

PD-AAW-907

NUTRITION COLLABORATIVE RESEARCH SUPPORT PROGRAM

First Report of the

External Evaluation Panel: January 20, 1983

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FOREWORD

When the possibility was first formally considered some years ago of seriously examining the consequences of less-than-severe malnutrition for five selected human functions, it was recognized that a major effort would be required, unprecedented in scope, costs, and complexity, and without tested methodological guides with respect to some of these functions. Nevertheless, the potentially profound implications for individuals, households, communities, and societies of the relationship between food intakes and human functions were considered to justify a research effort across several countries.

The decision to fund this set of major investigations was made in full recognition that only a partial base of experience and data existed for studying some functions, and little or none existed for others. The risks of obtaining reliable research results for all five functions (resistance to disease, reproductive competence, cognitive development, work performance, and social performance or activity) were evident.

The three country multi-institutional collaboration, organized and managed by the University of California, Berkeley (UCB), with financial support from U.S.A.I.D., has designed such an investigation and is now at the point of launching full-scale data collection in the field. The External Evaluation Panel has been asked to review the effort thus far, including the conceptual design, work plans, and management arrangements.

The Panel's report that follows reflects the tension between two points of view. The first is the breadth, depth and boldness of the research design conceived by UCB in "going for all of it." The second is the Panel's serious reservations that "going for all of it" all at once risks accomplishing none of it. This is not a matter of "I-would-rather-fail-in-a grand-venture-than-succeed-small-ones." The likelihood is that financial support on the scale already made available is an opportunity that may not occur again soon. For this reason, the Panel is inclined toward an incremental approach that can master the early problems and then build on this experience. Thus, the Panel's observations and suggestions are directed at preserving the conceptual pioneering but within more knowable and manageable boundaries.

SUMMARY OF MAIN FINDINGS

The External Evaluation Panel considers that the research effort thus far on intake - functions relationships can be productive and should proceed subject to the following findings:

1. The conceptual design requires modification to assure the most direct and cost/effective way to clarify the central question of intake - functions relationships. The present concept of a holistic or total system approach appears to be high risk because the problems of analysis of the "system" are formidable (and perhaps insurmountable) and would entail an effort of model building and testing calling for quite unpredictable time and resource needs.
2. Design modification should aim at achieving a specified minimum level of information on the association between lower-than-average-intakes (and/or lower-than-standard growth performance) and two functions that have the highest probability of being manageable. Two such functions appear to be (a) the ability of children to resist infectious diseases and (b) the ages at which they pass certain stages of cognitive development. The preliminary informal reaction of the three country investigators is that these two choices seem reasonable and achievable.
3. The sample design may be improved by stratifying households on the basis of two variables: (a) a socio-economic proxy for household food intake and (b) the age of the lead female.
4. The work plan for the first year of field data collection must be sure to respond to the question of "what must we do now to get, after one year of field work, a good grip on whether and how intakes of children are associated with resistance to infectious diseases and with the progress in cognitive development."
5. If this defined priority work can only be achieved by deferring work on other functions, then such adjustments should be made. Whether this priority to the two functions can be accomplished concurrently with work on one or two other functions without strain on staff time and budgets, is a matter of judgment by UCB and its collaborators. The correctness of this judgment will be demonstrated by the quality and relevance of the data produced at the end of the first year of data collection and by whether the design permits meaningful review at that time.
6. At this time, the Panel doubts that it is feasible to study successfully all five functions concurrently. The Conceptual uncertainty of the social performance function (it now appears impossible to treat it within the core research design) suggests that it be dropped from core research activities. (See item 9, non-core research funding.)

7. Each site should have a full-time statistician to serve as data analyst/manager. In addition, a full-time senior statistician should be recruited by UCB to guide and help resolve statistical problems in the three sites. It would be useful even at this early date to lay out a set of tabulations and cross-tabulations that will be needed in any case. Present data management time schedules need to be re-examined in light of probable operational difficulties under field conditions.
8. UCB should intensify its efforts to recruit an experienced full-time project director to work with the investigators in the three sites on facilitating consensus on specific questions, allocating funds for such questions, working out differences on design issues, and initiating course corrections when necessary.
9. Until UCB has a clearer view of the resources needed for core research, financial support for non-core research should be limited to a level lower than 15-20% of total resources for data collection except for non-core research proposals demonstrably relevant to the purposes of the core research. In this connection, small studies in each site of the social performance or "activity" function may be justified to assist later decisions on what to do, if anything, in more sharply defining this function.
10. The modification proposed by the Panel, if accepted by U.C.B., may be accomplished by mid-1983, and in this event, there is no reason to delay further the initiation of data collection into Phase II of the program.

