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The Ten-State Nutrition Survey of 1968-1970, originally designated as the National Nutrition Survey, was the first and by all means the most comprehensive attempt to survey the nutritional status of Americans at all age levels. By way of illustrative numbers, 86,352 individuals were contacted; 40,847 participants were studied from an anthropometric, dietary, or biochemical point of view; and data on nearly 16,000 participants in the pediatric age group were collected and analyzed. More than 53 million bits of coded health information were acquired on infants, children, and adolescents alone.

By act of Congress, primary attention was given to "the incidence and location of serious hunger and malnutrition and health problems incident thereto in the United States." This means that the study was to pay particular attention to the poor, to people in poverty areas, and to the racial and ethnic groups most likely to be exposed to the culture of poverty, undernutrition, and malnutrition. The sample used for study was primarily to be drawn from the lower half of the income spectrum and with the lowest incomes disproportionately represented.

The history of the Ten-State Nutrition Survey is a complicated one. It began with the amendments approved by Congress on December 5, 1967, but without appropriations. The survey was then initiated in several states during 1968, and responsibility for coordination of data analysis was transferred to the Nutrition Program, Center for Disease Control. The Nutrition Program was abolished in 1972, long before all of the data could be fully analyzed or even partially reported.

The findings of the Ten-State Nutrition Survey, we find, go far beyond the original expectations. We worked with original data tapes and reexamined the data state by state and variable by variable, and we had opportunities for careful comparisons. We now have three major statements to make. First, the Ten-State data (from ten states and New York City) do not show evidence of acute Biafra-type malnutrition, even in the lowest (below-poverty) income groupings. Second, the data show remarkably consistent socioeconomic effects on size, growth, and development that have major bearing on the nation's health and the national welfare. Third, the findings have broad implications for our knowledge of growth and development. The applicability of many presently used "norms" are questioned, and new needs both for information and application are evident.

THE DIMENSIONS OF POVERTY

Children of the poor grow less, and less well, than children of those of greater affluence. Basic data collected in the Survey allowed comparison of size, growth rates, and skeletal and dental maturity by various socioeconomic indicators, including household income, per capita income, and the income-to-needs ratio of Orshansky. Although use of the Orshansky income-to-needs ratio was an integral part of the Ten-State Nutrition Survey, and a ratio of 1.0 designates the "poverty level," most workers find per capita income more familiar and easier to comprehend. This latter measure is employed in this report.

Taking per capita income from below the "poverty level" of 1.0 (approximately $800 per

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capita) through median per capita income for the years represented ($2,400 per capita and above), a few generalizations suffice. Low per capita incomes are systematically associated with smaller size. Higher per capita incomes are associated with greater size (Fig. 1). With increasing per capita income, increasing household income, and increasing incomes relative to needs, boys (Fig. 2) and girls are systematically taller and heavier, with greater circumferences (including head advanced in skeletal maturity, dental development, and in such derived constants as the fat-free weight and the skeletal mass). The generalizations hold, within ethnic and racial groupings, though at somewhat different levels for blacks, whites, and Meso-Americans.2

Given these simple relationships between socioeconomic level and either size or developmental status, it is obvious that the largest proportion of children at the lowest percentiles for size and the lowest percentiles for skeletal and dental development are from the poorest families. By selection of “standards,” the results can be made more or less dramatic. If standards such as those of the Brush Foundation Studies or the Fels Research Institute Studies are employed, then the effects of poverty may be shown as even more growth-limiting than if the Harvard or Iowa standards are used.

A few examples suffice. The stature difference between boys and girls of near median per capita incomes and those of lowest per capita incomes amounts to perhaps 0.4 SD. Weight differences and fatness differences between these socioeconomic groups amount to perhaps 0.5 to 0.7 SD (Table 1). Indeed, all measurements follow this pattern: height, weight, head circumference, knee height, and calf, arm, and chest circumferences. What the Ten-State study has measured may be described as the dimensions of poverty, showing the absolute and the relative size differences within the sample as a whole.

