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Neurological Defects Come With Premature Births

DOES PREMATURITY (low birthweight) directly impair the development of intelligence? That this question should be so controversial shows some of the difficulties of arriving at statistical proof of important issues in human affairs.

Many studies have been made of the birthweights of handicapped children. Whether they have physical handicaps, like cerebral palsy, or are blind or deaf or mentally retarded, their birthweights are always lower. The association of neurological defects with prematurity is unassailable.

However, the best designed studies, reported from Britain by Dr. Alison MacDonald, indicate very little if any effect on later IQ of birthweight under four pounds unless there was associated neurological damage.

How can we reconcile this finding with the birthweight statistics of mentally retarded children in institutions?

Drs. Mark Abramowicz and Edward H. Kass of Harvard Medical School critically reviewed the evidence bearing on "Pathogenesis and Prognosis of Prematurity" in a series of articles published last year in the New England Journal of Medicine.

Very little work done so far passes their criterion of effective controls for social and economic discrepancies of the families involved. The difficulty is that prematurity itself occurs most often among underprivileged classes. It has been directly shown to be more prevalent with mothers of sub-average IQ, who are also most likely to be juveniles, unmarried and poor.

The inmates of public institutions are also from similar social strata. Supposed results of prematurity may simply reflect the coincidental prevalence of cultural and hygienic retardation in the same strata.

Corrections for these biases in the samples are hard to validate in the absence of a randomized, prospective study, which is inherently expensive and rarely seen.

One way to cancel out the socio-economic factors is to compare children within the same family, or, even better, twins. In just such studies, Dr. John A. Churchill of Wayne State University has found a small but consistent retardation of about five IQ points for the lighter members of pairs of identical twins. Twins are known already to have some general disadvantage of about five points compared to the general population.

The same question can be applied to both findings, if the facts become generally confirmed. Is the lighter twin showing an impairment of his brain resulting from his cramped growth during intrauterine life? Or does the psychosocial constellation of the twinship keep it from full participation in the outer life of the family and community?

To study this question, one might compare twins who are or are not embedded in larger kindreds; but then we face the same problems of cancelling out differences between families.

Dr. McDonald's data do not agree with Dr. Churchill's, and she found no special trend correlating I.Q.'s with the birthweights of the 280 twins tested in her sample. However, four pounds is a low birthweight, even for a twin, and the two samples overlap only slightly. One might argue that Dr. McDonald's babies were too small to compete with one another. Alternatively, general standards of medical care or of child-rearing might be different enough between the two countries to influence the way twins interact with one another.

Besides the obvious medical interest in the consequences of prematurity, we are all concerned about human destiny. Apart from obvious physical defects, and the affluence of his parents and community, can the newborn child tell us anything about his ultimate prospects in life?

We should doubly alert ourselves to the danger that our own prophecies may be self-fulfilling. If we either neglect or over-protect the child with cerebral palsy we are likely to satisfy our expectations that he might be mentally retarded too. And the same might hold for deviations in birthweight or for color.