I. Conceptual Framework of the Research Design

The Panel recognizes that the major goal of CRSP must be to increase understanding of the relationships between food consumption and function. We agree also that those aspects of function which are identified as both significant and measurable should be studied within the household context and under as "natural" conditions as possible.

Discussion within the Panel has focused on two alternative ways of establishing a design framework:

- i. A total system approach would require the collection of data on all members of the household such that the expression of the various functions, and their interactions could be studied. In theory, such an approach could yield information not only about the intake/function relationship in different kinds of individuals, but could also show how those relationships are expressed in different kinds of households. This seems to have been the philosophy behind the CRSP design so far. However, a significant compromise has been made by eliminating older adults from the study.
- ii. A conservative approach would place first priority on the collection of data on specific kinds of individuals (e.g., the younger children). But it would also provide the basis for assessing the influence of "first order" personal interactions such as the health status and attitudinal responses of the mother and of others likely to be involved in child care

since these are factors which may modify the expression of the intake/functional relationship in the child. In addition, in analyzing the results, it would be necessary to be able to allow for a number of confounding factors related to the household such as the demographic structure, and socio-economic status. This approach, whilst recognizing that the individual is part of a larger system (the household) and that the household is also part of a yet larger system (the community), also respects the need to define the boundaries of the system to be studied with due regard for practicality. Thus, although it is important to know the current status and competence of the child caring adults, it is less important (in terms of research priorities) to know about the second order causes such as how the adult's intakes determine their health status, and less important still to know about the third order causes such as how the psychological states of those adults are conditioned by their social activities and personal relationships with other individuals within and outside the household. The study of these second and third order relationships would be seen as justifiable on their own merits as part of the program to the extent that they did not prejudice the first priority measurements either directly, or by absorbing data collecting, handling or processing resources.

In the view of the panel, the holistic or total system approach might, if successful, yield information of great significance for policy, particularly if it should emerge that relatively small deficits of intake have important biological or social effects. As against this, however, the approach must be regarded as a high risk one, particularly if a "no effect" result is obtained. In the first place, all family members would have to be included. The current proposal omits older people and will inevitably raise the criticisms that such people are often of vital importance in child care, and that they also make economic contributions to the household either directly or indirectly. Secondly, the volume of data required will be such as to place the whole project at risk of failure of management. Thirdly, the level of observer interference is very greatly increased. Finally and perhaps most fundamentally, the size of the sample required to have a reasonable chance of detecting significant effects or relationships and the problem of analyzing the "system" are formidable (in the view of some panel members, insurmountable), and would entail a program of model building and testing calling for quite unpredictable time and resource needs.

By contrast, the conservative approach could result in a design giving the maximum assurance of achieving during the first year of data collection at least a certain minimum level of information about, say, two functions, e.g., the association between lower-than-average intakes and/or lower-than-standard growth performance in children and their ability to resist infectious disease, and the ages at which they pass certain stages of cognitive development. In the view of the panel, this should be considered by the program designers as constituting a minimum achievable target.

The Review Panel believes that an appropriate sampling procedure, coupled with assessment of health and attitudes, and socio-economic status of individuals and households at the beginning and at the end of the two year period, will ensure that the first order interactions can be measured, and the confounding household characteristics can be adequately taken into account. It is not the intention of the Panel to suggest that the projects be limited to the minimum achievable target design. We suggest that having arrived at an

initial design which will secure at least that desirable outcome, more components should be added to the core in order to arrive at a final design, which will likely require less data than the current proposal. However, it is not possible to say in any detail how much less data will be needed than for the holistic approach: clearly some extra information on older adults would need to be included, but much intake and behavioral observation data on adults might be excluded. However, this will only emerge as designs are elaborated for each of the project areas: what we are advocating is a stepwise approach which includes data beyond that needed for the minimum achievable target only when the resulting marginal increment in resource cost can be shown to be both justifiable in scientific terms, and also not likely to reduce materially the chance of achieving the priority target.

