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A REPLY TO GLASS

WILLIAM D. ROHWER, JR. AND ARTHUR R. JENSEN
University of California, Berkeley

Two main methodological criticisms made by Glass of Jensen's and Rohwer's conclusion concerning the relationship of mental age (MA) and IQ to learning rate are answered. The data support Jensen's and Rohwer's original conclusions. Within the MA and IQ ranges sampled, MA differences account for less variance in learning rate than IQ differences, and the method of sampling in these experiments makes it most improbable that the results can be attributed to statistical regression.

In our initial paper (Jensen and Rohwer, 1968), we reviewed some data relevant to the Zigler (1967) hypothesis that equivalence of mental age (MA) implies equivalence of learning rate between samples of normal and retarded *S*s. Glass has quite correctly called attention to two features of our data that cast doubt on the conclusion that the evidence contradicts Zigler's hypothesis. The first feature concerns the obstacles inherent in attempts to achieve complete matching of two samples on all variables but one, in this case IQ. The second feature attaches to the strong possibility that in experiments where matched samples are used the results can be attributed to regression effects. We will consider these two points in connection with two of the exepriments we reviewed: Jensen (1965), and Rohwer and Lynch (1968).

The first problem is that of perfect matching. Both experiments involve comparisons on short-term learning tasks of normals and retardates matched for MA. Despite the demonstrable equivalence of the samples in terms of MA, Glass is surely correct in his contention that they differ not only in IQ but in numerous other ways as well. It is also incontestable that "perfect matching of normal and retarded *S*s on all variables (including MA) except IQ [is] an obvious impossibility [p. 415]." Glass goes on to suggest an alternative method for assessing the implications of normal-retardate comparisons for the issue of equivalent learning rates. The method is to contrast the difference between two samples matched on MA but differing on IQ (normals versus retardates) with the difference between two samples matched on IQ but differing on MA (older normals versus younger normals). Fortunately, a contrast of precisely this kind can be made in the data from one of the experiments we reviewed (Rohwer and Lynch, 1968).

The data necessary for this contrast of differences are displayed in Figure 1 of the Jensen and Rohwer (1968) paper. Consider the samples of middle-socioeconomic-status first-, third-, and sixth-grade children and the sample of retarded adults. All of the elementary school children were drawn from the same schools and, accordingly, are closely matched on IQ across the grade levels. The first- and sixth-grade samples, however, differ in mean MA by approximately 5 years. The other relevant difference is provided by a comparison of the performance of the third-grade children and the retarded adults where MA is equivalent (9.6 versus 9.7, respectively) and IQ varies (109 versus 59). Learning rate is indexed by the mean numbers of correct responses in two test trials on a 24-item paired-associate list. When IQ is equivalent and MA varies, the difference in mean performance is 1.71; when MA is equivalent and IQ varies, the corresponding difference is 6.66. Assessed by the Scheffé method, the contrast between these two differences is significant ($p < .05$); the normal-retardate difference is larger than the normal-normal difference. Clearly, within the MA and IQ ranges sampled, MA differences are associated with a smaller amount of variance in learning rate than is the case for IQ differences.

The second problem raised by Glass is

[1] Requests for reprints should be sent to: Arthur R. Jensen, School of Education, University of California, Berkeley, California 94720.

the possibility that the results of the two experiments are attributable to regression effects. With respect to this problem, the two experiments under consideration are quite similar. In both cases, the retarded sample consisted of *S*s of the type usually called familial mentally retarded. They were selected as follows: At a state institution for the mentally retarded, a listing was requested of all persons in the IQ range 40–75; this list was limited by excluding all those for whom the diagnosis included organic and neurological defects in the suspected etiology as well as those with sensorimotor handicaps; the sample was then selected randomly from among all the names remaining on the list. Accordingly, in neither study was there a bias for selecting a disproportionate number of *S*s from the higher end of the distribution of IQ among familial retardates. Indeed, in both cases, the mean IQ of the sample selected was, if anything, biased toward the lower end of that distribution.

With respect to the normal samples matched for MA with the retardates, the bias, if any, was toward the selection of children whose mean IQ exceeded the average of the population of normals. Matching was attained, not by selecting children generally duller than the average of the population sampled but by selecting from among children known to be brighter than the average of the population, a chronological age sample such that equivalence of MA with the retardates could be achieved.

These are the facts about the manner in which the samples were matched in the two studies and about the characteristics of the populations from which they were drawn. If the results of the Jensen (1965) experiment and the Rohwer and Lynch (1968) experiment are confounded by a regression effect, the direction of that effect was such as to underestimate the magnitude of the difference between the normal and retarded samples. Thus, a close examination of our data with respect to the points raised by Glass adds weight to our original conclusion that equivalence of MA across samples of normals and retardates does not imply a corresponding equivalence in learning rate.

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