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Clocking the mind: Mental chronometry and individual differences, Jensen A.R., Elsevier, Amsterdam (2006), ISBN: 0-08-044939-5 (pp. xi+ 272)

Arthur Jensen's latest book, "Clocking the Mind" (henceforth CtM), will please the student but plague the researcher. It will please the student because the book provides a simple summary of the literature on the relation between general intelligence and response speed in elementary cognitive tasks. On top of this, the student is provided with a clear-cut interpretation of the findings: The reason that some people are more intelligent than others is because smart people have the right genes. These genes lead to various neurophysiological advantages (i.e., increased myelinization) that increase the speed and efficiency with which signals travel through the nervous system. No wonder then, that highly intelligent people respond faster than less intelligent people in even the simplest cognitive tasks (e.g., deciding whether a clearly presented arrow points to the left or to the right); these individual differences in performance are simply indicative of the more fundamental differences in neurophysiology, which are, in turn, brought about by individual differences in genetic makeup.

As already mentioned, apart from pleasing the student, CtM will plague the researcher—and for more than one reason. The first source of anguish is that the book fails to discuss the work by mathematical psychologists, such as Roger Ratcliff, Gordon Logan, Jim Townsend, and Jay McClelland. In mathematical psychology, models for response time have been developed to such a degree that they are now being used as psychometric tools (as a typical example see the work by Ratcliff, Thapar, and McKoon on the cognitive effects of aging). The advantage of a mathematical process model is that it proposes a concrete link between latent psychological processes and observed behavior—this advantage becomes all the more prominent if we compare sequential sampling models of RT such as the diffusion model or the race model to the "neural oscillation theory" advocated by Jensen. These sequential sampling models propose concrete mechanisms for response time and accuracy (i.e., noisy information accumulation until a relative threshold of evidence is reached), whereas neural oscillation theory does not. There may be something to be said for neural oscillation theory, but this remains unclear until the theory is instantiated as a testable model.

The second source of anguish is that the book argues strongly for the standardization of chronometry (an entire chapter is devoted to this topic). It is true that standardization is desirable if one wants to compare absolute numbers across experiments, but it is also true that standardization confounds the general characteristics of mental processing with the procedure-specific characteristics imposed by the standardization. The dangers of standardization are aptly illustrated by the kinds of tasks used in clinical psychology—for instance, normal controls in the Iowa gambling task show a "somatic marker" that precedes the execution of a bad decision; because this task is standardized, it took decades of research before it was discovered that the somatic marker occurs because of a confound: in the standard version of the Iowa gambling task, response options that are bad are also the most variable (e.g., Dunn, Dalgleish, & Lawrence, 2006).

The third source of anguish is that CtM presents a view of the world that is selective and one-sided to the extreme. For instance, throughout the book Jensen presents many Brinley plots, but never discusses the research that has highlighted the deficiencies of this method (e.g., Ratcliff, Spieler, and McKoon, 2000). The strongest case for selective reporting can be made when Jensen discusses the relation between genes and environment. In CtM, Jensen implicitly denies the plasticity of the brain, and ignores the fact that the environment can influence gene expression (Gottlieb, 1998). Nowhere does Jensen mention the Flynn effect—if genes are all there is to general intelligence, how can it be that the average IQ of entire populations can increase dramatically over the course of a few decades (Wicherts et al., 2004)?. Jensen discusses the measure of h^2 for heritability, but he does not mention the drawbacks of this measure (e.g, the fact that h^2 depends on the degree of homogeneity in the environment). Also, everybody – including Jensen, in different work – agrees that people select environments that suit their abilities, and this considerably complicates the gene versus environment debate (Dickens & Flynn, 2001). Finally, van der Maas et al. (2006) have shown that reciprocal causal relations between cognitive (brain) processes explain much of the data on general intelligence without the need for

invoking a *g*-factor. This research further challenges the simplistic unidirectional genes-to-brain-to-cognition picture of intelligence that is painted in CtM.

The prospective reader should also be aware that almost 100 pages of CtM are closely related to Jensen's earlier book "the *g*-factor" (Jensen, 1998, Chap. 7 and 8). It is somewhat peculiar that this overlap is not mentioned in the preface.

Notwithstanding the above criticisms, CtM is destined to be a citation classic. The book radiates enthusiasm, and it is useful to see so many findings on mental chronometry and individual differences discussed in one book. The book is suitable for an advanced undergraduate or graduate student course, but not without including additional literature to balance out the overly simple and one-sided account of the relation between response speed and intelligence that is provided by Jensen. Simplicity is the dominant feature of CtM, and simplicity is the book's main strength and the book's main weakness.

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