II. Sample Design

These comments are made with respect to the sample design described in Section 5 of the CRSP report to the External Evaluation Panel dated December 1982 and in Annex I-C of the report. An important decision was to make no attempt to choose households that are statistically representative of the population of households in each study community, even though it would not be difficult to achieve such representation at very little extra cost. The proposed design selects households with very young (0-2) children and with school age children. The sampling method in summary form is:

- i. Collect demographic information on entire population of households in the study community.
- ii. Identify two subpopulations of households:
 - a. all households containing a child 0-2 years (subpopulation A)
 - b. all households containing a child 7-10 years (subpopulation B)
- iii. Select an intake proxy.
- iv. Scale the intake proxy measure over the two subpopulations separately, using a feasible and consistent method, and stratify the two populations using this criterion.
- v. Randomly sample the strategy for the two subpopulations and merge into one core sample frame of households.

There are two problems with the sample design. First, by restricting the sample choice of the two sub-populations with at least one child in the age group 0-2 or in school age, an inevitable selection bias enters, though its extent cannot be assessed a priori. The reason is that the observed number of children of various age groups in each household is a net result of the fertility and mortality experience of the household, both of which would have been influenced by its intake-nutritional status-mortality nexus. Thus, households which experienced a favorable fertility-mortality outcome (possibly because of favorable intake history) have a greater chance of being represented in the two sub-populations. Also, it is likely that the younger households may be over-represented (relative to their proportion in the population) in sub-population A and somewhat older households in sub-population B.

The second and perhaps more serious problem is the stratification by an intake proxy. As the CRSP group itself recognizes (p. 25 of the Report), stratification on the basis of intakes might confound the analysis. Specifically, if a function (say, work output), is influenced by intake, but the causation also operates the other way in some cases (that is, intake is influenced by the work output), the same observed intake of different households may be the resultant of either of these directions of causation. This will also mean that the direction of the intake-work output relationship cannot be identified from the data.

Whether or not one considers the confounding effect of stratification by an intake proxy serious, there is the further problem that the intake would be that of the household as a whole, whereas it is the individual within a household such as the pre-schooler, lead person, or schooler who will actually be studied. Given this, it seems that the household level intake proxy is best regarded as a proxy for the household's socio-economic status (SES) rather than anything else. The Panel considers that it would be more appropriate and less likely to have a confounding effect, if the stratification were to be done on the basis of an SES proxy or perhaps an SES proxy and an additional variable such as the age of the leading female. If that were done, households at different stages of the reproductive span would be covered. In choosing an SES proxy, it would be necessary to look for determinants of the long-term SES of the household rather than for an indicator of current income, since current income is likely to be highly correlated with the intake proxy. At this early stage, it may not be possible to get SES data, but this could be collected when teams have been long enough in the field to establish their bonafides.

The reasons offered for ensuring that a pre-schooler or a schooler (or both) is present in every sample household are persuasive. Nevertheless, since not only successful fertility-mortality experience as seen from the presence of such children, but also unsuccessful experience (to the extent it is related to maternal or child intake history) is of interest, the Panel believes that such households should not be left entirely out of the sample. We suggest that at least a partial accommodation could be made in this direction by defining the two subpopulations as (A) in which a preschool (0-2) child is present at the time of survey or was present within two year prior to the survey; (B) a schooler is present or was present within two years prior to the survey. Subpopulation (B) so defined is not likely to be very different

from the corresponding sub-population as defined by CRSP. An alternative definition of subpopulations and one which the Panel favors, would be to focus on age of the lead female. The reproductive spans could be divided into a suitable number of intervals, and an appropriate number of households (not necessarily equal) could be chosen from each, so that the sample will have enough schoolers, pre-schoolers and adolescents.

To conclude, the suggestion is to sample after stratifying the households on the basis of two variables (i) a socio-economic status proxy and (ii) age of the lead female.