**FATNESS AND ITS EVALUATION**

Prior to the Ten-State Nutrition Survey, comprehensive, single-source, life-cycle data on outer fatness simply did not exist for the United States or any other country. In the absence of such data, investigators were presented with a choice of fatness standards, among them the Rauh-Shumsky values from Cincinnati;3 composite values compiled by Seltzer and Mayer at Harvard;45 and English standards derived from various school groups and institutionalized patients.6 By providing fatness information from age 1 through adulthood and beyond for different socioeconomic groupings, the Ten-State data completed the “missing” ages (Fig. 3) and demonstrated the compelling need to define fatness standards in terms of a socioeconomic reference.
<table>
<thead>
<tr>
<th>Age Midpoint</th>
<th>Stature (cm)*</th>
<th>Weight (kg)*</th>
<th>Triceps Fatfold (mm)*</th>
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<td>0-$800  $2,400-up</td>
<td>0-$800  $2,400-up</td>
<td>0-$800  $2,400-up</td>
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*Median values for white children. Per capita income similarly relates to size and fatness in American Negro (black) boys and girls.

Fatness values, based on either triceps or subscapular fatfolds, tend to be skewed in their distributions; therefore, the use of medians and percentiles instead of the conventional means and standard deviations is necessary. No simple transform (such as the log transform) is adequate because the direction as well as the amount of skewness of fatness varies from age to age. In late
adolescence and adulthood, triceps and subcapular fatness values bear a reasonable relationship to relative weight or percent of standard weight; but, during infancy and through early adolescence, there appears to be no alternative but measuring fatness as fatness8 (Fig. 4).

As shown in the Ten-State data, separately by race and socioeconomic group, females evidence greater outer fatness at all ages from childhood through the ninth decade.9 Adolescence for the female is not a period of loss of baby fat, as popularly believed. Rather, it is a period of increasing outer fatness, both in the poor and in the rich. However, the male does undergo a transient reduction in outer fatness in early adolescence (Fig. 3).

In a general way, and within each racial and ethnic group represented in sufficient numbers for realistic comparison, the poor are leaner (less fat) and those at median incomes are fatter. This generalization holds for males at all ages (with some early exceptions), and it applies to females through early adolescence. However, during adolescence, females with lower incomes end up fatter and those of higher incomes end up leaner. Indeed, during the adult years, fatness is positively (upwardly) related to socioeconomic status in the male, but negatively (downwardly) related to socioeconomic status in the female. Moreover, the "reversal" of relative fatness in the female during adolescence and beyond serves to challenge the contention that the level of fatness attained in infancy predicts or predetermines relative fatness through to adulthood.8

There is considerable evidence from studies of obese children and longitudinal studies that fatness is auxogenic (growth-promoting)—that fatter boys and girls are taller, have a larger skeletal mass, mature earlier, and so forth.10, 11 New data from the Ten-State Nutrition Survey document this evidence to perfection. Year after year, fatter children are taller and definitely more advanced in development than leaner boys and girls. By 12 years of age, the lean boys and girls

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**Fig. 2.** Size comparisons of low-income, white, school-age boys (solid lines) and median-income, white, school-age boys (broken lines) demonstrating the relationships between per capita income and growth. As similarly observed in blacks, Meso-Americans, and Puerto-Ricans, boys and girls below the poverty level ($800 per capita) are size-diminished and become shorter adults.
Fig. 3. Life cycle comparison of fatfold trends in 8,437 white females (broken line) and 6,823 white males (solid line). There is a tendency for the female to be fatter at all ages. Data from the Ten-State Nutrition Survey confirm the existence of a prepubertal fat gain in both sexes, but an adolescent loss in the male coincident with a notable adolescent fat gain in the female.

are about 6 cm shorter than those who are fat[^8][^12] (Fig. 5).

Furthermore, fatter individuals showed higher hemoglobins and consistently higher hematocrits (Fig. 6) during infancy, childhood, and adolescence, as well as throughout the life span. This finding is important to understanding differential mortality of anemic individuals[^13] and in presenting hemoglobin and hematocrit "norms."

If the Ten-State Nutrition Survey showed nothing else, it clearly documents the systematic relationship between the level of fatness and the rate of growth. Apart from such other variables as nutrient densities, parental supervision of energy expenditure, and standards of medical care, the level of size and the level of growth attainment may be manipulated by altering the caloric balance.

THE PREVALENCE AND CONCOMITANTS OF OBESITY

Although the Ten-State Nutrition Survey was authorized by Congress to undertake an investigation into the prevalence of undernutrition in the United States, it was obvious from the beginning that the broader question of malnutrition (including both undernutrition and overnutrition) was of national concern.

