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ABSTRACT

The broad design features of a national day care cost effectiveness experiment, made to assist the Office of Economic Activity in formulating a "request for proposals" to actually operate and implement such an experiment, are presented. An attempt has been made in the report to present rationales and recommendations about day care program types to be included; program documentation and evaluation; experimental design; collection and analysis of cost data; project management and administration; scheduling; and budgeting. Although primarily intended for legislators and policy makers, the information is also useful to parents, caregivers, day care operators, early education specialists, program developers, and parent action groups. Three major influences shaped the final design: the need to identify an optimal per-child annual cost for day care; to assess policy implications of the trend to shift day care out of the family home into group settings; and to explore the merits of merging day care and early childhood movements. (Author/DJ)

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Final Report

A DESIGN FOR A NATIONAL DAY CARE COST-EFFECTIVENESS EXPERIMENT

March 3, 1972

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Dennis Deloria
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February 29, 1972

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REFERENCES

A DESIGN FOR A NATIONAL DAY CARE COST-EFFECTIVENESS EXPERIMENT

Prepared for:

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ABSTRACT

Purpose of the report

This report presents the broad design features of a national day care cost-effectiveness experiment to assist the Office of Economic Opportunity in formulating a "request for proposals" to actually operate and implement such an experiment. An attempt has been made in the report to present rationales and recommendations about day care program types to be included; program documentation and evaluation; experimental design; collection and analysis of cost data; project management and administration; scheduling; and budgeting. While as many details as possible are provided, it was assumed that additional planning by the Prime Contractor selected for the experiment will be performed within each area examined in the report.

Purpose of the experiment

This experiment is primarily intended to obtain information about day care to meet the information needs of legislators and policy makers, but it was also designed to obtain a range of information potentially useful to

parents, caregivers, day care operators, early education specialists, program developers, researchers, and parent action groups. Three major influences shaped the final design. The first is the need to identify an optimal per-child annual cost for day care to guide legislation currently before congress. Second is the need to assess the policy implications of the apparent legislative trend to shift day care out of family homes and into group settings. A third need is to explore the merits of the merging day care and early childhood education movements. Within these three broad constraints the needs of the variety of users mentioned above have also been addressed.

A series of initial specifications for the design were identified by OEO:

Initial Specifications for the Design

Target population

- Primarily potential Family Assistance Plan families, with preference given to single-parent families
- Children who have not reached public school age, but preferably older than three

Day care programs

- Must represent a range of major existing educational and child care philosophies along the continuum from structured to unstructured
- Must include both family day care programs and center day care programs
- Must represent several levels of funding, ranging from considerably below the current average to considerably above
- Must realistically meet the needs of the families by being conveniently accessible, cost-free, and operational ten hours per day, year-round, corresponding to the typical U.S. work calendar

- Must provide health and nutritional services to all children according to acceptable standards, such as those for Head Start, rather than varying these services experimentally

- Must be operated in sites that provide reasonable job opportunities for single parents who wish to work

- Must be patterned after existing programs, although formulated for independent operation within the study, and closely administered and monitored to insure program "purity" to type

Scope of effort

- A study of three to five years was specified, with funding up to several million dollars per year

Day Care Program Typology for the Experiment

The day care program typology selected for the design has four dimensions. The first dimension includes three levels of caregiver/child ratios (1:6, 1:10, and 1:15), functionally defined as caregiver/child contact hours. This dimension was selected because it represents the largest source of day care operational expense. In addition, it has been identified in previous research as an important determinant of the quality of care given to children. The 1:6 level was chosen because it represents the approximate ratio specified for children this age in the current Federal Interagency Day Care Requirements; 1:15 was chosen because it approximates a common ratio found in private for-profit child care programs as well as constituting a transitional level to the 1:20 ratios commonly found in kindergarten. A third ratio midway between these two (1:10) was included to permit identification of the shape of the cost-effectiveness curve connecting the other two.

The second dimension is composed of two basic settings for day care: family homes and centers. These were selected because of

Day Care Program Typology for the Experiment (Cont.)

the many who question the desirability of moving day care out of family homes and into group settings, which is a trend in pending legislation and statements of day care need. Although centers included in this experiment will be operated at all three of the caregiver/child ratios specified above, family homes will be operated at only the 1:6 ratio because of the difficulties in caring for large numbers of children with only one adult present.

The third dimension is the cost distinction between providing formal training to caregivers or relying on the informal, natural training occurring in most current day care programs. This distinction was selected because it was considered important to the delivery of quality child care; because it introduced another large cost factor; and because it seemed one acceptable way to operationalize the hard-to-define "custodial/developmental" distinction widely debated. In addition to all the resources of the informal training for a particular caregiver/child ratio and setting, programs with formal training will include a person to train caregivers; training materials; scheduled release time for trainees; and a formal preschool curriculum framework for the training.

A fourth dimension, nested within the third dimension, involves different formal preschool curricula used as frameworks for the formal training. Three curricula, the Child-Centered, Open-Framework, and Programmed, were selected to represent the three dominant positions held by early education specialists. In a Child-Centered Curriculum (probably the most widely used of these types), development of children's social skills, ego awareness, and ego strength is emphasized. An Open-Framework Curriculum would likely draw upon "cognitive" theorists such as Piaget or Bruner who view learning as a complex interaction between the organism and environment following a sequence of broadly defined stages. The third curriculum position, represented by a Programmed Curriculum, would be held by

behaviorists, generally following the principles of Skinner, who view children's learning as largely under the control of specific external stimuli.

The 16 program variations included in the final design are displayed in Figure 1.

Day Care Program Measurement

Three different approaches are recommended for measuring program characteristics and effects: outcome measurement, treatment documentation, and case studies. Outcome measurement includes a broad range of techniques commonly used to evaluate program outcomes for children, parents, families, and communities. Child variables to be measured include physical development, cognitive development, and social-emotional development; parental variables include parent-child relations, parent attitudes and employment, marital effects, and parent-center relations; community variables include employment rate, cooperation among community service agencies, and responsiveness of agencies to families. Basically, five different outcome measurement techniques will be used: routine records, interviews and questionnaires, videotape recordings, classroom observations, and structured testing situations. Findings from the outcome measures will be used to answer the central research questions about cost, setting, training, and curriculum implicit in the typology above.

Treatment documentation consists primarily of observation techniques using a "hard" documentation method such as videotape, but also including the examination of program records about services rendered, child health and nutrition, absences and turnover, and costs. There are two main purposes for treatment documentation: first, some of the outcome variables mentioned above can only be measured adequately by observing children in the process of acting within the day care setting; second, to draw conclusions about different program types based on outcome measurement, the programs must be systematically observed to assure that they remain "true to type." Treatment documentation will examine four domains of program variables: setting,

supplementary services, social and psychological qualities of the day care experience, and relations between the community and child care unit.

Day Care Program Measurement (Cont.)

Case studies are qualitative narrative descriptions of individual child care units. Such narratives will be compiled early in the experiment and periodically updated. They will be used to provide broad, detailed descriptions of the different program types to parents, caregivers, day care planners and administrators, and policy makers. In addition, case study narratives can be of assistance in the interpretation of outcome findings by providing a broader context for the qualitative measurements referred to above. The case studies will include statistics about program operation, subjective impressions of the operation, goals of the program, and descriptions of program components.

Experimental Design

Three replications of each of the 16 program types are recommended to permit estimation of "normal" program variability from site to site, as well as to ascertain the generalizability of findings. Three replications for each of the 16 program types involves a total of 48 child care units to be operated as part of the experiment. These 48 units would be assigned to six carefully balanced groups of eight units each, for operation in six moderately large urban sites throughout the country. Balanced assignment of program types to sites will permit tests of all main effects in Figure 1, in spite of the confounding effects of site differences, and the fact that not all program types will be operated at each site. There will be 30 children in each child care unit, or 240 per site, and an overall experiment total of 1440 children served.

Sites would be selected using 1970 Bureau of Census data describing the density of eligible families in neighborhoods where the programs could be run. A large number of eligible sites would be initially identified, then six would be randomly selected from geographic strata. These six would be surveyed more

closely to determine local day care need, employment opportunites, licensing regulations, public transportation, and available facilities. Sites failing to meet criteria in such concerns will be replaced by randomly selected alternates which meet the criteria. Eligible families will be identified by a central intake office for the site and randomly assigned to different child care units. An effort will be made to locate the eight units in each site as close to each other as possible, to minimize transportation inconvenience due to random assignment.

Data Analyses

Two broad kinds of analyses will be performed upon data collected in the experiment, statistical analysis and cost-effectiveness analysis. Statistical analysis will use multivariate analysis of variance procedures to test the central hypotheses, but will also use selected univariate parametric methods, nonparametric methods, and measures of association. Cost-effectiveness analyses will be conducted in two stages. First, a number of within-program and between-program comparisons will be calculated using cost data alone, which will be collected according to a functional accounting system and in a comparable way across all units in the experiment. Second, a combined analysis of cost and outcome data will be performed to determine the relationships of different cost inputs and program outcomes. The estimated annual cost per child among the 16 program types will vary from $1,553 to $2,656.

Project Organization

Three distinct levels of management are seen as necessary for this experiment: overall project management, site management, and child care unit management. Overall project management will be performed by a Prime Contractor, supported by subcontractors in certain areas such as implementation of the three formal preschool curricula, and in specialized research tasks. It is strongly recommended that a single Prime Contractor be given fiscal control of all levels of operation in the experiment, as well as final responsibility for the success of the experiment. The Prime Contractor will oversee the installation and

Project Organization (Cont.)

operation of all child care units at all sites, and will collect and analyze the research data. Site management will be performed by people indigenous to the site, but employed by the Prime Contractor. The functions would include assisting in the operation and data collection for all units at that site. Child care unit management will be the responsibility of a "head caregiver" in each unit, hired by the site manager and paid by the Prime Contractor. The head caregiver will be responsible for the proper day-to-day functioning of his or her own unit. Tasks of this position would include actual child care, but release time would also be provided for keeping records, contacting parents, hiring caregivers for the unit, and assisting in their training. To the extent that efficiency and requirements of the research design permit, individual child care units will be facsimiles of units outside of the project. This will assist in the generalization of findings to day care program types not embedded in a research project superstructure.

Project Time Schedule

The experiment as currently outlined is scheduled to operate for five years, and has four identifiable phases. The first phase is six months and includes project start-up activities, which initiate the hiring of key project personnel, site selection, and other activities preliminary to field operations. The second phase, which begins as soon as possible and lasts until the end of the first project year, is a pilot phase of operations. In this phase the program components and research methods would be tested using a portion of the overall target population. The third phase, which extends from the beginning of the second project year until the middle of the fifth year of the project, is the full operations phase. In this phase all day care services are provided and full data collection occurs. A fourth phase will overlap the operational phase considerably, but will concentrate most intensely in the final year or six months of the project. This is the final interpretation and reporting phase, which will include final data analysis and the formulation of comprehensive conclusions about the outcomes.

Continuing Information Dissemination

It should be stressed that information which is delayed until the end of the experiment may be of little value to many users, so data should be analyzed and results disseminated as early in the project as possible. To assist in this process, it is recommended that a public information office be established as part of the project to identify and prepare for dissemination any information that may be helpful to users. "Information" is conceived broadly, including not only outcomes of the formal research, but also descriptions of the methods used and problems encountered in conducting the experiment. If resources are available following the end of the five year project, an additional phase is recommended to permit longitudinal follow-up of project children into the public schools.

Project Budget

The overall cost needed to implement the project is roughly estimated to be $5,762,200 for a single year of full operations. Operation of the 48 child care units takes 55% of the total, or $3,152,250; project administration is 5% or $290,000; project research is 20% or $1,159,890; and indirect costs are 20%, or $1,160,060.

FIGURE 1

TYPOLOGY OF DAY CARE PROGRAM TYPES

CENTER DAY CARE

FUNCTIONAL TEACHER/CHILD RATIO	INFORMAL TRAINING	FORMAL TRAINING: CHILD-CENTERED	FORMAL TRAINING: OPEN FRAMEWORK	FORMAL TRAINING: PROGRAMMED APPROACH
1:6				
1:10				
1:15				

FAMILY DAY CARE

	INFORMAL TRAINING	FORMAL TRAINING: CHILD-CENTERED	FORMAL TRAINING: OPEN FRAMEWORK	FORMAL TRAINING: PROGRAMMED APPROACH
1:6				

1

INTRODUCTION

1.1 Autumn 1971: A Need and a Request

Growing demands for day care. The continuing increase over the last 25 years in numbers of parents desiring some form of day care for their children and in the numbers of children actually receiving such services is documented and taken as a point of departure in a number of major large-scale studies (such as Abt, 1971; Westinghouse-Westat, 1971). Moreover, there are consistent indications of a rapid acceleration of these trends in the forseeable future, including

- Increasingly audible demands for adequate day care from people who wish to substantially reduce the need for welfare by assisting people now on welfare to get jobs

- Pressures from the spectrum of women's liberation groups, and particularly on behalf of those women who wish to achieve satisfaction through professional careers

- The conviction of those who see adequate day care as one prime means for improving the lives of poor families, including both parents and children

- Agreement in principle among large segments of both management and organized labor that increased day care availability can help to stabilize the labor force, decrease work absences, and lessen turnover in some job categories.

In the face of such tremendous interest in day care, the direct demand for such services appears to have outrun their availability, even in the context of some unfilled slots in a few existing day care programs (Rowe, 1971a).

More questions than answers. It is also apparent from a survey of the rapidly growing literature on day care that the provision of services has considerably outdistanced the obtaining of basic, concrete research information on the methods for effectively rendering these services (Chapman and Lazar,

1971). Several facts become apparent from the overview of research questions presented by Chapman and Lazar:

- In spite of currently intense research activity on day care, little is known about effects resulting from <u>any</u> significant aspect of day care

- The prevailing questions are so diverse as to require a complex network of coordinated research projects before any significant portion of the needed information can be obtained

- The state of the art in certain research areas, such as tests and measurements, raises doubts about how many questions can actually be answered at this time.

In response to this situation, many federal agencies are providing a high level of research support to begin obtaining answers to some of the most pressing questions. Over 35 programs of research in day care were federally funded in FY 71, encompassing the following areas (Chapman and Lazar, 1971):

- Day care auspices

- Staffing and staff training

- Program types

- Selected subpopulations

- Research planning, evaluation, and dissemination.

Moreover, several of the federal agencies supporting these programs are planning to increase their focus on research projects in day care for FY 73.

<u>OEO asks for a design</u>. In Fall of 1971, within the context briefly sketched above, the High/Scope Educational Research Foundation received support from the Office of Economic Opportunity, Division of Research and Evaluation, to begin formulating a comprehensive design for a national research study of day care programs. The study was to involve a true experimental design, complementing and extending the information produced from two major day care surveys (Abt, 1971; Westinghouse-Westat, 1971) completed in the Spring of the year, supported by other divisions within OEO. This was an auspicious time to begin designing the experiment, because nearly every passing month brought major new research reports or surveys of existing research. Moreover, debates raging in Washington over the four competing day care bills for

the poor highlighted many issues to be addressed by the experiment, even though the issues were so diverse that no single experiment could possibly speak to all of them. One of the most important of these issues revolved around the debate between the welfare reform advocates and the child development people. The former argued that publically supported day care should provide some care, though perhaps at less than desirable levels, to all families in needs; the latter felt that more costly "enriched" care should be provided even through this would mean reaching fewer families within a fixed overall level of funding. Lacking firm scientific evidence to support one side or the other it was not possible to reach a rational settlement in this argument. Ostensibly the issue was whether to provide "custodial" or "developmental" day care, although no one was able to adequately define the distinction between the two, and few if any existing day care programs would admit to merely being custodial. But, presumably, whatever the real differences between these two types of day care, there was a definite cost difference setting the "developmental" care in a much higher bracket.

Initial design specifications. Having some idea of the issues needing solution, knowing that poverty families were involved in all pending day care legislation, and obtaining an expression of OEO's commitment to fund a large-scale national experiment in day care, it was possible to jointly identify with OEO the initial specifications for the design:

Target population

- Primarily potential Family Assistance Plan families, with preference given to single-parent families
- Children who have not reached public school age, but preferably older than three

Day care programs

- Must represent a range of major existing educational and child care philosophies along the continuum from structured to unstructured
- Must include both family day care programs and center day care programs
- Must represent several levels of funding, ranging from considerably below the current average to considerably above

- Must realistically meet the needs of the families by being conveniently accessible, cost-free, and operational ten hours per day, year round, corresponding to the typical U.S. work calendar

- Must provide health and nutritional services to all children to attain acceptable standards, such as provided by Head Start or similar guidelines, rather than varying these services experimentally

- Must be operated in sites that provide reasonable job opportunities for single parents who wish to work

- Must be patterned after existing programs, although formulated for independent operation within the study, and closely administered and monitored to insure program "purity" to type

Scope of effort

- A study of three to five years was specified with funding up to several million dollars per year

1.2 A Closer Look at the Information Need

Virtually all persons involved in day care planning, administration, operation, or utilization can profit from additional basic information. A comprehensive national day care experiment ideally ought to try to meet as many of the information needs for various users as practicable in a single experiment. However, efforts to accommodate all the needs of the various users must be tempered by an awareness of the pitfalls of reaching beyond available resources in an attempt to address too many of the available questions in a single study. A partial list of the many users and uses of day care research information is presented below, to illustrate both the need and the difficulty of obtaining sufficiently broad information in a single experiment:

Parents*

- For informed decisions about whether or not to seek day care for their children

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*Although parents are the persons most concerned about the characteristics of available day care programs, few research studies have directly asked them what they desire. Appendix A explores findings for a few selected questions from some studies that did ask parents directly.

- To select among accessible alternative day care programs
- As a basis for attempting modification of programs which they currently utilize

Day care staff

- For use in selecting and sequencing daily activities
- To identify the training elements essential in preparing caregivers to maintain high-quality program operation

Day care operators and administrators

- In development, location, and administration of new programs
- In choosing among service alternatives when necessitated by budgetary considerations
- In selecting from possible educational approaches and determining the extent they are to be implemented

Legislators and policy makers

- For allocation of public funds to increase the availability of certain types of day care services
- To formulate consistent guidelines and regulations for administering these services

Early education specialists

- On the effects of different educational philosophies within the full-day context of day care
- For additional understanding of the problems and processes of replicating distinct educational approaches on a nationwide scale

The research community

- Toward development of research strategies and instruments particularly applicable to the day care situation

- As guidance in the problems and methods of administering carefully controlled research across multifaceted and large scale programs

Community leaders and representatives of special interest groups for women, minorities, etc.

- As factual indication of the capacity of day care programs and services to improve the lot of those they represent

- On such programs as vehicles to increase the participation of their constituents in several different areas.

1.3 Some Basic Research Questions

In formulating the research design presented in this report, the High/Scope Foundation has attempted a practical, working consolidation from among the major influences identified in the preceding sections:

- The tremendous needs and diverse uses for as much solid information on day care programs as can be obtained within a reasonable time

- The particularly pressing and immediate informational needs of national policy makers

Cost issues. Cutting clearly across these two major influences are concerns pertaining to the relationships of costs and effects in day care, or how can the federal government best allot limited resources for maximum service to those needing some form of day care? More particular cost questions are as numerous as the possible expenses for such varied and far-reaching services, but obviously of central concern are the following:

- What are the most influential cost determinants for different types of programs?

- Which major cost factors for a range of programs can be firmly related to effects of day care on children, parents, and communities?

- What are possible trade-offs among functional costs while maintaining program effectiveness?

- Is it possible, within feasible cost levels for federal support, to satisfactorily operate and replicate certain distinct educational approaches in the day care environment?

Program issues. Though hardly distinct from cost considerations, a cluster of issues can be identified as relating directly to the structure, including owner-auspices and setting, in which specific day care services are offered:

- Which structures among the variations in family home day care and center day care seem particularly related to specific program outcomes?

- Are the effects of varying cost factors greater on one of these day care structures than others?

- How does the provision of staff training or of supplementary services differ between home care and center care?

- Are there essential differences between numbers of staff and their prior qualifications for effective home care and those for center day care?

Education issues. Whatever the structure for providing the day care, it is crucially important to obtain much more basic information about what actually takes place during the day care hours and what the significant variations may be for day care consumers, the children and parents. For instance:

- Among the various approaches to educating children, which can be practically adapted to the particulars of day care, such as family home settings, longer hours, perhaps fewer professional educators on the staff?

- For educational approaches that can be so adapted to day care settings, which achieve desirable impact, and at what relative costs?

- What are the results of varying such cost factors as caregiver/child ratios and training on the initiation and operation of different educational programs?

- Even given realistic program costs, can effective educational approaches be successfully replicated on such a large scale and in the diverse locations of a national day care program?

1.4 Lessons from Past Research

The technology of educational research has never been without its problems, but the large, national, action-oriented research projects which emerged in the sixties have put all the old problems as well as many new ones into a different perspective. For example, several years passed after the start of these projects before there was widespread recognition that tests and measures from the "paper and pencil" tradition were simply unable to assess the behavioral changes considered most important by many program developers. Researchers responded to this problem by exploring other modes of measurement, particularly observational techniques, and this lead to the rapid development of observation coding systems (Simon and Boyer, 1970). As another example, the disruptive effects of unequal group sizes, missing data, and multidimensional measures on common statistical analysis methods have lead to adaptations of classical methods for applied research (Veldman, 1967; Finn, 1968; Cooley and Lohnes, 1971). Problems in sampling naturally-occurring units have also been given attention recently by competent statisticians (Light and Smith, 1970). The discrepancy between statistical and educational significance has been emphasized in some recent research writings (Lykken, 1968; Bakan, 1966). A distinction between research to improve programs and research to judge programs has finally achieved widespread recognition (Bloom, Hastings, and Madaus, 1971; Provus, 1971).

In general, it can be said that applied researchers are growing rapidly in sophistication and technical competence in comparison with their counterparts of ten years ago. In spite of this increasing sophistication, however, new problems are emerging which have not yet been fully acknowledged by practicing researchers. Three such problems are listed here and will be discussed below:

- Experimental subjects often do not receive the treatment that they were intended to receive.
- It is not possible to provide unambiguous interpretations of significant differences which occur.
- Research findings are seldom in a form useful to decision-makers.

<u>Treatments are fragile</u>. The experimental methods currently used by most educational researchers have evolved from the early efforts of such people as Fisher and others who worked largely within agricultural experimentation. Their strategy was to devise clusters of systematically varying

treatments which were "orthogonal," or independent of each other, and then to apply the ingenious "analysis of variance" statistical techniques to the resulting outcome data. The outcome data that they most frequently worked with were "bushels of oats per acre," or "worms per ear of corn," or some similar measure. The wealth of techniques that they pioneered has influenced virtually every quantitative discipline currently being pursued, including that of educational research. Predictably enough, the focus of people borrowing these methods has been on expanding the techniques already in existence, rather than on thoroughly rethinking the circumstances surrounding the new applications. This tendency has produced its own problems.

One vital difference that was overlooked by educational researchers was in the provision of experimental treatments. When agricultural researchers specified a treatment, they could be reasonably certain that it would be applied; a quantity of fertilizer or insecticide can be measured quite readily, and accurately applied to a narrowly circumscribed plot of land. In educational experiments, however, which are not so easily controlled because they are so susceptible to individual human foibles, the treatment actually provided often bears little resemblance to the germinal idea of the researcher who designed the experiment. In examining designs for educational experiments, it often appears that the designer did not anticipate the possible deviation of actual treatments from intended treatments. This seems true, for example, in designs where there is no replication of treatments (no way to estimate normal treatment variability); where there is no quantitative documentation of the treatment inputs to experimental subjects (no treatment description based on real-life events); and where there are no replications of the experiment (no assessment of whether the outcomes of similar experiments are consistent). The implications for this research design are clear:

- There must be simultaneous replications of each cell in the experimental design so that normal variations in treatment inputs can be assessed.

- There must be a method for quantitatively documenting the treatments as presented to children so input discrepancies can be detected and output discrepancies interpreted.

- The whole experiment must be replicated over time and over geographic sites so the generalizability of findings to new populations can be assessed.

"Causes" stubbornly remain hidden. One of the less obvious implications of the discussion above is that once a significant difference is found, as between an experimental and control group, it is rarely possible to determine absolutely what caused the difference. The outcome difference might be the result of one or more of a variety of causes: entering differences in the children participating in the two situations; the infectious enthusiasm of one of the staff delivering the treatment; random variations in the psychometric measure that was used to collect data; a particular subcomponent of the treatment; a reading program some of the children were exposed to in a class occurring during another time of the week; an adult education program in child-raising attended by many of the mothers of experimental children; and so on. Of course, the difference in experimental treatments provided to the two groups is always considered as an explanation of the outcomes, but within the total context of an applied research experiment, frequently it becomes a vanishingly small consideration.

The implications of this problem to the experimental design presented in this report are not quite as clear as the implications of the problem above. In fact, it is currently impossible to unambiguously identify the causes of outcome effects that may be detected in an educational experiment. Many experimenters write final reports as if the causes are clear, but it is not an overstatement to say that the state of the art in educational research simply will not permit unambiguous interpretation of results in the vast majority of educational experiments currently being conducted.

While a completely satisfactory solution does not exist, there are aids and safeguards that can be incorporated in a design to minimize the range of false interpretations of outcomes:

- The design should be set up to insure both its internal and external validity (Campbell and Stanley, 1963; Bracht and Glass, 1967).

- Experimental treatments should be carefully planned and monitored to insure that they are pure interpretations of the intended treatments.

- Experiments should be adequately replicated to see if the same results are consistently obtained. While this does not prove causality it strongly implies it.

- The range of alternative explanations for outcome effects should be tested in the data using all available methods.

Research is seldom planned for users. An assumption that lies behind every research project is that the data collected will be useful to someone, to a sufficient degree to justify the expense of collecting and analyzing it. When applications of educational research findings are examined closely, however, it appears that very few research studies have made a demonstrable impact on the intended users. A study committee assembled by Phi Delta Kappa has examined this problem intensively and discussed it at length in a recent book (Stufflebeam et al., 1971). Without sidestepping issues they begin by discussing "the symptoms of evaluation's illness," including among these symptoms the general avoidance of research when not absolutely necessary, the weak impact of research on schools, the widespread skepticism about research, the bad advice frequently given to practitioners in the name of research, the frequency with which comparative studies end with "no significant difference," the lack of necessary research tools and personnel, and other problems.

They attribute the cause of "evaluation's illness" to its failure to meet a number of scientific and practical criteria. The problems of scientific criteria of internal and external validity, reliability, and objectivity have been pursued by researchers for many decades and are slowly yielding to the developing technology. These considerations have been incorporated into the experimental design presented in this report to the extent that the state of the art permits; for the most part, the guidelines for meeting these criteria can be found in textbooks of educational research.

The practical criteria of educational research, on the other hand, are the ones overlooked most often in educational research. These are the criteria which are least clear, and most difficult to achieve. They need to be addressed with close attention in this experiment if its findings are to achieve any greater usefulness than those of past experiments.

The six utilitarian criteria which must be met by evaluation studies according to Stufflebeam et al., are presented in abbreviated form below. (The authors note that each criterion involves some interaction with the receiver of information.):

. Relevance

Evaluative data are collected to meet certain purposes, and if the data do not relate to those purposes, they are useless. The criterion of relevance asks whether or not the purposes are in fact served.

- Importance

  A great deal of information can be collected which is nominally relevant to some purpose, but, obviously, not all information is equally important. Evaluative information must be culled to eliminate or disregard the least important information and to highlight the most important information.

