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Item Response Theory for creativity measurement: A Primer

Item-Response Theory (IRT)/Modern Test Theory represents a key advance in measurement theory (Borsboom, 2006). Yet, it is largely absent from curricula and psychological testing textbooks (as well as popular statistical software}, or only introduced through a limited set of models for binary test data, leading to its very modest success beyond mental ability tests. This book, intended for at creativity and innovation researchers and researchers-in-training, will aim to provide:

1. an overview of the shortcomings of Classical Test Theory (CTT) for a number of creativity measurement situations (e.g., fluency scores, consensual assessment technique ratings, etc.);
2. a concise introduction to IRT and its core concepts (latent variables, item response functions, test/item information, local independence, monotonicity, etc.) with only a minimal amount of mathematics – as a side note, this section will borrow from Mellenbergh's (2004) Generalized Linear IRT (GLIRT) approach, which notably incorporates CTT models as particular cases of IRT;
3. an overview and breakdown of IRT models and how they differ in structure (unidimensional, bifactor, etc.), response function (linear, logistic, exponential, etc.) and item distribution (normal, binomial, multinomial, Poisson, etc.), with directions regarding the available software that can be used to estimate them;
4. a few example applications from creativity research (because a list could not be exhaustive, I project that the examples will serve to demonstrate an analytic framework that can be reused in many situations); and
5. ideas for future work that could advance how IRT could better benefit creativity research, as well as connections with other popular frameworks (e.g., psychometric networks).