

Comment on Jensen's 'Chronometric analysis of intelligence'

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I have followed Jensen's work since before 1969, and until recently had read at least one other discussion by him (Jensen, 1979) of relations between intelligence and reaction time. Nevertheless, it was only when faced by the task of commenting on his present paper that I took time to absorb enough details to appreciate the potential implications of these exotic methods. In the likelihood that others will respond as I first did despite their deep concern with mental abilities – that is, with interest tempered by resistance to unfamiliar gadgets, novel paradigms and previously unheard of (by me) investigators – I feel that my comment is best directed toward 'seconding' vigorously Jensen's assertion that recent developments in the chronometric analysis of intelligence hold great importance.

The techniques of investigation Jensen and others are employing remind me of the early days of 'atom-smashing', a crude term that often disguised the fact that it referred to analysis. The parallel lies not only in the concern with minute observational details, but in the promise such details hold for revealing something fundamental about concrete events and structures that are themselves at an atomistic level. Many sorts of minute observations could be made concerning individual IQ test items, but these observations would not be as pregnant with implications for concrete structures as the chronometric slopes, intercepts, and standard deviations described in Jensen's article.

The behavioural geneticist Lindon Eaves once remarked to me that he thought *g* or general intelligence was assembled out of many specific abilities in the course of evolution. Something like this idea underlies chronometric studies of reaction time. Chronometrician Sternberg (1979, p. 47) – not the author of the *Sternberg* paradigm – recently remarked, 'we tend to doubt that intelligence is any one thing. Instead, we believe it is a collection of things that go together much of the time'. Substitute the words 'the atom' or 'the atomic nucleus' for 'intelligence' and reaction time studies leap into proper focus. Indeed, Sternberg must have had a similar analogy in mind, because he used the word 'quark' in the title of his article. At the time of my conversation with Eaves, I thought he was referring only to specific mental abilities, such as Thurstone's seven primary factors, which gradually would become more perfectly correlated under the pressures of natural selection. After studying Jensen's article, I now realize that while my interpretation was not necessarily

wrong, the examples it employed were too exclusively molar. Evolution was under way long before the seven primary mental abilities emerged, and there must be finer detail that we no longer detect without help from special apparatus. Differences in reaction time so small that subjects themselves cannot discriminate between their own faster and slower trials (Jensen, 1980, p. 691), when consistently observed between subjects, are apt to reflect differences in fine neurophysiological detail.

The question naturally arises, are such fine details primarily electrochemical or cytoarchitectural? Judging from what he has written elsewhere, Jensen's (1980, p. 702) thinking inclines more toward the latter possibility than his discussion of nerve conduction speed in the present paper would suggest. In view of the interconnections among neurons, structural differences can lead to physiological differences at the level of massed cellular functioning.

Minute structural differences, according to Jensen, may correlate with global IQ because of the dependence of the latter on the presence of the former. Jensen's hierarchical model of this functional dependence would account for the fact that correlations between IQ and reaction time, although often substantial, are less than perfect. This possibility makes a great deal of sense. I have always been impressed by the occasional glimpses we get of the extent of independence among mental abilities that normally are positively correlated with each other. To give just a few examples, consider extraordinary mnemonists; idiot-savants with spectacular single talents; Turner's syndrome patients, whose (non-verbal) Performance IQ averages 17 points *below* their Verbal IQ; and the unique cognitive profiles peculiar to practically all ethnic groups, which in the case of the profile for Jews, for example, yields a mean Verbal IQ 15 points *above* the average Performance IQ. Clearly, not everything that usually goes together need do so all of the time.

Jensen brings to the study of reaction time an unsurpassed command of knowledge concerning individual differences in performance on conventional tests of mental ability. We await with interest the outcome of this cross-fertilization.

References

- Jensen, A. R. (1979). *g*: Outmoded theory or unconquered frontier? *Creative Sci. Technol.* 2, 12-29.
- Jensen, A. R. (1980). *Bias in Mental Testing*. New York: Free Press.
- Sternberg, R. J. (1979). Stalking the IQ quark. *Psychol. Today* 13 (September), 42-54.