- Scope

  Information may be relevant and important but lack sufficient scope to be useful. It may be the truth, so to speak, but not the whole truth. When applied together, these first three criteria should produce information meeting the purposes of the evaluation (relevance) without being too detailed (importance) or too narrow (scope).

- Credibility

  Credibility relates to the quality of trust or belief. Not all users of evaluative information are in a position to determine its validity, reliability, or objectivity, so they must be able to trust the evaluator. Credibility is, of course, enhanced considerably if the evaluation is carried on openly and if the evaluator has a history of integrity.

- Timeliness

  The best of information is useless if it comes too late (or too soon). Evaluators are often reluctant to report findings until every nuance is explored. Such an attitude is probably self-defeating. Providing perfect information late has no utility, but providing reasonably good information at the time it is needed can make a great deal of difference.

- Pervasiveness

  All evaluation designs should contain provisions to disseminate the evaluation findings to all persons who need to know them. The criterion for pervasiveness is met if all the persons who should <u>do in fact</u> know about and use the evaluative information.

Stufflebeam et al., go on to point out that in present research efforts these criteria are very poorly met, and they conclude, "We must do something about the gross violation of practical criteria which renders present evaluative efforts almost useless" (p. 32).

The implications of these criteria for the present design can be interpreted in many ways; an effort has been made to accomodate them all in the design presented in this report. The following requirements have been imposed on the design or the steps leading to its formulation:

- The real information needs of users must be utilized in planning the typology of day care programs to be investigated. (relevance)

- The instruments must be as relevant to the expressed user needs as the state of the art in measurement permits. (relevance)

- Day care program dimensions which are expected to make the least difference to children should be eliminated from the experiment so that increased resources can be devoted to the dimensions of most importance. (importance)

- Many categories of outcome measures must be included in the measurement package. (scope)

- Many research methods must be integrated into the overall experimental framework, including case studies, observations, and outcome measures. (scope)

- Multivariate statistical analysis techniques must be planned for and incorporated into the design. (scope)

- Some of the research methods used should be readily comprehensible to non-researchers. Case studies and observations would meet this requirement. (credibility)

- The research experiment must have a high degree of visibility to the potential users of the findings. To this end, research information and details of the research method must be disseminated as early in the project as possible. Case studies, observation findings, and descriptions of research methods should all be released during the first year of the experiment. (credibility, timeliness, pervasiveness)

- A public information office should be established for the experiment so that useful information from the project is disseminated to all potential users as thoroughly, quickly, and efficiently as possible. (pervasiveness)

1.5 Planning the Day Care Experiment

The entire planning and writing of this report were completed in a period of just over four months, by a basic team of seven Research Department members from the High/Scope Foundation. The steps which were followed during this time may be of interest to the reader, so a brief summary follows.

The great hunt. The first step which took place after the initial assignment of different task areas to the seven researchers was an intensive effort to reach out to every source of relevant written information about day care programs, research methods, outcome measures, project management, and cost-effectiveness methods that was known to the staff. Computer searches of information files were conducted through five sources:

- Educational Research Information Center (ERIC)
- Smithsonian Science Information Exchange (SSIE)
- Medical Literature Analysis and Retrieval System (MEDLARS)
- National Technical Information Service (NTIS)
- Psychological Abstracts Search and Retrieval (PASAR)

One project member thoroughly searched the government documents, hardbound publications, and journals in the library of a nearby university. These searches revealed literally thousands of references that were then judged for relevance. Decisions on those references which seemed potentially most useful were followed up by orders for papers, books and other documents; by letters to ongoing projects for information; and by visits to organizations performing particularly extensive work in the area of day care, including a large number of different government offices supporting such work. Additional information was sought by letters requesting information about day care sent to thirteen ministers of education in other countries; nearly all of them replied with relevant information, but it consisted mainly of statistics about the number and location of day care

facilities, rather than details about the substantive nature of day care operations.

As publications began to arrive, their bibliographies were searched, and they provided references for ordering additional books, papers, and reports. Publications were ordered until the last few weeks of the project. The searches, orders, and personal requests produced a flood of information that continued through the end of the project. Most of the sources sent their materials in time for their implications to be considered in the planned design. However, there was one notable exception; virtually none of the materials ordered from the Government Printing Office had arrived by the end of the project, even though many of them were ordered during the first few weeks.

In order to keep High/Scope Foundation staff, OEO personnel, and outside consultants informed about events occurring in the fast-paced project, a "Progress Memo" of approximately three pages was prepared and distributed weekly. The memos proved highly effective for briefing outside consultants on the project's direction and the areas to which they could contribute, as well as for documenting key decisions and other indications of progress for High/Scope Foundation staff.

Early in the project, four prominent consultants were brought to the High/Scope Foundation to explore the areas of information need in day care, and the possible methods for obtaining the needed information. Two of the consultants, Dr. Robert Hess and Dr. Courtney Cazden, are particularly experienced in the area of early childhood education; the others, Dr. Irving Lazar and Dr. Jeanne Mueller, have long been involved in planning and administering large-scale day care operations. A series of meetings was held over a three-day period by the High/Scope Foundation staff, OEO staff, and these consultants for the purpose of broadly exploring possible day care issues for research. These meetings served as an important catalyst for the identification of key problems that had to be faced in the process of designing the experiment. Three other such conferences with consultants were planned to cover the areas of tests and measurement, experimental design and analysis, and cost-effectiveness methods, but the short duration of the project and the fact that the holiday season fell in the middle of it did not permit conducting these meetings.

Digestion and indigestion. As publications were received, a continuing attempt was made to scan them for relevance and assign the most important ones to the appropriate task leader for more careful reading. It was not

long, however, before stacks of unread material began accumulating on each team member's desk. It quickly became clear that works offering summaries of information in the various content areas would have to be relied on as the primary sources of information used in planning the experiment, with the exception of individual studies so relevant and well done that they could not be overlooked. Two basic facts about the search impressed the High/Scope Foundation staff: first, that there was such a vast quantity of recent information in each content area; and second, that it was so difficult to discover all of the largely uncoordinated sources of day care information. Every time it was felt that all major sources of information had been reached, new sources were uncovered that, in turn, led to additional sources.

As new information was assimilated by project staff, group brainstorming meetings were held to disseminate the information to other staff, to identify major issues, and to arrive at the series of decisions leading to the final design. Staff members from the entire High/Scope Foundation were involved in these meetings at one time or another, each bringing a particular area of skill to bear on the issues and decisions. These meetings fulfilled the primary decision-making functions necessary to adequately meet the conflicting criteria of thoroughness and speed. Even though unanimity was not reached, a reassuring consensus was obtained to support the final design.

Getting it all together. Little attempt was made to permanently document decisions for the final report until very near the end of the project, after most of the information sources had been examined. Since the official duration of the project was only 3½ months, a rough draft was prepared in the final two weeks and submitted for review early in February. In-house critiquing of that draft commenced immediately, leading to this revised final draft. Although the project time was short, it is not felt that time constraints compromised the experimental design which was finally evolved. A longer time certainly would have been more comfortable, and it would have permitted details in many of the subordinate areas of the design to be explored more thoroughly, but this probably would not have produced major changes in the existing design.

1.6 A New Experiment

The experimental design which evolved from the planning efforts in this project is presented in detail in the following sections of this report. It may be useful here to

point out some basic information about the proposed design.

First of all, this experiment was designed primarily in response to the needs of a particular group--national legislators and policymakers. Although it is expected to produce vital information for a much broader audience, the needs of this group were given highest priority in determining the final decisions. That is why two of the four final experimental dimensions relate to cost, and a third (home versus center setting) has important ramifications for current national policy trends. Only the fourth dimension (educational curricula) was considered as being of primary use to someone other than legislators. In spite of this focus, steps have been taken to build in sources of information for a wide spectrum of users, including parents, caregivers, program operators, child development specialists, and curriculum developers, in addition to legislators and policymakers.

Secondly, the design possesses a number of unusual features which go beyond previous studies in day care:

- True experimental methods are used in preference to quasi-experimental (Campbell and Stanley, 1963) or survey methods.

- Extensive resources are devoted to documenting the treatments children actually receive, using observation methods, to insure that they are the same as the treatments stipulated on paper by planners.

- An attempt has been made to reach beyond the limitations of hypothesis-testing methods by using an integrated combination of three research methods: case studies, observations, and traditional outcome evaluations.

- Effort has been devoted to integrating the research design with the project management in this large-scale field operation.

- Provisions for detailed, functional cost accounting, comparable across all day care units operating in this study, have been incorporated into the data collection system.

- An attempt is made to overcome the limitations of existing tests by gathering overlapping information, using many different measures and data-gathering techniques.

Thirdly, in spite of the extensive planning and the large quantities of resources supporting the experiment, there are many questions that need answers but that will not be directly addressed by the experiment. Examples of these are the responses of different populations to different child care program types, comparisons between child care centers of varying size, and differential improvements resulting from the provision of varying levels of supplementary services. The admission that this design has distinct limitations does not in any way argue against its adoption. Indeed, the questions facing child care planners, operators, and consumers are so diverse and far-reaching that nothing short of a broad complex of research projects extending over one or two decades would be adequate to the needs of the entire task. This experiment could serve as a springboard to new studies just as the Abt and Westinghouse-Westat surveys provided essential preliminary information for this design.

1.7. Summary of Report Sections

The following sections of this report move from the general needs discussed above to the concrete recommendations of the High/Scope Foundation for obtaining sound answers to selected questions about child care. These sections pick up themes which have already been introduced and attempt to translate them into the details of what to study and how to do it.

- Section 2 presents in non-technical terms the actual program types for this research design and how these were determined.

- Section 3 discusses the range of potential experimental outcome effects of child care programs. Again the discussion is presented in non-technical terms as far as possible.

- Section 4 presents the technical specifications of methods for extracting desired research information from the programs operated.

- Section 5 recommends a staff and management pattern which will facilitate the implementation of this experiment.

- Section 6 presents an estimated time schedule for the various phases and activities within phases.

- Section 7 presents a preliminary estimate of the annual budget for one of the full operational years, based on a total experiment length of five years.

DAY CARE PROGRAM TYPES

The heart of this experimental design is the typology of day care program types to be investigated. Decisions made at this point in the design will limit, in an absolute way, the range of conclusions which may be reached at the close of the project. If the decisions about typology prove off-target as the experiment unfolds, no amount of improvement in the project operations, nor tightening in the research methods, can make the situation right again. Moreover, the final selection of day care program types becomes particularly difficult because of the virtually limitless range of program types that might reasonably be included (Abt Associates, 1971), or of research questions that might reasonably be addressed (Chapman and Lazar, 1971). Fortunately, however, there do seem to be clusters of related questions that possess higher priority than others for investigation in an experiment such as this.

There is no uncontroversial way to arrive at the final decisions about program types, because these decisions must ultimately rest on values held by the experiment designers. The decisions presented in this section are no exceptions. They are the result of requirements established early in the design phase by High/Scope Foundation staff, based on both the initial reasons presented by OEO staff for initiating this experiment, as well as on the larger national need for information upon which federal policy decisions can be made. Given these considerations, day care cost variations emerge as a central determinant of the program types included in the final recommendation. Another determinant was the apparent legislative trend to shift the bulk of day care services from home settings to group settings; this has far-reaching national policy implications that need close examination. A third determinant was the spreading indication of a merger between day care and early childhood education movements. A fourth determinant was the general necessity for concentraing on programs that might have some reasonable chance for future wide-scale adoption within the practical realities of available funds, personnel, time, and so on. In view of these conditions, the day care program dimensions that were chosen for experimental variation had to meet one or more of the first three following requirements, and all had to meet the fourth requirement:

- First, the day care program dimension should significantly influence the cost per child.
- Second, the day care program dimension should have important national policy implications for legislators.
- Third, the day care program dimension should attempt integration of methods from both day care and early education disciplines.
- Fourth, the day care program dimension should fit within realistic projections of available resources and needs.

The purpose of this section is to present, in nontechnical language, the experimental variables and the reasons for choosing them. Administrative structures for day care homes and centers are examined first. Then general day care cost features are discussed, followed by a more detailed look at the particular cost features chosen to be systematically varied. A typology of preschool educational programs recommended for adaptation to the day care setting is next, and the last part of the section discusses those supplementary services that will be held constant across all program types.

The following summary illustrates how all these features are integrated to form the day care program types to be investigated in this study. A day care program is, for the purposes of this experiment, a family-home unit or a center which has a specified ratio (one of three levels) of caregiving adults to children being cared for, and provides either formal or informal training for the caregiving staff. Formal training is included to support implementation of one of three distinct types of educational programs developed by preschool educators. Supplementary health, nutrition, and social services will be made available to children in all day care program types on an equivalent functional basis.

2.1 Day Care Administrative Structures

Administrative structure is defined as a combination of ownership-auspices and setting. This section provides brief definitions of the two characteristics and gives a rationale for the inclusion of particular combinations.

Ownership-auspices. The various ownership-auspices ar-

rangements may be grouped under four categories (McClellan, Zemont, and Kelpsas, 1971): cooperative, not-for-profit, church-related, and private. These labels refer to the individuals or organizations who sponsor day care units.

Not-for-profit and private day care are the two most representative types, but only not-for-profit day care will be investigated in this experiment. There are two main reasons for the exclusion of privately owned, or proprietary, day care: (1) This experiment is concerned with low-income families, but most private day care facilities, such as the better known franchise chains, serve middle-class families. (2) Private day care operators can make a profit only by keeping the ratio of staff to children relatively low (i.e., "unfavorable"), but this ratio will be systematically controlled in this experiment (see Section 2.2). A distinction will be made between the overall staff/child ratio and the ratios of particular staff groups to children. For example, the caregiver/child ratio is distinguished from the administrator/child ratio.

Setting. The most commmon setting for day care programs is in homes. Most parents make informal arrangements utilizing relatives, older siblings, friends, or neighbors, in which services are bartered rather than paid for (Rowe, 1971a). The vast majority of day care is provided either in the parents' own home or in the homes of friends, neighbors or licensed caregivers within walking distance. "Family day care homes" are defined in the Federal Interagency Day Care Requirements (1968) as homes serving not more than six children. "Group day care homes" serve up to 12 children.

The other common setting for day care is in centers. The Westinghouse-Westat Survey (1971) found that the modal capacity of day care centers throughout the country fell between 13 and 29 children; the next most frequent category was 30-44 children.

This experiment will investigate day care programs in the two most representative home and center arrangements:

- Family day care homes
- Small single centers (serving approximately 30 children).

Rationale for selection of setting. Rather than underwrite any particular setting for day care, those responsible for public policy should have at their disposal information that could be used for the promotion of a variety of day care arrangements, and a variety of quality programs. Prescott et al. (1970) have approached this issue with a skeptical

eye toward claims by special interest groups that their form of day care is the "best." Rather, they maintain that provision of the widest possible choice by parents among types of care is likely to strengthen quality both of day care programs and of child rearing at home (p. 156). They suggest that, contrary to the assertions of some observers, both proprietary day care and family day care should be regarded as assets "with respect to their contribution to diversity." A similar view is forcefully presented by Emlen (1971).

While family home day care is by far the most widespread arrangement and may remain so for the foreseeable future (Emlen, 1971), it is on the defensive because of pressure from many articulate professionals in the early childhood field who believe that group care in centers, especially for children from low-income families, has the most potential for making a significant educational impact. The scarcity of empirical information on the effects of family day care and center day care on children makes it important for an experiment concerned with child outcomes to systematically compare the two settings.* The data thus gathered and interpreted could be the foundation for further empirical studies of such administrative options as systems of centers (several centers under one administrative umbrella) and mixed (center-home) systems.

2.2 Day Care Cost Dimensions

This section details the cost dimensions of day care to be systematically varied in this experiment, as well as those

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*While a majority of parents today would be expected to seek care in nearby homes, interest is growing in the use of nearby centers for at least part of the day (Rowe, 1971a). Therefore, a system including both center and home would be likely to attract an increasing number of people. Further, the mixed system may result in monetary savings. For these reasons, the mixed system could be added as a third type of arrangement to be investigated. However, there are currently very few mixed systems operating in proportion to the number of family homes and centers, and therefore they are not representative of the present situation in day care. Further, we know so little about the effects of family homes and single centers that it is felt to be more important for the immediate future to examine these predominant types of child care arrangements.

to be kept at uniform values so that they will not influence the outcomes of the experiment. The most important features influencing cost are discussed in Section 2.2.1. The features finally selected for analysis and their experimentally varied (or controlled) levels are discussed in Section 2.2.2. Section 4.8 suggests how the analysis of cost features can be related to program outcomes.

Nationwide day care costs have recently been surveyed and analyzed extensively (Children's Bureau, H.E.W. and Day Care and Child Development Council of America--CB-DCCDC Budget--1968; Abt Associates, 1971a,b,c,d; Westinghouse Learning Corporation and Westat Research, 1971; Inner City Fund, 1971). Parts of the CB-DCCDC Budget, Abt, and Westinghouse-Westat data have been summarized and interpreted in the testimony of Rowe before the Senate Finance Committee (Rowe, 1971a). The fourth source, a study conducted by Ogilvie of the Inner City Fund using a computer simulation of day care center characteristics, considers the variation in per-child costs produced by manipulation of a number of variables and includes a list of those features of day care that account for the largest share of costs and cost variations (Inner City Fund, 1971). An examination of these studies revealed that the following six factors strongly influenced costs:

- Caregiver/child ratio
- Professional level of caregivers
- Wage rate for caregivers
- Administrator/child ratio
- Total licensed enrollment capacity of a day care unit
- Enrollment rate as a ratio of the actual enrollment of children to total openings available.

An additional cost factor identified by the High/Scope Foundation staff is the presence of a formal training program for caregivers.

All of these factors make a strong difference in the cost of day care. However, an experiment that varied all of them and studied their effects would have an extremely complex design, and this would adversely affect the control of variables and the analysis of data. Further, some of these factors can be expected to have a larger effect on the lives of the children than others. Therefore, the cost features that are to be independent variables in this study have been narrowed down to two: caregiver/child ratio and formal staff training. The reasons for this decision are presented in the following discussion of each of the cost factors listed above.

2.2.1 Influential Cost Factors

Caregiver/child ratio. Caregivers are the adults who are in regular daily contact with children in the day care setting. The caregiver/child ratio identifies the number of children under the care of each caregiver. This ratio is the single most important factor affecting day care costs (Abt, 1971d; Inner City Fund, 1971; CB-DCCDC Budget, 1968, and Rowe, 1971a). The Inner City Fund computer simulation shows that, under some circumstances, the shift from a 1:7 to a 1:4 caregiver/child ratio can cause costs to increase by 30% if other factors are held constant (Inner City Fund, 1971, p. 5). Further, for CB-DCCDC Budget cost figures (1968) the largest contribution to the "increase in quality" between minimal and desirable care comes from an increase in the ratio of classroom staff to children (Rowe, 1971a, p. 27). Because this ratio is the single feature of day care that most strongly affects cost and, as many believe, quality, no study that attempts to relate cost variations to outcome differences can fail to deal with caregiver/child ratio.

Professional level of caregivers. The professional level of caregivers (in terms of credentials, training or experience) is also a strong potential contributor to day care costs. It interacts with the caregiver/child ratio in an inverse way, so that $12,000 in salaries can be used to hire one Ph.D. in early childhood development (for twenty children--a caregiver/child ratio of 1:20), or two professional preschool teachers with B.A.'s and some specialized training (1:10), or three paraprofessionals with little or no experience (1:7). It is not at all clear from the available literature that professional status is related to favorable outcomes for the children; in fact, major day care studies have strongly urged, on the basis of their experience and data, that standards for the selection of caregiving staff be kept flexible (Lally, Honig, and Caldwell, 1971; Prescott et al., 1970; Abt, 1971a). Moreover, an adequate test of this variable separately from the caregiver/child ratio variable would be very expensive and would depend greatly on recruitment of scarce professionals. Given the lack of strong findings of the favorable effects of formal academic qualifications, it seems fair to conclude that since trained day care professionals are scarce and show signs of becoming more so in the next few years, the current experiment might well examine what levels of outcome can be achieved by varying other factors and maintaining a constant mix of professional and paraprofessional staff. It is recommended that paraprofessionals be used for the most part, but that at least one professional caregiver be used for each center and for each cluster of homes to give supervision and guidance.

Wage rate for caregivers. On the subject of the wages paid to personnel, the Westat summaries of salary data for their sample list a median annual wage for staff and directors of $4,300, just above the poverty level; if directors are excluded, salaries for most teaching staff are found to be at or below the poverty level for a family of four. As Rowe (1971a) states, personnel may not continue to be available at these salary levels, and certainly not trained personnel. If the demand for qualified or experienced personnel in day care continues to increase, and if there is a massive increase in government expenditure, salaries will have to rise. Again, it does not seem particularly advantageous to vary this factor experimentally; the effects on child outcomes would not seem to be direct, but rather to be caused by such intermediate factors as changes in staff turnover rates and competitive hiring of more qualified or experienced personnel. For the purposes of the current experiment, it seems more proper to set values for wages at a single, fixed level, and to make the value high enough to provide competitive salaries.

Administrator/child ratio. This indicates the numerical relationship between the number of administrative staff in a day care unit and the number of children, and was cited in Abt (1971) as a determinant of the "warmth" of a center. This ratio will not be varied because its effect upon children is considered to be far less significant than the caregiver/child ratio, which is also a more important cost variable. All day care units to be studied will be the same size, so there is no practical reason for varying the ratio so long as the number of administrative staff is sufficient for the number of adults to be supervised.

Total enrollment capacity. In terms of efficiency and economy, large single centers* and systems of large centers may have some advantages, but there is evidence that the risk of detrimental effects on children--as a consequence of the impersonal milieu that is often the price of efficiency and economy--would outweigh the value of the data gained if center size were varied (Prescott, Jones and Kritchevsky, 1967; Milich, Prescott and Jones, 1969; Prescott, 1970). Further, most existing centers fall either in the small or moderate categories, with large centers being relatively rare at the present time (Westinghouse-Westat, 1971). The practical reason for this is probably related

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*Using the Abt (1971a) and Prescott et al. (1967) data, small centers may be defined as those having an enrollment capacity of 30 children or less; moderate-size centers enroll 30 to 60 children; large centers may serve up to 200 children.

to the large distances that would be involved in getting enough children to fill a large center, with its attendant unpopularity with parents (Rowe, 1971a). Therefore, centers (and clusters of homes; see Section 2.2.2, Caregiver/child ratio) will be set at a uniform total enrollment capacity of 30 children, which borders the two most prevalent, currently existing size categories (Westinghouse-Westat, 1971).

Enrollment rate. The enrollment rate is the degree to which a day care unit has enrolled children up to its licensed capacity. It is clear that under-enrollment leads to higher costs per child since certain personnel and facilities must be available regardless of the number of children present (Inner City Fund, 1971), but there would seem to be little value in varying enrollment experimentally. Further, for research purposes, it is essential that enrollment be controllable, attendance high, and "dropping out" minimal. For these reasons, the following general guidelines are given to ensure the continued participation of day care users in all program types:

- The day care units must be conveniently located, open ten hours every weekday, and open at convenient times during the day.
- Day care services must be provided at no charge to the users.
- A full range of medical services must be provided for the children (see Section 2.4).
- A continuing effort must be made to recruit eligible families for the project.

Staff training. Formal training in child care, taking place primarily "on-the-job," has not been systematically studied in relation to child outcomes or effects. However, it may be one of the crucial factors affecting the quality of day care programs, especially from the point of view of the child. (See, for example, Dokecki et al., 1971, and Nimitz, 1971, on the need for training programs for family day care "mothers.") Intensive, ongoing training for caregivers requires release time for planning and attendance at training sessions; establishment of links with trainers, consultants and curriculum developers; and provision of written and audio-visual training materials for implementation of specific programs. These features affect the per-child cost.

It has been pointed out by many writers on day care that the addition of an educational program (for example, a preschool compensatory curriculum) does not affect day care cost, but this is true only if one presupposes that training in that program has already occurred. The bulk of the caregivers in this experiment, however, will be paraprofessionals

from the local communities chosen as experimental sites; for the most part, these people will be untrained and inexperienced in day care. In order for them to implement the educational programs described in Section 2.3, they will have to receive extensive formal training, which does significantly affect cost (see Tables 7-2 through 7-10).

Staff training has been selected for analysis in this experiment; it will be systematically varied along with the other cost factor selected, caregiver/child ratio. Both of these are discussed in greater detail in the next section.

2.2.2 Cost Factors Selected for Analysis

Caregiver/child ratio. Since it has been decided to use this facet of day care as an experimental variable, the following questions must be considered. How many levels of variation should there be? What should the level values be? What is the range of acceptable caregiver/child ratios? There are two opposing views on this subject.

On the side of relatively favorable (i.e., high) caregiver/child ratios are the preschool and child-development experts. Their view is reflected in the Federal Interagency Day Care Requirements (1968), in which it is stipulated that the minimum adult/child ratio for a center serving preschoolers should be 1:5.

On the side of lower caregiver/child ratios are operators of private day care facilities who face staffing and financial problems. They point out that many day care centers and most day care homes are operating without licenses, that their most frequent violation of licensing requirements is a low caregiver/child ratio (1:10, 1:15 and even 1:20 are not uncommon), and that, nonetheless, many of these day care facilities give good care. Moreover, when children enter kindergarten shortly after leaving the day care setting, teacher/child ratios of 1:20 are widely accepted.

Since this experiment could not support more than a small number of levels of this (or any other) "independent variable" without becoming highly complex and almost unmanageable, a three-level variable has been chosen: the caregiver/child ratios for the experimental day care centers will be 1:6, 1:10 and 1:15. Three levels were chosen to reflect the two extremes just mentioned and to provide a "moderate" alternative between them which falls close to licensing requirements in many states (Consulting Services Corporation and Social and Administrative Services and Systems Association, 1971). However, family homes with caregiver/child

ratios of 1:15 or even 1:10 would lead to overcrowding and overworked caregivers, and the risk of accidents to the children would increase since adequate supervision would be very difficult with only one adult present. For these reasons, the experimental day care homes will all be maintained at the first level, 1:6. They will be administered in clusters of five homes in close proximity to each other (30 children served in each cluster).

A caregiver/child ratio as high as 1:6 may be of little benefit to the child if the caregivers sit at a table and talk with each other while the children watch television or play by themselves a large part of the day. The facet of interest here is contact between caregiver and child, the actual time spent by the adults with the children. Therefore, while the experimental design, staffing and other preliminary activities will be based on simple caregiver/child ratios, caregiver/child contact will be carefully monitored along functional lines similar to those indicated by Abt (1971d) or by McClellan, Zemont, and Kelpsas (1971), and separated from staff functions not directly related to the children.

Staff training. The relative cost effectiveness of staff training will be determined in this experiment through a comparison of formal training with informal training. There are clear differences between the two, in terms of both operation and cost. Formal training makes provisions for trainers, training materials, scheduled release time for trainees, and a particular preschool curriculum to guide the training; informal training involves only the natural exchange of information that occurs when caregivers with different skills work together in a common setting for an extended period of time. When a thorough program of formal training is incorporated into a child care operation, the per-child increase in cost is considerable (see Section 7). Two key questions facing day care planners are whether such an expenditure is justified, and if the ambitious goals many people hold for day care can be adequately realized without such training. This section will elaborate upon the characteristics of informal and formal training as they are incorporated into this day care experiment.

