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Book review

David J. Bartholomew, Measuring Intelligence: Facts and Fallacies, 2004, Cambridge University Press, Cambridge, UK, ISBN 0 521 83619 0 hbk, 0 521 54478 5 pbk. Pp. xiv + 172

In the last ten years some good general introductions to the contemporary research in human cognitive abilities have been written by psychologists (Mackintosh, 1998; Deary, 2001) and even journalists (Seligman, 1993). Bartholomew's book is the first one that approaches the subject from a statistician's perspective. Although quite a lot of material is packed into less than 200 pages, the author manages to present his ideas in a way that is both accessible to the general reader and useful to scholars in the relevant fields.

In a short historical introduction, two lines of research are traced that developed separately but later converged: one focused on IQ as a manifest variable (an empirical index obtained directly through scores on mental tests); and the other focused on the *g*-factor as a latent variable (the result of statistical inference and possibly having a biological reality). In the central part of the book this opposition between IQ and *g* is also used to a good effect to clarify a number of conceptual issues and to explain theoretical advantages of the *g*-oriented research.

For example, although switching from a relatively easily measurable magnitude like IQ to an apparently dubious and unobservable construct like *g* might look like a move in the wrong direction, especially to those with an empiricist turn of mind, Bartholomew shows that it is actually "the first step out of the morass." IQ as an index suffers from irremediable arbitrariness of selection of its test items, whereas *g* is largely stripped of such impurities through a process of statistical extraction. Main contours of this process are described in a completely non-mathematical way and with some nice and very helpful analogies from other, non-psychological contexts. Again, the core section on the epistemological and theoretical status of *g* gives outsiders a glance into this rather technical part of psychometrics but at the same time it has something to offer to those more statistically minded as well (e.g. the explanation of the difference between principal components analysis and factor analysis).

Bartholomew also tries to correct some of the widespread misconceptions about the measurement of intelligence. The main target of his criticism is Steven Jay Gould's book *The Mismeasure of Man*. Even here the distinction between IQ and *g* comes in handy: it is shown that the standard objection (raised by Gould and others) that intelligence cannot be captured by a single number does apply to IQ but not to *g*.

But the main complaint about Gould is that he was simply not in contact with the relevant literature: already with his views about factor analysis in the first edition of the Mismeasure, "Gould was half a century out of date." His attempt to justify his later decision to publish the second edition without even mentioning, let alone discussing, the research between 1981 and 1996 "is, at best, a dangerous and patronizing half-truth unworthy of any serious attempt to treat such an important issue." It is also

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suggested, with excellent reasons, that Gould's persistent empirical claim that there is no correlation between IQ and brain size "can now only be maintained if one ignores a substantial research literature on the subject."

Much of this criticism of Gould is not new. For instance, Carroll (1995) has said about Gould's treatment of factor analysis that "Gould had not done his homework properly", and Rushton (1997) raised many damaging objections to Gould's scholarship in an extensive book review of the second edition. Yet it is worth reviving these criticisms, basically for two reasons. First, Gould's book continues to be taken as the last word on these matters by many laymen, and even by a number of scholars (outside of research on intelligence proper), so some debunking, or at least injecting a healthy dose of skepticism is still in order. Second, however unfortunate this may be, it is simply a fact that, nowadays, the views of someone like Rushton are being automatically dismissed in some quarters because of his views on race differences. Therefore, some points he made against Gould, as cogent as they may be in themselves, are unlikely to get a wider hearing unless they are made again by scholars with an untainted public image.

Bartholomew's discussion of the heritability of intelligence explains well the central methodological problems of this research and summarizes its main results. He shows that if *g* is not interpreted as a mere statistical extraction from the correlations of specific cognitive abilities, but is taken to refer to a property of the brain, the high magnitude of its heritability is guaranteed in an almost tautologous fashion. One thing that might be terminologically confusing to behavior geneticists is that, when speaking about confounding of genetic and environmental influences on intelligence, Bartholomew occasionally uses the term "interaction" for what is in the literature usually described as "correlation" (e.g. in his comments on Dickens' and Flynn's views).

The brief chapter on intelligence differences between groups is especially commendable for its thoughtfulness and good judgment as well as for not avoiding making claims about socially sensitive issues. Faced with the politically explosive question about heritability of race differences in intelligence, many scholars tend to take refuge in the (correct) statement that the available empirical evidence cannot resolve the issue beyond reasonable doubt. They stop just there and never take the discussion to the next stage, which most people expect to be addressed, and rightly so. Namely, if neither of the two answers (zero or non-zero heritability) cannot be conclusively proved, is there then at least some way to compare the plausibility of these two views?

Bartholomew, however, enters the fray, and although for reasons of space he is clearly unable to justify his position adequately, he ventures an opinion that, in this context, the hereditarian standpoint is actually better supported by evidence than pure environmentalism. It is indeed refreshing to see a scholar who does not take the line of least resistance and does not seize on the lack of certainty as a welcome opportunity abruptly to terminate the debate about this controversial topic. Clearly, even if certainty eludes us, it may still be possible to evaluate the rival theories on the basis of preponderance of evidence. Paraphrasing the well known advice that one should not let the best be the enemy of the good, the slogan here should be: Do not let the certain be the enemy of the plausible.

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