III. Data Management

The extract from the report of the Technical Advisory Group (TAG) on statistical design and data management is admirably clear in laying down the principles of sound data management and laying down some alternatives in decreasing order of their desirability. Understandably, it does not adequately address some mundane but vitally important operational issues and above all does not lay down a firm schedule in terms of a detailed PERT chart for each of the major components of the research. The Panel regards as extremely unrealistic the TAG's view of the likely time lapse between primary data collection in the field and its transfer to the three data centers (host country, the university involved, and Berkeley). This view is reproduced below.

As an operating guideline it should be a reasonable expectation that primary data (NCR forms) will be transferred between data centers in the system (see flow diagrams) on a biweekly schedule and computer-entered data tapes on a monthly schedule, that restricted data flow to the core data base on a monthly schedule and that the time lapse between field data collection and entry of edited data into the core data base be no more than 4 months; this assumes that the time required between collection in the field to edited "good" data in the U.S. country project data base is 3 months or less and that final revisions of the core data are then complete within 4 months. Transfer of data from country to the U.S. will be by hard copy NCR form (biweekly) and computer tapes (biweekly or monthly). Transfer of data between the U.S. country project data base and the core data base might be by computer tape or by direct linkage of computers.

It is not clear what is meant by "hard copy NCR form." If it means a copy of field level schedules of enquiry, the panel has serious reservations as to the feasibility and desirability of such copying and transferring.

Time scheduling is of critical concern because all schedules of enquiry do not yet seem to be available in a final/field tested form. Even if they are, it is not clear whether they are in a form that enables all data to be transferred directly from them to data cards or tapes without going through an intermediate stage of transfer to code sheets. Decisions have to be taken as to how many (and in what form) data files are to be created and these will depend on proposed analysis. Also, it is not clear what sort of mechanism is in place for field level supervision and scrutiny of data as they are being collected. The TAG rightly emphasizes documentation of everything done to the

primary data. However, to do this properly, edit programs have to be written, the formats for documenting actions taken on the basis of whatever error messages are thrown up at various levels of editing have to be laid out. It is possible that some of these tasks are already on hand. The Panel would like to be reassured on this.

It is not too early to think about analysis of the data generated. While more sophisticated multivariate statistical analysis must await the development by the CRSP group of an analytical model or models and a set of hypotheses to be tested, it is possible to lay out even now a set of simple tabulations and cross-tabulations that will be of interest in any case.

It is of the utmost importance that a fulltime statistician to serve as data manager/analyst is appointed for each site right away if it has not been done already. A fulltime senior statistician should also be recruited, preferably at the same time, to guide and help resolve statistical problems that arise in the three sites. Because the outcome variables are jointly dependent on the exploratory or independent variables, it will not be easy for country investigators and UCB, the management entity, having little prior knowledge about the nature of their joint distribution conditioned on the exploratory variables, to assess various data/costs trade-offs. The statisticians will have to recommend early critical decisions mostly on the basis of their experience and judgment rather than on prior information about the relationships being studied

IV. Project Director

UCB should intensify its efforts to recruit a fulltime project director to oversee the design of core studies and to help select and sharpen the chief questions to be asked in each of the research (functions) areas, especially those questions needed to achieve the minimum first year data collection targets. The project director must guide country investigators and statisticians on study designs, sample sizes, and the data capture instruments and determine the methods of analysis and the money needed to answer the key questions. That person must deal on a day-to-day basis with trade-offs between the simplicity of design uniformity across sites, the cost-effectiveness of site-specific designs, and differences of view among the country teams on a host of policy and technical issues. The UCB co-administrators have other responsibilities and must have a project directly that corresponds to a chief operating officer.

V. Notes on Selected Functions Morbidity

Certain aspects of the morbidity protocol deserve attention. As we understand it, data on physical illnesses only, are to be collected and such collection will be triggered mostly when the occurrence of such an illness is brought to the notice of the investigators. It seems to us that to exclude psychological illnesses would be unfortunate, particularly because the functions to be studied will be affected not only by intake but also by the psychological state of the child or adult as the case may be (e.g., depression, bizarre behavior, irascibility, etc.). Since the perception by the individual or the household of an episode of illness may depend upon its

severity and persistence, as well as the socio-economic status of the household, there is a danger that some episodes may not be brought to the attention of the investigators and their consequences (for example, in terms of absence from school or work) will go unrecorded. On the other hand, some individuals may overstate the true extent of their illness. Great care, therefore is needed in designing the instruments of enquiry into morbidity