Informal training will be representative of training as it usually occurs in centers and homes today. This is partly a function of individual initiative. A caregiver may decide to take courses, attend lectures, or keep up with the literature in the early childhood field. None of the licensing requirements demand that she do this, so it is purely a matter of her own initiative, and she must pay for her training herself unless she is associated with a

public agency.

In any "good" center, public or private, the head caregiver will seek to provide opportunities for staff development. She will set aside time for them to discuss their needs and problems with regard to children in their care. She will try to talk with her staff about their work in terms of her own view of the best ways to care for a group of young children; she will participate in the activities with children as much as her schedule permits; and she will observe children and caregivers as they interact, with such observations forming the basis for staff discussion. It is this on-the-job-training, consisting of ongoing observation, feedback, and discussion, facilitated by the head caregiver, that should be sought in the informal experimental units. Because of these major and critical responsibilities in staff development and support, the selection of the head caregiver, who will in turn choose her staff, is a crucial factor. There is no way to ensure informal training except through this critical choice. Any other method would involve the use of formal monitoring-feedback procedures and the allotment of release time for planning and evaluation; these contribute to per-child cost and are not representative of the "real world" of day care. It should be recognized that to keep the informal day care units true to type, no funds for training can be provided, and process documentation cannot involve feedback to staff (see Section 4.6). Monitoring of the staff in an informal center must be done by the head caregiver if it is done at all.

There are two kinds of formal training, preservice and inservice. Preservice training would be brief and preliminary, in preparation for start-up activities, and inservice training would be ongoing and would continue throughout the project. Three distinct types of preschool educational programs will be used in this project (Section 2.3), and caregivers at each child care unit will be trained to implement one of these program types. The training methods are more fully defined as follows:

- Preservice training. This is a period of orientation for caregivers before the program begins. The content of this orientation will reflect the goals of the educational program, and the techniques used (e.g., lectures, seminars, role playing, programmed texts) may vary according to the kind of program and the needs of the people involved.

- Inservice (on-the-job) training. The process of observation-feedback-discussion that is the backbone of good informal on-the-job training will also be

the core of this kind of formal training. For the latter, this process will reflect the concerns of the educational program being implemented and will be facilitated by an additional training specialist. In an effort to ensure that this process does occur, channels for communication and monitoring have been suggested (see Section 5). In addition, weekly release time for consultation with trainers will be provided, and therefore part-time people will have to be employed to maintain the caregiver/child contact ratio.

A critical component of inservice training is the time allotted for daily activity or lesson planning by the caregivers. Whether there are two or five caregivers for thirty children, this function will be regarded as a team effort, taking place for at least an hour each day while part-time workers care for the children. Since the content of the daily activities with the children will be determined by the preschool model, the head caregiver must, in time, become something of a curriculum "expert;" it will be her responsibility not only to communicate her knowledge of basic child-care skills but also to make the planning sessions pertinent to the goals of the educational program. Appendix B presents a view of the principal components of inservice training--planning, curriculum supervision and team teaching--from the perspective of a curriculum developer.

Several decisions will have to be made by the project manager, trainers and program developers before preservice and inservice training can begin. These concern the organization of the training groups, the duration of the training periods, and the relation between topics covered in preservice training and their follow-up in inservice training (Lally et al., 1971). Such questions as the following will have to be considered:

- In what ways will the previous experience and training (if any) of center and home personnel be built upon?
- How long should the preservice training period be?
- How long should the weekly inservice training sessions be?
- How will professionals and paraprofessionals be trained together?
- Will center and home personnel for the same educational program be trained together?

It was not considered appropriate to decide these issues here because of their intimate relationship to the three program types described in the next section, and because of the different positions held by curriculum developers.

2.3 Preschool Educational Programs for Day Care

The previous section (2.2) presented the cost dimensions of day care along with recommendations for the proposed research. This section will present the educational program aspect and will recommend a specific typology for implementation.

2.3.1 Theoretical Orientation

Educators and psychologists hold widely varying views on how a child best learns to think and act within our society. In preschool education and day care programs, these positions are reflected in a series of differing program types. Perhaps most influential in recent program development has been the behaviorist philosophy as outlined by Skinner. From this philosophy, learning and child development are seen, on the whole, as under the control of specific external stimuli. If it is desired to obtain a certain end goal in child rearing or schooling, the task is to define clearly what is desired, break the complex end product into manageable intermediate steps (behavioral objectives), and then set about the task of leading the learner through the steps in such a manner that he makes few if any errors. A whole technology has been derived to support this orientation. Computer-assisted instruction, programmed learning, operant conditioning and behavior modification are a few of the better known procedures used by advocates of this position.

A second position is that of the cognitive theorists who look at child development as both a learning and a maturational process. Piaget and Bruner have written extensively about observations and experiments documenting the "natural" pace of growth that children exhibit as they learn in real environments, as opposed to the artificial environments of the behaviorists. The key to the orientation of theorists utilizing this point of view is the interaction of the child as an organism with the complex stimuli of the external world. While growth does not just "happen," neither can it be "taught" even when understood. From this orientation has come a healthy respect for experimentation on the part of the learner, a utilization of real experiences, and a feeling that obtaining "wrong" answers to important

questions can sometimes facilitate the development of processes to achieve "right" answers later.

A third position has been present in child development literature longer than either of the above two. This is the position influenced by the Freudians, who emphasize the general affective development of the child as the major concern in the early years. Theorists who follow this view are mostly concerned with the development or presence of anxiety in young children, with social skills, and with general development of ego strength and ego awareness. The current approach to early childhood education has evolved primarily over the years from this orientation. Much of the early literature in preschool, both descriptive and experimental, has been based on these general affective concerns. Indeed, until 1965 it was rare to find a discussion of language or cognitive development in preschool education literature, though these are major considerations now.

2.3.2 Typology for Educational Programs in Day Care

Most preschool programs currently in use are based on one of the three basic theoretical orientations outlined above. Some programs, of course, are eclectic in nature and draw from any usable source. In this research project, however, it is recommended that programs representing relatively pure positions be adopted for the sake of experimentation. With the recommendation in Section 3 for extensive documentation of the process of program implementation, considerable information will be generated to evaluate the various theories upon which the programs are based.

Most preschool programs may be placed under one of these categories (Weikart, in press): Programmed, Open Framework, and Child-Centered.* In Figure 2-1, each of these program types is related to the way teachers and children in such programs participate and interact, in other words, to the teachers' and children's "roles." If the teacher's predominant role is to initiate, she plans lessons, organizes projects, and develops activities; she decides or directly

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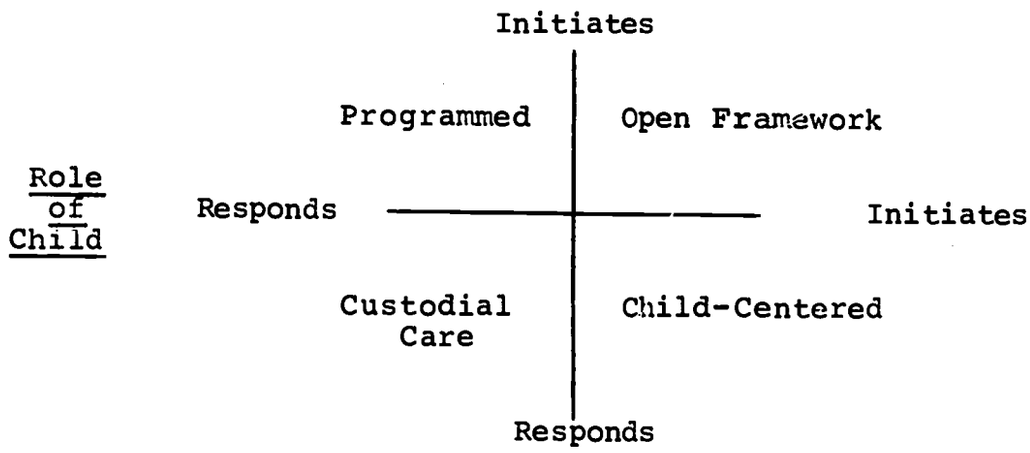
*A fourth category, Custodial, would cover those institutional or home-based day care situations in which the physical needs of the children are met, but little is done in the way of "education." Thus, this category does not represent an educational program type but rather the absence of such a program. Since we are concerned in this section with distinguishing between program types, the Custodial category will not be further discussed, though it is included in the typology for the purpose of providing a comprehensive schematization of the day care/preschool world.

FIGURE 2-1

Preschool Program Models*



Typical Programs

Programmed Curricula	Engelmann-Becker's DISTAR Bushell's Behavior Modification Approach Glazer and Resnick's Primary Education Ulrich's Learning Village
Open Framework	Gray's Demonstration and Research Center for Early Education Merle Karnes' Ameliorative Preschool Sprigle's Learning to Learn Program Weikart's Cognitively Oriented Program McAfee's New Nursery School
Child-Centered	Bank Street College programs Nimnicht's Responsive Environment Spaulding's Durham Education Improvement Project American Montessori Watson's Education Development Center

*Adapted from Weikart, D. P. Relationship of curriculum, teaching, and learning in preschool education. In J. C. Stanley (Ed.) Preschool programs for the disadvantaged: Five experimental approaches to early education. Baltimore: John Hopkins Press, in press.

influences what will be done; she presents materials, programs, and ideas; she guides action and directs the efforts of the children. The initiating, or active, teacher usually follows a specific theoretical position, developing her classroom activities from its tenets or following specific procedures prescribed for her. Indeed, an "initiating teacher" can even be a programmed textbook or a sophisticated computer terminal from which a theory of instruction interpreted by a program developer may be applied through carefully controlled materials. In general, the teacher who initiates is forceful in applying her talents and skills to accomplish specific instructional objectives.

If the teacher's predominant role is to respond, she watches the actions of both individual children and groups of children in the classroom environment. She responds to their needs and tries to facilitate their interaction with each other and with the materials in the classroom. While she will introduce materials and activities at specific points, she does this in response to what she feels are the expressed needs of the children. To ascertain these needs, the responding teacher applies the general knowledge of child development she has gained through training and experience. On the whole, the teacher responds carefully through her essentially intuitive understanding of the children's behavior.

When the child initiates, he is engaged in direct experience with various objects through manipulation and through full use of all his senses; he is involved in role play and other kinds of fantasy play; and he is active in planning his daily program, determining how he will work in the classroom environment. There is considerable physical movement by the child and a balance among teacher-child, child-child, and child-material interaction patterns. The impetus for learning and involvement comes primarily from within the child.

When the child responds, he is attentive or receptive; he listens to the teacher and carries out her requests; and he responds verbally to requests and demands. The responding child tends to move about the classroom less than the initiating child since his predominant role is to wait for and attend to what is prepared and presented to him. In general, this child is working within a clear framework of acceptable behavior and progressing toward a specified goal.

Each of the three preschool types--Programmed, Open Framework, and Child-Centered--is, among other things, a particular combination of these styles of teacher-child interaction. They will be discussed next.

Programmed. This model combines teacher initiation and child response. Several major innovative programs in the current wave of compensatory preschool projects are Programmed curricula. These curricula tend to be directed at clearly defined educational goals such as the teaching of reading, language skills and math skills. Although the program developers show little respect for traditional education at any level, the goal of many of these programs is to equip the youngster with the skills necessary to manage the demands of such education. These curricula tend to be highly structured with the teacher dominating the child and with a heavy emphasis on convergent thinking--"Say it the right way"--and learning through repetition and drill. They depend on specified procedures, equipment, and materials.

The key to these programs is that they are "teacher proof"; that is, they are packaged and thus not subject to extensive modification by the teachers using them. As one major exponent of teacher-proof methods put it, "If you use my program, 75% of everything you say will be exactly what I tell you to say!" Usually these programs are produced by a central group of program developers and then published or distributed for general use by interested school systems and parent groups. Since these programs assume that everything can be taught by the careful control of the student response, many of them use behavior modification techniques.

The major advantage of the Programmed model is its relative ease of dissemination; this is because the performance of the child is keyed to the materials and not to the creative abilities of the teacher. Thus, relatively untrained paraprofessionals as well as sophisticated and experienced professionals can use these curricula effectively and with little difficulty. In addition, the teacher-proof characteristic appeals to angry parent groups who question the motives or commitment of teachers and who want full teacher accountability for the time their youngsters spend in school. These parents want their children to be taught to read and write and do arithmetic, and these programs claim to do that job without any nonsense. Many school administrators also like these programs because they provide effective control of their teaching staff and promote efficiency in the ordering of equipment and supplies.

Another advantage of Programmed curricula is the ease with which new components may be added as they become necessary or are identified. For example, another innovator in the Programmed area was criticized because of the failure of his methods to permit creative experiences for the children. He commented, "If you'll define what you mean by creativity, I'll develop a program to teach it."

In general, these curricula have clearly defined educational objectives, present a carefully designed instructional sequence to move children toward these objectives, and give the teacher explicit directions on how to behave during these learning sequences. Teaching is accomplished through the application of scripted materials supplied by the program developers. Learning is seen as the acquisition of correct responses as determined by the materials; anything can be taught to almost any child if the educational goals and behavioral objectives can be specified. The principles which support these programs are drawn from learning theory, behavior management procedures, and language development theory.

Open Framework. In this category, representing teacher initiates-child initiates, are preschool programs which subscribe to specific theoretical goals but which depend upon the teacher to create the exact "curriculum" in which the child participates. These programs focus upon underlying processes of thinking or cognition and emphasize that learning comes through direct experience and action by the child. They omit training in specific areas such as reading or arithmetic, treating these skills as inevitable outcomes of the development of basic cognitive ability. These programs try to develop the capacity of the child to reason and to recognize the relation of his own actions to what is happening about him; they tend to be skeptical of claims that academic skills or methods of solving problems can be taught directly to preschoolers.

These programs are usually based upon an adaptation of Piagetian cognitive-developmental theory to classroom practice. With this theoretical base, a framework is constructed that gives the teacher clear guidelines as to how the program should be organized. The theory delimits the range of preschool activities, giving criteria for judging which activities are appropriate. The theory also gives the teacher a frame of reference for organizing her perspectives on the general development of children. The framework itself generally includes directions for structuring the physical environment, arranging and sequencing equipment and materials, and structuring the day. It is this open framework that provides discipline to the program.

Open Framework programs tend to be oriented toward organizing and utilizing the people involved rather than any special equipment. They demand that the teacher create a transaction between the child and his environment to develop his abilities. And they demand that the child learn by forming concepts through activity, not by repeating what he has been told. The framework provides guidelines for establish-

ing these conditions but does not require special materials or equipment.

One of the major advantages of the Open Framework approach is that while the teacher must adopt a theoretical position and work within its limits, the specific program she creates is uniquely hers, developed as an expression of her attempt to meet the needs of the children in her group. At the same time, since the curriculum is based upon a specific theory, her expression of that curriculum can be closely examined by others who know both the theory and children to provide the teacher with guidance and assistance, facilitating quality control of the program.

Another advantage of Open Framework programs is that since they focus on the development of basic cognitive processes rather than on social-emotional growth, and since the specific program is created by the teachers who carefully plan activities according to the developmental levels of individual children, these programs are relatively free of cultural bias and untested assumptions about children's abilities. Thus they can be used effectively with youngsters with varying abilities and from diverse ethnic and socio-economic backgrounds. The programs are also free of specific linguistic criteria and may be employed with non-English-speaking children.

In general, these programs are organized to achieve cognitive and language development based upon a theory of intellectual development. An open framework is provided for the teacher as a context within which she develops a specific program for the children in her classroom. Learning by the child is the product of his active involvement with the environment structured by the teacher.

Child-Centered. In this category, representing child initiates-teacher responds, are the bulk of the traditional preschool programs as found on college campuses and in national projects such as Head Start. These programs focus on the development of the "whole child," with emphasis on social and emotional growth. They are characterized by open and free environments with a generally permissive relationship between the teacher and the children and among the children themselves. Content revolves around things which interest or are helpful to the child, such as community helpers, seasons, holidays, etc. There is a firm commitment to the idea that "play is the child's work" and recognition of the importance of the child's active involvement in his environment. Considerable attention is given to social adjustment and emotional growth through fantasy play, imitation of adult roles, rehearsal of peer relationships, and the careful development

of the ability of the child to be independent of direct adult assistance.

If theory is involved, it is usually a theory of emotional development. The actual program developed by the teacher comes mainly from her understanding of child development on the one hand and her observation of the needs of her children on the other. In general, the hallmark of the Child-Centered approach is an open classroom with children free to express their individual interests and help create their own environment, and with teachers who have developed a sense of how to support this environment.

The major advantage of the Child-Centered approach is its openness to the needs of individual children. The program may be in direct harmony with the goals of both the parents and the professionals, reflecting the specific concerns of all involved. In addition, Child-Centered programs are highly reflective of the values given considerable prominence in society as a whole: independence, creativity, self-discipline, constructive peer relationships, etc. Also, since this is the traditional preschool program style, there is a vast reservoir of trained talent throughout the country, in colleges and universities, in organized national associations, and in the large number of programs currently utilizing these methods.

In general, these programs attempt to assist the child in his overall development through careful attention to his individual needs. The teacher draws upon her knowledge of child development to create a supportive classroom where learning is the result of the child's interaction with the materials, his classmates, and his teacher. While there may be agreement on general goals in most Child-Centered programs, each teacher is responsible for the design of almost everything in her work.

See Table 2-1 for a summary of the salient characteristics of each of the program types just described. The relationships of all of the day care program combinations are graphically displayed in Figure 4-1.

2.4 Constant Supplementary Services*

There are a number of adverse conditions, such as malnourishment, illness, material want, and lack of transporta-

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*The authors wish to acknowledge the considerable contributions of Drs. Irving Lazar and Jeanne Mueller to this section.

TABLE 2-1

CHARACTERISTICS OF THE THREE PRESCHOOL CURRICULA

Child-Centered	Open Framework	Programmed
Child initiates, teacher responds. Traditional nursery school. Oriented to social and emotional growth. Trips to community. Themes or units about community, nature, seasons, holidays. Children free to choose and change activities. Activity areas. Initial Head Start model.	Piaget-based. Oriented to cognitive processes. Children learn by doing; choose own activities planned by teachers. Much interaction with adults. Both teacher and child active: teacher initiates, child initiates. Individual and small group activity. Latter includes Piaget-type tasks (e.g., sorting and ordering).	Preacademic instruction. Behavior modification techniques used to produce desired school and social behaviors. DISTAR language, reading and arithmetic drill sessions with small groups. Music and structured play time. Children grouped by ability; groups rotate from one subject (and teacher) to the next. Teacher highly directive: teacher initiates, child responds.

(Summarized from: Weikart, D. P. Relationship of curriculum, teaching, and learning in preschool education. In J. C. Stanley (Ed.) Preschool programs for the disadvantaged: Five experimental approaches to early education. Baltimore: John Hopkins Press, in press; Malte, M. L. & Martin, M. The unit-based curriculum. Ypsilanti, Mich.: High/Scope Educational Research Foundation, 1970; Hiatt, L. & Mainwaring, S. The language-training curriculum. Ypsilanti, Mich.: High/Scope Educational Research Foundation, 1970; McClelland, D. The cognitive curriculum. Ypsilanti, Mich.: High/Scope Educational Research Foundation, 1970; and Mayer, R. S. A comparative analysis of preschool curriculum models. In R. H. Anderson & Shane, H. G. (Eds.) As the twig is bent: Readings in Early Education. New York: Houghton-Mifflin, 1971.)

tion, that can be expected to occur with higher-than-normal regularity among the low-income families eligible for day care in this experiment. To the extent they prevail, the effects of these conditions are likely to mask the treatment effects which are of central interest. The approach recommended for overcoming the confounding of these nonexperimental variables with the treatment combinations is to provide corrective supplementary services, according to need, to bring all children up to acceptable functional standards.

Recent research is pointing to an alarming incidence of malnourishment, accompanied by related sicknesses, among children living in low-income areas throughout the United States (Schaefer, 1969). Schaefer reported a number of preliminary findings of the National Nutrition Survey in his Senate testimony:

- Fully one-third of the children under six showed iron anemia and vitamin A deficiency.
- About 14 percent exhibited vitamin C deficiency.
- Almost five percent showed symptoms of goiter, vitamin D deficiency, protein and calorie malnutrition, or growth retardation.
- Ninety-six percent had an average of ten teeth decayed, filled, or missing, with five of these needing immediate attention.
- There were cases of severe malnutrition, rickets, Bitot's spots, and other illnesses that were thought to be permanently eliminated in the United States many years ago.

Others have presented similar data suggesting a higher-than-expected incidence of these problems throughout the country (Birch and Gussow, 1970; Lazar et al., 1970).

The importance of these facts becomes clear when they are coupled with the new evidence of a direct adverse relationship between malnutrition, sickness, and a child's intellectual performance (Birch and Gussow, 1970; Coursin, 1969; Tanner, 1961).

- Malnutrition affects growth rate, and there is a strong relationship between growth rate and mental maturity (Tanner, 1961).

- One characteristic feature of nutritional stress is psychological disturbance; the most common behavioral finding in malnourished children is apathy accompanied by irritability (Birch and Gussow, 1970).

- Below four years of age, the brain is most vulnerable to nutritional deficiencies with the likelihood of irreversible changes being produced that remain throughout life (Coursin, 1969).

- Children with severe clinical illness resulting from protein calorie malnutrition show depressed levels of intellectual functioning (Birch and Gussow, 1970).

The importance of these facts about malnourishment and illness to the functioning of the child, and more narrowly, to the results of this experiment, would seem to justify the recommendation of a good level of nutrition and health services for all children.

Although the services needed cannot be accurately determined at this time, it seems reasonable to expect that good levels of service can be provided at a workable cost per child per year.

- Much assistance can be provided through referral to existing agencies.

- Directly delivered services can be varied according to actual need and centralized by site for efficiency.

Regardless of the actual costs, however, the expense is absolutely essential to the successful execution of the experimental design, especially as it relates to unambiguous interpretation of project results at the end. Therefore, it cannot be urged strongly enough that serious consideration be given to the proper selection and delivery of services to attempt complete elimination of malnutrition, nonroutine illnesses, severely disruptive home conditions, and lack of transportation.

The next five sections present the recommended services for several areas to be provided to all children in the experiment. Section 2.4.7 makes recommendations about staffing for supplementary services.

2.4.1 Nutritional Services

Nutritional screening. All children coming into the project should be screened for nutritional status, with additional tests performed as necessary to follow up any required treatment. A detailed set of recommended screening procedures is included in Screening Children for Nutritional Status, complete with forms (U.S. HEW, 1971), and includes:

- Determination of food intake, using the 24-hour recall method, accompanied by a dietary questionnaire and a search of local food outlets for the availability of key foods

- A physical examination, consisting of stature and weight measurements and a search for indicators of nutritional deficiencies

- Laboratory studies of the blood, particularly for hemoglobin and hematocrit; roentgenographic studies using wrist x-rays to determine developmental age and to screen early cases of rickets or scurvy.

Nutrition improvement through meals and snacks. It is essential that provision be made for adequate meals and snacks while children are actually in the day care units. It cannot automatically be assumed that children will have eaten breakfast by the time they arrive in the morning, nor that they will receive an adequate supper after they leave at night. As much of their daily protein, calorie, and vitamin requirements should be met as is possible within the time limits of their stay at the day care unit. Steps that should be taken include:

- Careful planning of menus by a trained dietician to insure properly balanced meals

- Provision of extra meals and snacks to insure adequate daily total intake

- Addition of enriched foods and food supplements to combat specific deficiencies known to exist among the children.

Nutrition improvement through parent education. Lack of money alone is not the major cause of malnutrition among the poor, testifies Schaefer (1969), because most of the essential food nutrients are available in relatively inexpensive forms; rather, he feels that the major problem is that the parents do not have an adequate awareness either of the crucial importance of proper nutrition for their children or of the food sources which provide key nutrients.

This suggests the importance, both to children actually in the project and to siblings, of some form of parent education which might include the following components:

- The relationships of necessary foods to bodily needs
- Menu planning to provide needed nutrients in appealing ways
- Consumer practices such as buying, storing, preparing, and serving foods.

Many services in this area can be obtained at no cost to the project through local County Extension Services, administered by the Department of Agriculture.

2.4.2 Medical Services

Medical screening. All children entering the project should be screened to identify past and current illnesses so that appropriate follow-up can be conducted. This should include:

- A medical history of past health problems, past care, and past immunizations
- A physical examination including, in addition to the nutrition tests above, a major systems check (heart and lungs), vision and hearing tests, and special tests for illnesses common to particular areas.

Many appropriate forms are available to guide this screening, but it is important to recognize that a balance must be worked out between collecting too much data and collecting too little. One form that strives for this balance is that used to screen children in the Appalachian Regional Commission day care centers (Appendix C). It would probably be good practice to postpone the screening procedure until the children have become acclimated to the day care unit, after a month or so, so that they are not put under undue stress during the initial period of separation from their parents.

Treatment of illness or injury. When children are put into group settings for the first time a large increase in infectious respiratory illness occurs, and it must be anticipated that occasional serious accidents and illnesses will need special care. It is urged that the following kinds of care be provided as necessary to all children in all day care units:

- Care for routine illnesses such as colds, flus and viruses, including medication by a nurse and the provision of isolation and rest for the affected child. (It might be useful to have one or two nonexperimental day care units in each site that accommodate only sick children.)

- Emergency first aid for injuries occurring while the child is in custody of the day care unit

- Medical treatment for serious illness or injury, including appointments with a private doctor, transportation if necessary, and follow-up to insure proper medication and care. (It might be desirable to let mothers choose their own doctors insofar as possible.)

Preventive treatment. One of the least expensive and most potentially rewarding expenditures for medical care includes the services normally called "well-baby care." When the children are available in group settings, these services can be delivered in a very efficient manner, and they can greatly decrease both the long-range stress on the child and the overall costs of remedial treatment. Such preventive treatment would normally include:

- Periodic medical examinations

- All essential immunizations.

Dental treatment. Although dental treatment might at first be considered out of the realm of reasonable day care services, information from the National Nutrition Survey (Schaefer, 1969) suggests that there may be a strong link between the dental problems mentioned above and malnutrition, which leads to poor performance: "Inability to bite and chew leads to a selection of soft and readily swallowed foods which frequently are deficient in some of the essential nutrients and can lead eventually to overt malnutrition." In view of these interrelationships, it is recommended that dental care be provided to children in the experiment in the form of:

- Prevention through the application of topical fluoride (where not provided in drinking water)

- Regular examinations and treatment by a local dentist.

2.4.3 Health Education

The importance of routine health safeguards may not be fully recognized by all of the parents involved in this experiment, and it is recommended that systematic health education programs be incorporated into program operations at each site. Over an extended period of time, many topics might be included in such a program, benefiting not only children in the experiment but also their siblings:

- Illness prevention and care, including discussion of respiratory and other contagious diseases, poisoning, home accident prevention, sleep, regular medical checkups, immunization
- Effective utilization of doctors, clinics, hospitals, and public agencies
- Insurance and public financial assistance
- Planned parenthood

2.4.4 Psychological Services

Although the incidence of chldren who are emotionally disturbed or seriously retarded is expected to be relatively low, some provision must be made for identifying and treating those few children who do show symptoms of psychological abnormality. These services would be minimal, but might include:

- Screening for emotional disturbance or retardation
- Referral to sources of counseling and psychotherapy
- Emergency counseling until the case is accepted elsewhere.

