

Symposium on
Nutrition and Behavior*

THE study of the relationship of behavior to nutrition falls in an interstitial area, with its counterparts in such fields of human biology as the study of human work and of aging (gerontology). Interdisciplinary in nature¹ it shares with these counterparts the intellectual appeal and the practical importance as well as certain difficulties inherent in this type of endeavor—such as attracting financial support and adequate personnel.²

The complex relationships between diet and behavior³ may be considered with reference to their *direction* (sequence of events) and to the *levels* at which they may be expressed. Thus, the psychotic behavior of a pellagrin illustrates the somatopsychologic sequence initiated by faulty nutrition. By contrast, in anorexia nervosa the individual starves himself, perhaps to death, in the absence of organic interference with the ingestion and digestion of food and in the midst of a plentiful food supply. This is, typically, a psychosomatic disorder.

While such neat schemes may appeal to the logician, the reality is frequently more complex, with socio-economic and attitudinal factors being at the root of improper nutrition (in this example, deficiency in niacin and tryptophan). This, in turn, brings about alterations in blood chemical constituents, brain metabolism and function, and, finally results in observable abnormalities of behavior.

This brings us to the problem of *levels* at which we wish or are able to study the events. The selection of levels, on which attention is to be focused, will depend on several factors, such as, the aims of the study, technical facilities, and the current status of methodologic development. Let us begin by agreeing firmly, first of all, that there are several levels requiring radically different technics. Ideally, if understanding of the somatopsychologic process is our goal, one should like to trace the successive steps in detail, including an analysis of the diet, alterations in the internal environment of the organism, and physiologically characterized changes

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in the function of the central nervous system, as well as the behavioral facts and histopathologic findings.

Problems of this complexity must be studied in an interdisciplinary setting as no single individual can put on the hat, in turn, of the dietitian, biochemist, physiologist, pathologist, and psychologist. In clinical research the "team" is enlarged by the inclusion of internists, neurologists, and psychiatrists. The skills of psychiatrists are essential where individual psychotherapy is a part of the study, e.g., in some cases of weight reduction. In this laboratory psychiatric competence and collaboration were also found useful in severe, experimentally induced nutritional stresses.^{4,5} When we leave the premises of the laboratory and the medical clinic, and this on occasion we must do, we need the professional help of the social scientist, preferably one with an anthropologic bent. This may lead us into the study of economics and agriculture, an approach that appears to be basic to the improvement of the nutritional status in the underdeveloped and underfed parts of the world.

The canvas is vast, almost overwhelming. Yet, within this perspective there is place for research on partial problems and for improvement of methodology.^{6,7} It is in this way that scientific progress is actually made. For science usually marches in small steps; it is the exception rather than the rule that the individual scientist puts on "seven-league boots."

I have stressed, perhaps to excess, the complex character of the interrelationship between nutrition and behavior and the essentially interdisciplinary character of this field of study. Two specific points should be added. First, the chain cannot be stronger than its separate links. This emphasizes again the importance of developing better research methods and more adequate conceptual systems within the single disciplines. In particular, the crucial area of quantitative personality assessment is in need of such a development.

Second, in any interdisciplinary work everyone is a bit (and at times a good deal) uncomfortable. It is the very fact of *limited* personal competence that is the *raison d'etre* of the team approach to some of the separate problems and certainly to the field as a whole. I am sure that at this Symposium there will be times when the nutritionists will feel lost in the refinements of behavioral methods, while the psychologists will wish they knew more about biochemistry. The fact remains that we deal with nutrition *and* behavior, and that solid progress can be made only by *pooling* information and methods of physiologic and behavioral sciences. This Symposium should serve to document, in a measure, the effectiveness and the desirability of such an approach.

No attempt will be made to cover the whole field. Little or nothing will be said about such relevant topics as nutrition with reference to industrial work,⁸ vision,⁹ children's feeding problems, undernutrition due to psychologic maladjustment, or the psychiatric aspects of dieting other than that aiming at weight reduction.¹⁰ Nevertheless, it is hoped that the papers to follow will indicate something of the geography of this border area and its contribution to the wider science of human nutrition.

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