Many investigators on the American social scene have put overnutrition and obesity as parallel problems; obesity is no less morbidogenic than undernutrition and contributes more to adulthood mortality. The problem was to investigate overnutrition and obesity in a population sample without clear definitions as to exactly how "obesity" was to be described. Preliminary studies with the fatfold and weight data from the
Ten-State Nutrition Survey showed that the "20%" weight definition of obesity commonly used for adults was both an inappropriate and unacceptable definition for infants and children. Further studies revealed that socioeconomic and population differences in the level of fatness made a definition of obesity suitable for one group but unsuitable for another. Defining "obesity" as the upper 15% of fatness (i.e., above the 85th percentile), and taking the Ten-State Survey data as a whole, different proportions of children were "obese" in different socioeconomic groupings. Beyond infancy, for simplicity, the "obese" were systematically those of greater affluence in both American Negro (black) and white children. Conversely, the percent defined as "obese" was necessarily less in the poor and below-poverty boys and girls. The upper reaches of fatness in infants, children, and adolescents were more likely to be achieved by middle income boys and girls.

Concomitants of "obesity" thus defined were found to be numerous. As may be expected from the previous section on fatness, the obese boys and girls were developmentally and size advanced; they were taller, heavier, and further along in ossification; and they had larger skeletal masses and considerably greater mineral mass. Although generally the obese boys and girls did not differ particularly in reported nutrient densities, the obese of all ages and both sexes had systematically higher hemoglobins and hematocrits.

A separate category of super-obese boys and girls, the upper 5% in fatness, resembled the obese in certain respects and carried the dimensional and developmental extremes further. The super obese were taller and more advanced skeletally; they had larger skeletons, a still larger fat-free weight, and a larger mineral mass. But, they were not notably middle-income as were the simply obese, and, in other socioeconomic respects, they did not share backgrounds with the simple obese.

The exact definition of obesity remains an equivocable one. From the extensive data on hand, ranging from the lowest to the highest levels of fatness, there is not a discontinuity in the fatness distribution representing a separate area of "obesity," nor is there bimodality to indicate who the obese inherently are. Rather, the obese display, in size and development, the characteris-
FIG. 5. The relationship between level of fatness and growth in size in boys (left) and girls (right). Fatter children are systematically taller than leaner children, and the statural difference may be 12 cm and more. These findings show the need to interpret body size in conjunction with fatness data throughout childhood.

tics of the continuum. They are fatter, from higher income levels, are bigger and more developed, and they have a higher fat-free weight and a larger skeletal mass. The super obese share these developmental concomitants, but super obesity cannot easily be related to income. The antecedents leading to super obesity may be different from those that lead to simple statistical obesity, per se.

FAMILY-LINE ASPECTS OF FATNESS

Since families and entire households were included in the Ten-State Survey, new opportunities existed for the family-line analysis of developmental data. Complete family-line analysis of fatness (comparing parents and their children, and siblings to each other) were undertaken. This was a formidable statistical task because of the thousands of pairings involved; there were 8,000 white families alone.

The results showed clearcut parent-child similarities in fatness and sizable sibling similarities in fatness. When the parents were categorized as lean, medium, or obese (based on their fatness percentiles) and the various parental combinations were compared, the results were impressive. When both parents were lean, the children tended to be lean. When both parents were obese, the children tended to be obese. The parental combinations, obese + lean and obese + medium, yielded nearly textbook results (Table II).

To avoid having the sibling similarities in fatness and the remarkably consistent parent-child resemblances in fatness taken as simple proof of the genetic hypothesis, there are considerable similarities in fatness between spouses (husband-wife); these increase through the fourth decade. Taken together, these findings suggest that the level of fatness may be more acquired because of family eating and exercising habits than genetically inherited. These findings attest,
TABLE II
PARENTAL FATNESS COMBINATIONS AND RELATIVE FATNESS OF THEIR CHILDREN*

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</tr>
<tr>
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<td>Obese</td>
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<tr>
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<tr>
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<td>Medium</td>
<td>516</td>
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<tr>
<td>Medium</td>
<td>Obese</td>
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</tr>
<tr>
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<td>Lean</td>
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<tr>
<td>Obese</td>
<td>Medium</td>
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<tr>
<td>Obese</td>
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<td>105</td>
<td>+0.57</td>
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</table>

*Parental fatness based on triceps percentiles for age and sex. Fatness values for the children are expressed as normalized Z scores relative to the median for age and sex. By the late teens, the children of lean + lean and obese + obese parents are even more dramatically different.