2.4.5 Social Services

Parents must show a good measure of trust in any agency to which a major responsibility for the care of their child is entrusted. It is not unlikely, therefore, that when a family crisis of some kind occurs a parent will turn to the day care personnel for help if it cannot be obtained from immediate family or friends. This will be particularly true if open and supportive communication existed prior to the crisis, and the parent is unfamiliar with available public assistance agencies. When a mother approaches day care personnel, there must be some provision either for referral to appro-

private agencies or for direct services. Some of the areas for which it is important to include referral or assistance are:

Material needs

- Provision of emergency food or food stamps
- Employment assistance
- Housing assistance
- Clothing distribution
- Legal aid

Interpersonal needs

- Family counseling
- Family crisis intervention
- Social events, such as coffee hours, dinners, and game nights.

These are typical of the needs of the chronic poor which result from circumstances common in their lives and are caused directly by lack of money, lack of education, or both. It is beyond the scope of this experiment to completely eliminate these needs, even through the use of extensive referrals to community agencies, but the necessity of some resources for continuing crisis intervention must be anticipated.

2.4.6 Transportation

The prevalence of private transportation among families in this experiment is unknown but expected to be low, and the physical proximity of day care units to public transportation cannot be controlled or predicted with any certainty. Under these circumstances it must be anticipated that children in some of the day care sites will need transportation to and from the child care units to insure adequate attendance for purposes of the experiment. Where necessary, it is recommended that transportation be provided as part of supplemental services to families, but a wait-and-see attitude should prevail during the start-up phase of the project because of the expense and uncertain need. When low attendance rates demonstrate the need for project-supported transportation in a particular site, OEO should make additional funds available expressly for transportation at that site.

2.4.7 Staffing of Supplementary Services

Although the supplementary services recommended in this section are quite comprehensive, the actual cost per child need not be excessive. Part of the reason for this is that many of the services can be delivered very efficiently with few personnel when children are available in group settings. Another reason is the existence of many public assistance agencies which may not currently be used by eligible families, although it must be noted that many agencies cannot accommodate additional clientele. Assuming that about 200 or so children participate in the experiment in each of several sites as described in Section 4.3, supplementary services can be administered to children in all treatment combinations by a single central staff consisting of:

Full time

- One paraprofessional intake worker
- One secretary
- Two public health nurses
- Two MSW social workers, or one MSW social worker with two paraprofessional aides

Part time

- Private doctors, including dentists and eye and ear specialists
- Clinical psychologist
- Nutritionist and dietician

Intake worker. It is desirable that all intake and service records be kept in one place by one person, so that any of the professional staff can quickly ascertain the services rendered by other staff members. Moreover, care must be taken to insure that the incoming children are not needlessly exposed to duplicate examinations by different professionals. One person should be trained to collect all preliminary screening information and to coordinate all examinations, preferably using a single form. One example of such a form, used by the Appalachian Regional Commission, is provided in Appendix C. Because of the personal nature of much of the necessary information, it is desirable to have a local person, with social and ethnic background similar to the program participants, collect the data. Care must be taken to insure the confidentiality of this information, however, preferably

by hiring someone who lives outside the immediate service area of the experiment. The American Academy of Pediatrics (1971) has a program for training paraprofessionals to do intake work such as that required by the experiment. Partial funding of the intake screening might be obtained through Title XIX funds.

Nurses. The nurses employed in the sites should preferably have public health training or be from the Visiting Nurse Association. They can be responsible for much of the screening and "well-baby care" under the medical responsibility of a local doctor. In addition they can:

- Care for routine child illnesses which occur
- Work with teachers in classrooms to teach health and hygiene to children
- Teach health education to families
- Coordinate medical needs of children with community agencies
- Provide follow-up to doctor appointments to insure that prescribed medication and treatment are obtained
- Provide transportation to and from the doctor when needed.

Social workers. Two MSW social workers, or one MSW social worker with two capable paraprofessionals, could be expected to handle the 200 or so children anticipated in each of the experimental sites. The paraprofessionals could be trained through the resources of the Family Agent Program. This team would be responsible primarily for the crisis intervention services and referral to local agencies for problems such as those listed under material needs above.

Doctors. A contract should be arranged with a local doctor to perform three functions:

- Make major systems checks for initial screening
- Prescribe treatment for any gross abnormality discovered
- Provide medical responsibility to support the activities of the nurses, and make follow-up recommendations.

Three arrangements are commonly made for obtaining the services of a doctor:

- A doctor can be hired for a day in the day care unit as needed.
- Parents or staff can take children to a private doctor and obtain reimbursement.
- Doctors in public facilities can be used, such as those listed in the Directory of Comprehensive Neighborhood Health Service Programs (OEO, 1971).

Hiring a doctor for a day would probably be best for the initial screening tests, but for illnesses that arise once the project is under way, it might be more advantageous to let parents choose individual doctors and have them bill the project. This would help bolster the self-esteem of the parents through their active participation in the provision of care, and it would provide a learning-by-doing opportunity in the use of medical resources. In this case the doctor should send a summary of prescribed treatment and medication to the project nurse to insure proper follow-up to the visit. Public facilities can be used when needed, but often the overcrowded conditions and long waits do more to deter routine utilization than to increase it.

In some sites it might be possible to obtain much of the costs of doctors' services through some form of group health insurance, such as Kaiser or HIP.

Clinical psychologist. In order to screen the children for emotional disturbances, it would be desirable to hire a clinical psychologist for at least a half day every couple of months or so to observe the children as they interact in the day care setting, having him especially note children singled out by the caregivers. Abnormal behavior spotted during this time would be followed up by thorough testing and referral or emergency counseling as necessary.

Nutritionists. Professional dieticians and nutrition aides should usually be available at no cost to the project through the County Extension Service administered by the Department of Agriculture. This resource can be tapped for many of the nutrition services described above, including menu planning and parent education.

3

TREATMENT DOCUMENTATION AND PROGRAM EVALUATION

Three basic procedures are outlined in this chapter:

- Treatment documentation--the measurement of program variables
- Program outcomes--the measurement of the effects of the day care experience
- Case studies--qualitative narrative descriptions of individual day care units.

Section 3.1 describes the important variables that function as input to the children. The treatment documentation, which basically utilizes observational procedures, provides information about the day care environment presented to the children. Treatment documentation also provides information about certain effects of the program while it is still in progress. This latter "Process outcome" information supplements the summative evaluation procedures discussed in Sections 3.2 through 3.7, which consist of observations, interviews and structured tests. Section 3.8 describes the case studies of the day care programs, which will attempt to gather broad overview information that is difficult to get using the more structured techniques above. They are also intended to provide quick, nontechnical descriptions of the various program operations for use by program operators, caregivers and parents.

The limitations of this chapter should also be made clear. The purpose is to provide a framework within which decisions about the selection, quantification, and collection of variables can be made. Recommendations for particular variables are presented in this section, as well as the reasoning leading to the recommendations; it is felt, however, that the organization actually conducting the experiment should be responsible for deciding which specific variables will be measured and how they are to be operationalized.

3.1 Treatment Documentation

One of the major thrusts in educational research has been the attempt to assess the relative outcomes of various types of curricula. A recent review of this kind of research (Rosenshine, 1970) has strongly urged that outcome research not be conducted in the absence of a careful examination of the specific implementation of the various curricula under consideration. There are two basic problems inherent in attempting outcome research without a careful delineation of implementation methods used with the curricula involved.

- First, since the curricula are not specified in terms of how they actually have been implemented, the treatment effect of any particular curriculum often may be heterogeneous. That is, the ways in which a specific curriculum may be translated into actual classroom practices may be quite diverse. As such, each "treatment effect" is not a single entity as is presupposed in such a design, but may be a combination of many effects.

- Second, although curricula specified on paper may appear to be quite different in the abstract, the actual implementation of the curricula might reveal much similarity. Therefore, one has no assurance that the type of curriculum specified by the curriculum planner is in fact the type of program that the subject children are receiving.

The difficulties these two problems would cause in drawing inferences from outcomes are clear: first, without knowing what specific treatments each group received, it would be difficult to conclude anything about the differences found on the outcome measures; second, if the implemented curricula differ from those specified by the curriculum planners, it would not be possible to make conclusions about the effectiveness of the intended curricula. In this experiment, high priority will be devoted to relating what actually occurred in terms of curriculum implementation, rather than what ought to have occurred, to outcome variables of interest.

To provide orientation and permit decision-making in the large field of potential variables, the treatment documentation is divided into two major areas:

- Curriculum variables include all variables selected from the articulated positions of the curriculum planners for each of the three curricula in the study. These three lists would be combined into one major list entitled curriculum variables.

- Program variables include all variables describing the day care experience except the curriculum variables. For the purpose of this study, the program variables have been further divided into a series of domains.

3.1.1 Curriculum Variables

It is important to assess curriculum variables for a number of reasons:

- First, it is necessary to have a clear documentation of the curriculum as it is implemented in order to know what has contributed to the treatment effect. In short, it is necessary to demonstrate that the curriculum that appears on paper does indeed translate into actual measurable procedures.

- Second, the extent of difference between description of a curriculum and its implementation is of considerable interest in this study. In fact, this difference may be considered a variable in itself. A curriculum which poses major problems in the translation from paper to classroom may well be one that should not receive continued support. Whatever the outcomes of this study, if the implementation of the curriculum cannot be replicated, then the curriculum is not suitable for implementation on a large scale.

- Third, in order to maintain the "purity" of a curriculum, its actual implementation must be carefully monitored. To do so requires documentation compatible with the philosophy of the curriculum planner, and this is established by selecting variables directly from the articulated position of the curriculum developer.

- Fourth, documenting curriculum differences in terms of curriculum-specific variables would make it possible to explore differences in both inputs and outcomes with a single curriculum. Despite the fact that the same "on-paper" curriculum is being implemented in a series of sites, there will be normal variations in day care activities across sites, and an estimate of this "normal" variation would be useful. In addition, a careful documentation of the curriculum as it is implemented may reveal differences in outcomes attributable to implementation variations for a given curriculum.

It was mentioned above that the curriculum-specific variables for each of the three curricula involved in the project should be combined into a single curriculum variable list. The major reason for assessing each curriculum not only in terms of curriculum variables specific to it but also in terms of variables of major importance to the two other curricula stems from the need to compare all three curricula across all variables. Each curriculum in this study will have particular merits, and it seems useful to assess all of the curricula with one global list of curriculum-specific variables reflecting the curriculum planners' conceptions of what the key dimensions of a curriculum are.

The curriculum variables comprising the global list will be selected from the written positions of the authors of the curricula which will be a part of this study. A thorough examination of the three curriculum types represented in the day care study still remains to be done. However, for each of the three curricula, some tentative examples of important variables can be given.

- The Programmed Approach is a highly structured curriculum, often emphasizing language development. Variables which describe key issues in the implementation of a programmed approach may include:

  a) Number of convergent questions asked by adults

  b) Frequency of grammatical correction of children's language

  c) Number of drill responses given by children

- The Open Framework Approach is a moderately structured curriculum emphasizing the learning of concepts independent of the specific language patterns used to verbalize them. Variables which could be used to document the implementation of this approach include:

  a) Number of divergent questions asked by adults

  b) Amount of sociodramatic play which occurs (role playing)

  c) Number of times an adult asks a child to elaborate a response

- The Child-Centered Approach is the least structured of the three curriculum types and it emphasizes socio-emotional growth. Examples of variables which capture salient aspects of this approach may include:

a) Frequency of adult responsiveness to individual child needs

b) Number of times children initiate activities (autonomy)

c) The amount of sharing children do.

To obtain the curriculum variable list, variables which capture the major issues involved in implementing each of the three curriculum types will be pooled to form one overall set of variables.

3.1.2 Program Variables

Many variables are not specifically included in curriculum planners' objectives, and are separately grouped as program variables. These typically refer to activities common to day care centers which are not specifically educational. There are two major reasons for assessing program variables:

- First, a great deal of what occurs within a day care center will be non-curricular, and there may be unexpected similarities and differences among curriculum types with respect to the remainder of the day care program. Some of these similarities and differences in non-curricular aspects of the day care experience may be significantly related to outcome variables.

- Second, program variables will also include curriculum variables judged important by some people, but not specified by any of the curriculum developers. In general, these will be mainly theoretically neutral variables relating to curriculum implementation.

Given the complexity of the day care experience, one could assess endlessly in the interest of more complete description. What this study strives for in detailing the treatment effects is relatively complete, salient day care documentation within the reality of research cost limitations. To this end, program variables have been subdivided into a series of domains. The domains presented below were chosen because an examination of the day care literature suggested that they would be useful for classifying variables of importance:

- Setting

- Supplementary services

- Social and psychological qualities of the day care experience

- Relations between the community and the day care unit

In addition, within each of the four domains, dimensions have been identified which seem to be particularly salient. Specific variables will be given below to illustrate what the dimensions within each domain are attempting to capture.

Principles guiding selection of program variables. Because of the lack of substantial research on day care, there are no firm, data-based guidelines to use in defining a specific focus for the research, nor are there definitions of specific variables. Therefore, an attempt is made here to include as many variables as possible in considering the phenomenon of day care: this is based on a careful delineation of four principles intended to assist in the selection of appropriate variables:

- The first principle is that variables should be chosen to assess a wide variety of different aspects of day care rather than being limited to one or two major aspects. In the same vein, drawing variables from a variety of theoretical positions would prevent the undue bias which might result from a single theoretical position.

- Secondly, there is very little literature specifically relating to the selection of psychological variables in a day care study. Therefore, it seems wise to consider those concerns expressed by people who are familiar with the implementation of day care programs.

- The third principle concerns the importance of selecting variables which tap relatively molar dimensions of the day care experience, leaving more refined micro variables for later work. In short, since day care represents an uncharted territory in terms of research, the variables which help map general features of the terrain would seem to be more important than those which analyze the chemical composition of the soil. The decision to concentrate on molar variables also results from the technology involved in data collection. The methods available for assessing an extensive series of delicate micro variables are prohibitively expensive at this time.

- The fourth principle of variable selection concerns the level of inferences one wishes to draw. Since

the purpose of this research is to compare different day care units, one must be assured that variables are cast in terms which permit cross-unit comparisons. There are essentially two ways of accomplishing this goal. One involves selecting variables which pertain directly to unit-level activities, e.g., a global rating of day care units. The second method takes individuals as the target of observation, but then provides a strategy for aggregating the codings or ratings of individuals so that general statements about units can be made.

Examples of program variables. Each of the four domains comprising the program variables is presented with the above guidelines in mind. The domains will be discussed individually in the following way: first, the domain will be presented; next, salient dimensions within the domain will be enumerated; and finally, some examples of variables within that domain will be given. Each dimension consists of a series of variables tapping various aspects of the domain. In short, a dimension is not to be considered as a single variable or as a monolithic construct, but rather as a term representing a collection of related variables.

Domain 1: Setting. This domain refers to those aspects of the day care experience which are relatively static and which describe the physical and staffing aspects of the day care unit.

. Physical dimension

Equipment and materials
Number of square feet
Density (ratio of people present to usable square feet)
Type of setting (e.g., home, church, school, etc.)

. Social dimension

Caregiver/child ratio
Number of contact hours per child with a caregiver
Number of children present
Number of caregivers present

Domain 2: Supplementary services. Most of the dimensions to be assessed in this domain, as well as examples of specific variables, have already been presented in Section 2.4. Some of the major ones are summarized below:

. Nutritional dimension

Number of snacks and meals provided
Kinds of menus followed
Number and kinds of food supplements provided
Kinds of nutrition education programs for parents

. Medical dimension

Number of serious illnesses identified
Number of illnesses and accidents treated
Number of medical examinations conducted
Number and kinds of immunizations given
Kinds of health education programs for parents

. Social services dimension

Number and kinds of material assistance, for example through provision of food, housing, employment, etc.
Number of effective referrals to public agencies
Frequency with which parents seek help from project personnel

Domain 3: Social and psychological qualities of the day care experience. This domain encompasses a host of variables, all of which pertain to occurrences within the walls of the day care unit.

. Social structure dimension

Group size
Group composition
Group stability
Group proximity

. Social skills dimension

Complexity of social behavior
Sharing behavior
Separation behavior
Decision making

. Child-affect dimension

Enthusiasm
Quality of mood
Intensity of involvement

. Adult-characteristics dimension

Warmth

Degree of encouragement
Ability to set appropriate limits
Degree of facilitation of peer group formation
Degree of control exercised over children
Amount of interaction among adults

. Type-of-activity dimension

This refers to what would probably be operationalized as a single variable. It is offered separately because it did not seem to fit any of the other dimensions. Examples might include art, reading, arithmetic, music, large muscle play, and so on.

Domain 4: Relations between the community and the day care unit. This domain refers to activities involving day care unit personnel and individuals and/or groups not usually present at the day care unit.

. Parent variables

Parent participation in day care unit activities
Parent contact with caretakers
Parent attitudes toward caregivers

. Relationship to community organizations

Contacts with social agencies
Contacts with informal interest groups in the community
Contacts with political office-holders

This section has presented an outcome of a research strategy to document day care program implementation. An overall framework for viewing such a research effort was constructed, key issues in documentating day care programs were highlighted and discussed, and guidelines for variable selection were introduced. However, it is important to note that this does not constitute a detailed blueprint for a research project. Specific operationalized variables along with data collection techniques have yet to be determined. It may be necessary to make these decisions after brief pilot projects (e.g., see Appendix D) have been conducted.

3.2 Rationale for Selection of Child Outcome Variables and Evaluation Procedures

The selection of outcome variables and measures rests upon interrelated political, psychological, educational, practical, and statistical considerations. This section

section attempts to make clear how these factors were reviewed and how they influenced the final recommendations. Most of this section is concerned with child outcomes. In developing the rationale for selecting variables to measure child outcomes, five factors are considered: (1) the concerns of the day care consumers, (2) the desire to overcome weaknesses of previous research, (3) the significant findings of previous research, (4) the behaviors important for normal development and for success in school, and (5) measurement considerations. The rationale for selecting family, community, and staff outcomes is reviewed more briefly. Immediately following each section on rationale, the suggested list of variables to be measured is presented. Section 4.4 will then present the suggested assessment procedures to be used for the outcome variables.

3.2.1 Concerns of Consumers

The importance attached to various program outcomes involves value judgments by the groups that are concerned about day care. The potential users of the experimental results have divergent views. What follows is an attempt to set forth what appear to be the concerns of five identifiable groups of consumers: the child's parents; parent action groups; child development specialists and psychologists; educators and program developers; and legislators and public officials.

Parents. These are the actual users of the facilities. They have practical, everyday concerns and most immediately feel the impact of changes in their child's behavior. Their first concerns are cost, geographical convenience and appropriateness of hours (Rowe, 1971a), but they also desire a good caregiver-child relationship (Emlen, Donoghue and LaForge, 1971). When asked about quality of care, family day care users most often mention cleanliness, routine and discipline, and close attention given to the child (Emlen et al., 1971). If child behavior is affected by day care in ways that noticeably alter family interaction patterns, parents would certainly be concerned. A survey by the Massachusetts Early Education Project asked parents to select the program characteristics they found "most important" from a list of sixteen. Characteristics selected by at least a third of the parents in the Massachusetts study were "Help children get along better with each other" (57%), "Close to home" (41%), "Provide health care" (38%), and "Provide meals" (36%). Of least importance were "Provide TV," "Speak many languages," and "Provide special toys." (Rowe,

1971a, p. 14)*

> Recommendation: To get at the outcome variables considered important by parents, the study should, at a minimum, assess the caregiver-child relationships (including amount of attention and modes of discipline), child-child interactions, and physical health.

Parent action groups. The goals as stated by organized groups of parents may be quite distinct from those mentioned by parents as individuals. There is often an overlap with the goals stated by child development experts as parent groups acquire ammunition for supporting their case before legislators, yet the goals are too often vaguely defined. Although each parent group is likely to have its own list of criteria, a report for the Field Foundation "Children's Advocacy Project" listed six basic services (Bourne, Medrich, Steadwell, and Barr, 1971):

- "Accessible custodial care for children whose parents are away from home regularly or irregularly
- Stable and intensive adult-child relationships for children whose parents are regularly away from home
- An environment which fosters the child's development of identity, interpersonal and group relationships and social skills
- Development of cognitive and perceptual school readiness skills
- Nutrition and health care
- Early diagnosis of physical and psychological problems and treatment...."

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*A word of caution about interpreting the concerns of parents: the real test of parental needs and desires would be to provide alternative day care programs over a period of time and allow parents to choose among them. In the absence of such data, it has been suggested that parental desires may best be met by providing a diversity of programs and informing parents as to what a particular choice means (Abt Associates and Pacific T&TA Corporation, 1971).

Recommendation: To get at these concerns, the study should assess the caregiver-child relationship, development of identity, social skills, school readiness skills, and physical health.

Child development specialists and psychologists. Here the importance of a particular outcome is likely to be defined in terms of the specialist's interpretation of research results (e.g., Butler, Gotts, Quisenberry and Thompson, 1971a) and in terms of a particular theoretical orientation. In the absence of the former, the dimensions that are presumed important within a theoretical orientation are likely to guide program recommendations. Thus there are goals formulated in terms of developing cognitive structures, meeting basic emotional needs, or facilitating ego development. As the child development specialists become involved with the implementation of programs, their goals are more likely to be stated in the terms of the educators and program developers.

Recommendation: Accommodating all the concerns of this diverse group would require assessing practically every conceivable child outcome. The concerns of other groups and measurement considerations will take priority in variable selection.

Educators and program developers. At this level the important outcomes appear in the statements of program objectives, although these are sometimes ill-defined. Appendix E presents several taxonomies of educational objectives which illustrate the kinds of outcome variables considered important by the practitioners.

One criterion of importance that receives considerable agreement among this group is the relevance of behavior changes to success in later schooling. Thus, if a day care program fostered behaviors that increased a child's level of achievement in first, second, or third grade the program would be considered successful. There might still be disagreement, however, as to what constituted the important aspects of first, second, or third grade achievement. In their review of successful intervention programs, Hawkridge, Chalupsky, and Roberts (1968) found that the most common measure of elementary school achievement was some test of reading ability. Broader measures of school achievement have been considered valuable as well: "We assume that school achievement tests of grades 1-3 offer the single most credible criterion generally available in ages 0-9 for estimation of the future social dependency of the child" (White and Cohen, 1971). Related to the interest in school

achievement, there is often an emphasis on cognitive variables as the important ones, although there may be less concern with this in the day care field than in the preschool education field.

> Recommendation: It would appear that some of the main concerns of this group would be met by assessing school achievement as a follow-up to the day care experience.

Legislators and public officials. Although the cost of any child care program is probably the first concern of elected officials, there are other practical issues considered important, and these do not necessarily coincide with the issues considered important by educators. Some outcomes are not directly concerned with the child at all. For example, President Nixon's message vetoing the Economic Opportunity Amendments of 1971 (U.S. President, 1971) cited enabling mothers to take full time jobs as the first need for day care. The second goal mentioned was protecting children from "actual suffering and deprivation" (nutritional, medical, health). This concern with minimizing harmful effects may seem like a negative approach yet certainly one that should not be overlooked. It is not inconceivable that exclusive attention to positive cognitive benefits could result in inadvertent adverse effects.

> Recommendation: To get at these concerns, assessment should be carried out to determine whether the child receiving day care is any worse off than the child who does not (particularly in the physical growth and health areas). Certain family effects, such as employment habits, might also be stressed since they might in turn affect welfare costs (see Section 3.4).

It will be noted that several of the concerns represented above are more related to inputs--what happens to the child--rather than outcomes. Several writers have discussed day care benefits strictly in terms of input variables. Thus, when the major goal of day care is to give mothers the freedom to seek employment or to provide the child with close attention by means of a high caregiver/child ratio (Abt Associates, 1971a), a center with certain child inputs is automatically good--without any measure of how the child changes as a result of his experience. There may be good arguments for restricting evaluation to this approach (based largely on the paucity of evidence regarding permanent effects with traditional outcome measures), but there would be just as much debate on what constitutes a quality day care milieu as there is on what constitutes important outcomes. As is done with outcomes, it would be

possible to look for inputs considered important from the standpoint of various theoretical orientations, or from the standpoint of any of the interest groups mentioned above. Data for this purpose will be available from the treatment documentation records and, to some extent, from the case studies.

3.2.2 Overcoming Weaknesses of Previous Research

From the time of the first Head Start programs in 1965 there has been great debate about the effectiveness of early intervention or compensatory education programs. Much of this debate centers around measurement issues which are discussed below; four more general issues which have been raised in criticism of previous research are discussed here--evaluating only immediate effects, vague definition of program objectives, lack of correspondence between measures and objectives, and the search for generic treatments. In order to overcome some of the weaknesses of previous research, certain procedures should be followed which will have the effect of eliminating some variables that might otherwise be selected. In particular, the following are recommended:

- Long-term or follow-up outcomes should be assessed, at least on a limited scale.
- Carefully defined "global" variables should be assessed.
- Measures sensitive to expected outcomes should be used.
- A range of assessment devices should be used.
- Measures that can be related to treatment documentation and to background information should be used.

Short-term vs. follow-up evaluation. Much of the research in early education has been criticized for not demonstrating long-range effects of the intervention. Some of the most commonly mentioned benefits of day care are effects that occur 10, 15, or 20 years after. Goals of "breaking the poverty cycle" and preventing juvenile delinquency are examples. Ill effects feared by some may not be detected until adolescence or later, e.g., social dependency, chronic poor health, and delinquency and crime. Another fact to consider is that when significant gains do occur in well-controlled studies, their duration is relatively short. Sta-

tistically significant gains may appear one year and be gone the next. A complete evaluation of any program for young children must not report immediate gains while failing to detect later reversals.

It may be argued that follow-up is not so crucial because standardized test scores can be used to predict future behavior patterns. Unfortunately, the relationships between test scores at age five or six and later adolescent or adult behavior are not strong enough so that these scores can substitute for longitudinal follow-up analyses. A five-year experiment will permit some degree of follow-up, at least for the children who are in day care during the first year or two of the experiment, but if data could be gathered on these children over a longer interval, the value of the project would be enhanced considerably.

Definition of program objectives. Many goals of early childhood programs are stated in vague terms (e.g., "helping the child achieve his full potential") although the popularity of behavioral objectives in recent years may be changing this to some extent. As Lazar et al. (1970) put it, "Measurement of outcomes, evaluation of progress toward achieving those outcomes, and cost-outcome analysis depend on the formulation of specific program goals and subgoals for program components" (p. 381). There is a dilemma here that is probably best resolved by a compromise. If the effects one is measuring are too specific, i.e., very narrow behavioral terms, one is open to the charge of ignoring the "really important" behaviors. The use of global variables that are defined as carefully as possible is recommended on both conceptual and technological grounds (see "Principles guiding selection of variables" in Section 3.1.2). To a considerable extent, the more specific outcomes must be specified by the program operators.

Correspondence between measures and program objectives. Several writers have made it clear that a failure to consider the match between program objectives and dependent measures may be dooming the evaluation to failure. The tests currently employed are, for the most part, insensitive to the outcomes expected by specific programs (Parker, Ambron, Danielson, Halbrook and Levine, 1970; Zimiles, 1970). The rationales presented here will lead to the selection of outcome variables to be evaluated along with suggestions for measures that will be designed to relate to those variables. In addition, provision will be made for evaluation of outcomes specific to the curricular models.

Search for generic treatments. Gordon (1971) has observed that "questions as to what works for which children under what specific conditions are not heavily reflected in available research to date" (p. 9). He lamented the fact that research efforts

> reflect a search for generic treatments, a desire to find the program or practice that works for large numbers of people; this tendency can be seen as a reflection of the generic nature of research on population characteristics, which tends to give the impression that we are dealing with a large, homogeneous group with common problems of development (p. 9).

