Summer Virtual Training Session Schedule

Training Session Abstract: Cognitive Diagnosis Modeling: A General Framework Approach and Its Implementation in R

Facilitators: Jimmy de la Torre, *The University of Hong Kong* and Wenchao Ma, *The University of Alabama*

Workshop Date: Wednesday, June 17, 2020 and Thursday, June 18, 9:00am – 1:00pm EST

Pre-Registration Link: [https://form.jotform.com/201535111193140](https://form.jotform.com/201535111193140)

**Please register by June 11, 2020 to receive session materials**

The primary aim of the workshop is to provide participants with the necessary practical experience to use cognitive diagnosis models (CDMs) in applied settings. Moreover, it aims to highlight the theoretical underpinnings needed to ground the proper use of CDMs in practice. In this workshop, participants will be introduced to a proportional reasoning (PR) assessment that was developed from scratch using a CDM paradigm. Participants will get a number of opportunities to work with PR assessment-based data. Moreover, they will learn how to use GDINA, an R package developed by the instructors for a series of CDM analyses (e.g., model calibration, evaluation of model appropriateness at item and test levels, Q-matrix validation, differential item functioning evaluation). To ensure that participants understand the proper use of CDMs, the theoretical bases for these analyses will be discussed. The intended audience of the workshop includes anyone interested in CDMs who has some familiarity with item response theory (IRT) and R programming language. No previous knowledge of CDM is required. By the end of the session, participants are expected to have a basic understanding of the theoretical underpinnings of CDM, as well as the capability to conduct various CDM analyses using the GDINA package.

Training Session Topic: Using Stan for Bayesian Psychometric Modeling

Facilitators Yong Luo, *Educational Testing Service* and Manqian Liao, *University of Maryland*

Workshop Date: Friday, June 26, 2020, 1:00pm – 5:00pm EST

Pre-Registration Link: [https://form.jotform.com/201534390711144](https://form.jotform.com/201534390711144)

**Please register by June 18, 2020 to receive session materials**

This session will provide audience with systematic training on Bayesian estimation of common psychometric models using Stan. The estimation of model parameters for common psychometric models will be illustrated and demonstrated using Stan, with a particular emphasis on IRT models. Further the advantages and disadvantages of Stan comparing to traditional Bayesian software programs such as OpenBUGS and JAGS will be discussed. This session consists of lecture, demonstration, and hands-on activities of running Stan. It is intended for intermediate and advanced graduate students, researchers, and practitioners who are interested in learning the basics and advanced topics related to parameter estimation of common psychometric models using Stan. It is expected the audience will have some basic knowledge of the Bayesian theory, but not required. Attendees will bring their own laptop and download the software program free online. It is expected that attendees will master the basics of writing Stan codes in running standard and
extended psychometric models; further they can develop Stan codes for new psychometric models for their own research and psychometric modeling.

**Training Session Topic:** Examining the Consequences of Assessment Design and Use Because Assessment Matters

**Facilitators** David Slomp, *University of Lethbridge* and Maria Elena Oliveri

**Workshop Date:** Wednesday, July 15 1:00pm – 5:00pm EST

**Pre-Registration Link:** [https://form.jotform.com/201534572302142](https://form.jotform.com/201534572302142)

**Please register by July 7, 2020 to receive session materials**

The session will describe and illustrate consequences of test use and demonstrate approaches to mitigate unintended negative ones. By using a mixture of lecture, hands-on exercises, and group work, participants will:

- Learn how to systematically examine the consequences of assessment design and use for both classroom and large-scale assessment programs
- Identify the unintended consequences of testing, generate examples of relevant unintended consequences, and create strategies to mitigate them
- Understand the connections between unintended consequences, professional standards, and validity
- Become familiar with and actively apply two approaches—Integrated Design and Appraisal Framework (IDAF; Slomp, 2016) and Theory of Action (ToA; Bennett, 2010)—for identifying and mitigating unintended consequences of testing and increasing the use of intended ones.

An overview of the literature on the consequences of assessment design and use will be provided, with illustrations applied to decisions made when developing an assessment program. Participants will be guided through case studies illustrating the application of the IDAF and ToA models to this assessment context. Participants also will work collaboratively on building an action plan, extrapolated from these frameworks, that they will apply to a case study.

**Training Session Topic:** A Visual Introduction to Computerized Adaptive Testing

**Facilitators** Yuehmei (May) Chien, *NWEA* and David Shin, *Pearson*

**Workshop Date:** Friday, August 28, 2020, 2:00pm-4:00pm EST

**Pre-Registration Link:** [https://form.jotform.com/201534818711149](https://form.jotform.com/201534818711149)

**Please register by August 20, 2020 to receive session materials**

The training will provide the essential background information on operational computerized adaptive testing (CAT) with an emphasis on CAT components (including ability estimation, item exposure control and content balancing methods--weighted penalty model and shadow tests) and CAT simulation. Besides the traditional presentation through slides, this training consists of demonstrations of several CAT key concepts with visual and interactive tools and a CAT simulator. Practitioners, researchers, and students are invited to participate. A background in IRT is recommended. Upon completion of the workshop, participants are expected to have

1) a broader picture about CAT;
2) a deeper understanding of the fundamental CAT techniques;
3) appreciation of the visual techniques used to analyze and present results in an intuitive and pleasing way.