Moreover, to the wisdom of investigating nutrition in the family and household context, and the value of investigating survey data for more than simple description.

Complete analysis of family-line aspects of fatness will be given in a later report. For example, by age 17 the children of obese parents are three times as fat as the children of lean parents!

RACE DIFFERENCES IN GROWTH AND DEVELOPMENT

Prior to the Ten-State Nutrition Survey of 1968-1970, there was insufficient data on race differences in growth and development to suggest or reject a need for race-specific standards for size during growth. However, with the nearly equal sample of American Negro (black) and American white boys and girls in the survey and the detailed socioeconomic information, the magnitude of race differences could be established with confidence. Though initially smaller than white neonates and infants, American Negro (black) boys and girls grew more rapidly, and from the second year of life through early adolescence they were systematically taller by about 2 cm. This finding, reported in the American Journal of Diseases of Children,15 proved to be in accordance with Owen and Lubin’s findings from the Preschool Nutrition Survey16 and recent findings from the National Collaborative Survey of the National...
Institute of Neurological Diseases and Stroke.\textsuperscript{17} Furthermore, these comparative findings from the Ten-State Survey are compatible with comparisons from the Kaiser-Permanente Health Plan in California\textsuperscript{16} and similar comparisons from the National Health Examination.\textsuperscript{19} Both with and without correction for socioeconomic status, American Negro (black) boys and girls tend to be taller from infancy through to adolescence (Fig. 7). Race-appropriate norms and standards may well be recommended, at least for American Negro (black) and American white boys and girls.\textsuperscript{19}

In similar fashion, American Negro (black) children proved systematically advanced in tooth emergence or, specifically, the age-at-emergence for each of 28 permanent teeth.\textsuperscript{20} Tooth by tooth, American Negro (black) boys and girls had earlier tooth emergence than their white age-peers, a race difference further increased when appropriate correction was made for socioeconomic status.\textsuperscript{20, 21}

Postnatal ossification also showed systematic evidence of a difference between blacks and whites as indicated from median ages at ossification of postnatal centers of the hand and wrist.\textsuperscript{22} These findings show a systematic advancement in skeletal development in blacks. They are in marked contrast to findings reported from various countries in Africa (where the black children tend toward skeletal retardation beyond the first or second year of life). These new findings indicate that, given any reasonable level of economic equality, separate standards for ossification timing are indeed appropriate when evaluating hand radiographs or making "bone-age" assessments in blacks and whites.

In addition to the systematic differences in length or stature, in permanent tooth emergence, and in postnatal ossification, systematic race differences were also found in metacarpal lengths,\textsuperscript{23} computed rates of subperiosteal apposition and endosteal surface resorption, and relative rates of bone formation and bone loss. The net effect, as calculated from radiogrammetric measurements, is to produce a larger skeletal mass in children and adults of largely African ancestry.\textsuperscript{24} Therefore, evidence for greater skeletal mass at all ages bears on basic problems of both caloric and mineral nutrition. If stature is greater in American Negro (black) boys and girls and if the skeletal mass attained is considerably greater in children and adolescents of largely African ancestry, it is reasonable to suggest greater caloric requirements, larger allowances for calcium and phosphorous, and (possibly) greater requirements for vitamin D.

In one area the question of true race differences remains partially equivocal—the area of fatness. Considering the sample as a whole, American Negro (black) boys and girls are leaner (through adolescence) than their white counterparts. However, this difference in fatness has some socioeconomic basis because higher-income American Negro boys and girls and if the skeletal mass attained is considerably greater in children and adolescents of largely African ancestry, it is reasonable to suggest greater caloric requirements, larger allowances for calcium and phosphorous, and (possibly) greater requirements for vitamin D.

In one area the question of true race differences remains partially equivocal—the area of fatness. Considering the sample as a whole, American Negro (black) boys and girls are leaner (through adolescence) than their white counterparts. However, this difference in fatness has some socioeconomic basis because higher-income American Negro boys and girls are leaner than their white counterparts at and below the poverty level. Moreover, though American Negro (black) girls are systematically leaner than their white counterparts through to adolescence and after, the adult black female is fatter at all ages through the ninth decade. Accordingly, we are not inclined to regard the lesser fatness of American Negro (black) boys and girls as necessarily or exclusively genetic; we tend to see this difference as a socioeconomic and subcultural manifestation altered in adulthood by differential expectancies of fatness, differences in body image, and different levels of access to calories.