It may well be impossible to declare that one set of benefits should be sought after for all children in all program types in all parts of the country. One must consider the possibility that a particular day care program will have good effects on some children, no effect on others or bad effects on other children. It should also be expected that effects may vary in duration and in timing. Some may appear immediately and persist for some time; some may appear immediately and dissipate with time, either slowly or rapidly; some effects may even not appear immediately yet occur after some unspecified time interval. Beyond this, there may be contradictions between immediate effects and later effects, e.g., a child who experiences frustration in the day care center, cries and manifests other undesired behaviors, may be better able to cope with frustrations in the future. The reverse is also possible--a child who is completely "happy" in the day care center may possess poor impulse control in elementary school. Likewise, the immediate child effects in the center may not be congruent with immediate child effects in his home. All these problems serve to point up (1) the necessity for broad-based assessment techniques that do not rely upon one-shot, formal testing situations and (2) the importance of relating outcomes to information obtained from treatment documentation and to background information.

3.2.3 Positive Findings from Previous Intervention Research

It can be argued that if a given variable was an indicator of success in a previous early childhood intervention project it may have potential for indicating success in the day care experiment. This, of course, can not be the only criterion for including a variable for assessment since any or all of the problems discussed in this section may be

operating in a given study and preventing the finding of a statistically significant outcome.

The task of reviewing the previous research and picking out the significant variables is frought with pitfalls. Not only is there the difficulty of comparing qualitatively different intervention programs and interpreting results from poorly designed experiments, there are also the problems of comparability in subjects, measuring instruments, and procedures of data collection even when the same instruments are used.

In spite of these difficulties it seems important to attempt to catalog the results of these studies. The reported findings have been classified by domain and are presented in Table 3-1. It will be noted that (a) there are not a large number of significant findings from these studies, (b) most of the social-emotional gains concern within-classroom behavior, and (c) many of the behaviors will be difficult to measure.

3.2.4 Behaviors Important for Normal Development and for Success in School

Another rationale for selecting variables would be that they are behaviors which have been found to be important for normal development; thus one should know whether these behaviors are developing in the day care setting. If a behavior has been shown to be related to later school success, it should likewise be assessed.

The most comprehensive recent survey of normal development in the preschool years was completed by Butler, Gotts, Quissenberry and Thompson (1971). They reviewed between 1400 and 1500 studies of child development published between 1960 and 1970. On the basis of this review, they set forth what they called "empirical objectives" for three- to five-year-old children, i.e., empirically derived, measurable behavioral events related to school performance of advantaged five year olds.

The objectives listed by Butler et al. are presented in Appendix E. They are very comprehensive, including a large number of behaviors in the psychomotor, cognitive, and affective areas. Because of their inclusiveness they serve not so much to facilitate the selection of important outcome variables as to suggest reasonable expectations for the age group and, in some cases, workable definitions for behaviors considered important for other reasons. For example, par-

TABLE 3-J

CHILD OUTCOMES FOUND IN PREVIOUS EARLY CHILDHOOD INTERVENTION RESEARCH

I. Health, Nutrition and Physical Development

- No evidence of positive effects on physical, health and motor development (Sjølund, 1971)

II. Cognitive Development

- Immediate gains on intelligence measures (Bissell, 1971; Datta, 1969)
- Speech developed more poorly in centers, but depended on age groupings (Sjølund, 1971)
- Improved ability to cope with cognitive demands (Bissell, 1971)

III. Social-Emotional Development

- Gain in ability to inhibit motor responses (Bissell, 1971)
- More socially appropriate behavior (Datta, 1969)
  - increased interest in new things
  - improved child-child and adult-child interaction patterns
  - increased task orientation
  - improved attitude toward learning
  - improved self-concept
  - decreased alienation from authority
  - increased trust in others
  - increased social interaction with tester
- Positive social-emotional development (Sjølund, 1971)
  - less inhibited and more spontaneous
  - less timid and anxious
  - greater self-assurance
  - more initiative and greater curiosity about surroundings
  - better adjusted to reality
  - more independent of adults, but more dependent on peers
  - more self-assertive
  - obtain status in the group
  - more social-minded, find social adjustment easier
  - more helpful toward others and better able to cooperate

ents have expressed an interest in having their children get along better together; Butler et al. state that there is a decline in the negative interactions with peers at age five, but that adults must not expect this age group to establish parity in sharing.

3.2.5 Measurement Considerations

The primary concerns in measurement are reliability and validity. The first part of this section will discuss how these factors limit the extent to which important variables can be assessed by means of traditional testing procedures. An additional measurement consideration which affects the selection of variables are the actual data gathering procedures--the observations, structured tests, records, interviews, etc. If the reliability and validity are questionable for one measure of a variable, it will have to be decided whether another data gathering procedure is more suitable for that variable.

The disheartening state of affairs in educational measurement is reflected in such statements as that recently given by Rowe (1971a) before the Senate Finance Committee:

> In fact there are at present no adequate ways to measure the effects and/or quality of child care, and the measures we do have show no reliable 'output' differences among programs (except for programs clearly unsafe or otherwise abusive to children). Such measures and evaluations as we have are mostly oriented to cognitive achievement and are controversial with respect to goals and methods of use. The critical question of measuring social and emotional development of children is still in infancy (p. 24).

In reviewing 326 programs for the disadvantaged, Wargo, Campeau and Tallmadge (1971) judged only 3.1 percent to be successful when subjected to an in-depth analysis. They concluded that

> it would be an understatement to say that the evaluation procedures used in determining the effectiveness of most compensatory education programs are totally inadequate (p. 27).

In yet another review of compensatory education programs, McDill, McDill, and Sprehe (1969) wrote:

> In sum, although compensatory education programs continue to be focused on the affective or socio-emotional development of the child, in assessing them one is still required to accept subjective evaluations because rigorous measuring instruments are lacking (p. 12).

Although one can find differing views on psychological measurement and its strengths and weaknesses, it seems that the above comments are valid and do represent the state of the art.

Even the best and most widely used of the standard testing procedures have come into question. For example, the two most widely used cognitive measures, the PPVT and the Stanford-Binet (Hawkridge, Chalupsky and Roberts, 1968), were not rated highly on reliability or validity in a recent test evaluation (Hoepfner, Stern and Nummedal, 1971). And from a conceptual viewpoint, many cognitive psychologists question the significance of the concept of general intelligence (Bruner, 1971; Kagan, 1971). It is beyond the scope of this report to review all the pros and cons of standardized tests of "intelligence," but with all the methodological and conceptual problems, it would seem that the investment in such evaluations could be made more profitably in other procedures. Regarding published tests in general, the conclusion of Hoepfner et al. was that

> few test publishers have done their normative sampling very well, and...the technical manuals abound with obfuscatory and quasiscientific, if not downright misleading sampling techniques (1971, p. xix).

The capabilities for employing alternative procedures in the present experiment will function to alleviate some of the measurement problems associated with the standard tests:

- Observational techniques are being tried out in a large number of studies (including Planned Variation Head Start and Follow Through). Depending upon how carefully these observational methods are carried out, they may turn out to be more valid measures of important dimensions of child behavior than the standardized tests that are so much a part of the literature on early childhood education research (Caro, 1971).

Observations can also be used in conjunction with standard testing procedures to yield information that may be helpful in increasing the validity of test interpretation, e.g., the "response style" observations of Hertzig, Birch, Thomas and Mendez (1968).

- Another way of increasing the potential usefulness of standard evaluation procedures would be to use a multiplicity of approaches. There is probably no single evaluative technique or instrument that should be used to the exclusion of others. This does not mean that a large number of tests, each of which has questionable value, will necessarily have greater value. It does suggest, however, that patterns of measures may be more meaningful than single scores.

The point is well summarized by Butler et al. (1971d) on the basis of their study of objectives and tests for early childhood programs:

> A balanced approach to measurement should emphasize the selection of that combination of tests, observational procedures, and technical procedures which best provides the construct validity required to determine the effectiveness of particular educational programs in producing, on the average, in the child what the program objectives say will be accomplished (p. 229).

Other measurement considerations that would affect the decision regarding variables to assess have to do with methods for collecting data. Information about data-gathering procedures (written records, case studies, interviews and questionnaires, videotape recordings, classroom observations and structured testing situations) is discussed in Section 4.4.

3.3 Suggested Child Outcome Variables

On the basis of the considerations discussed above a number of recommended outcome variables are presented in this section. First the general measurement area is listed and then operational procedures are suggested. Again, it should be realized that the desires and capabilities of the prime contractor and the state of the art at the time the experiment is conducted will all function to modify the suggestions made here. It should also be noted that the possible outcomes that might be considered common goals for

all types of day care and that are measurable with some degree of reliability and validity are actually quite few. It is expected that a greater number of goals will be program-specific, i.e., each of the explicit educational components in the study will have definite goals that are largely unknown at this time. Provision has therefore been made so that sufficient data collection resources (see Section 7) will be available to accommodate the needs of the specific educational programs.

Physical development (including health and nutrition)

(Considered important by parents and parent action groups and important for normal development.)

- Assessment of health status can be made by referring to records kept at each site (see lists in Section 2.4)

- Assessment of physical and motor development is more difficult but indications at a gross level can be obtained from caregiver reports and videotapes of the children's activities. At a finer level, a procedure for obtaining developmental age from weight and stature measurements and wrist x-rays is available from Screening Children for Nutritional Status (1971).

Cognitive development

(School readiness skills considered important by parent action groups; school achievement important to educators; growth in intelligence, speech, and ability to cope with cognitive demands were found in previous research.)

- The assessment of speech or language on the basis of video recordings would be very difficult because of problems with audio quality. Standardized tests of language development are subject to many distorting influences (Cazden, 1971). No specific procedure can be recommended at this time other than to encourage the data collectors to attempt to obtain samples of the child's natuarally occurring speech.

- Attention is often considered an important readiness skill. An operational definition such as that suggested by Palmer, Cazden and Glick (1971) may be used: How long an individual child, on the average, spends with a puzzle, at the easel, or in the block corner. These data could be obtained from video-

tapes or classroom observations and average time at the beginning of the day care experience contrasted with that at the end.

- The ability to cope with cognitive demands was assessed in the context of intelligence testing in Planned Variation (Bissell, 1971). If a more useful operational definition can be arrived at, this may be an important concept to assess.

- The assessment of general intelligence is not recommended (see Section 3.2.5).

- Other measures of cognitive development in place of "intelligence" should be explored, e.g., the measures of horizontal decollage being developed by Kohlberg (Kohlberg and Mayer, 1970), and the Preschool Inventory (Caldwell, 1967).

- School achievement can be assessed on a follow-up basis for children who are in the early phases of the day care experiment by administering a standard achievement test when the child is in school. If a difference among tests is not considered crucial, it may even be possible to rely upon scores provided by the school system.

- If follow-up achievement tests are not feasible, the possibility of a "school readiness" test might be considered.

Social-emotional development

(A variety of behaviors in the social-emotional area is considered important by almost all concerned with day care and child development.)

- Sociability or interpersonal social skills might be defined in terms of the number and quality of child-child interactions. The quality could be defined by rating the interaction as cooperative, not producing withdrawal or crying, etc. Variables related to this are included in the treatment documentation section under "Social and Psychological Qualities of the Day Care Experience."

- Caregiver-child relationships may also be assessed from videotapes. The adult's warmth, degree of encouragement, ability to set appropriate limits, facilitation of peer group formation, and control over children are mentioned in Section 3.1.2. These

would seem to tap the important caregiver-child relationships indicated by parents and parent action groups.

- Child affective posture, also a part of the process variables discussed under treatment documentation, includes behaviors important to consider as outcomes (enthusiasm, quality of mood, and intensity of involvement).

- The large group of other social behaviors that may be considered important (e.g., cooperation, trust, self-assurance, etc.) should, as much as possible, be defined in operational terms that would permit coding from videotapes or from classroom observations.

3.4 Suggested Parental, Sibling, and Family Outcomes

The major consideration up to this point has been the child. There is a growing concern, however, that day care might have consequences for the family that should be understood, partly because family interaction patterns may have the greatest long-term influence on the child. A good argument has been made by Lichtenberg and Norton (1970):

> It should now be evident why nearly all the programs measure their success not only by the changes in the children, but by the alterations in the behavior of the parents with respect to the children and with reference also to their own participation in the world around them. Cognitive development or mental development in children is a measure of the living that a child experiences, and that living, not only in the preschool years but long after, involves his relations with his parents. The prospects for the child's continued growth and development are intimately connected with the achievements of engagements in life with the child reached by the parents.... Thus, evaluations of programs such as these should include studies regarding changes in parents as well as in children (p. 90).

There are many measurement problems in the study of family variables. The interview technique is widely used but subject to a number of methodological difficulties. Paper and pencil instruments are also used, sometimes in conjunction with an interview. Straus (1969) surveyed the

sociological and psychological literature from 1935 to 1965 and selected 319 family measurement techniques to report in his abstracts. He advised the reader, however, that "The relatively undeveloped state of family measurement techniques has necessitated liberal criteria for inclusion in the abstracts" (p. 8). This and other surveys should be consulted to develop an interview schedule oriented towards the objectives of the day care experiment.

As was done in the case of child outcomes, it seems useful to examine the findings of previous investigations to guide the selection of family outcome variables. In Table 3-2 are listed the results of two studies, as examples of findings from intervention research. On the basis of these and other considerations, the following variables are suggested for study. Without detailing the methodology at this time, it can be seen that much of the data can be gathered from records kept for the day care units; the remainder would come primarily from parent interviews.

Parent-center and parent-community relations

- Frequency of contacts with day care center
- Confidence in center or day care home
- Friendships with other parents of children in day care
- Length of use of day care arrangement
- Participation in community activities (PTA, clubs, etc.)
- Use of community resources (agencies, city government, etc.)

Parent effects

- Employment
- Attitudes toward child-rearing and education
- Dress and grooming
- Health and diet (knowledge of, and practice)

Marital effects

- Marital stability or instability
- Birth rate

TABLE 3-2

FAMILY, COMMUNITY, AND STAFF OUTCOMES FROM SELECTED PREVIOUS RESEARCH

I. Family Outcomes

Mothers

- Verbal communication increased (Bissell, 1971)
- Increased use of praise as discipline (Bissell, 1971)
- Improvement in caretaking functions (Lazar et al., 1970)
  - housekeeping standards improved
  - personal grooming and dress improved
  - improved health care
- Improvement in family-community relations (Lazar et al., 1970)
  - increased sociability and community involvement
  - increased use of community resources
  - increased employment by 13%
- Changes in behavior (Lazar et al., 1970)
  - increased independence and self-confidence
  - raised self-concept and level of aspiration

Family

- Better relationships, but increased strife in some cases (Lazar et al., 1970)

Children in the Family

- Improved health and developmental level, cleaner, neater, more relaxed, friendlier, more sociable and self-confident, eating better, more verbal, less docile, more cheerful, energetic (Lazar et al., 1970)

II. Community Effects (Lazar et al., 1970)

- Stimulated local interest in establishing additional PCCs
- Increased cooperation between community agencies
- Contributed to new community programs in nutrition, food distribution and community health

III. Staff Effects (Lazar et al., 1970)

- Increased intercultural and interclass appreciation as well as conflict

Parent-child relations

- Involvement with child's development (encouragement, providing materials, etc.)
- Dress and appearance of children, general physical maintenance
- Emotional nurturing of children
- Discipline techniques

3.5 Suggested Community Outcomes

Social planners as well as many politicians argue for community-based solutions to community problems. There are federal programs which attempt to effect social change by encouraging local control. Lazar et al. (1970) has provided preliminary evidence that a program delivering comprehensive services to low-income families can produce changes within the community, e.g., responsiveness of social agencies to the needs of the poor, that seem to increase the capacity for working out problems on the community level. These results are summarized in Table 3-2. If such effects do occur relative to day care needs, this would be important information for decision-makers to have.

In assessing effects on the community, the problem is not so much one of reliability and validity, but of availability of evidence. It is recommended that the procedures be adapted from the National Survey of the Parent Child Center Program (Lazar et al., 1970) since that project apparently uncovered some important community effects.

Important outcomes to look for on the community level might include:

- Increased employment of women
- Community efforts toward related kinds of programs
- Cooperation among community agencies
- New community programs in services (e.g., health)
- Attitudes of community businesses toward low-income groups
- Responsiveness of local agencies to needs and problems of low-income families

- Extent to which community becomes dependent on continued federal money (welfare rolls).

3.6 Suggested Staff Outcomes

One benefit often associated with day care is increased employment of persons with some child care skills. As a by-product of the day care experiment it should be useful to assess any effects the teaching experience has on the caregivers--both the day care center staff and the mother in charge of family day care units.

Several intervention programs have reported changes in staff behavior that might be considered beneficial outcomes of the program. Although the staff is certainly not the prime target of the experiment, measures of staff changes may indicate something about the success of the day care model, and indirectly, how the children are being affected. Whether the staff expressed satisfaction with the program, for example, may indirectly indicate how they are interacting with the children. These reports could even be verified by data from videotapes. An increase in knowledge about child development, especially among aides and paraprofessionals would be an important contribution to their development as well as having an effect on the children. And certainly changes in skills of working with children should be assessed (also see Table 3-2).

Since there will be very few variables related to effects on staff, the measurement considerations can be dealt with briefly. A short interview form can be developed for acquiring data relative to staff opinions about the program. More importantly, staff measures can be obtained from videotapes and from observations in the same manner as the child measures. Many of the measurement problems discussed in the context of child effects are applicable here.

3.7 Conclusions Regarding Outcome Assessment

All of the above considerations and suggestions attempt to provide a solid framework for the evaluation of outcomes of the day care experiment. The intended accomplishments are summarized here partly to emphasize how crucial it is that the day care evaluation meet these criteria. When the final assessment decisions are made, the measurement procedures should:

- Encompass most of the variables that are considered to be important outcomes by consumers and decision makers

- Go beyond traditional tests and measures to provide a broad-based assessment program that has the potential for tapping the richness of the child's behavior
- Permit the longitudinal assessment of individual children from the beginning to the end of the day care experience
- Allow for the greatest degree of construct validity possible given the state of the art in psychometric and observational methods
- Be matched to the program objectives so that they are sensitive to the program's content
- Permit the drawing of relationships between specific program variables and the dependent measures.

3.8 Case Studies

The case study method has enjoyed a long history in clinical psychology but has only recently been applied to the analysis of large-scale programs such as day care (Abt Associates, 1971b). As an adjunct to the extensive, systematic, and largely quantitative treatment documentation procedures, case studies provide an excellent means of placing a wide spectrum of information into an overall context. Specifically, for the day care experiment, case studies can:

- Provide interpretative, qualitative data that supplement and give breadth to the treatment documentation and other records
- Serve as a backdrop against which summative evaluations can be viewed
- Alert program monitors to special problems that might be missed by other data collection methods, but are important because of their impact on the caregivers or program operators
- Make information available early in the life of the project as feedback to all concerned
- Put information into a format that is highly readable to all interested people, from caregivers to legislators.

Although many variations on a basic case study procedure are possible, the central features of one such method appropriate to this project will be outlined here for purposes of illustration. With information available from the treatment documentation procedures, cost records and project monitoring procedures, the interviewing and observing upon which case studies depend can be greatly reduced and focused on specific areas. All of these sources of information will then be combined into the case study write-up.

Three steps in using the case study as a data-gathering procedure will be discussed here:

- Previsit planning
- Actual observation and interviewing
- Debriefing and write-up

Previsit planning. Since it is important to collect uniform information across all child care units included in the project, careful attention must be given to prior planning. The details of the interviews and observations will depend to some extent upon the nature of the information required to better understand the operation of a particular child care unit. The suggested format for the case study is presented in Table 3-3. Central project personnel would use this outline to develop an interview-observation guide for use at child care units in all project sites. This guide should detail the areas that are to be covered (e.g., goals of the staff, constraints placed on program implementation by local conditions, changes that have occurred over time, etc.). The guide will also specify the key persons who should be interviewed and what kinds of observations should be made.

Actual observation and interviewing. Persons assigned to obtain case study data will visit each child care unit for the purpose of interviewing personnel and observing children according to the uniform project guidelines mentioned above. All of the local records available should be considered for possible use in the case studies, in order to achieve as broad an information base as possible.

A preliminary visit, prior to the main data gathering visit, should serve to (1) establish a good rapport with the staff and parents, (2) learn about the community or neighborhood, (3) finalize the list of key persons to contact, (4) modify the case study format, and (5) identify elements that will need more intensive focus during subsequent visits.

TABLE 3-3

SUGGESTED FORMAT FOR CASE STUDIES

A. Case Study Summary

Location
Program type
Total families involved
Number of target children
Number of siblings
Ages of children
Socio-economic and ethnic characteristics of families
Family status (one-parent, two-parent, extended, etc.)
Staff characteristics
Community and neighborhood characteristics

B. Summary Impressions

The "atmosphere" of the child care unit
The personalities of the people
Particularly striking elements of the program
Opinions of staff and parents

C. Goals of the Child Care Program

Definition of goals and changes over time
Staff interpretations of educational philosophy
Staff planning procedures--description of a typical planning session
Special strategies for achieving goals
Relationship of practice to educational philosophy
Identification of key elements:
- Factors aiding success
- Factors contributing to failures
- Description of unintended results

D. Description of Program Components

Points to be included in this section can be found in the descriptions of the supplementary services and the educational programs. This part of the case study should also include observations of children during normal activities, with a description of a "typical" day.

Debriefing and write-up. After each field visit the case study interviewer should report to the site level staff to go over impressions, problems and recommendations for future action. The writing of the draft of the case study visit should be completed quickly, say within three weeks, so that the impressions are as fresh as possible. The final report of each visit, incorporating the other sources of information with the information from the visit, should be circulated for review and editing to all major components of the project management staff who are concerned with that particular child care unit. This could function as an effective information dissemination device as well as enhancing the accuracy of the case study reports.

To be of continuing value, the case studies must be updated periodically. Twice each year, brief field visits should be made so that the final case study reflects the continuous flow of the program's operation. These subsequent interview-observations should be especially attuned to the follow-up of previously noted problem areas and successful features.

EXPERIMENTAL DESIGN, IMPLEMENTATION AND ANALYSIS

This research project is conceived as an experiment in which three classes of variables are identified:

- Independent variables, certain features of day care environments which are introduced at controlled, systematically varied levels so that their effects may be assessed

- Confounding variables, variables that might provide alternative explanations of effects and are controlled by experimental or statistical methods so that their contributions to effects are minimized or made uniform

- Dependent variables, certain characteristics of children and their families, of caregivers and of communities, which are outcomes of the day care environments, and are measured during and after the day care experiment

Variables in the first and third categories have been discussed in general terms in previous sections. This chapter, first, combines the independent variables recommended earlier into an explicit design in which the effects of potentially confounding variables are accounted for; second, considers the collection and processing of dependent variables; and third, discusses the analyses that are needed to provide answers to the main research questions. Specifically, subsections below deal with:

- Independent variables

- Confounding variables to be controlled

- Sample and site selection

- Dependent variable measurement techniques

- Statistical analysis

- Cost assessment procedures

- Cost/effectiveness analysis

4.1 Independent Variables

In Section 2 four characteristics of the day care environment were selected as the most important areas for experimental variation in the proposed research. These features were: setting, caregiver/child ratio, training, and curriculum. Categories chosen for each of these independent variables are:

Setting

- Family home
- Center

Caregiver/child ratio

- 1:6 ratio
- 1:10 ratio
- 1:15 ratio

Training and curriculum

Training caregories:

- Informal training
- Formal training

Curriculum categories (for explicit training only):

- Child-centered
- Open framework
- Programmed

The design matrix in Figure 4-1 represents graphically the sixteen different program types (or experimental treatment combinations) formed by the above variables. Not all of the possible treatment varieties are included in the final selection, since less favorable caregiver/child ratios in the family day care setting have been eliminated. This exclusion prevents the assessment of effects due to different caregiver/child ratios in family day care; however, for reasons given in Section 2.2.2, it is felt that the idea of caring for large numbers of children in family homes is unrealistic.

With the above selection of treatment combinations and the appropriate statistical techniques, the following questions can be asked of the data:

FIGURE 4-1

DESIGN MATRIX OF INDEPENDENT VARIABLES

CENTER DAY CARE

FUNCTIONAL TEACHER/CHILD RATIO	INFORMAL TRAINING	FORMAL TRAINING: CHILD-CENTERED	FORMAL TRAINING: OPEN FRAMEWORK	FORMAL TRAINING: PROGRAMMED APPROACH
1:6				
1:10				
1:15				

FAMILY DAY CARE

	INFORMAL TRAINING	FORMAL TRAINING: CHILD-CENTERED	FORMAL TRAINING: OPEN FRAMEWORK	FORMAL TRAINING: PROGRAMMED APPROACH
1:6				

- With equivalent levels of caregiver/child contact, do family home and center child care units produce different effects?

- Within center units, do large variations in caregiver/child ratios lead to differences in outcomes?

- Within center units, family units or both, what is the increase in outcome effects produced by the addition of formal caregiver training?

- Within family or center units, if a decision has been made to formally train caregivers, is there any advantage to adopting one curriculum over others in terms of effects?

- Within center units, does formal caregiver training, using any of the educational curricula, bolster the effects of less favorable caregiver/child ratios?

- Within center units, are some of the educational curricula more sensitive than others to variations in caregiver/child ratio?

4.2 Potentially Confounding Variables To Be Controlled

A number of features of day care environments must be taken into account in addition to the independent variables discussed in the preceding section. These additional features share the following characteristics:

- None are the variables of central experimental interest.

- All of them might have more or less serious effects on the outcomes of the experiment if they are not controlled in some fashion.

A third characteristic divides these confounding variables into two groups. The levels of some of these variables can be controlled; for others, the levels are not subject to control.

Controllable variables. A number of variables are to be set at a single, uniform level across treatment conditions, so that their effect on process and outcome measures may be kept constant. Examples of variables for which uniform control will be established are:

- Professional/paraprofessional ratios among caregivers at each unit
- Administrative structures, and particularly administrator/child ratios
- Caregiver performance within the bounds of curriculum-derived standards (for treatments involving explicit training)
- Supplementary health, nutrition and social services
- Physical facilities
- Equipment which is not curriculum-specific.

The method of handling these variables within the experiment is to specify desired levels of each and to monitor the day care units to insure that they meet the specified criteria.

Uncontrollable variables. These are features of the day care environment that are not subject to direct manipulation by the experimenter. Two interrelated sets of variables comprise this group:

- Variables which distinguish one geographic site from other sites
- Variables which distinguish one subpopulation of families from other subpopulations.

Since they cannot be controlled directly, attempts must be made to distribute the effects of these variables equally over all treatment combinations. Random distribution of effects can be achieved through random selection of sites, random assignment of balanced subsets of treatments to each site, and random assignment of children to treatments. Detailed recommendations for implementation of these procedures are contained in the subsection on sample and site selection, following immediately below.

4.3 Sample and Site Selection

Three main problems arise in the selection of a procedure for experimental "control" of the "uncontrollable" variables mentioned in Section 4.2:

- There are large differences between potential sites on a number of variables, and these differences could have serious effects on the outcomes of the experiment.

- Resources available for an experiment in day care are limited, and hence the numbers of sites and of treatments per site must be optimized.

