FALL 2023, VOL. 36 NO. 2; ISSN 1051-0796

RMT

RASCH MEASUREMENT TRANSACTIONS

Transactions of the Rasch Measurement SIG
American Educational Research Association

Overview of The Issue

The Fall 2023 issue of RMT includes a mix of notes and announcements that may be interesting to Rasch measurement researchers.

First, we have two announcements from the AERA Rasch Measurement SIG Chair Trent Haines. The first is a request for nominations for the Benjamin Drake Wright Senior Scholar Award. The second is a call for nominations for Rasch Measurement SIG Officers.

Next, we have the Presidential Address given by George Engelhard, Jr. in August 2023 at the Pacific Rim Objective Measurement Society in Macau.

Third, we have included an announcement about the 1st Scandinavian Applied Measurement Conference.

We end the issue with information about upcoming Rasch-related courses.

As always, we welcome your contributions to the next issue for RMT. We would appreciate receiving your research note, conference or workshop announcement, etc. by December 1, 2023. Please contact Stefanie at swind@ua.edu to submit something for inclusion.

Sincerely,
Stefanie A. Wind & Leigh Harrell-Williams

Rasch Measurement Transactions
www.rasch.org/rmt
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Two Announcements from Rasch Measurement SIG Chair, Trent Haines

Solicitation of Nominations for the Benjamin Drake Wright Senior Scholar Award

The Benjamin Drake Wright Senior Scholar Award shall be presented to an individual senior scholar for outstanding programmatic research and mentoring in Rasch measurement over the course of a career and who is still active in Rasch measurement research at the time the award is granted. It will be offered for the fifth time in 2024. The award is open to scholars worldwide. Membership in AERA or Rasch Measurement SIG is not required of the nominee.

Eligibility Criteria for the Benjamin Drake Wright Senior Scholar Award
The Rasch Measurement SIG will bestow the Benjamin Drake Wright Senior Scholar Award upon a senior scholar who is active in Rasch measurement research at the time the award is granted (as attested to, for example, by research publications of recent date or current doctoral advisees) and who is nominated by members of the community as an exemplar in regard to the following two basic criteria. Potential nominees will have

designed and carried out programmatic research that originates in Rasch measurement and helps understand crucial phenomena in model definition, parameter estimation, fit assessment, construct specification, novel applications, the place of Rasch measurement in the history and philosophy of science, etc., as represented in a corpus of writings and research projects that have contributed to the theoretical development of the field as well as having been grounded empirically; AND

developed the research capacity of the field, as attested to by the existence of a "school of thought" or intellectual heritage associated with the scholar's name, a heritage that includes other individuals whom the scholar has had a direct influence in encouraging and helping become productive in Rasch measurement research or an identifiable domain of

Rasch measurement research within which the nominee's constructs and results are used regularly by other researchers.

The Rasch Measurement SIG recognizes also that other features of a person's work might add to the criteria above, strengthening a nomination. Among the criteria that could add to the basic ones is one or more of the following. The nominee may also have made

a) major contributions to broader fields of research in education, psychology, health care, or the social sciences, as represented by his or her participation (as author, speaker, or consultant) in research forums from fields other than Rasch measurement or by the recognition of his or her scholarship in other fields of inquiry (inclusive of all of educational research and the social sciences); OR

b) major impact on the practice of Rasch measurement, as represented by the existence of policy documents, curriculum materials, professional development programs, or a corpus of practitioner- or public-oriented literature to which the nominee has significantly contributed as an author.

The Award

The award includes a plaque which will be awarded at the 2024 AERA business meeting. The recipient will also be invited to address the 2025 Rasch SIG business meeting at AERA conference. An honorarium is included, and some travel reimbursement may be available. Nominations should include (and are restricted to) the following Individuals will be nominated via a letter of nomination emailed to the Convener of the Awards Committee proposing the name of the nominee and describing the grounds on which the nominee meets the requirements for the award. Three criteria should be addressed in the letter:

- A brief (no more than 250-word) description of the program of research carried out by the nominee;
- A list of significant publications representing the contributions described; and a list of scholars who have been significantly affected by

the work of the nominee. The list of scholars may include, but need not be limited to, doctoral students who worked with the nominee. Current contact information for the list of scholars should also be included in the nomination.

- The nominee's CV.

Self-nominations will not be accepted. The deadline for nominations is Friday January 12, 2024. Nominations are submitted by sending an email with nomination criteria to the SIG Secretary, Haiying Long, at hlong@ku.edu.

Call for Nominations for Rasch Membership Officers for 2024- 2026

Dear Rasch SIG Members,

We are writing to encourage you to submit nominations for the officers of the Rasch Measurement SIG. The following positions on the Rasch Measurement SIG are open for election. The length of the term is indicated in parentheses, and all terms start at the end of the 2024 AERA Annual Meeting.

