











Miller, Director of the Child Psychiatry Research Center of the University of Louisville School of Medicine, to run additional tests on the authors' data. He found that the authors' major conclusions are, indeed, supported by their results—for example, developmental patterns are significantly different following breech delivery as compared with low forceps extraction. It must, however, be kept in mind that when one runs as many correlations as reported in this extensive report, some will be significant by chance alone. For this reason, we await with interest the results of the cross-validation study which the authors have promised us.

Finally, some thought should be given to the identification of common factors which may underlie the specific findings reported. For instance, are there underlying factors responsible for producing a breech presentation which are more significant than the circumstances surrounding the obstetric delivery of the infant? Superficially one might assume that the untoward developmental problems shown to follow breech delivery were related to hypoxia associated with delivery of the aftercoming head; but since the authors' other measures such as "minutes to breathe and cry" did not correlate, it is possible that some other unrecognized factor may be operative in this situation. I am not competent to comment on purely psychologic matters, but another possibility is that negative parent-child relationships could conceivably be connected in some way to breech delivery, and that these, in turn, might affect a child's capacity to perform.

With due consideration for the many problems inherent in this type of research which inevitably raise questions about reliability and validity, Drs. Muller, Campbell, and associates should be commended for their diligent and conscientious work in this difficult and important area of research. It would seem reasonable to consider their findings as hypotheses awaiting confirmation by cross-validation. In the meantime, it is heartening to note that at least for the time being they do not suggest that their findings constitute a mandate to obstetricians to modify their current obstetric practices. We all await with interest the findings of the prospective study, and especially the analysis of the factors surrounding breech delivery.

DR. R. RALPH MARGULIS, Royal Oak, Michigan. I would like to use this opportunity to add a few comments derived from our study.

This study was conducted at the Neuro-Education Center of the William Beaumont Hospital. Two hundred children between the ages of 4 and 15 years have been studied for evaluation and elucidating reasons for academic failure in school. Three hundred variable parameters were investigated for each child.

In the majority of these children, indications are present that minimal organic central nervous system changes are evident (minimal brain dysfunction). These findings are showing a high correlation with complications encountered in pregnancy and labor. Induction of labor has been a common denominator in about 30 per cent of the tested subjects. I am not advocating, at present, changes in our obstetric practice relative to elective induction, but I would be interested to have members of our Association evaluate these findings in similar studies. Our preliminary results make it imperative to evaluate the entire problem in a future prospective study.

DR. GEORGE J. L. WULFF, JR., St. Louis, Missouri. Sub-lethal damage is also highly prevalent in breech presentations, and cerebral palsy is one example of this potential damage. The incidence of breech among total term presentations is about 3 per cent. The incidence of breech presentations in cerebral palsy children, however, is 8 times as great, and this has been tabulated by Dr. Nicholas Eastman in retrospective studies of cerebral palsy children.

I should like to ask Dr. Campbell his experience with cerebral palsy children in his study.

DR. CAMPBELL (Closing). The findings from our study have left some questions unanswered. We now have various factors which we will check in our prospective study. The prospective study has been started, and the children are now 4 and 5 years old. It should be finished in 5 years and we are eagerly awaiting the results.

As to the question about cerebral palsy, we did not have any reports in our study on this subject.

Of the 2,383 deliveries included in the study, there were 101 breech deliveries. There were 11 perinatal deaths from this group of deliveries. This, plus the fact that 24.5 per cent of the children found on follow-up were one or more years behind in school, is rather frightening.

We hope others will join us in this type study.