The Ten-State Nutrition Survey showed the existence and reality of certain race differences, even after correction for socioeconomic status,
Examples of the triquetrolunate fusion (arrows) in posteroanterior hand radiographs of American Negro (black) individuals. Hand-wrist radiographs taken in the Ten-State Nutrition Survey provide new population data on the frequency of this trait, and they further confirm the validity of the race assignments.  

FIG. 8. Examples of the triquetrolunate fusion (arrows) in posteroanterior hand radiographs of American Negro (black) individuals. Hand-wrist radiographs taken in the Ten-State Nutrition Survey provide new population data on the frequency of this trait, and they further confirm the validity of the race assignments.

Radiograph showing brachymesophalangia of the middle segment of the fifth digit and a cone-shaped or "peg" epiphysis. Radiographs taken in the Ten-State Survey provide new population frequencies for this trait, which is especially common in Meso-Americans, Chinese, and Japanese, and showed that affected individuals tend to be shorter than their unaffected siblings.

FIG. 9. Radiograph showing brachymesophalangia of the middle segment of the fifth digit and a cone-shaped or "peg" epiphysis. Radiographs taken in the Ten-State Survey provide new population frequencies for this trait, which is especially common in Meso-Americans, Chinese, and Japanese, and showed that affected individuals tend to be shorter than their unaffected siblings.
and (with the exception of fatness) in directions opposite to those suggested by the economic differences. After socioeconomic correction, and even before it, black boys and girls tended to be taller, had a larger skeletal mass, had a greater bone density, and had skeletal and dental advancement. All these findings were to a degree which indicates the need for appropriate race standards in future nutritional surveys and clinical evaluations.

**RADIOGRAPHIC FINDINGS**

The Ten-State Nutrition Survey of 1968-1970 followed the example of the Central American Nutrition Survey by including posteroanterior hand-wrist radiographs of a majority of individuals studied. As a result, we have much new and valuable information on the effects of nutritional status on ossification timing, bone remodeling and bone lengths, and proportions during growth. We also have important baseline "normative" data on many developmental variants never before sampled in such depth.

Within the Ten-State sample, virtually all examples of the triquetrolunate fusion were observed in participants designated as black in the survey (Fig. 8); this is a useful and important independent test of the accuracy of the race assignments. Brachymesophalangia V was disproportionately observed in participants of Meso-American and American Indian ancestry; again, this confirms the accuracy of the assignments. We now have useful, normative frequencies for the triquetrolunate fusion, brachymesophalangia V, and cone-shaped epiphyses, and we can show that cone-epiphyses are not a necessary prelude to brachymesophalangia (Fig. 9). Radiographs from the Ten-State Survey have resolved many outstanding problems.

Analysis of individuals with brachymesophalangia V show them to be stature-reduced for age, sex, and race, and even stature-reduced compared with their own siblings. Therefore, this radiographic "sign" must now be considered as more than a simple skeletal variant, one with major implications to growth and development.

The radiographic findings demonstrated a relationship between family income and postnatal ossification of the hand, within each race, separately considered. We now have median values at age-at-ossification of 30 hand centers—from the capitate and hamate to the distal ulna and the adductor sesamoid of the thumb—for different socioeconomic groups. Radiogrammetric measurements have shown that subperosteal apposition is greatest in those of greater affluence and less in those at and below the poverty line (Table III). The excess of bone formation over bone resorption clearly follows an economic gradient—at least through median per capita income—to the extent that the skeletal mass is a partial reflection of economic status. Extrapolated to kilograms of bone or grams of calcium or phosphorous incorporated into bone, the advantages of affluence may be described as a 5% greater skeletal mass or mineral mass and a 5% greater rate of bone formation.

Comparison of skeletal development in blacks and white proved especially impressive. Even without correction for economic status, black boys and girls had earlier ossification timing than white boys and girls, through to the appearance of the adductor sesamoid. Black boys and girls evidenced greater metacarpal diameters, longer metacarpal lengths, greater cortical thickness, and larger cortical volumes and calculated bone volumes (Fig. 10).