- Chair (2 years)
- Secretary (2 years)
- Treasurer (2 years)

AERA policy requires that all elections be competitive; that is, there must be two or more candidates for each elected office. Only Regular Members of AERA can run for office. Candidates must also be current members of the SIG and of AERA to serve as an officer. Self-nominations are welcome. Members who wish to nominate a candidate for consideration, or self-nominate themselves, should send a one-page biography including the qualifications of the nominee to Dr. Eli Jones (Rasch SIG Treasurer) at eli.jones@memphis.edu. Nominations are due on October 20, 2023.

Duties and Responsibilities of The Officers

Chair: The Chair shall be responsible for the general administration of the SIG, for ensuring that the SIG Bylaws are followed, and shall act as liaison between the SIG and AERA and the SIG and the SIG Executive Committee. The Chair shall preside at all meetings of the SIG's Executive Committee and at the Annual Business Meeting. The Chair shall act as parliamentarian or shall appoint a SIG member to serve in that role

for each meeting. The Chair shall appoint ad hoc committees as needed and shall appoint persons to assist officers, to chair committees, or to carry out other work of the SIG.

Secretary: The Secretary shall be responsible for managing any official correspondence and meeting minutes of the Rasch SIG. This person will also be responsible for maintaining the Rasch SIG website or appointing an appropriate representative as need.

Treasurer: The Treasurer shall be responsible for managing and reporting on the financial accounts of the Rasch SIG and the safe keeping of all financial documents of the Rasch SIG.

For more information about Rasch Measurement SIG, please check out our website and follow us on Facebook.
Website:
https://www.aera.net/SIG083/Rasch-Measurement
Facebook:
https://www.facebook.com/groups/raschmeasurement

Thank you for your involvement in and commitment to the Rasch community.

R. Trent Haines, Chair of Rasch SIG
Eli Jones, Treasurer of Rasch SIG
Haiying Long, Secretary of Rasch SIG

Presidential address to the Pacific Rim Objective Measurement Society (PROMS 2023): *Invariant measurement and the three traditions of measurement*

I am delighted to have the opportunity to share with you my views regarding invariant measurement and Rasch measurement theory. In preparing for this presidential address, I wondered about my long-term commitment to studying and teaching about Rasch measurement theory. I first met Ben Wright at the University of Chicago in the summer of 1977 (45 years ago). He shared with me his ETS lecture (Wright, 1968), and an article by Bruce Choppin (1968). Needless to say, I very quickly became hooked on these new ideas regarding item-invariant person measurement and person-invariant item calibration. In addition to the power of these ideas, Ben Wright made a strong case for why measurement should

meet the requirements of invariant measurement. Recently, the work of Sinek (2011) on successful leaders has introduced a golden circle model that argues for the importance of stressing why before dealing with the what and how in business and other endeavors. Ben Wright knew why we needed objective measurement, he made it clear how to use Rasch measurement theory to achieve this goal, and he stressed the what in terms of the creation of invariant measures. I view the why, how, and what as follows:

Why: Our goal is to create measures to represent key constructs for improving human sciences (theory, research, and practice).

How: These measures are clearly defined based on scientific principles related to invariance using Rasch measurement theory.

What: These invariant measures can be used to discover invariant structural relationships.

Invariant measurement is the use of scientific principles to guide measurement. As pointed out by Simon (1990), who was a cognitive scientist, "the fundamental goal of science is to find invariants" (p. 1). Various measurement theories offer us different perspectives on invariance, and I have found it useful to identify three traditions of measurement: test score, scaling, and structural traditions. These traditions have the characteristics of paradigms, and they also provide different lens for seeing and not seeing a variety of measurement issues.

Examples of measurement theories within each tradition are shown in Figure 1. The test-score tradition includes classical test theory and generalizability theory. Measurement theories in the test-score tradition focus on sum scores using linear models (e.g., classical test theory) with the goal of estimating and reducing error variance. The scaling tradition includes item response theory models and the family of Rasch models with a focus on item-person responses using non-linear models (e.g., the logistic function). The goal is to estimate invariant measures to create a continuum to represent a latent variable or construct. Finally, the explanatory tradition includes path analysis and factor analysis models that are frequently combined to form structural equation models. The structural tradition is concerned with the identification of invariant relationships between variables.