Cognition and Behavior

The Panel is of the view that the literature deserves further review to identify as yet open research issues on the intake-cognitive development nexus. There appears to be a tendency to administer available standard tests without carefully considering the relevant dimensions of cognition measured by these tests and their link to nutrition. These tests may not be sharp enough to detect the possibly weak association between nutrition and cognition. Not much attention has been given to the conditions under which the "tests" are administered. There is a need to go beyond traditional "intelligence" indices and the aim should be to develop an index that takes into account of biological and sociological variables and measures the risk of failure or vulnerability of a child in cognitive development. Excessive attention is devoted in the CRSP to early childhood. At the same time, the inclusion of early adolescent in the design is wise because it is only in the later years of childhood that some of the outcome variables can be assessed. (A fuller discussion and suggestion on this function by Dr. Yarrow appear in an annex to this report.

Social Performance or Activity

The reason that CRSP has not come up with a general model for societal performance research is that, apart from the most general and necessarily almost trivial kind, it is impossible to do. If research is to be pursued on the social performance consequences of varying intakes, separate research models must be initially constructed for each of the sites or social universes under study. But because research would have to be done separately and tailored differently to conditions and local experience at each site and therefore is not utilizable by all three sites, the social performance function cannot fit the core design. Nevertheless, such separate efforts may be eligible for non-core research support and may produce important information for later decisions on whether and how to pursue this function, if at all. (A fuller discussion on this function by Dr. Adams is in an annex to this report.)

VI. Policy on Non-Core Research

Until UCB has a clearer view of what will be required for core research, it seems prudent to limit initial commitments for non-core research support to a level substantially lower than the current levels of 15-20% of total resources for data collection, except where non-core research proposals are demonstrably relevant to the purposes of the core research, e.g., specific non-energy nutrient intakes as related to human function, testing alternative measurement techniques, etc. The foregoing implies that the principal investigators carefully screen non-core proposals and that U.C. Berkeley retain control on approvals and rejections.

VII. The Next Panel Review

The Panel intends to review at its next visit what steps have been taken in connection with the issues discussed earlier in this report. Specifically, the Panel will want to learn the following:

- a. that modifications, if any, have been made on the priority of functions to be studied and the kinds of data to be collected in light of suggested modification of overall concept and design, including dropping social performance from the core research and pursuing alternative separate studies in this functional area?
- b. What modifications have been made on sampling?
- c. What timetable and benchmarks have been set for data collection in the first year with specific reference to morbidity and cognitive development?
- d. What specific responsibilities have been assigned to whom for data management?
- e. What changes, if any, have been made on policies for support of non-core research?
- f. What other actions have been taken since January 1983?

Three days of Panel discussions and review have not been enough to do justice to the complexities and subtleties of the research design. The Panel has been able to confirm the potential importance of attempting to determine relationships, if any, between intakes and selected functions and to subscribe to the general direction of the research effort organized by U.C. Berkeley. But the Panel has urged significant modification of the particular design selected by U.C. Berkeley to assure the most direct and cost/effective way to clarify the central question of intake-function relationships.

The decision on when to proceed with full scale data collection rests with U.C. Berkeley and AID. The modifications proposed by the Panel, if accepted by U.C. Berkeley, may be accomplished before mid-1983. In this event, there is no reason to delay the implementation of Phase II data collection. If, however, U.C. Berkeley finds the proposed modifications unacceptable, the Panel is prepared, if invited, to review the reasons for this at its next visit.

ANNEX A

Annex A

Additional Comments on Cognitive and Behavior (Dr. Yarrow)

The following comments, questions, and suggestions focus on conceptualizations of, and assessments of the behavior of children. The spectrum of variables that are dealt with in the protocol includes (a) sensory-motor dimensions, (b) perceptual, attentional, and cognitive processes, (c) the child's regulation of his/her behavior, (d) the child's interactions with the physical and social environment, and (e) aspects of the child's environment (in particular maternal and home variables) assumed to be significant stimulus conditions for child development.

