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Book Review

Review of: *The rationality quotient: Toward a test of rational thinking* (K. E. Stanovich, R. F. West, & M. E. Toplak) MIT Press: Cambridge, MA ((hbk), xvii, 459 pp.), ISBN: 978-0-2620-3484-5

From Newton's experiments with alchemy to Conan Doyle's investigations of spirits and fairies, we all have our favourite example of conventionally intelligent people doing highly irrational things. The new book by Keith Stanovich, Richard West, and Maggie Toplak, *The Rationality Quotient*, aims psychometrically to quantify this irrationality, describing a new test for doing so. Perhaps as you'd expect from Stanovich, who previously wrote a book called *What Intelligence Tests Miss* (Stanovich, 2009), rationality is set up as something standard IQ tests "ignore" (p.16). Indeed, one of the blurbs on the book's cover states that it "challenges the century-old citadel of psychometric intelligence". As we'll see, however, the book's very own data show that these claims are false.

The theory of rationality discussed in the first part of the book is derived from the 'judgment and decision-making' tradition in psychology (e.g. Tversky & Kahneman, 1974). Critical is the 'dual-process theory' of the mind, the idea that irrationality comes when our primal, unconscious, 'fast' cognitive system (System 1) is inadequately inhibited by our deliberative, conscious, 'slow' system (System 2; Kahneman, 2011; though Stanovich et al. propose some more complex models). Stanovich et al. describe this tendency to underuse System 2 as 'cognitive miserliness' (a phrase I appreciate: being from Scotland, I know a great many misers, both cognitive and otherwise). They hypothesize that, in the same way that people differ in terms of their matrix reasoning ability or their memory, they differ in the extent to which they are cognitive misers. This is the basis of the newly-proposed test, the Comprehensive Assessment of Rational Thinking (or CART).

Describing the subtests of the CART, and the results from samples Stanovich et al. collected to develop it, is the focus of the book. We are taken through 'cognitive reflection', 'anchoring' effects, probabilistic reasoning problems such as the 'conjunction fallacy' (the famous 'Linda is a bank teller' riddle you may recall from psychology textbooks), and more. The descriptions and background given here will be useful for readers who are more used to 'orthodox' IQ measures.

Toward the end of the book, the authors report results from the full-form CART, which includes 20 subtests administered across many (often unpublished) studies. For a book that debuts a new instrument, the discussion is somewhat psychometrics-light: the authors pose questions about the structure of the CART (for instance, to what extent there is a *g*-factor of rationality in the same way there is for intelligence), but don't really get into answering them, beyond a single, cursory principal components analysis (Table 13.9). They do report correlation matrices, though (Table 13.8), so enterprising researchers could go beyond their simple analyses.

But it was the reported correlation of the CART with IQ-type tests that was really unexpected, given the authors' argument that they measure very different constructs. A cognitive composite—made up of tests of analogies, antonyms, and a word checklist (Table 13.11)—was found to have a correlation with the full-scale CART of 0.695. 0.695! The CART thus shared over two thirds of its variance with standard IQ-type tests (and those tests explained nearly 50% of the variance in the CART; one would expect this percentage to be even larger were latent variables rather than sum-scores used, and were a fuller IQ measure taken). So much for 'what intelligence tests miss'. If this is an assault on the citadel of intelligence testing, the attacking army forgot to bring any battering rams.

So IQ tests do, to a substantial degree, tap rationality (and this isn't a shock, given Spearman's (1927) principle of 'the indifference of the indicator'). Maybe, though, rationality tests predict important outcomes over and above IQ. Bafflingly, however, Stanovich et al. explicitly say in their Preface that they're not "concerned with the issue of incremental validity" (p.xii). Why not? Anyone proposing a new measure—especially if they have made a great deal out of what the old measure 'misses'—needs to show that their measure has incremental validity, lest they commit the 'jangle' fallacy of erroneously assuming a test score tells us something novel or different just because it has a different name (or superficially different content; Deary, 2000).

Don't get me wrong: Stanovich et al. have done the field a service in collating the rationality measures, formalizing them into the CART, and establishing their relation with IQ. The CART's link to IQ is strong, though not perfect; there is still room for smart people to do stupid things, and for some of that stupidity to be explained by poor rationality. To continue to investigate rationality is eminently sensible. But to continue framing it as a major hole in the edifice of intelligence testing seems—if you'll forgive me—rather irrational.

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