- There are large differences between potential day care user families on a number of characteristics, both within and across sites, which could seriously affect experimental outcomes.

Each of these problems will be discussed in turn below.

Controlling site effects. Differences beyond the control of the experimenter are inevitable between different sites selected for the projected research. The proportion and density of low-income families, the availability of jobs, the availability of--and need for--low-cost public transportation, the availability of acceptable or easily modifiable structures for day care facilities, the community or neighborhood political structures, are merely some examples of the site characteristics that can be expected to differ markedly from one geographic location to another. Some of these differences, further, may have serious effects for the experiment. Two procedures can be followed serially in order to minimize the confounding of experimental effects with site effects:

- Deliberately selecting those sites with characteristics least likely to affect outcomes, by setting up "a priori" criteria for site acceptability

- Randomly selecting patterns of confounding variables, through the random selection of sites from the pool of acceptable sites.

The first procedure limits the extent to which the findings from this study can be extended to sites not studied, and therefore criteria for site acceptability must be carefully considered if the findings from this research are to be usable for decisions about a national day care system. The following characteristics for geographic locations are essential:

- A large number of low-income families with children between the ages of three and five

- Areas within the site with a high density of eligible families, so travel distances to day care units can be minimized

- Convenient access to the day care facilities, perhaps through public transportation

- Availability of accessible jobs or training for mothers in the eligible families

- Expressed need for day care on the part of potential users

- Acceptance by local government officials of the experiment's uniform standards for day care centers and homes.

Some of the above characteristics would rule out rural areas; it is therefore recommended that attention be confined exclusively to urban areas with, say, between 50,000 and 500,000 inhabitants. This decision will prevent statistical generalization of the outcomes of the experiment to rural populations and very large cities, although there may nevertheless be alternative common-sense reasons supporting such generalizations.

For the purpose of generalizing the results of this study from the specific urban sites selected to other sites it is important to choose sites randomly from different geographic regions of the United States. In order to accomplish this, we recommend that urban areas most nearly meeting the above criteria be identified from available summary sources of information. Current Bureau of the Census publications indicate that the Fourth Count summary computer tapes for the 1970 Census of Population (DAD No. 18, 1970, and No. 22, 1971) will contain necessary information on the number of eligible poverty-level families, and the number of children between three and five, at the level of census tracts. From these tapes a large number of acceptable locations can be identified, which can then be stratified by geographic region and a preliminary list of sites and alternates selected at random from each region. Final decisions about the acceptability of selected sites must be made from inspection of site characteristics in the field. The following steps are recommended:

- A survey of physical characteristics of the site, including studies of accessibility and suitability of potential day care facilities and the availability of public transportation

- Interviews and liaison with local and state employment and manpower organizations, in order to establish the availability of jobs and training programs for day care users

- A survey of day care need and availability as perceived by potential users in the target location, using techniques similar to those used by Zamoff (1971; also Zamoff and Lyle, 1971)

- Review with local day care licensing officials of the experiment's day care standards, in order to obtain permission to run controlled day care environments that may be in violation of local day care licensing requirements.

Appendix F contains additional details about identifying and selecting sites.

Limitation of experimental resources. In an ideal world, the perfect design for this experiment would specify a large number of sites, and have every one of the sixteen treatment combinations in each site. Some obvious advantages would be derived:

- This design would allow good statistical generalization of results due to the large number of sites.

- It would permit all statistical comparisons, including those on treatment interactions, to be made without any confounding of site effects, since every treatment combination in a site would be equally affected by whatever site variables were acting.

- It would provide a good indication of the variation in both treatment and outcomes to be expected for a single treatment combination in different sites, since the same program would be in every site, and would reflect changes due to unique conditions in each site.

Unfortunately, it is not possible to build this ideal scheme within the constraints of this experiment:

- At 30 children per day care unit, having 16 units in a large number of sites would quickly exceed any reasonable research budget for the experiment.

- Within a site, 16 units of 30 children each would require 480 eligible children, which probably exceeds the availability of children in all but a very few service areas of acceptable geographic size.

- With children taken from larger distances to obtain a total of 480, random allocation of children to treatments becomes impractical without some provision for transportation, because of the travel time required of parents. Transportation, in turn, removes many of the most favorable opportunities for the parents to see the centers or homes and meet the caregivers--removing the experiment from the level of the neighborhood.

- Sixteen units per site would considerably complicate administration of the experiment.

In order to reach a workable compromise between the ideal situation and practical constraints a model is recommended in which several sites are established, each having a subset of all treatment combinations. Particular subsets would be randomly assigned to sites. This will allow all the main effects of interest in the experimental design to be tested, providing that treatments are assigned to sites according to an appropriate balanced design.

In delineating this model for allocation of treatments to sites three initial assumptions are necessary in order to put numbers on the sites and on treatment combinations within a site:

- Assume a budget of three million dollars per year for the operation of day care units within the experiment.

- Assume an average program cost/child/year of $2,000.

- Assume that a large number of sites can be located having between 200 and 300 eligible children within a reasonable service area.

As was mentioned in Section 2.2.1, it is recommended that day care units have a uniform capacity of thirty children. Selecting this unit size has the following advantages:

- The day care units correspond in size and structure to the nationwide majority of day care centers. The Westat national survey showed that the modal capacity of day care centers in the United States was 13 - 29 children, with the second largest group of centers having 30 to 44 (Westinghouse and Westat, 1971, p.27).

- More treatment conditions and replications are possible than for the larger center sizes. Additionally, the possibility of potentially detrimental effects on children resulting from attendance at large centers is avoided (Rowe, 1971a, pp.33-4; Prescott, Jones, Marshall, and Milich, 1970).

- More uniform center administrative structures and a better fit to the selected caregiver/child ratios are possible than for the smaller center sizes.

Under these assumptions and conditions 1500 children can be included in the experiment ($3,000,000 divided by 2,000), and at 30 children per day care unit it is possible to operate 50 units (1,500 divided by 30). This means that each of the 16 treatment combinations can be replicated three times (16 x 3 = 48), adequately meeting the crucial experimental need to assess differences between day care units using the same treatment conditions but located in different sites. If 240 children are available in a typical site, then eight day care units can be operated there (30 x 8 = 240), allowing a balanced design that tests two levels of every independent variable at every site. One such design is presented in Appendix G. Finally, with 48 units assigned eight to a site, six sites are needed, giving restricted but reasonable geographic representation.

The number of units per site, and hence the total number of sites, will depend on the number of eligible children found at each site. Appendix F contains preliminary projections of the number of children of day care users for some typical census tracts, using data gathered in the 1960 Census. These figures show that the number of children in a service area fluctuates widely, but that areas with 240 potentially eligible children can be found without difficulty. Depending on the availibility of sites in the initial selection from the Fourth Count 1970 Census summary tapes, then, the design should incorporate somewhere between six and eight sites, with between eight and six units per site respectively, in order to optimally utilize a service budget of $3,000,000 within the experiment.

Controlling population effects. As with site-level effects, differences that the experimenter cannot control will occur among the families that are potential day care users. The age level of the families, desire to work, presence of children younger than three years of age, educational and job background and ethnicity are some of the factors that may be expected to differentiate one family from another. In order to distribute outcome changes due to these differences in the most uniform way, it is recommended that children be assigned randomly to treatments (with the exception of siblings, who should be sent to the same program.) This can be accomplished by having all families in a site apply for day care at a central intake office, and then notifying parents which day care unit is available for their child.

Even with random allocation of children to treatments, discrepancies in outcome may be introduced if there are systematic variations in rates of withdrawal from the program. These variations cannot be predicted in advance; if they exist, they form real limitations on generalizations from the

results of the study, and must be carefully documented.

Nonparticipation by certain potential day care users might be another limitation on generalizations from the study. A particular example can be mentioned: user families with children between the ages of three and five and simultaneously with children between the ages of one and three might not be able to use the day care services unless they can make their own arrangements for care for the infants. Resources do not allow the formal installation of a program of infant day care to alleviate this problem, although perhaps arrangements with babysitters could be aided through the intervention of caregivers or other program personnel, after the fashion of Emlen's "matchmakers" (Emlen and Watson, 1970; Emlen, Donoghue and La Forge, 1971).

4.4 Dependent Variable Measurement Techniques

The data collection methods recommended for this experiment are designed to provide information important to the three procedures described in Section 3--treatment documentation, outcome measures, and case studies. The purpose of this section is to describe the measurement techniques that are intended to be the sources of this information. Basically, five different techniques will be used:

- Records
- Interviews and questionnaires
- Videotape recording
- Classroom observations
- Structured testing situations

Records. The daily records kept by the child care unit staff will be the source of information for certain outcomes (e.g., child's illnesses, parent participation), for documenting the treatment (e.g., attendance records), and for building the case studies.

Interviews and questionnaires. Much of the data about the parents (their perceptions, reactions, etc.) and changes in family situations will come from interviews. During the pilot year interview schedules will have to be developed to get at such things as family relationships, discipline techniques, and so on. Questionnaires and interviews may also be used to get at effects of the program on the caregivers. The data obtained by these techniques will contribute primarily to the outcome measures and case studies.

Videotape recording. The importance of a permanent record for documenting the treatments, as well as for assessing certain process outcomes, cannot be over-emphasized. The tapes can be viewed several times with a different focus each time, interobserver reliability problems are reduced, and with work done in a central location a single group of trained and monitored coders can be used. In addition, permanent records can be made available for other researchers to test specific hypotheses or to develop materials for use in training day care personnel.

Two techniques for obtaining a permanent record can be considered--permanently mounted cameras and hand-held cameras. The former seems preferable because it is much less obtrusive than a cameraman moving about the day care setting. However, a preliminary feasibility study conducted as part of this design effort (Appendix D) has highlighted a number of technical problems that must be overcome, relating to lighting, sound levels, and camera placement for adequate coverage. A system such as this does seem feasible, however. Tape recordings made with a live cameraman in the room would have the advantage of being able to follow activities of individual children much more closely, if it was determined that the method did not disrupt normal day care activities too much. The use of both procedures to provide complementary data may be considered, such as using fixed cameras in indoor settings and portable cameras outdoors. It is strongly recommended that a feasibility study be conducted during the pilot year of the experiment to examine these techniques in detail before the final decision is made.

Classroom observations. The use of observers in the day care setting to obtain treatment documentation or outcome data would not possess the same advantages as a permanent record (once the behavior is coded the only record is the category description). As a supplement to tape recordings, however, much useful information could be obtained, especially in terms of outcomes and case studies. Observation techniques may be useful for getting at child (or staff) behaviors that are of special interest but occur too infrequently or are too obscure for recording by fixed cameras on a random time-sampling basis. They are also useful for following up specific hypotheses regarding behavior of individual children.

Structured testing situations. Of interest primarily for the outcome data they provide are several procedures that include paper and pencil tests and "structured observations" of the sort Osofsky (1970) has used in assessing parent-child interactions. The latter consist of setting up special situations, perhaps in another room in the center

or home in which a standard life-like situation is presented to the subject or subjects. The extent to which tests and structured situations can be used will have to be gauged by information on the extent to which these procedures will intrude on the normal day care operations.

The recommendations for measurement suggest a strong reliance upon observational procedures. The approach of Butler et al. (1971d) quoted in Section 3, emphasizing construct validity, argues strongly for an emphasis on observation. If a permanent record of the children's behavior exists, then one knows that the behavior observed is the behavior that occurred; if there is high interobserver reliability on an observation instrument, one has more confidence in the validity of the categories. Caro (1971), for example, has suggested that there are fewer validity problems as the measures become more behavioral. The main question with respect to validity, then, is whether sufficient contexts are sampled to give support to generalizations about the representativeness of the behavior. For this reason, repeated time samples from the videotapes will be used, and any other observations or tests should be carried out in a variety of settings.

4.5 Recommendations for Data Collection and Processing

Three main classes of data will be collected in this experiment:

- Data describing ongoing day care unit processes
- Data on ongoing day care unit costs*
- Background data and outcome data on children, caregivers, families, centers or homes, and communities.

Subsections below deal with the collection and processing of these three kinds of information. Each of the following subsections contains general recommendations, followed by specialized issues of particular interest.

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*Data on ongoing site management, research, and home office operations and costs will also be gathered for operational purposes; it is not properly part of the data to be collected for research in this experiment and will not be covered here.

4.5.1 Collection

General data collection. Table 4-1 below lists a number of data sources that are recommended for the collection of the information called for in preceding sections. The table lists the subject area covered by each source, the frequency and time-points of collection, and the person responsible for collection of the data. It will be noted from the table that

- The interval between successive collection times for structured tests, questionnaires, interviews and narrative descriptions is one year; for cost data and live coded observations it is one month, while for videotaped process data it is one week.

- Attempts are made to keep the burden of paperwork on the caregiver as low as possible; thus he or she provides only monthly summaries of child attendance, contact hours and unit costs, along with an annual questionnaire, while specialized testers/data collectors work full-time at each site to collect structured test data and interviews.

Videotape data collection. This topic is worthy of special attention because of its complexity and because videotape has not often been used as a major tool in the evaluation of a large-scale experiment. Some of the problems in collecting such data were explored in a feasibility study conducted as part of this project (Appendix D). Some preliminary recommendations for the operation of a videotape data collection system are given in Section 4.4. Additional recommendations are:

- The unit of observation is to be the individual child, not the center or home in which the observations take place.

- Children for observation will be randomly selected.

- Observations are each to be approximately fifteen to thirty minutes in length.

- Observations are to be collected at intervals randomly spaced over the day care day and the days of the week, throughout the year.

- At each day care unit, a total of approximately two hours of videotaped observations are to be collected each week, although this amount may vary from week to week.

TABLE 4-1

RECOMMENDED SOURCES FOR DATA

Subject Area	Source	Time and Frequency of Administration	Administration
Process data	Videotaped observations	At random intervals in day care week. Total collected: 2 hr/week	Videotape cameraman & technician
	Live coded observations and general description of setting	Once a month	Observer or monitor
Cost data	Records: Unit costs & break-down by functional category	Once a month	Head care-giver
	Unit per-sonnel time spent by functional category	Once a month	Head care-giver
	Site costs & functional breakdown	Once a month	Site manager & accountant
Background and outcome data	Child meas-urements (on areas in Section 4.4, mainly struc-tured tests)	At entrance into program, before departure, and at 1-year intervals	Site tester/ data collector
	Parent in-terview	At entrance into program, 1-year intervals	Site tester/ data collector

TABLE 4-1 (cont'd)

Subject Area	Source	Time and Frequency of Administration	Administration
	Staff & parent interviews: Day care unit narrative description (case study)	At unit opening, 1-year intervals	Site manager, site tester/ data collectors
	Caregiver questionnaire	At entrance into program, 1-year intervals	Head caregiver

The amount of data suggested by the above figures is large; careful attention to logistical details in the processing of so much information is required. Although some key decisions remain to be made, it appears reasonable to estimate that up to 100 hours of videotape data may be collected over 48 day care units in one week.

4.5.2 Data Processing

Data reduction. Two clearly distinguishable data reduction activities are important for this project:

- Processing of structured tests and similar materials
- Processing of videotape data.

The processing of structured tests, interviews, questionnaires and other similar written documents is straightforward. Scores are coded according to prescribed test format and entered into a tape- or disk-based data bank, then verified against original protocols.

The processing of videotaped data is straightforward but more difficult. Coders must spend at least one hour of time coding for each hour of videotaped data collected, and that same amount of time again for each additional coding scheme used. Additional time is needed to check reliability between coders.

The data bank. It is important that a unified storage, access and data updating structure be devised for handling the information collected in the course of this research. Such a structure would maximize the efficiency with which a wide variety of research questions can be asked, and would permit easy updating. Another advantage of a data bank is the possibliity of access to the data by qualified outside users. There are a number of other large-scale, long-term educational experiments currently in progress; the manner in which they store, update and retrieve their data might be examined for adoption in this experiment. One such description can be found in Chapter 3 of ETS-Head Start Longitudinal Study, Vol. 1 (Educational Testing Service, 1970).

Protection of original source materials and data tapes. Protection of the experimental data from accidental destruction is important. The following steps are recommended:

- Copying onto microfilm all collected structured tests, interviews, questionnaires, narrative reports and other materials upon their receipt into a central processing location

- Copying all videotapes as soon as received
- Copying all data bank tapes or disks, and forming new copies whenever the tapes or disks are updated.

Copied materials should not be used in analysis or coding, and should be kept in a safe location separate from the location of the original materials. In addition, data tapes should be protected by password access limitations and "read only" restrictions.

4.6 Analysis of Program Effects

This section will deal with the following topics:

- Multivariate nature of the data
- Techniques for answering the principal research questions
- Major problems in the analysis of program effects
- Supplementary questions and techniques for answering them.

Multivariate nature of outcome data. Measurement of outcomes in this experiment will involve a large number of dependent variables. The outcome measures will range from structured tests, interviews, and questionnaires administered to the children, their parents, and caregivers to observations of children collected during the caregiving day. The effects of the experiment are expected to be multidimensional; it is therefore of great importance that, wherever the state of the art in statistics permits, analyses use multivariate techniques. Multivariate techniques imply methods of analysis in which a number of dependent variables are dealt with simultaneously. In the area of multivariate analysis of variance (MANOVA), which will be emphasized below, the paper by Bock and Haggard (1968) affords a clear introduction to the subject. Tatsuoka (1971) and Cooley and Lohnes (1971) have published recent texts on multivariate techniques for application in education and the behavioral sciences; Tatsuoka basically uses a theoretical approach, while Cooley and Lohnes tackle the subject from a more applied viewpoint using computer programs.

Techniques for answering the main research questions. The main research questions have been listed already at the end of Section 4.1. These questions can all be summarized in terms of one question:

- What are the differences in outcomes for the different treatment combinations?

This question, however, does not reflect the continuous flow of the data across time, so an additional dimension must be added to the original design. The following question must be examined at the same time as that above:

- What are the changes in outcomes for treatment combinations over time?

A series of MANOVA configurations will be used to answer these questions.

If the experimental design were completely balanced, the questions could be answered by a single four-way repeated-measures MANOVA, where the four dimensions of analysis would include the three dimensions of the independent variables depicted in Figure 4-1 along with a time dimension using pre- and post-treatment measurements of effect. As can be seen from Figure 4-1 the design is not balanced, in that caregiver/child ratios of 1:10 and 1:15 in the family home setting will not be used as treatment conditions. Because of this lack of balance, the following analyses are recommended to answer the two questions above:

- A three-way repeated-measures MANOVA contrasting home and center (at the 1:6 caregiver-child ratio only) day care units, with training model and curriculum as the second dimension and pre-and post-treatment measures as the third. Figure 4-2 graphically displays the cells for this analysis.

- A three-way repeated-measures MANOVA contrasting different center unit caregiver/child contact ratios, with program type and time, respectively, as the second and third dimensions. Figure 4-3 displays the cells for this analysis.

If significant main effects or interactions are found for these analyses, it will be clear that there were changes over time or changes in effects related to different treatments; the nature of the relationships between treatments and effects will not yet be known. Further analyses will be necessary to clarify those relationships:

- Univariate three-way repeated-measures analyses-of-variance for each of the dependent variables, to establish which outcome measures show significant differences over time and between treatments (for a discussion of alternative procedures in the analysis of multivariate experiments and the recommendation

FIGURE 4-2

CELL MATRIX FOR MANOVA
(Home/Center Contrast)

TRAINING AND CURRICULUM

SETTING:	TIME:	INFORMAL TRAINING	FORMAL TRAINING: CHILD-CENTERED	FORMAL TRAINING: OPEN FRAMEWORK	FORMAL TRAINING: PROGRAMMED APPROACH
HOME	Pre				
	Post				
CENTER	Pre				
	Post				

FIGURE 4-3

CELL MATRIX FOR MANOVA
(Center Contact Ratio Contrast)

CAREGIVER/ CHILD CONTACT RATIO		TRAINING AND CURRICULUM: INFORMAL TRAINING	FORMAL TRAINING: CHILD-CENTERED	FORMAL TRAINING: OPEN FRAMEWORK	FORMAL TRAINING: PROGRAMMED APPROACH
1:6	TIME: Pre				
	Post				
1:10	Pre				
	Post				
1:15	Pre				
	Post				

of the procedure here suggested see Hummel and Sligo, 1971). For each of the univariate analyses, Scheffe post-hoc comparisons can be used to establish the precise contrasts which are significant (Scheffe, 1959).

- Trend analyses of differences over time or between center treatment conditions at different caregiver/child contact ratios. Bock and Haggard (1968) recommend a MANOVA-based approach, with orthogonal polynomials used to decompose overall trends into constant, linear and (for the caregiver/child ratios) quadratic components. Bock (1963) discusses the use of trend analysis in MANOVA.

Major problems in the analysis of outcomes. Three major problems are worthy of mention in the analysis of data for this experiment:

- Unequal cell sizes
- Missing data
- Unequal time-intervals for child participation.

The first of these problems is the most straightforward of resolution. Current advances in computer programming for MANOVA techniques have provided programs that perform multivariate analyses-of-variance on designs with different cell sizes, even coping with extreme situations in which one or more cells of a design are empty. An example of such a program is MESA 98 (Finn, 1968).

A more difficult problem is posed by the possibility of missing data. As with any large-scale data-gathering operation, it is inevitable that some information will be lost through child or parent absences or other unavoidable circumstances. This experiment collects a large amount of information on a relatively small number of children; under these conditions the proportion of children with missing information can rapidly become very high for particular design cells. Three courses of action can be considered:

- To discard children with missing data from all analyses.
- To discard from each analysis only those children with missing data for the variables involved in that analysis
- To use an imputation technique to estimate missing data values.

If data are missing at random, each of these techniques may be considered for use. Haitovsky (1968), recommends the first procedure in preference to the second in multiple regression analysis, and in general when the proportion of children with missing information is small. For the present set of data this is, as has been mentioned before, unlikely to be the case. A more general technique based on principal component analysis has been suggested by Dear (1959). This method obtains the vector of factor loadings for individuals with complete data sets and then estimates missing data values through the equations of transformation. Other imputation techniques might make use of temporal relationships between missing and existing data points.

If data are missing in some nonrandom, systematic fashion, no imputation technique is likely to be very useful. The best procedure that can be suggested in such a situation is to document fully the bias introduced in the analyses by the missing data, and to include in the report of the findings a caution against generalizing results to the full (unbiased) population.

The third problem is that of child turnover in the experiment. Given the employment uncertainties that poverty families always face, a certain amount of dropping out from the program must be expected. When children leave the program before they have spent a year in it, site testers must attempt to get enough advance notice to collect a full battery of outcome measurements. Even though there would then be the same amount of data for these children, it would be collected after only part of a year had elapsed and should not be included in the same analyses with that for children receiving a full year of day care treatment. One procedure that might be adopted here involves the computation of a multivariate regression equation with time-in-treatment as one of the independent variables, and the extrapolation of this equation might lead to reasonable estimates of year-end scores. Children for whom data were collected at entrance alone, of course, cannot be included in overall analyses.

Supplementary questions and techniques for answering them. Supplementary analyses to those above may be performed to accomplish two goals:

- To accept or reject explanations which challenge the validity of the main effects tested above

- To more intensively explore particular process and outcome areas.

Alternative explanations of outcomes emerge from questions such as the following:

- Are some differences in outcomes directly related to site differences rather than treatment differences?

- Do the children in different treatment conditions show differences in the initial measurements at entrance into the program?

Once more, MANOVA techniques can be used to answer questions such as the above. For example, to explore the possibility of within-site versus between-site effects, a nested two-way MANOVA with treatments-within-site and site as the dimensions can be used, with initial values of the effect measures as the dependent variables. For the second question, if assignment procedures have approximated true randomness, there will be no reason to expect initial differences between treatment conditions. Such differences may occur by chance, however. If initial differences are found, multivariate covariance adjustment techniques are included in programs such as the above-mentioned MESA 98, and hence can be explored for use to partially compensate for initial differences among subjects (if the necessary assumptions can be met; see Cochran, 1957).

More intensive exploration of particular process and outcome areas might include:

- Studies of the need for transformations of data for particular outcome measures, to help guarantee satisfaction of the assumptions necessary for the main analyses.

- Significance tests and measures of association for selected categorical variables, such as the numbers of individuals within different treatment groups who are male, Spanish-speakers, drop outs, etc. Tests such as Chi-square allow the researchers to establish, for instance, whether the distribution of drop-outs from center units after six months was significantly related to the caregiver/child contact ratio at the units.

- Analyses of the intercorrelation of measures, to explore the possibility of using some outcomes as substitutes for others in future analyses.

- Cluster analyses of similarities in outcome measure values for individual children, to search for groups of children having highly similar profiles. (This could perhaps lead to predictions about the effects of certain program types on particular subgroups of children.)

- Sequential analyses of the process measures, which might display much more sensitively than non-sequential analyses the interactions between children and caregivers, or between one child and another (Kalter, 1971).

4.7 Cost Assessment Procedures

As described in Section 2.2, several cost dimensions are examined in this experimental design. The two major cost factors which will be experimentally varied are the caregiver/child ratio and staff training. Although cost levels for the different day care units will be specified in advance, continual monitoring will be necessary due to the practical impossibility of rigid control. Costs are not static, but vary by: functions performed, time of expenditute, geographic region, kind and quality of items purchased, etc. Because of the many influences affecting costs, they must be carefully recorded. This section focuses on recommended methods for assessing and recording costs.

There is a general consensus that the seemingly straightforward area of day care cost assessment has a real shortage of reliable and adequate cost data. (Berstein and Giacchino, 1971; Sonenstein, 1971; Inner City Fund, 1971; McClellan, 1971b; Pittaway, 1971; and Warner, 1971).

Some of the major problems in the area of cost assessment are:

- The lack of definition and classification of day care programs into consistently comparable types
- The lack of consistent units of measurement of day care service rendered
- Confusion in the comparison of prices and costs from different geographical regions and from different years
- Difficulty due to thinking of day care cost as one figure rather than as a set of cost figures, <u>some</u> of which are part of each day care program's cost
- Confusion between the market <u>price</u> or fees charged for day care and the real <u>cost</u> of day care
- Lack of adoption of standardized accounting procedures, i.e., accrual accounting, and of a functional reporting system.

Steps have been taken to minimize the occurrence of these problems in the present study. One of the major goals of this study is to assess all costs for each program in such a way that cost differences are comparable across programs and that cost norms can be determined for certain program types and structures of day care programs. The cost assessment procedures outlined here will permit a comparison of actual adjusted costs across all programs studied.

Cost assessment procedures must deal with the three major areas of measurement, accounting and pricing. (More detail on each of these areas is presented in Appendix H.) The broad considerations included under each of these three major areas are as follows:

Measurement considerations

- Costs must be separated into: start-up costs, which are the "once-only" costs of beginning a program, standard operating costs, which are program related and recur yearly, and supplementary services costs, which are done over and above the standard program costs, i.e., transportation, social services, etc. In order to accurately measure and compare the variation in standard operating costs across the different cells in our design, the supplementary services costs will be identified and held constant across the different cells.

- Costs must be longitudinally controlled, because programs develop and change over time (i.e., year one of one program should be identified and compared to year one of other programs.) This is especially important because of the short life span for many day care centers today (McClellan, 1971), including the day care centers set up in this study.

- The time interval used for program cost comparisons should be one year, because day care can be seasonal and variations in attendance occur over the year.

- Costs should be identified both on an average daily attendance basis and on an enrollment basis.