The radiographic findings from the Ten-State Nutrition Survey yielded a variety of substantive findings on the effects of race and nutritional status on ossification timing, bone remodeling, and bone loss; and it provided new and normative information on ossification sequence timing, remodeling rates, maturation, and completion. New norms for these parameters on the carpal angle, and on dimensions, proportions, and ratios of clinical and diagnostic value make the radiographic findings from the Ten-State Survey of greater pediatric value than was originally anticipated.
SOME "MONDAY MORNING" REFLECTIONS

Because we were not involved in the original design of the Ten-State Survey, we are not ego-involved in defending the sampling procedure. We explored the data in depth. From what we know now, we would have preferred a considerably larger survey, the inclusion of a larger number of states, and the deliberate inclusion of larger numbers of Puerto Ricans, Mexican-Americans, and a useful sample of Cuban migrants. Although 400 boys or 400 girls of an age is a respectable sample by conventional experience, when subdivided into race groupings and socioeconomic groupings, it is difficult to extract a usefully large sample of minority groups at different economic levels. In retrospect, we would also have preferred the use of a single survey team which moved from state to state, central procurement of supplies, and a control laboratory, rather than the decentralized state-by-state teams that Congressional action dictated. But this would have required more time than Congress allowed, and the results may not have been significantly different.

Certain design features may be highly commended. The sample provides nearly equal numbers of American Negro (black) and white boys and girls. There were reasonably comparable numbers of white children in both the low and median income groupings. Although the samples of Mexican-American and Puerto Rican boys and girls are smaller than we might like, they are still larger samples than previously studied. Subcodings and geographic separation allowed division of that government rubric SPAM (for Spanish-American surnames) into useful Meso-American and Puerto Rican subgroupings. All Spanish-speaking persons do not share the same genes or the same dietary practices.

In these "Monday morning" reflections, we are also aware of the need for reasonably prompt answers, which precluded a ten-year survey, with dangers of built-in obsolescence. We have become aware of the tremendous size of the data accumulation, which taxes the limits of the IBM 360 computer, and the problems of merging so many tapes with so much data on them. We have also discovered that the sheer writing-up of the findings is a taxing problem, especially since appropriations have ceased to exist.

There are many other parts of the Ten-State Survey, relating to serum and urinary biochemistries, caloric and nutrient intakes, and problems of pregnancy and lactation. These still have to be summarized and reported. We are aware that there are complaints that the survey did not find rampant malnutrition, or that the survey—with intentional concentration on the poor—seemingly overreported growth retardation and size diminution for the United States as a whole.

We feel that we have reasonably reported what was found of primary scientific value, and without attempt to sensationalize. The basic findings on growth and development reported here are numerous enough and important enough to obviate any need now to concentrate on the proportion of children below arbitrary levels of size or growth performance. Indeed, we urge future workers to concentrate on differences within the sample they have surveyed, without recourse to external "norms."
between economic level and size and growth. It also showed interactions could be spelled out in smaller size and not suggest the prevalence of "hunger" of a kind limbed malnutrition of the starvation level. It did obesity in socioeconomic context. And entitled development. What we have learned about organ systems and measures of somatic and skeletal development.

The survey did not find pot-bellied, spider-limbed malnutrition of the starvation level. It did not suggest the prevalence of "hunger" of a kind widely advertised in a 1967 television spectacular. What it did show was that the dimensions of poverty could be spelled out in smaller size and lesser growth. It also showed interactions between economic level and size and growth performance in blacks and whites.

Among the novel and serendipitous findings were those showing dimensional, developmental, and temporal differences between black and white children who were carefully matched for economic level. The study showed the simple effect of level of fatness on both tempo and amount of growth. It demonstrated the antecedents of obesity in socioeconomic context. And it showed the differing participation of different organ systems and measures of somatic and skeletal development.

The Ten-State Nutrition Survey has been criticized first for directing attention to the poor, and second because it was not exclusively a survey of the poor. Yet, we now have data that never before existed. These data show the exact dimensional and developmental comparisons, both of the children of the poor and those of median incomes. The survey has been criticized for limited geographical representation; it excluded both the Western states and the Plains states. Apart from the logistics, it is questionable whether the inclusion of Montana, Idaho, Nebraska, and Wyoming would have appreciably altered the results. The survey, empowered by Congress but with no initial appropriation, did not return complete results in a mere six months. With budgets now cut off, some of the findings may never be revealed. Yet, the nature and the direction of the findings greatly amplify our knowledge of growth and development. What we have learned about fatness, socioeconomic effects, or racial differences in growth will long influence growth appraisal and nutritional assessment. There is a clear need to keep a continuing eye on the growth, development, and nutritional status of Americans, at least once each decade. We should not wait until the millenium to learn whether our present measures of appraisal are obsolete.

**REFERENCES**


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