The materials provided for the Panel regarding cognition, learning, activity and performance of children are referred to in a variety of places. These discussions and references have been extracted from documents and are the basis of our review. It is recognized that we have only partial information in the write-ups available to us, and that more detailed descriptions of rationale, research questions, and procedures may address some of the issues raised by the committee in the following comments.

The Panel's first concern is about the research questions (or hypotheses) that have guided investigation of this domain, what guidance has come from previous research findings: from (a) previous human research on malnutrition and behavior, (b) the experimental work on animals, (c) recent work on moderately malnourished children and on children with specific nutrient deficits, and (d) research in developmental psychology in general.

The Panel feels that the links from past research to proposed CRSP research, or from theory to CRSP research and procedures have not been presented, and we are unable to judge whether or not they have been adequately made. We might have taken upon ourselves the responsibility for examining the assembled battery of proposed tests to try to identify the dimensions or variables which they contain, and thereby to construct the nutrition-behavior associations of interest. However, this was not our task. The Panel feels that it is absolutely necessary to make the research questions explicit. In other words, what are the bases of selection of the particular variables of cognition and behavior. This task is, of course, closely followed by justification of the procedures relied upon to index each variable.

It will be recalled that in the workshop on cognition (one of the forerunners of CRSP), there was unanimous opinion, expressed by a group of researchers whose names are well known in nutrition-behavior studies, that global cognitive tests had served an earlier stage of research in this field; that they were not likely to yield more definitive information about nutrient-behavior relationships. However, from the materials we have received, such global associations receive considerable emphasis in the present protocol.

What seems clear, also, from past research is that conceptions of psychological or behavioral outcomes must be expanded beyond the traditional "intelligence" or cognitive indices. Animal and child research suggests a

number of capacities which are likely to be impaired: namely, (a) the organism's abilities to respond to (make use of) environmental stimulation, (b) attentional abilities, (c) learning and problem-solving capacities, (d) activity level (both extremes, of apathy and hyperactivity, appear), (e) regulation of behavior (e.g., impulse control, unregulated aggression and emotion, stress-resistance). This is not an exhaustive or exclusive list. These behaviors are all measurable and quantifiable, and certainly are the kinds of consequences and impairments that have significance for the functioning of the child and family. Some specification within the gross category of "cognition" is essential. (Cognition as a term becomes quite meaningless -- to cover everything non-biological.)

The Panel does not feel that the research questions listed under "Cognition" (A -227-B) are adequate or reflect a probing research analysis of this area, namely, "what aspects of cognitive development are affected by undernutrition?" Do biological and socio-economic factors act synergistically to affect cognitive development? Development of Cumulative Risk Index. "What are the characteristics of the 'invulnerable child'?"

The preceding comments reflect strong feeling by the Panel that the basic formulation of the research questions (identifying specific research objectives and research variables) needs to be communicated.

A second consideration of the committee concerned the ages of children who will be studied. In the opinion of the Panel, there is great potential strength in this project in the fact that early childhood, midchildhood and early adolescence are to be studied. Without in any way detracting from the importance of the first years, it should be recognized that it is only in the later years of childhood that some of the outcome variables can be assessed. This is true of many aspects of problem-solving, learning, and emotional control, behavior problems, etc. Moreover, the status measures of the older children also provide indirect information concerning the degree of permanence of impairments that appear in the early years. Do the impairments that are documented in infancy and early childhood persist into childhood and adolescence?

There are good opportunities in this study to do a number of things across ages:

- (a) to measure the dimensions of function at each of the ages;
- (b) to measure the children from multiple data sources (tests, observations, parent or teacher questionnaire reports);
- (c) obtain mini-longitudinal measures (e.g., 2-year assessments) to assess the stabilities and/or developmental changes with regard to given functions.

There are indications in the material presented that suggest midchildhood and early adolescent periods will get less attention than the early period. This would be unfortunate. Are there any other investigations in the literature that have dealt with the broader age span? Could this not be a particularly significant contribution from the CRSP? The Panel recommends that this part of the protocol be expanded and clarified.

We would like to offer a comment about the conception of psychological development that is important for this area of study: Advances in understanding the course of child development in sensory-motor function, and thought processes have been solid and have given the field a substantial set of assessment procedures. However, this constitutes only one aspect of the functioning child. The science deals also with the emotional, motivational, and interactive behavior of the developing child. The very close relationship between cognition and emotion emphasizes the inadequacy of "pure cognition" as an indicator of how behavior is, or is not, influenced by food intake.

