

Discrimination Reaction Time and "g": A Reply to Humphreys

HANS J. EYSENCK

University of London

Humphreys argues that I based my conclusions about the nature of general intelligence on the size of loadings of a psychomotor test of discrimination reaction time on the first factor extracted from various matrices of intercorrelations published by Thorndike (1987). He argues that a general factor determined by the intercorrelations of the tests in this case was determined to some extent by the largely visual-spatial nature of the majority of the tests included. He is right in suggesting that the "g" determined in this way is suboptimal, and that the centroid so determined is pulled off-center by the presence of many tests defining the group factor of visual-spatial ability. He is on more doubtful ground when he suggests that the high loading of the discrimination reaction time test on the first factor extracted is the result of a moderate loading on the general factor and a substantial loading on a visual-spatial group factor.

Humphreys admits that both reading comprehension and arithmetic reasoning, which are excellent measures of the general factor, have high first factor loadings in Thorndike's analyses, in spite of the handicap of being placed in the matrices largely composed of visual perception speed, spatial visualization, and spatial orientation tests. If Humphreys were right, then we would expect the loading of the reaction time tests to be lowest in the factor analysis where reading comprehension and arithmetic reasoning had the highest loadings, but this is not so. Reading comprehension and arithmetic reasoning have the highest loading in matrix 6, and this is also the matrix where reaction time has its highest loading of .61, as compared with .68 for reading comprehension, and .62 for arithmetic reasoning. (RT also has a loading of .61 in matrix 3, where the loadings on reading comprehension, arithmetic reasoning are rather lower.)

However, this point is not really vital to my purpose in citing the Thorndike study. I did not, as Humphreys suggests, base any conclusions on the Thorndike study; it is merely quoted as one of a series indicating that tests of crystallized ability or knowledge correlate quite highly with relatively simple tests of speed of reaction which have a low cognitive content, and that this goes counter to current theories of the nature of intelligence, which suggest that intelligence, as measured by IQ tests, is merely a kind of acquired academic knowledge. The

Correspondence and requests for reprints should be sent to Hans J. Eysenck, Institute of Psychiatry, De Crespigny Park, Denmark Hill, London, SE5 8AF, England, Great Britain.

high loading of discrimination reaction time in a battery of tests including tests of reading comprehension, general information, judgment, arithmetic reasoning, mechanical principles, and mechanical information, reinforces the point. These are all tests of crystallized ability, whereas the reaction time test was entirely new to the recruits.

Humphreys concludes by suggesting the use of error scores, in addition to scores for correct responses, in correlating RT and IQ measures. Where there are numerous scores, as they normally are not in RT experiments, this might be an interesting idea, although my own view would be that the correlation would be higher with personality variables (impulsivity?) than with IQ. But most of all one would expect variability to correlate with IQ, even better than ordinary speed measures, whether of correct or incorrect responses. However that might be, it does not seem that Humphreys' objections raise any vital points concerning the relevance of Thorndike's experiment to the major contention of my paper.