The Study of Child Development

The philosophy—as well as the purpose—of the study of child development may be summed up as follows: A *well-born and a well-reared child is a community asset; anything less is a liability*. There are two basic concepts here that are complementary. "Well-born" means that it should be the birthright of every child to come into the world as free as possible of heritable taint and congenital defect. "Well-reared" means that it should be the privilege of every child to grow up under the best possible environmental conditions. If the child's biogenetic endowment is sound, then it should be nourished in the fertile soils of human love and cultural richness. The realization of this vision entails the study of the whole biobehavioral child in the entire context of his familial-cultural milieu. We may paraphrase: "A sound unfolding mind in a sound growing body"—to which we might add, "in a sound and stable environment."

It has been said that we grow, we grow up, we grow older. In more concrete terms this implies increase in size, change in proportion, and organic maturation. In a very real sense, therefore, the study of the entire process must embrace the realms of morphology, physiology, biochemistry, and endocrinology. This effectively covers the biological side of the picture. The behavioral side must include the educative process and social and psychological aspects in the broadest possible manner. The concept "the growth of the whole child," as commonly stated, embraces consideration of every possible variable in and of the growing period, roughly the first two decades of life.

There is one thing common in assessing these variables: they must be quantified; i.e., they must be measured or be made measurable. In this process of multimeasuring there are five aims: (1) to ascertain status, at any one time; (2) to evaluate progress between two or more periods of time; (3) to compare either status or progress to standards for age and sex peers; (4) to fit the child's growth into the potential inherited in family-line background; (5) to add all this up to a final analytic interpretation of the individual pattern. In basic principle, although we study hundreds of children, we ultimately focus upon one child at a time, especially if this growth is of clinical concern.

We have discarded the old idea of extensive cross-sectional norms or averages (100 boys and girls at birth, 100 at one year, at two years, and so on). Instead, we take a sample for a much more intensive serial or longitudinal analysis. We march with them in time, year after year. The averages we derive are, in reality, the expression of so many individual paths of growth. An important result of this approach has been to free the individual child from the slavish adherence to arbitrary height-weight standards, or other rigid norms of bodily development. Thus we no longer force the child to walk the straight and narrow path of the mean; rather, we permit him to saunter, as his own growth potential will, along the broad highway of an acceptable range of variability. For stature and weight, for example, we have adopted the principle of fitting the individual child into a family line of tall, medium, or short; heavy, medium, or light—feeling that the child will almost invariably reflect an inherited height-weight trend.

One final word must be said: we are studying normal, healthy children in our long-term programs. We are studying them from every possible biological and cultural angle, putting the results together for one common goal: that tomorrow's children may have life more abundantly, because we are learning from today's children.

Wilton Marion Krogman

Graduate School of Medicine
University of Pennsylvania

*Science* (1980, published each Friday by the American Association for the Advancement of Science at the Business Press, 10 McGovern Ave., Lancaster, Pa. Entered as second-class matter at the Post Office at Lancaster, Pa., January 13, 1949, under the Act of March 3, 1879. Acceptance for mailing at special rate postage provided for in the Act of February 28, 1925, embodied in Paragraph (d-2) Section 34.40 P. L. & R. of 1948. All correspondence should be sent to *Science*, 1515 Massachusetts Ave., N.W., Washington 5, D.C. The AAAS assumes no responsibility for the safety of manuscripts or for the opinions expressed by contributors. Four weeks' notice is required for change of address, and an address sticker label from a recent issue must be furnished. Claims for a missing number will be allowed only if received within 60 days from date of issue. Annual subscription: $7.50; single copy, $2.25; foreign postage, outside the Pan-American Union, $1.00; Canadian postage, $1.50. Special rates to members of the AAAS. The AAAS also publishes *The Scientific Monthly*. Subscription and advertising rates on request. Cable address: * Advancesci*.