In the CRSP study, there is considerable opportunity and challenge to utilize the findings, assessments and perspectives of investigators working with children who are "at risk" for many different kinds of biological problems.

The Panel recommends that behavioral assessment, at each of the age levels, be extended to include measures of behavior regulation and motivation (specified on p. 13).

How adequately do the chosen instruments provide the desired assessments?

a. Bayley, Uzgiris-Hunt, McCarthy, Wechsler have been mentioned as the tests to be given. It should be important to identify the specific dimensions or subtests that are assessed by this and that will be used in analysis. We do not have information, neither do we know the rationale for choosing these tests. What are the dimensions believed to be progressively measured by repeated testing using this battery of tests? How well-suited to the several countries are these tests?

b. The observations of child will be made in the home. Like the standard testing cited above, the design of the proposed home observations, needs further specification. What are the variables to be observed, and what standards have to be met in the sampling of behavior? How site-specific are the measures?

c. School data will be utilized -- records and test assessments. The school provides an excellent setting for assessment. It is suggested that this source of data be given further consideration. There are some excellent standardized instruments for assessing behavior problems and competences of children. These have been standardized by age and sex on U.S. populations (for example, the Achenbach questionnaire check-list that would be filled out by teachers).

Are the testing conditions and testing intervals adequate?

It is strongly recommended that careful attention be given to the "testing" conditions. It is not a good idea (and probably not part of the culture) to take a child off with an adult to be tested. To some extent, this cannot be avoided; however, it is also possible to "orchestrate" child assessment sessions or settings in ways that are "good for the child", are efficient for data gathering, and provide information on important behavioral dimensions. One way to accomplish individual testing and observation of natural interactive behavior is to bring together 5 to 6 children at a time in

a play-like setting. What transpires can be carefully staged as a standard situation for measuring children's activity level, play capacities, aggression, apathy, etc. -- whatever the specific variables of interest. Direct precoded observational data are thus obtained under standard situations and on 5 to 6 children. During these sessions, individual children are taken to an adjoining room for individual tests. This strategy has been used in field settings similar to those involved in the CRSP research. The method greatly speeds up and standardizes observational data, and can be adapted to any age level.

In summary, the Panel feels that psychological-behavioral assessments should be dealt with in ways that:

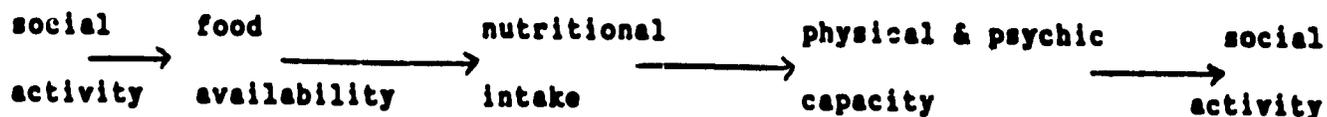
- (a) more clearly specify the research problems and variables;
- (b) reflect adequately the best state of the science (particularly developmental psychology) and;
- (c) carefully justify the procedures used to measure the variables.

ANNEX B

Annex B

Additional Comments on Social Performance or Activity (Dr. Adams)

The logic of relating nutritional intake to an area of social activity depends on the presence of a series of intermediate processes. Presumably the picture is something as follows:



As currently written, CRSP seems to emphasize the intake-capability-activity portion. Discussion with project personnel suggests that it was originally intended to include the activity-availability-intake portion.

If the entire paradigm of activity-intake-activity is of relevance, then it must be spelled out, and modeled in much clearer terms in detail than is currently the case.

The CRSP group has been unable to delineate a model for the study of social performance. There is no research plan that seems seriously related to the question of the consequences of intake (not to mention the antecedents).

There are good reasons for this situation. A social organization -- whatever its proportions and structure may be -- cannot have the integral degree of self-organization and self-reproducibility that is characteristic of the human organism. The nearest thing one might find are highly knitted corporate organizations -- such as the Catholic Church or secret societies -- but even they are subject to the individual vagaries of their separate members. As a result, all societal formations are highly individualistic and follow unique patterns. Any structural map of societies that serves for all must be so highly generalized as to be almost useless as a map of any of them. Such generalized maps are useful for purposes of social research but quickly lose their relevance when the concern is with the operation of a single society.