- Program information must be put into standard form such as a standard 10 hours per day, 5 days per week, 250 days per year (52 weeks with ten holidays). This adjustment permits program-to-

program comparison of costs even when programs differ on hours open per day or months open per year. This also allows children who are there for different fractions of the day to be figured in, based on the fraction of the standard day attended.

- Costs should be adjusted for imputed value of all donated time, equipment, etc.

Accounting considerations

- Standardized definitions and accounting procedures are to be used across all programs in this study.

- Standardized reporting forms are to be used for collecting operating cost data on a line item basis consistently across all programs in this study. Examples of such reporting forms are given by McClellan, Zemont, and Kelpsas (1971), and by Abt (Volume IV, 1971e). (Also see Appendix H.)

- A system of functional accounting categories has been set up for use in all programs in this study. The eleven functional accounting categories are as follows:

  Administration

  Occupancy

  Basic child care

  Teaching and instruction

  Food service

  Staff development and training

  Intake evaluations and recruitment

  Community relations activities

  Health services

  Social and economic services

  Transportation

  A distinction has been made by McClellan, Zemont, and Kelpsas (1971) between functional accounting and functional reporting. This study

will use both a functional accounting system and a functional reporting system which becomes possible since all 48 units of day care programs will be under the control of one prime contractor (see Appendix H).

- Standards for allocating line item expenditures into functional categories will be defined and used across all programs. Such standards include: (1) the setting up of depreciation allowances for heavy equipment based on the "Internal Revenue Service Depreciation Guidelines and Rules" (Galambos, 1971), (2) the prorating of occupancy costs and administration costs over the remaining program functions, and (3) the use of interviews, time schedules, and job titles to assign personnel time to various program functions.

- Fixed and variable costs can be an important factor in estimating costs for different-size day care programs. However, all programs in this study will be of a constant size so fixed and variable costs will probably not be identified.

Pricing considerations

- Prices will vary by as much as 100% around the country (Rowe, 1971a). For this reason regional price adjustments should be made on salaries based, for example, on Salary Schedules for Teachers, 1971-1972 (National Education Association, 1971). Regional price adjustments on rent, food, and medical expenses could be made using "Indexes of comparative costs based on a lower level budget" which is in Three Budgets for An Urban Family of Four Persons (1971).

- Costs will vary from year to year because of national and local patterns of inflation. The Consumer Price Index from the U.S. Department of Labor, Bureau of Labor Statistics, can be used to adjust for year to year inflation, or an annual inflation rate of, say, 3% can be assumed (Abt and Pacific T and TA, 1971).

4.8 Cost/Effectiveness Analysis

The cost/effectiveness analysis in this study will relate dollar costs to quantified but nonmonetary effects. Thus a cost/benefit ratio would not be determined, but it will be possible to specify, for example, "degree of improvement in health per dollar of health services cost" or "degree of change in child sociability per dollar of total cost". Or, it may be more accurate to specify a profile of different functional costs for a program, and then compare that profile to a profile of different effects or outcomes from that same program. The reasons for not moving into a cost/benefit analysis are related to the following problems:

- There must be general agreement on the measurement of each outcome through the use of valid and reliable instruments (Provus, 1971).

- There must be general agreement in the difficult area of assigning dollar values to child development outcomes, changes in family values, and related educational, health, safety, and social benefits (McClellan, 1971).

- There must be precise methods of analyzing the relationships between resources and effectiveness (Carpenter and Haggart, 1970).

- Antecedent conditions which must be provided in order for desired outcomes to occur are difficult to identify, and are not reliably, accurately, or completely measured in terms of dollars (Wargo, Campeau and Tallmadge, 1971).

- Cost/benefit analysis assumes a closed system of cause and effect. This assumption would appear to be particularly dangerous when dealing with day care. The most important influences on possible benefits to day care recipients may be family size, income, mores or family social values, rather than day care programming per se (McClellan, 1971).

- There is no way to guarantee future effectiveness if the program is modified or implemented outside its original context (Wargo, Campeau, Tallmadge, 1971).

Because of the above problems, this study will not attempt a full cost/benefit analysis, but cost comparisons, effects comparisons, and cost/effectiveness comparisons will be performed and analyzed. Each of these three different types of comparisons will be made within each individual day care program and also between the different groups of

programs. Each of these three different types of comparisons will include comparisons by (1) day care structure, i.e., family home vs. center, (2) caregiver training, i.e., formal programs vs. informal programs, (3) program type, i.e., formal program #1 vs. #2 vs. #3, (4) caregiver/child ratio, i.e., 1:6 vs. 1:10 vs. 1:15, and (5) replications within each cell, i.e., informal center program with caregiver/child ratio of 1:10 replication #1 vs. replication #2 vs. replication #3.

Cost comparisons. The analysis of costs will focus on both within program (or a group of similar programs) cost comparisons and between program (or different groups of programs) cost comparisons. Among the many useful internal cost comparisons are the following (McClellan, Zemont and Kelpsas, 1971; Inner City Fund, 1971):

- Comparison of the percentage of total costs spent on each functional category of the center's operations
- Comparison of how sensitive total cost figures are to changes in each contributing factor
- The ratio of personnel costs to total operating costs
- The ratio of administration costs to total operating costs.

Among the many useful cost comparisons between different day care programs (or between different groups of day care programs) are the following (McClellan, Zemont and Kelpsas, 1971):

- Comparisons of the operational cost differences between two or more child care units, i.e., personnel, occupancy, communications, etc.
- Comparisons of the different allocations of costs by functional category, i.e., Staff Development and Training, Basic Child Care, Teaching and Instruction, etc.
- Comparisons of the different adjusted costs per child per year of day care service (adjusted for regional price differences, total program offered, differences in units of measurement, etc.)
- Comparisons of how widely different costs for child care units of the same kind will vary
- Establishment of cost norms for different kinds of units, and the determination of the deviation of individual child care programs from these norms.

Effects comparisons. The analysis of program effects or outcomes will also focus on within program comparisons and between program comparisons. Within each program the different effects on the children will be described, quantified, and compared, as will the effects on the families, community, and teachers. The comparison of effects between programs (and between groups of similar programs) will deal with the size of overall effects on the child, family, community, and teacher. It will also deal with the relative effects (or the effects profile) of different programs.

Cost and effects comparisons. Once both the costs and effects have been separately defined, identified and analyzed for each program, then the costs and effects can be compared together both within programs and between different groups of programs. Some examples of cost effectiveness comparisons are as follows:

- Determine if there are any obviously superior programs and inferior programs. These would be individual programs with lower than average costs and higher than average overall effects, or vice versa. Then go back into the process and operational data collected on these programs and determine (using a case study method) the specific combinations of causes which differentiate superior and inferior day care programs.

  For example, after the data on costs and effects have been collected for the second year of program operation for all 48 day care units, two obviously superior and three obviously inferior programs might be identified. The videotapes and all other data collected over the two year span (for just these five program units) would then be re-examined to identify specific activities and processes which consistently differentiated the two superior programs from the three inferior programs. Regression analysis could then be used to identify the variables predicting superior or inferior programs.

- Determine the degree of consistency between adjusted costs and relative effects for each of the three sets of replicated programs. Establish norms on the cost and effects profile for each of the sixteen cells in the experiment that are consistent on the three program replications in the cell.

  An example of this would be to compare the three replications of the family home program for formal program #2. The adjusted operational and functional costs for each of the three replications would be

compared to determine if the costs held to a consistent pattern or varied considerably each time the program was run. The same comparison procedure would then be made for the effects profiles of each replication. If both the cost and the effects profiles held to a consistent pattern, then a cost-effects norm would be identified for that cell. If either costs or benefits were randomly distributed across the three replications, then no cost-effects cell norm would be identified.

- Using the norms for those cells having a consistent cost and effect profile, compare these cost-effect profiles for: (1) the informal programs vs. all the formal programs, (2) the family home programs vs. the center programs; (3) the three different formal programs with each other; and (4) the programs having the different caregiver/child ratios with each other.

  An example of the product of this comparison might be the finding that the informal program norm (with 1:6 caregiver/child ratio) shows significantly lower costs for staff development and training while having similar effects on the child as the three formal program norms (with 1:6 caregiver/child ratio).

- Using the functional cost analysis data and the specific effects data, determine the functional cost for each unit of effect, and compare these figures within cells (to determine consistency within the three replications in each cell); then compare cost-per-unit-effect between the different program types, program structures, and caregiver/child ratios to identify the most cost-effective components over all programs.

  For example, the greatest gain in future reading achievement per dollar cost for teaching and instruction might be found for formal program #3 with a 1:10 teacher/child ratio at the center. The greatest gain in child sociability per dollar cost for basic child care might be found across the board in all of the family home day care programs.

PROJECT MANAGEMENT AND ADMINISTRATION

Importance of the recommended management model. The success of a field experiment as elaborate as that proposed here is crucially dependent on the management methods and communication patterns established for the project. Such procedures and patterns will be important in at least three major ways:

- To coordinate the varied activities and maintain smooth operation of the large-scale, nationwide program of services
- To maintain basic differences among and consistency within different program types operated
- To obtain the research data sought and, consequently, sound answers to the basic research questions posed

Any workable model for managing and administering such a multifaceted, large-scale research project should keep the channels for administration, training, monitoring, etc., as clear, direct, and unambiguous as possible. At the same time, however, the model should facilitate the degree of firm control and coordination necessary to realize research objectives. In short, the recommended management model should attempt to build in some of the obvious research advantages of a local, limited-scale experiment, while accomodating the needs and information potential of a large-scale national effort.

Overview of the model. The model derived from these considerations is presented in detail in the series of charts and the subsections which follow. There are three basic levels of administration and responsibility composing this model: the overall project level, the site level, and the child care unit level. These three levels can be distinguished in terms of functions directly performed, those administered, or those supported. The number of operational components to be considered at each level is summarized in Figure 5-1. Figure 5-2 depicts the direct reporting relationships among these levels and among segments of staff at each level. This chart also indicates key lines of information flow and feedback among the three levels.

The overall project level staff perform functions relating to every project site and child care unit included in the experiment. It includes OEO staff assigned to the project, the project's Prime Contractor staff, and necessary staff employed by support subcontractors for each educational program component, for research, and perhaps for other specialized tasks in which the Prime Contractor's staff, facilities, or expertise may need to be supplemented. An example of a suggested staffing pattern for the overall project level is shown in Figure 5-3. Major responsibilities for these staff members (as well as for those at the site and child care unit levels) are specified in Section 5.1. It should be emphasized that a single Prime Contractor for the project is viewed as crucial to the objectives given above. A single "force" and unified operational perspective appear essential for coordination and integration of as many elements as shown in Figure 5-1, particularly when these elements will be spread out over several different locales and a large geographical area.

The site level staff perform functions relating to all the child care units within a particular site, but not across sites. Management and administration at the site level is patterned similarly to that for the Prime Contractor at the overall project level. In addition to a Manager for each site, there would be site administrative support, including staff for project intake and records maintenance; basic research personnel; on-site trainers for each formal educational program; and supplementary services staff for health, nutrition, social/psychological counseling, etc. Detailed staffing suggestions for a hypothetical site are shown in Figure 5-4.

The child care unit staff includes those giving the bulk of daily care to a group of 30 children receiving a particular treatment in the experiment. The essential staff for each child care unit includes a Head Caregiver and such other professional and paraprofessional caregivers and supporting personnel as required for each program type, that is, for each combination of caregiver/child ratio, family or center setting, training, or curriculum that may be operated at each site. Staffing patterns for each of these combinations are also shown in Figure 5-4.

The responsibilities and functions discussed in Section 5.1 for each segment of staff at each of the three levels are summarized in a chart following this section (Table 5-1). This chart also indicates further the interrelationships among these areas of responsibility and something of the degree of involvement of each staff member in each area. Because of the thousands of individual decisions represented in Table 5-1, and of the difficulty in finalizing them at

this stage of planning, the table should be viewed as being more useful for suggesting the range of decisions to be faced as additional information becomes available rather than for presenting the actual decisions. The table will need a more thorough listing of tasks as they are clarified by additional planning, as well as a re-examination of the specific staff members included on it. The final decisions will be further complicated in two ways: first, many of the decisions are based on personal preferences of key administrative personnel, rather than on any necessary conditions of the project design; second, many of the decisions are dependent on the capabilities of individuals actually hired for the project. In other words, many of the decisions presented in Table 5-1 will have to be adapted to the styles and capabilities of staff who are not identified yet, thus cannot be viewed as final.

Sections 5.2 through 5.4 provide further details and suggestions for three major and complex areas of project responsibility: training, communications, and quality control. These sections are intended to be suggestive rather than exhaustive on these topics. They rough out simple, basic guidelines for specific tasks, suggest resources for use in these tasks, and discuss relevant administrative duties which will undoubtedly be further defined as contracts are let for the experiment itself and during necessary start-up and pilot "phases."

Systematic analysis of needs, required tasks, constraints, and desired outcomes in project planning and management has been developed extensively within the last two decades. Insofar as possible for the relatively new context of field research on day care programs, the techniques for such analysis have been drawn upon freely for material throughout this section. Systems Analysis and Project Management (Cleland and King, 1968), is an informative basic treatment of these approaches which presents information from an industrial context that has many useful implications for managing early childhood research projects. In addition, considerable insight into the problems of data gathering, reporting, and information flow in a national early childhood program may be derived from Management Information for the Parent-Child Center Program, Phase I: Findings and Recommendations (Warner, Harris, and McClelland, 1971).

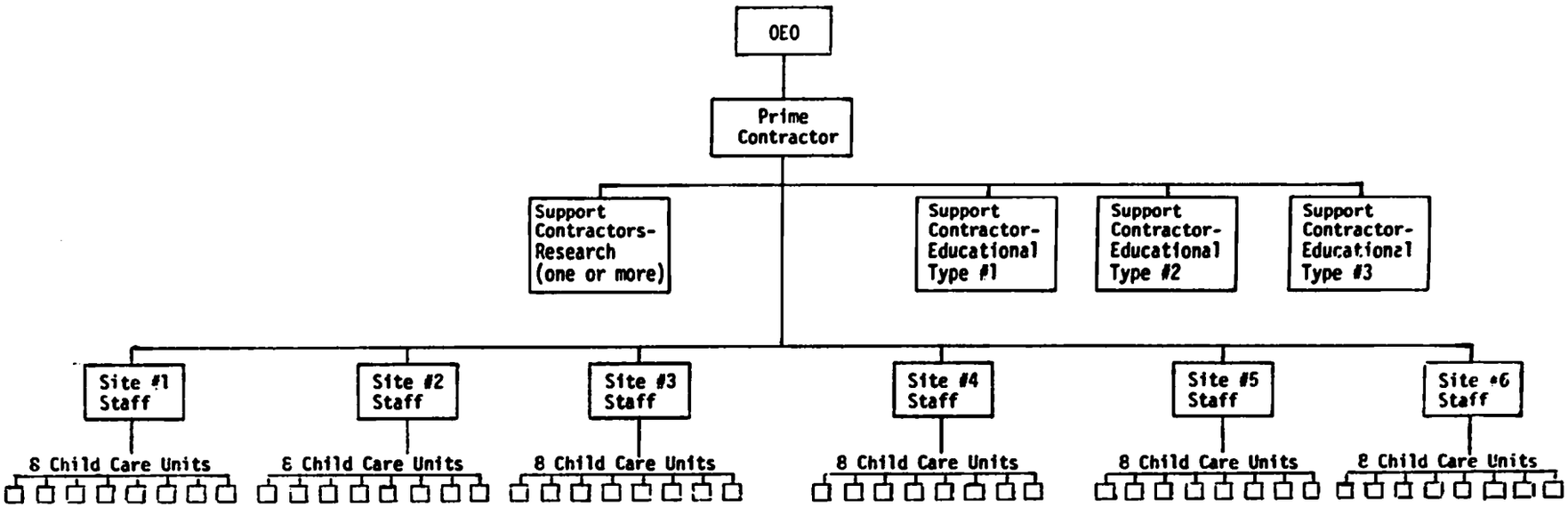


FIGURE 5-1. SCHEMATIC DIAGRAM OF ALL OPERATIONAL UNITS FOR THE PROJECT

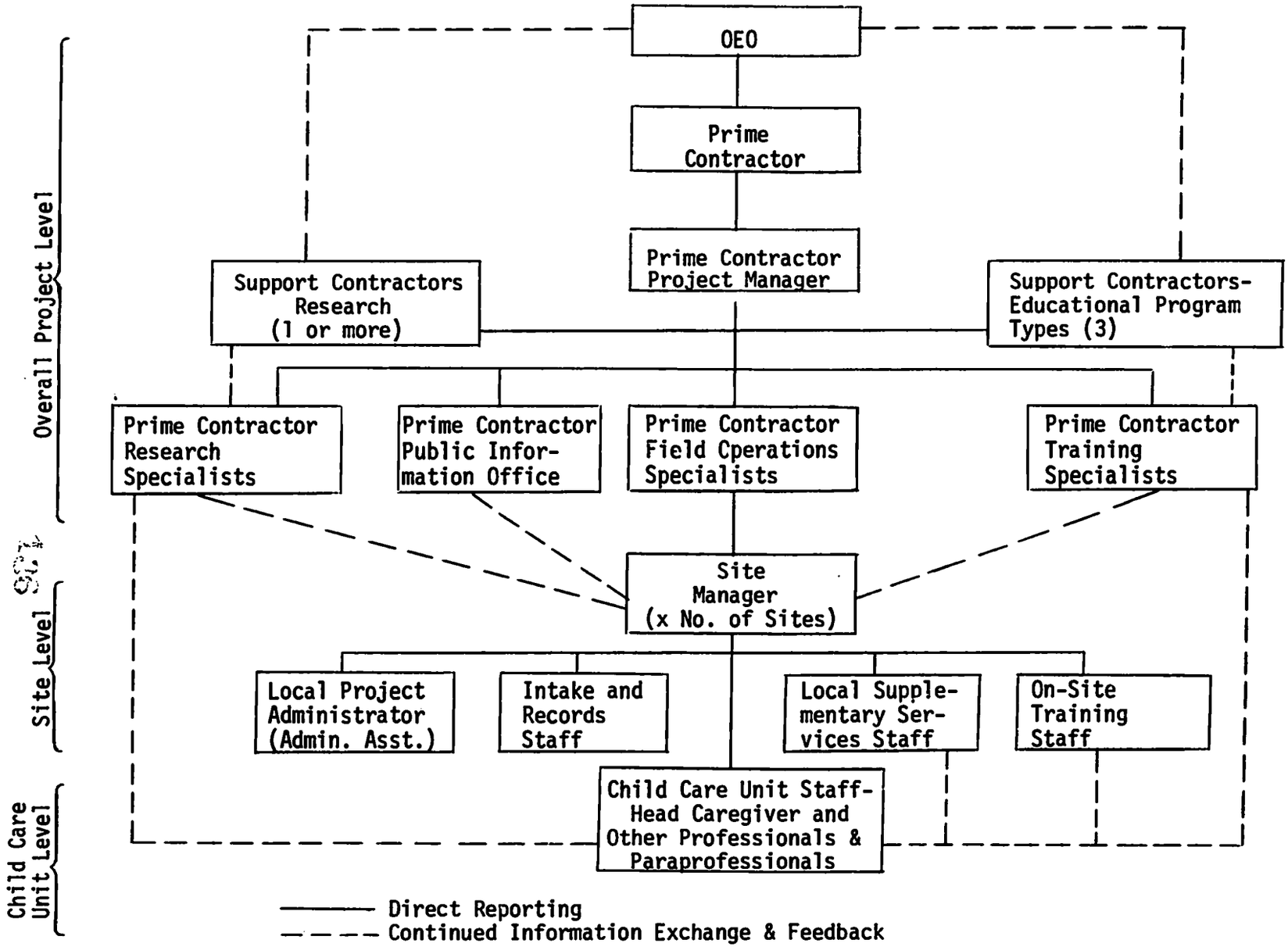


FIGURE 5-2. GENERALIZED PROJECT MANAGEMENT AND COMMUNICATIONS RELATIONSHIPS

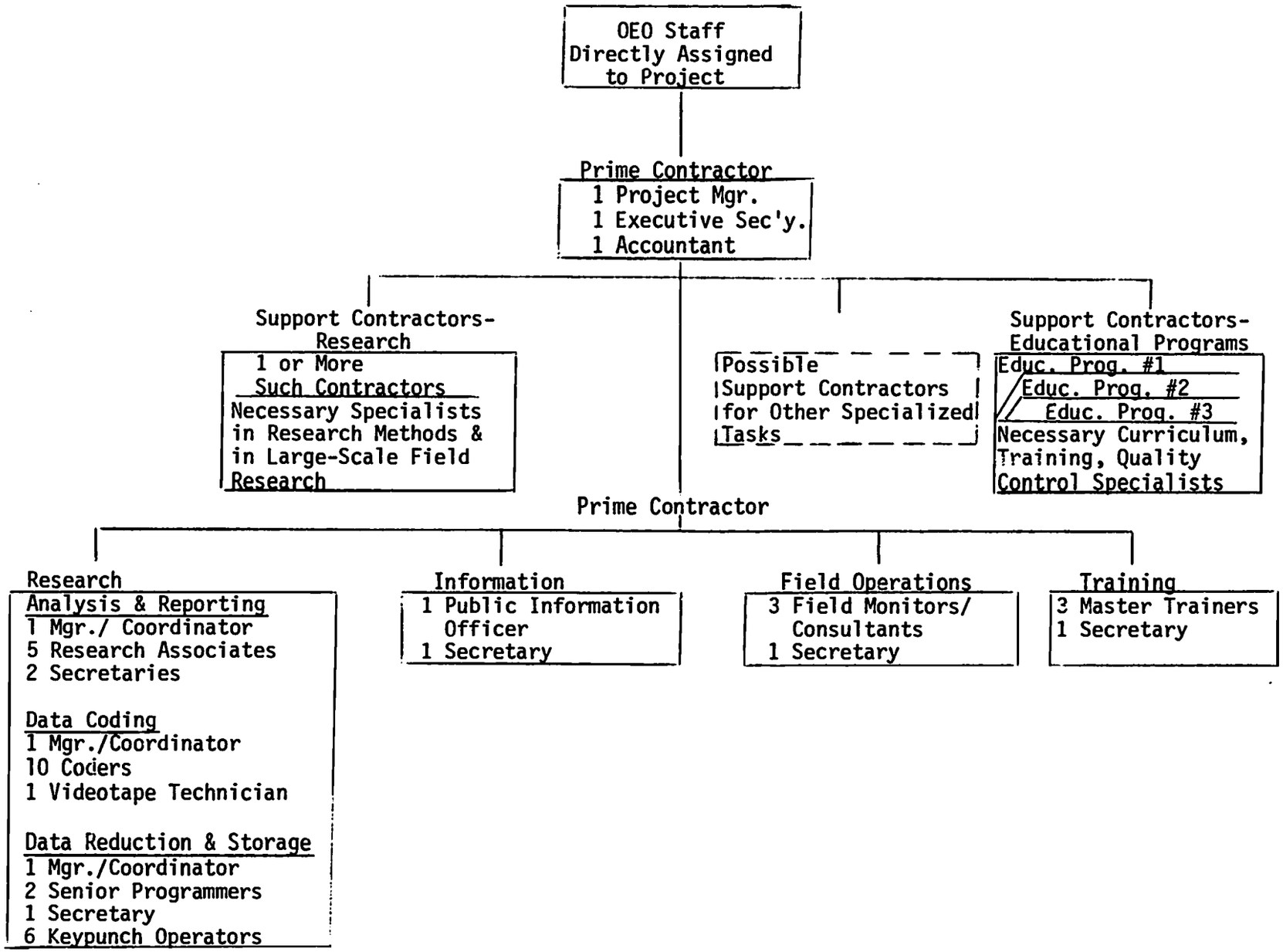


FIGURE 5-3. A SUGGESTED STAFFING PATTERN FOR THE OVERALL PROJECT LEVEL

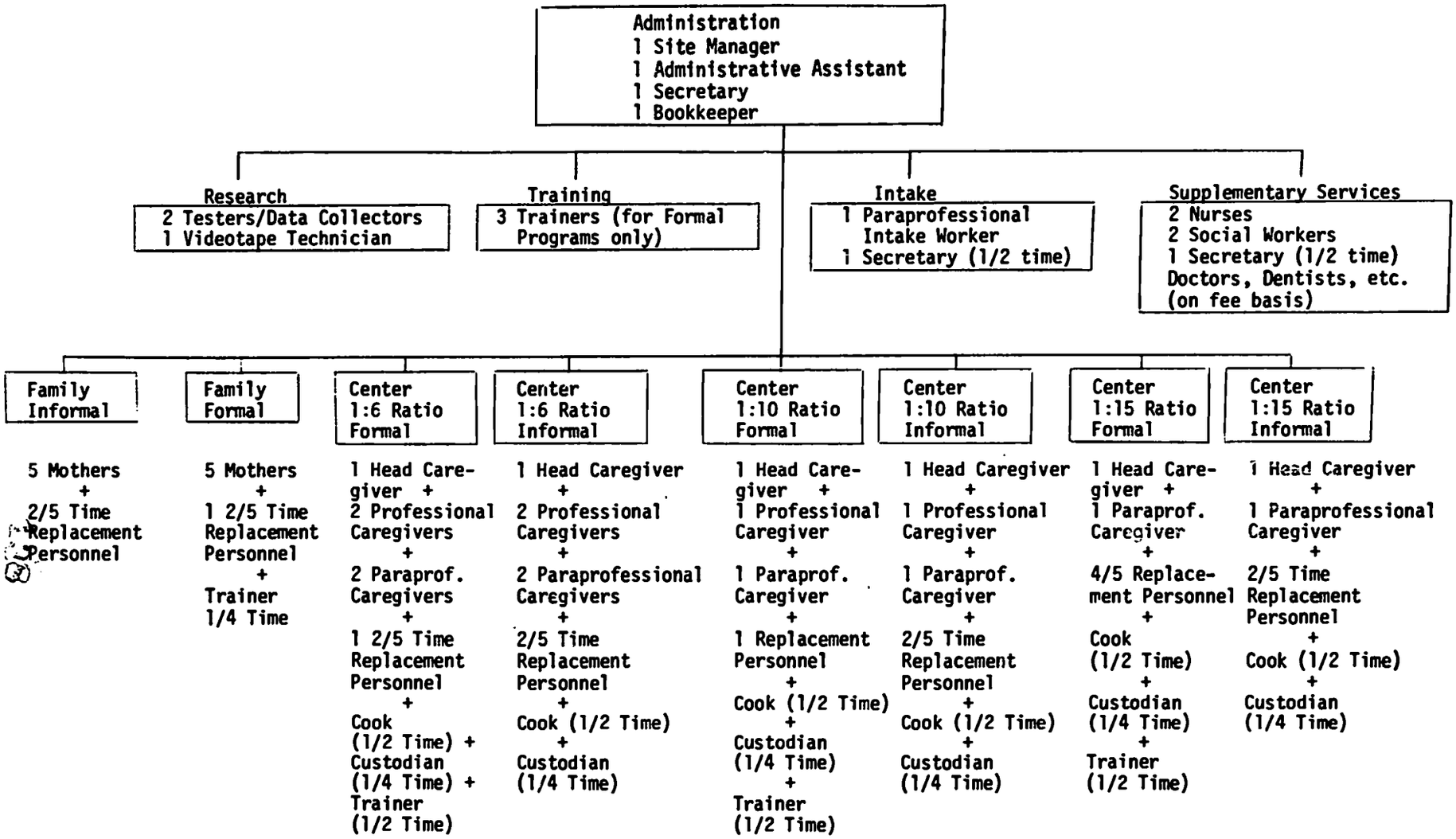


FIGURE 5-4. STAFFING PATTERN FOR HYPOTHETICAL SITE HAVING ALL PROGRAM COST COMBINATIONS

5.1 Descriptions of Levels of Administration and Responsibility

5.1.1 Overall Project Level: The Prime Contractor

The single Prime Contractor to OEO recommended for overall project management should have demonstrated competence in three basic areas:

- Managing early education field operations on a diverse, nationwide scale, for example in such programs as Planned Variation Head Start or Follow Through
- Training of program personnel to implement such a program
- Performing basic research on program outcomes and processes in such a field setting

The Prime Contractor's staff specifically for the national day care research project would include five essential components (see Figure 5-3):

- Project Manager

  A Project Manager (or Director) would have prime responsibilities for final detailed planning and scheduling of the experiment; for integrating the project's overall research, training, and service activities; for instituting and maintaining project quality controls; for information flow among all project levels and to users outside the project; for final interpretation and reporting of project research findings; and for planning any longitudinal follow-up studies for the project. The Project Manager would also be continually involved in the actual conduct of research in the project, in finalizing arrangements for project sites, and in continuing implementation of program training.

