement Invariance

Friday, February 16, 11:30 AM - 1:00 PM

242 Mabel Lee Hall

Michael Toland, MA, CYFS Statistics and Measurement Consultant and Director, NEAR Center

Kevin Kupzyk, MA, CYFS Statistics and Measurement Consultant

In order for researchers to be able to compare results from an instrument across separate administrations, groups, or samples, the instrument’s measurement invariance must be established. Measurement invariance can be viewed as constructs yielding the same relationships and indicators under different conditions (i.e., stability across groups, over time, between language translations, or between measurement modalities). This presentation will focus on approaches for assessing measurement equivalence/invariance in research by (a) discussing a deeper meaning of measurement invariance and the different levels of invariance, (b) demonstrating approaches for assessing invariance, and (c) presenting a rationale for why its assessment should be considered in your research. Examples of this may include investigating how anxiety is best measured across demographic groups, or assessing the relationship between depression and academic motivation over time.

Analytic Strategies for Dyadic Data

Friday, April 20, 11:30 AM - 1:00 PM

242 Mabel Lee Hall

James Peugh, PhD, Assistant Research Professor, Department of Psychology

Many social and behavioral scientists study interpersonal phenomena, including teacher-student interactions, dating and marital partners, peer relations, friendships, and family relations. This presentation will focus on the statistical techniques available to applied researchers for the analysis of relationships involving two participants, commonly referred to as dyadic data. Specifically, the presentation will include: (a) an overview of terms commonly used to describe various aspects of dyadic data, (b) a review of intermediate (i.e., mixed model ANOVA, pooled regression) and advanced (HLM, SEM, longitudinal) statistical analysis techniques as applied to dyadic data, (c) a special consideration of models and analyses available for social network data, and (d) an example analysis based on a portion of the Newlywed Study database, a longitudinal study that examines marital satisfaction indices among newlywed couples in which one or both members may have experienced one or more forms of childhood maltreatment.

Single Case or Small-N Research Design and Data Analysis

Friday, April 27, 11:30 AM - 1:00 PM

270 Mabel Lee Hall

Todd Glover, PhD, Research Assistant Professor, CYFS

Jim Bovaird, PhD, Assistant Professor, Department of Educational Psychology and Co-Director, CYFS Statistics and Research Methodology Unit

Although single-case or small-n research is commonly conducted in the social and behavioral sciences to investigate the effects of various practices (e.g., the efficacy of interventions), critics often point out the susceptibility of this research to potential confounds and interpretation bias. Several recent alternatives are now available to minimize difficulties commonly associated with the interpretation of effects generated from single-case or small-n research designs. This presentation will provide an overview of such alternatives, including the use of multiple-baseline and time-series designs, nonparametric generalized single-case randomization tests, and effect-size meta-analyses utilizing hierarchical linear modeling. This presentation is well-suited for those interested in improving the quality of single-case or small-n research. Special attention will be given to research methods for investigating the efficacy of interventions.