One consequence of societal individualism is that it is quite impossible to make any serious specific prediction about a given society without considerable previous specific knowledge of how it is organized. This is as true for predicting the presence or absence of some specific characteristics as it is for the potential consequences of a novel input.

In short, the reason that the CRSP researchers have not come up with a general model for societal performance research is that, apart from one of the most general and necessarily almost trivial kind, it is impossible to do so.

If research is to be pursued on the social performance consequences of varying nutritional intake, separate research models must be initially constructed for each of the communities or social universes under study. This work may be eligible for non-core research support.

It is evident from the project material to date that it has been hoped that some kind of protocols could be designed for a core component on social performance. The way that the core is defined is that it refers to particular components that are to be used by all projects. Thus, any research design component that is not utilizable by all three research sites is -- by definition -- not part of the core.

This poses an interesting problem. If it were the case that ethnographic data were important for all three projects -- beyond the most general kind of preliminary non-specific material -- the design and carrying out of the research would have to be done separately and differently by each project. The way that core is defined would require, then, that such study would be excluded from the research core. Since discretionary research peculiar to a given site is in a state of financial limbo until specific decisions are made with respect to it, any serious ethnographic research on social performance is excluded by definition from the core and apparently must be separated decided upon by CRSP and the individual site research directors.

If social performance is to be a component of core research, then either the definition of core research must be altered to allow the appropriate research, or separate design components and funding will have to be arranged in order to do it.

The design of the social performance component depends on some basic decisions as to what it is that one may want to know about the consequences of nutritional intake variation. Since the potential effect of nutritional variation is much more indeterministic in the social sphere than in the organic (although certainly no less salient or significant), the design of that research must in considerable degree be developed as the research is carried out. The logic of this should not be difficult to follow. If one is studying something that is stable over some period of time, then it is possible to construct a research design that will work over that period of time. If the events to be researched are highly stochastic and are individually less stable, then any design must follow on the more immediate state of the events. In short, what has to be studied, must, in considerable part be determined -- and thus designed -- as the state of the system becomes evident.

If social performance consequences are to be studied, then appropriate patterns of research design must be defined as allowable and legitimate within the general research plan.

Methodological reasons already mentioned effectively exclude social performance from the core. Arguments given earlier in this report suggest that the primary focus of the research ought to be on the intake-physical function phase of the total process.

While the intake-function is clearly of primary importance, it seems equally clear that the original conception of the project explicitly sought to trace the effects of intake-derived functional variables as they affected the individual social performance and thus indirectly also the on-going societal operation dependent upon that individual's performance. For reasons stated earlier, it is clear that such research must be individually tailored to the

various research sites and local experiences. The importance of findings in these separate studies and of whether they reveal patterns that are suggestive of larger hypotheses on social performance, is obviously an uncertain, but nonetheless extremely important potential product of the research

If social performance research is to be done in the immediate future, research on the problem of social consequences should be initiated separately by each project in order to develop separate research plans. The purpose of these plans is to obtain some estimate as to the cost and potential substantive yield that may be possible from such research. The future inclusion of social performance in some core capacity will be determined on the basis of the degree of promise of the plans as presented. A specific attempt will then be made to define what might be core designs materials collectively appropriate to the projects.

The term "ethnographic" is very general -- it merely means the direct study of a society and culture. To say that one does an "ethnographic study" is no more specific than to say that one is doing "nutritional research." The question remains completely open as to what one may be studying within the rather large universe thus delineated.

One of the cardinal historical characteristics of ethnographies is that if one is exploring a new subject matter in whatever field for information, it is unlikely that very much of relevance will be found in existing ethnographies. This is simply because ethnographers will, as a general rule, study that of which they are aware. The consequences of the above two points is that if one wants a particular ethnographic information, specific research attention must be paid to that subject matter.

If information is desired on the effects on social performance of varying nutritional intakes in particular societies, initial and continuing ethnographic attention will have to be specifically directed to that subject. A single staff ethnographer may or may not be adequate for this.