An exciting recent development in measurement is the recognition that Rasch

models can be estimated using generalized linear mixed models (GLLMs). De Boeck

Figure 1

The three traditions of measurement theories

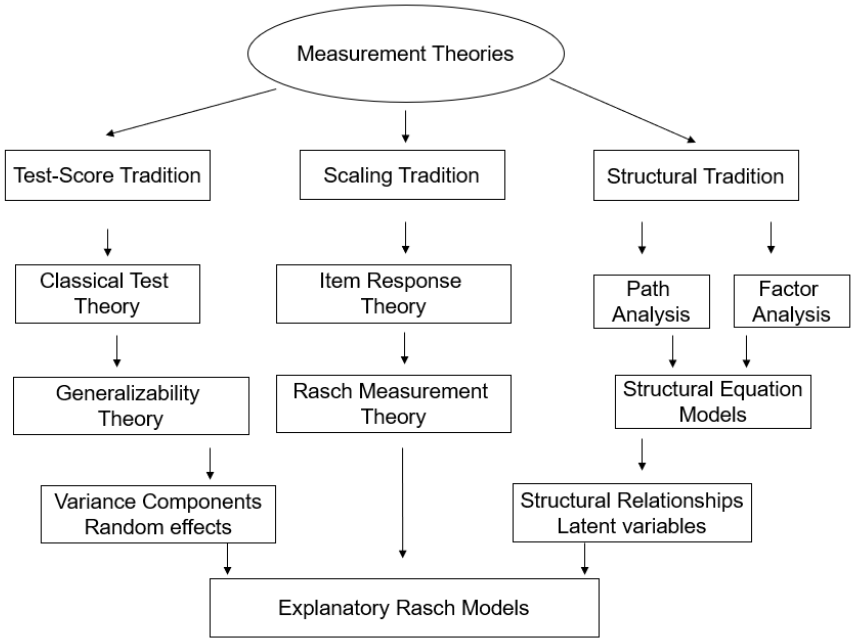
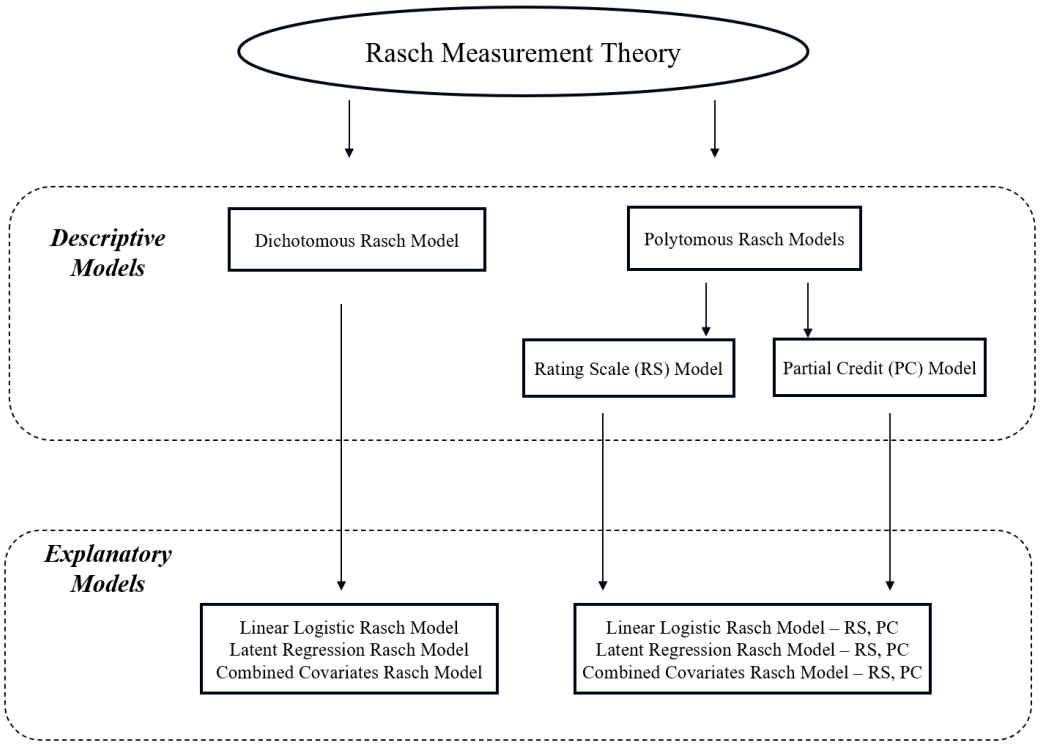


Figure 2

Descriptive and Explanatory Rasch Models



and Wilson (2004) made an important distinction between descriptive and explanatory item response models. Descriptive models do not include any covariates in the model, while explanatory models include both item and person covariates. GLMMs can be used to develop a variety of explanatory Rasch models, and to construct a bridge between the scaling and structural traditions from a Rasch measurement perspective. Since GLMMs also include random effects, there are aspects of these models with implications related to the test-score tradition with its emphasis on variance components.

