Foundations and Applications of the Rasch Model

Higher School of Economics
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Summer School 'Applied Psychometrics in Education and Psychology'

Instructors

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Course Description

The course **"Foundations and Applications of the Rasch Model"** by Profs. Christine Fox and Svetlana Beltyukova aims to introduce participants to the principles of objective measurement and build the foundation for using two most common Rasch measurement models: the Rasch model for dichotomous data and the Rasch Rating Scale model. The former is widely used in testing pass/fail situations while the latter is applicable in the analysis of survey or assessment data comprised of ratings. Both models provide rich item and person diagnostics that allow test developers and users to evaluate the extent to which the instrument meaningfully measures intended content in addition to making objective comparisons of scores across subgroups of interest and over time. Partial Credit Model and Rasch Regression will also be introduced.

Learning Objectives:

- Verbalize the principles of fundamental measurement
- Choose and interpret basic Rasch diagnostics
- Construct and run a WINSTEPS control file for a Dichotomous Model
- Interpret outputs for a Dichotomous Model
- Run a WINSTEPS control file for a Rating Scale Model
- Interpret outputs for a Rating Scale Model
- Recognize the need for the Partial Credit Model
- Describe the difference between the Rating Scale and Partial Credit models
- Choose user-friendly scales and outputs for presenting findings
- Identify and make decisions about misfitting persons and items
- Identify and interpret Differential Item Functioning
- Identify and make decisions about redundant items
- Construct iterative control file for Rasch Regression
- Interpret outputs within larger validation framework

Detailed Schedule

Note: Time allotment to specific topics may shift as we develop course materials.

Time/# Hours	Topic
Monday	
9:00–11:00 (2 hours)	Introductions and Overview of the Training Fundamental Measurement Validation Framework by Wolfe and Smith
11:00–11:30	*Coffee Break*
11:30–13:00 (1.5 hours)	Conceptual and Mathematical Foundations of The Rasch Dichotomous Model
13:00–14:00	*Lunch*
14:00–16:00 (2 hours)	Basic Rasch Diagnostics: Reliability, Fit, Dimensionality, Person-Item Map
16:00–17:30 (1.5 hours)	Creating a WINSTEPS Control File
Tuesday	
9:00–11:00 (2 hours)	Running WINSTEPS File and Interpreting Output
11:00-11:30	*Coffee Break*
11:30–13:00 (1.5 hours)	The Rating Scale Model
13:00-14:00	*Lunch*
14:00–16:00 (2 hours)	The Rating Scale Model (cont'd)
16:00-17:30 (1.5 hours)	Overview of the Rating Scale Control File (measure of empathy) Running WINSTEPS File and Interpreting Output
Wednesday	
9:00–11:00 (2 hours)	Guided Practice Session: Constructing a measure (readiness to change measure)
11:00-11:30	*Coffee Break*
11:30–13:00 (1.5 hours)	Guided Practice Session: Constructing a measure (readiness to change measure)
13:00-14:00	*Lunch*
14:00–16:00 (2 hours)	Summer School Sight-Seeing Tour
Thursday	
9:00–11:00 (2 hours)	Advanced Diagnostics: Differential Item Functioning, Person Misfit, Redundancy Analysis
11:00-11:30	*Coffee Break*
11:30–13:00 (1.5 hours)	User-Friendly Scales and Presentation of Results
13:00-14:00	*Lunch*
14:00–17:30 (3.5 hours)	Introduction to Partial Credit
Friday	
9:00–11:00 (2 hours)	Introduction to Rasch Regression
11:00-11:30	*Coffee Break*

11:30–13:00 (1.5 hours)	Guided Practice Session: Rasch Regression
13:00-14:00	*Lunch*
14:00–17:30 (3.5 hours)	Guided Practice Session: Rasch Regression
Saturday	
9:00–11:00 (2 hours)	Wrap-Up
11:00–12:30 (1.5 hours)	Feedback and certificates