



Symposium on Rasch Analysis

Monday 6 June 2016

Time	Activity	Presenter
12.15	Lunch	
12.45	<p>Multiple choice items in assessments of mathematical competence</p> <p>While multiple-choice (MC) items are seen by some researchers and teachers as less than ideal ways to collect data about student achievement, they continue to be used in large-scale assessments and an examination of how they function is warranted. Rasch Measurement Theory can be applied to students' responses to MC items and a scale of difficulty for the items can be produced. It is also possible when applying the theory to determine the extent to which particular incorrect options (distractors) are selected by students in different ability groups. Where some incorrect options are more attractive to students than others, an examination of the item can suggest that the students selecting these particular distractors have some, but not all, knowledge of the item content. Rescoring such items can provide these students with credit for their partial knowledge and hence provide a more valid measure of student achievement.</p>	Joan Burfitt
1.30	<p>Students' understanding of mathematics: measuring concepts, assessing achievement</p> <p>Mathematics exams tend to assess general achievement through testing procedural knowledge across a sample of mathematical domains. One reason for this focus on procedural knowledge rather than conceptual understanding is that the latter has traditionally been very difficult to assess validly and reliably. Recently we have developed a technique based on comparative judgement for measuring understanding of specific mathematical concepts (e.g. "fractions"). Our findings have shown the approach to be valid and reliable for conceptual measurement across a range of concepts, contexts and age ranges. I will present current research exploring whether such measurements of students' understanding across a sample of concepts can be aggregated to construct an assessment of general mathematical achievement. The findings suggest that the comparative judgement technique, if carefully designed and executed, produces valid and reliable estimates of students' general achievement. This has implications for improving the quality of mathematics resources, teaching and learning.</p>	Ian Jones
2.15	Break	
2.30	Rasch Workshop	David Andrich
4.00	Tea	
4.30	<p>Rasch Measurement Theory: Controversy in constructing measurements in the social sciences</p> <p>Rasch measurement theory, based on the work of the Danish Mathematician and Statistician, Georg Rasch, has been studied and applied extensively since Rasch's original publications in the 1960s. The theory involves a restricted class of probabilistic models for the responses of students to items, and is based on a requirement of invariance of comparisons. It has been applied in analysing data in the social sciences, including psychology, health outcomes, and educational assessment – the OECD Program for International Student Assessment (PISA) having a high public profile. However, the measurement theory has been controversial, both in applied work and in academic discourse, especially in contrast to item response theory. The presentation will outline the Rasch measurement theory, its source of controversy, and a comparison and contrast with item response theory.</p>	David Andrich