Jue Wang and I recently described the Rasch model for dichotomous data including applications for solving measurement problems (Engelhard & Wang, 2021). Explanatory Rasch models will be described and illustrated in my new book with Stefanie Wind (Engelhard & Wind, in preparation). Explanatory Rasch Models include:

- Linear Logistic Rasch Model with item covariates
- Latent Regression Rasch Model with person covariates
- Combined Covariates Rasch Model with both item and person covariates

The explanatory Rasch models are within the structural tradition, and they can be estimated with generalized linear mixed models to yield a broader framework for exploring invariant measurement and relationships.

A map of the descriptive and explanatory Rasch models is shown in Figure 2. Descriptive Rasch models include dichotomous and polytomous models (Rating Scale and Partial Credit Models). Multifaceted models can also be considered descriptive Rasch models. These models can be extended by adding item and person covariates to yield a number of exciting explanatory models. In the next few years, I predict that this will be an active and exciting area of progress related to Rasch measurement theory.

In summary, invariance is a key concept in science and measurement. The creation of invariant measures to represent key constructs, and the discovery of invariant relationships between these constructs is major goal of the human sciences. I leave you with the final thought that Einstein regretted that he called his theory "relativity theory" instead of naming it "Invariantentheorie" (Nozick, 1998, p. 22).

My hope is that the Rasch measurement community will continue its pursuit of invariant measurement with the added goal of discovering of invariant relationships guided by this broader perspective on why we are engaged in this quest.

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George Engelhard, Jr.
The University of Georgia

Conference Announcement

1st Scandinavian Applied Measurement Conference (SAMC)

June 12-14, 2024

Kristianstad University

Kristianstad, Sweden

The Scandinavian Applied Measurement Conference (SAMC) aims to facilitate interaction and knowledge exchange among researchers, practitioners, and students.

The SAMC theme is applied measurement, focusing on rating scales and other category-based measurement and assessment instruments. Papers on the development, evaluation and quality assurance of such instruments using Rasch measurement theory and related approaches are welcome. Person-centred measurement, which emphasize the role of the individual person in the measurement process and analyses, as well as the use and interpretation of results at the level of the individual person, is encouraged. The conference will be multidisciplinary and cover fields such as the health, social, educational, behavioral, and related sciences.

Abstract submissions opened on September 18, 2023.

Submission deadline: December 15, 2023

For more information and updates, please visit the SAMC website:
www.hkr.se/samc2024

We look forward to seeing you in 2024!

Organizing committee:
Prof. Peter Hagell, Kristianstad University, Kristianstad, Sweden

Prof. Karl Bang Christensen, University of Copenhagen, Copenhagen, Denmark

Dr. Jeanette Melin, Research Institutes of Sweden (RISE), Gothenburg, Sweden

Prof. Albert Westergren, Kristianstad University, Kristianstad, Sweden

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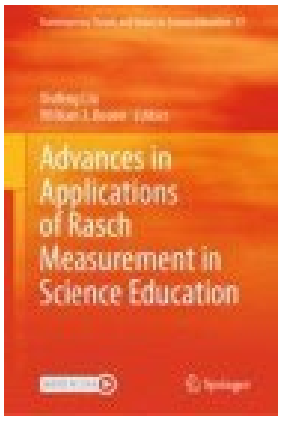
Book Announcement



Advances in Applications of Rasch Measurement in Science Education was recently released by Springer. This edited volume presents latest development in applications of Rasch measurement in science education. It includes a conceptual introduction chapter and a set of individual chapters. The introductory chapter reviews published studies applying Rasch measurement in the field of science education and identify important principles of Rasch measurement and best practices in applications of Rasch measurement in science education. The individual chapters, contributed by authors from Canada, China, Germany, Philippines and the USA, cover a variety of current topics on measurement concerning science conceptual understanding, scientific argumentation, scientific reasoning, three-dimensional learning, knowledge-in-use and cross-cutting concepts of the Next Generation Science Standards, medical education learning experiences, machine-scoring bias, formative assessment, and teacher knowledge of argument. There are additional chapters on advances in Rasch analysis techniques and technology including R, Bayesian estimation, comparison between joint maximum likelihood (JML) and marginal maximum likelihood (MML) estimations on model-data-fit, and enhancement to Rasch models by Cognitive Diagnostic Models and Latent Class Analysis. The volume provides readers who are new and experienced in applying Rasch measurement with advanced and exemplary applications in the forefront of various areas of science education research.

More information can found on the publisher's website: https://link.springer.com/book/10.1007/978-3-031-28776-3

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