- Research Specialists

  A group of Research Specialists (or "Research Department") would have prime responsibility in overall planning and scheduling of the experiment as it relates to the experimental design (with the Project Manager); in "pilot phase" testing of research methods and instruments; in actual conduct of the research during full project operations, e.g., data collection, processing, and analysis;

in quality control for this research; and in planning and administrating longitudinal follow-up research. Research personnel would also maintain continuing involvement in the interpretation and reporting of project findings during the project, at its conclusion, and on the basis of any longitudinal follow-up.

. Field Operations Specialists

The Field Operations Specialists (Field Consultants/Monitors) for the Prime Contractor would collaborate with the Project Manager and research and training specialists in final planning and scheduling of the experiment. They would assume prime responsibility for pilot testing of operational controls in such areas as budget, program content, and intraproject communications; for quality control in administrative and program implementation areas throughout the project; and for overall funds administration for the experiment. This group would represent the primary contact between the Prime Contractor and staff at local project sites. As such, the field specialists would also be concerned with contracting and licensing details for sites; coordination of facility, equipment, and supply needs across sites; and the interpretation and reporting of project findings.

. Training Specialists

Training Specialists for the Prime Contractor would be primarily responsible for necessary tests of training methods and materials, for continuing training of staff through the life of the project, and for the quality controls exercised over this training. Primary targets for these training efforts would be the local training staff at each project site (one local trainer for each educational component implemented at the site; see 5.1.3 below). Training Specialists would also be involved in final planning and scheduling for the project, in devising quality control procedures for program areas other than training, and in continuing interpretation and reporting of project results.

. Public Information Office

It is strongly recommended that the Prime Contractor maintain a Public Information Office specifically for this day care research project.

This office would be responsible to the overall Project Manager for continued dissemination of project information throughout the project itself and to policy makers, concerned educational professionals, researchers, parents, and community representatives outside the regular project staff. The information would be directed to particular needs of each such audience and presented in a format and at a level of technical detail suitable for their diverse uses. A Project Information Officer would also be involved, then, in producing regularly scheduled project reports and in direct contacts with participating parents and community representatives at project sites.

5.1.2 Support Contractors

Because of the unlikelihood that any single Prime Contractor would have demonstrated competence in the above areas and in the field implementation of several different types of educational programs, it is recommended that certain technical assistance be provided through subcontracts with agencies having solid expertise in the different programs to be included. Subcontracting would probably also be appropriate for consulting services and methodological support in large-scale experimental research. Smaller subcontracts may also be necessary for such specialized tasks as identification of suitable sites from national census data, design of a detailed management information system (MIS) for the project, and development of computer programs for the project data bank. Support contracts of this nature are often made directly by government agencies, but it seems preferable to have the Prime Contractor subcontract for this additional support because of the overall project coordination required.

Support Contractors for different educational program types. A Support Contractor should be obtained for each of the three different educational program types to be studied. These three contractors would possess

- Clear national standing in a particular educational "philosophy" or approach, e.g., open framework, programmed, or child centered
- Personnel and methodology for training others in this approach
- Experience in monitoring diverse field implementations of this approach

The Support Contractors could be selected on the basis of their response to a Request for Proposal (RFP) specifically concerned with the areas of responsibility sketched below. Each of these Support Contractors would maintain the following types of staff directly assigned to this project's efforts (though these need not all be full-time assignments):

- Specialists in basic philosophy and curriculum content for the particular educational approach

  This staff would function as the major resource to the Prime Contractor for curriculum materials appropriate to a program type at various locations. They would maintain continuing involvement in pilot testing of techniques for monitoring program content and "purity" of approach, and for quality control in these areas throughout full project operations. They would also perform occasional on-site monitoring of this educational program content. These specialists, as all Support Contractor staff, could also be expected to play a key role in continual information flow to appropriate users outside the project.

- Support Contractor training specialists

  Support Contractor training specialists would constitute the prime resource for training methods and materials to be used with the particular educational approach, and would prepare the Prime Contractor's trainers to perform subsequent project training in this approach. They would have some involvement in pilot tests of the training techniques and in quality control for training in this educational approach throughout the project.

- Specialists in implementation and monitoring

  The Support Contractor might also provide staff specialists in field implementation of a particular educational philosophy and in monitoring its implementation. This staff would be primarily involved in establishing operational and administrative controls for the educational program. They would consult with other Support Contractor staff on optimum training and curriculum materials for different program sites.

Support Contractor (or Contractors) for research. Whether one or more such contractors is finally judged necessary, the agency (or individuals) would be selected for

- National standing as an educational research organization or advisor

- Experience with state-of-the-art educational research methods and with large-scale field research, perhaps in such national programs as Head Start or Follow Through

Ideally, such a Support Contractor would maintain two contributing staff components, and, again, might be selected from responses to an RFP designed around the following functions:

- Specialists in research methodology

  Such specialists would act as the Prime Contractor's resource for strategies and instruments to assess particular program processes and outcomes. This group (or individual expert) would provide important input for preliminary tests of research methods and instruments and for optimum data processing and analysis procedures over the duration of the project. These specialists would also be consulted about quality control procedures for the research and about interpretation and reporting of project research findings.

- Specialists in administration of large-scale field experimentation

  Support Contractor specialists in administration of a large-scale field experiment would function primarily in developing quality control methods for such research and optimum data collection methods at all project sites. This staff would also contribute to program staff training concerned particularly with implementing research procedures (cf. Section 5.2).

5.1.3 Site Level

Each local site would contract for its project operations with the Prime Contractor. Staff at the site (see Figure 5-4) would include

. Site Manager

The Site Manager's prime responsibilities would be in necessary contracting, licensing, inspections, etc., for each day care program at that site; in determining necessary supplementary service levels for each of these programs; in providing necessary facilities, equipment, and supplies for programs at the site; in local staff recruitment and selection; and in regular contact between the day care programs and parents or community representatives. The Site Manager would also be extensively involved in pilot tests and full project administration of research methods, training procedures, and operational controls at the site; in administration of local project funds; and in project information flow, particularly between the Prime Contractor and other site staff. His or her consultation would be required in interpreting and reporting project research results and in the actual daily provision of child care services in each local program.

. Site Administrator (or Administrative Assistant)

The primary purpose of this position is to ease the Site Manager's "administrative burden" in such areas as local program licensing, contracts, and periodic inspections; collection of data from the site for the Prime Contractor; implementation of operational controls for the site's programs especially in budgeting; provision of equipment and supplies for each local program; some areas of local staffing; and the administration of funds at the site.

. On-site training staff

The on-site trainers will be prepared by the Prime Contractor's training specialists to assume the central role, throughout full project operations, in training local staff for those program types using a formal educational philosophy. They will play a prominent role in regular planning and problem discussion sessions of caregivers in these program types. Each on-site trainer can thus be expected to work intensively with all caregivers in a particular program at least one-half day per week, and in some cases daily. These trainers will also be involved in quality control for project training and, to some extent, for program content.

- Site supplementary services staff

  These staff members provide services in health, nutrition, social and psychological counseling, and transportation, as deemed necessary according to project functional guidelines. These services can be provided jointly by regular site staff and contributing professionals from the community at large. This group would be primarily responsible for the methods and schedule for rendering these services to each of the site's child care units. These personnel would also contribute importantly to the establishment of appropriate levels for these services, in provision of necessary facilities and equipment, to any continuing tasks connected with local inspections and licensing, and in contacts with parents and the community at large.

- Intake Worker and records maintenance

  Because of the volume and importance of the information involved, each site should plan for the full-time services of an Intake Worker to handle all necessary forms for families entering the project. The Intake Worker would also maintain the up-to-date file of regular records (e.g., health and nutritional status, social services requirements, pertinent personal background information) for each participating family and staff member at the site. This staff member would most likely be a paraprofessional specifically trained for these project tasks, and having part-time secretarial assistance.

5.1.4 Child Care Unit Level

A main thrust of the kind of management and administrative relationships recommended here is to separate from the child care unit as many overall project concerns of funds accounting, quality control, and general record keeping as possible, in order to place the focus at this level on the actual daily provision of care to children and related services to parents. The duties of child care unit staff would be as close as possible to duties of comparable caregivers <u>outside</u> the project. Specific project responsibilities would be handled at the levels already described, particularly by the site level staff. The child care unit staff would then assume the following basic roles (see also Figure 5-4):

- "Head" Caregiver

  The Head Caregiver would be the person primarily responsible for the proper functioning of his or her own child care unit. The most important responsibilities would include, in addition to working with the children, hiring and administrating the child care unit staff; facilitating the professional training of the staff, both in general child care concerns and in the formal curriculum for her unit; maintaining a limited number of fiscal and service records for the child care unit; coordinating requests of her unit from site or overall project staff; maintaining rapport with parents of children in the unit; and consulting about the interpretation of project results. It would be advantageous for the Head Caregiver to possess prior experience in Head Start classrooms, or other early education or day care settings. Part-time caregivers will be hired to work with children so the Head Caregiver can become free to perform administrative tasks without altering the caregiver/child contact ratio.

- Other child care unit professionals and paraprofessionals

  All of the child care unit professional and paraprofessional caregivers are central to providing actual daily care to participating children and, consequently, to curriculum implementation for explicit educational components and to parent contacts with the program.

- Staffing alternative for child care units

  As presented here, the Head Caregiver for a child care unit composed of five family homes (rather than a center with 30 children) would be one of the five operators of these homes. However, the Prime Contractor selected for the project and site level management should also consider, for each particular unit, the possibilities of incorporating a Child Care Unit Director, who would be additional to the five family home operators and who might assume some administrative responsibilities from the site level staff. This would affect the overall costs and family home care, rendering them higher than currently projected in Section 7.

Key

1. Prime Responsibility
2. Continued Direct Involvement
3. Occasional Involvement
4. Required Consultation
5. To Be Contacted/Informed

	Prime Contractor					Support Contractors: Ed. Programs			Support Contractors: Research		Local Site Level					Child Care Unit Level	
	Overall Proj. Manager	Research Specialist	Trainers	Field Operations	Public Inf. Office	Content	Training	Quality Control	Research Methods	Field Res. Admin.	Local Project Mgr.	Local Proj. Administrator	Supplementary Svcs. Staff	On-Site Trainers	Intake & Records Staff	Head Caregiver	Paraprofes. Caregivers	Other Professional and
OVERALL PLANNING & SCHEDULING OF EXPERIMENT	1	1	2	1	4				4	4	4					5		
PARTICULAR PILOT PHASE FUNCTIONS																		
Sites & Licenses	2			2							1	1			3	4		
Preliminary Tests of Research Methods	2	1							2	3	2	3						
Preliminary Data Gatherings	3	2		4						4	1	2			3	3	3	
Preliminary Tests of Operational Controls (Budget, Program Content, etc.)	2	4		1	4			4			2	3				3	4	
Initial Tests of Training Methods and Materials	2	4	1	3		4	4				2			3		2	3	
Development of Procedures for Support Services	3	5		3				5			1		2	4	4	2	3	
RESPONSIBILITIES DURING FULL OPERATIONS																		
Program Staffing	4	4	4	4			4	4			1	2	3	4		2		
Continuing Staff Training	2	4	1	3	3	3	3			3	2		3	1		2	3	
Details of Contracts, Licensing, Inspections	3			2							2	1	3		3	3		
Facilities, Equipment, Supplies	3			3		4		4			1	2		3	3			
Funds Administration and Accounting	4			1							2	2				4		
Project Information Flow	1	3	3	2	2			4		4	2			3	3	2	3	
Quality Control-Program Content	1	4	2	2		2	3	2			3			4		2	3	
Quality Control-Operations	2	3		1				3		3	2	3	3		3	3	3	
Quality Control-Research	2	1	3	2				4	3	3	2	3						

TABLE 5-1. SUMMARY OF MAJOR PROJECT RESPONSIBILITIES

Key

1. Prime Responsibility
2. Continued Direct Involvement
3. Occasional Involvement
4. Required Consultation
5. To Be Contacted/Informed

	Prime Contractor					Support Contractors: Ed. Programs			Support Contractors: Research		Local Site Level					Child Care Unit Level	
	Overall Proj. Manager	Research Specialist	Trainers	Field Operations	Public Inf. Office	Content	Training	Quality Control	Research Methods	Field Res. Admin.	Local Project Mgr.	Local Proj. Administrator	Supplementary Svcs. Staff	On-Site Trainers	Intake & Records Staff	Head Caregiver	Other Professional and Paraprofessional Caregivers
Quality Control-Training	2	4	1	3		3	3	3			3	3		2		3	
Experimental Procedures-Data Collection	4	1		3					3	3	2	2	3		3	3	3
Data Processing	4	1							3		3	3					
Data Analysis	4	1							3								
Interpretation and Interim Reporting of Research Findings	1	2	3	2	3	3			3		3			3		3	4
Provision of Daily Child Care	4	4	4	3		3		3			4		3	3		1	1
Provision of Regular Supporting Services	4	5		4				5			4		1			2	2
Records on Individual Children Participating	4	5		5				4			1	2	3		1	3	
Program Contacts with Parents and Community Representatives	3			3	3						1		3	3	3	1	3
FINAL INTERPRETATION AND REPORTING OF PROJECT RESULTS	1	2	2	2	3	3		3	3		3		4	4		4	
LONGITUDINAL FOLLOW-UP																	
Planning and Administering Follow-up	1	2		4		5			4							4	
Interpreting and Reporting on Follow-Up	1	2			3				4							5	

TABLE 5-1. SUMMARY OF MAJOR PROJECT RESPONSIBILITIES (Cont.)

5.2 Project Staff Training

Training requirements for such a research project as this are of at least three basic types:

- Initial (Support Contractor) training to prepare Prime Contractor training staff for continuing training of site staff in a particular educational philosophy and curriculum

- The subsequent Prime Contractor training of project personnel in educational approaches and field implementation of curricula throughout the life of the project

- Special training as necessary in certain administrative and procedural tasks to facilitate overall program operation and the attainment of project research goals

A basic reference for relevant training strategies and methods is Designing Training and Development Systems (Tracey, 1971). Since the first two types of training identified above have been specifically discussed earlier in this section and in terms of cost dimensions for research in Section 2.2.2, the purpose of this section is to briefly stress the needs for the third type of training related to project management and administrative responsibilities outlined in Section 5.1. It is apparent that this categorization would necessitate additional training for most site staff and some Prime Contractor personnel in

- Procedures for such basic research tasks as data collection, processing, and storage

- Site management and administrative methods, particularly project-wide control procedures for all program components, periodic reporting for an effective MIS, and the efficient use of cost or other record forms devised for the project

- Documentation and systematic response to certain program needs, problems, ongoing processes, and short-term results

While the methods and extent of such training would be determined by local contexts, particularly local staff experience, the High/Scope Foundation has achieved some success in such training using workshops, both at field sites and bringing together personnel from different sites; carefully designed multimedia materials reproduced for program-

wide dissemination; on-site demonstrations by Prime Contractor specialists for groups of local staff; and regular periodic conferences between appropriate Prime Contractor representatives and individuals from the sites. Ideally, any training for a multi-year project would be conceived as a planned sequence including all of these approaches.

5.3 Project Communications

Throughout this report, the need has been emphasized for continual communication and information exchange among all project levels and between the project and those outside of it who may need information for a specific purpose and at a particular time. Not only is this required for smooth project operations, but it would be unfortunate for such a large-scale multi-year effort to disseminate information only annually or, worse, through a multi-volume final report at the close of the project.

Both informal and formal communications must be maintained, and major responsibilities for this are identified in Section 5.1. Informal communications can hardly be planned and scheduled, but they can be facilitated by management which sees to it that certain staff are allowed such things as time and travel so that they can communicate with appropriate parties about their work. In effect, project management can create a variety of situations to promote informal communication.

Formal communications for the project might include

- A basic Project Manual, largely drafted during the project's "start-up" period (though prepared to conveniently permit later additions or necessary revisions). The manual would be the basic reference for specific project responsibilities, project-wide procedures, final time schedules for key project events, and samples of forms to be used for documentation and reporting. Such a manual would be used in staff orientation and training and serve as a continuing guide for routine decision making at each site.

- Regularly scheduled written reports to record the administration of project funds, services actually provided to families, "progress" in the implementation of each program type, and specific short-term and aggregate research findings. It must be emphasized that for such regular written reports to be effective and meaningful for all levels of staff, they must proceed through channels which are clear and for

which the rationale is apparent to all contributing staff. Some effects of not incorporating these considerations into an MIS are clearly described in the previously mentioned report by Warner, et al., Management Information for the Parent-Child Center Program (1971).

- A project-wide newsletter featuring not only program achievements and significant research findings, but also problems encountered in the project that might be of general interest. Brochures on particular program types or even specific services, and timely "news releases," could also be used for a number of project purposes. Such materials would regularly be originated by and/or disseminated through the Project Information Office (Section 5.1.1), but could also be prepared and circulated by staff at project sites.

- The case studies which will be written early in the project and updated through the life of the project (see Section 3.8). These might be distributed widely to inform the general public about different program types being examined in the project. Written in a simple narrative style they might well be the most heavily used information sources during the life of the project for anyone wanting detailed program information, including parents, caregivers day care operators, trainers, and policy makers.

- Videotape treatment documentation obtained for research and quality control purposes (see Section 5.4), but also adaptable for public information uses in day care training sessions and in parent and community meetings.

- Detailed cost accounting, monitored according to a regular schedule and in a form consistent across the project, to promote both comparisons among program types and information exchange about specific issues and problem areas.

- Conferences among all project levels, which will regularly bring together federal representatives, Prime Contractor staff, and selected local site personnel. Such conferences would offer further concrete uses for most of the materials described above.

- Scheduled periodic visits and consultation between specific individuals from different project levels, generally organized around the consulting and quality control relationships described in Section 5.1 (see particularly Table 5-1).

5.4 Quality Control

Several areas appropriate for the application of program-specific quality control methods during this project can be identified directly from the preceding discussions of project components:

- All child care services, including procedures for actually providing the services and record keeping for each family in the project. Federal guidelines and basic project specifications must, of course, be met, and the additional requirements for an experimental study of the dimensions discussed in earlier sections must also be fulfilled throughout the project.

- Training techniques and materials for each type of training identified in Section 5.2. The objective here would be two-fold: all project staff must be adequately prepared for the interlocking responsibilities discussed in Section 5.1, and the distinction between "formal" and "informal" training (cf. Section 2.2.2) must also be maintained. Training to the extent planned for this project is itself one method for quality control of program content and implementation methods.

- Fund flow and cost reports. Again, the concerns are not only to effectively monitor expenditures and to assure the provision of prescribed services, but also to establish a sound data base for comparisons among program types and their relative effects.

- Maintenance of distinctions among program types, that is, the "purity" and internal consistency of each different combination of caregiver/child ratio, family or center setting, training, and educational component implemented for the project. As already suggested, other project components such as training, effective communications systems, and efficient research procedures contribute directly to quality control in this area.

- Communications and utilization of available information within the project and between the project and appropriate external users. For instance, the regular reporting and information exchanges discussed in Section 5.3 would be specified in terms of required due dates, format (or project-wide forms) to be used, examples of recommended contents, offices and addresses of recipients, etc., during project start-up (in the basic Project Manual) and pilot operations.

- Parent involvement. As in every component of this project, work with parents and records for them must not only fulfill federal and local day care requirements, but also provide the context and generate the data necessary for experimental assessment of program processes and outcomes as described in Section 4.

- Experimental research methods, e.g., in data collection, processing, and analysis. Since the experimental research tasks are both a rationale and an instrument for comprehensive quality controls in other project areas, it goes almost without saying that procedures for gathering, validating, sorting, storing, and interpreting the project's research data must be planned and monitored with a similar precision and rigor.

The details of quality control methods in these areas can only be suggested here. They should follow from final detailed decisions about project operations and should evolve from analysis of actual program components during the start-up and pilot phases and from consultation among all levels of project staff. Nevertheless, the responsibilities and materials discussed in this section indicate a substantial number of resources for quality control:

- Scheduled reporting, at all levels, of "progress" in the project and of costs in functional form, and the timely communication of exceptional events or results.

- Specific tests (e.g., paper and pencil tests, responses to videotaped demonstrations) of the effectiveness of training sessions and of the training sequence over a program year.

- Program "treatment documentation," on videotape or by a trained human observer. Though this may be obtained as part of the experimental research data, it should also be important for monitoring and feedback on program implementation. This documentation could be regularly analyzed by Prime Contractor staff and used as a concrete basis for recommendations to site and child care unit staff on program modifications and training emphases.

- Periodic interviews, using carefully designed forms project-wide, with parents, child caregivers, etc. These would be conducted both to obtain essential initial information on participants and staff and to determine changes in attitudes, perceptions, and child-rearing practices during the project.

- Records for participating children which may show changes over time, for instance in health or psychological status.

- Records of staff absenteeism and turnover, and the extent and frequency of notable modifications in program content.

- Recorded levels of usage of available program services, as well as the direct comments on these services by parents and community representatives.

- Finished "products" from the project's work, such as published reports or papers, new training packages for wider application, revised or expanded "curricula," and new proposals from all project levels for additional investigations following logically from this project.

6

PROJECT TIME SCHEDULE

It would not be appropriate to forecast in detail a specific amount of time or a target completion date for particular project tasks prior to final decisions on such matters as funding level for certain functions, total number of participants for the experiment, and tentative starting dates for the work. What can be suggested, however (and what is attempted in the time chart presented in Figure 6-1), is as follows:

- A delineation of fundamental phases (such as those assumed in discussing project management in Section 5) through which the project effort might reasonably evolve toward its overall objectives

- A gross subdivision of these phases into some functions which obviously must be performed in implementing the proposed research

- A general sequencing of these activities, that is, a suggested order in which they might proceed

- A very rough estimate of the relative amount of time these phases and functions could reasonably be expected to occupy within the framework of a multi-year project

The general phases of the work assumed as a basis for the time chart are:

- Project start-up activities, which initiate the hiring of key project personnel, site selection, and other activities preliminary to field operations

- A pilot phase of operations, involving a portion of the overall target population, in which some program components and methods are tried out, revised and modified as necessary, and the overall project design adjusted for optimum effectiveness

- A full operations phase, in which all of the project's intended participants are offered services, with only

minor additional changes in basic program components accomodated, and the bulk of the expected research data collected

- A final interpretation and reporting phase, including final data analysis and the formulation of comprehensive conclusions about those elements of day care isolated for experimental investigation

- A longitudinal follow-up period, not completely within the bounds of this project, but added here to emphasize its importance to full understanding and sound generalization of the results of this research

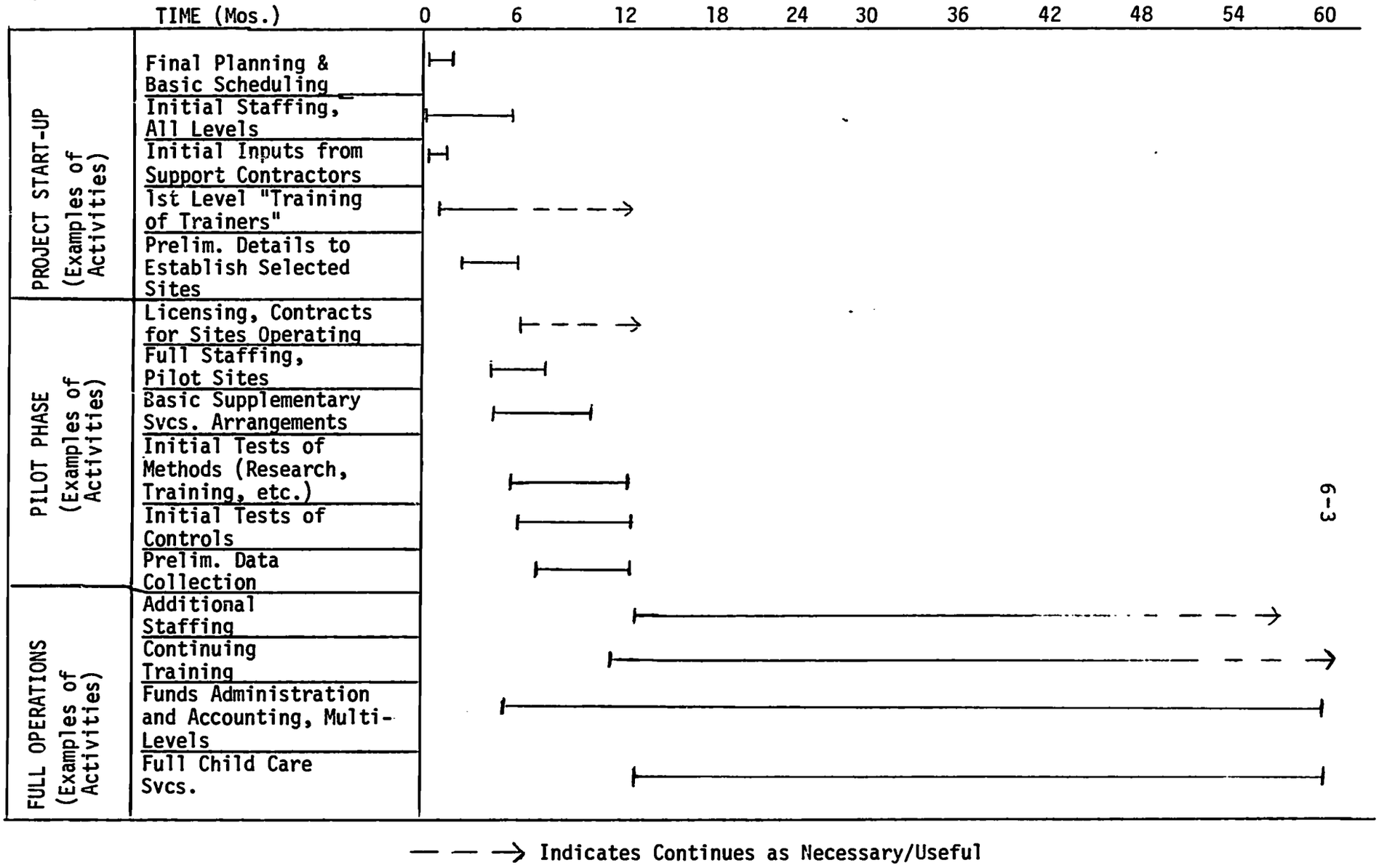
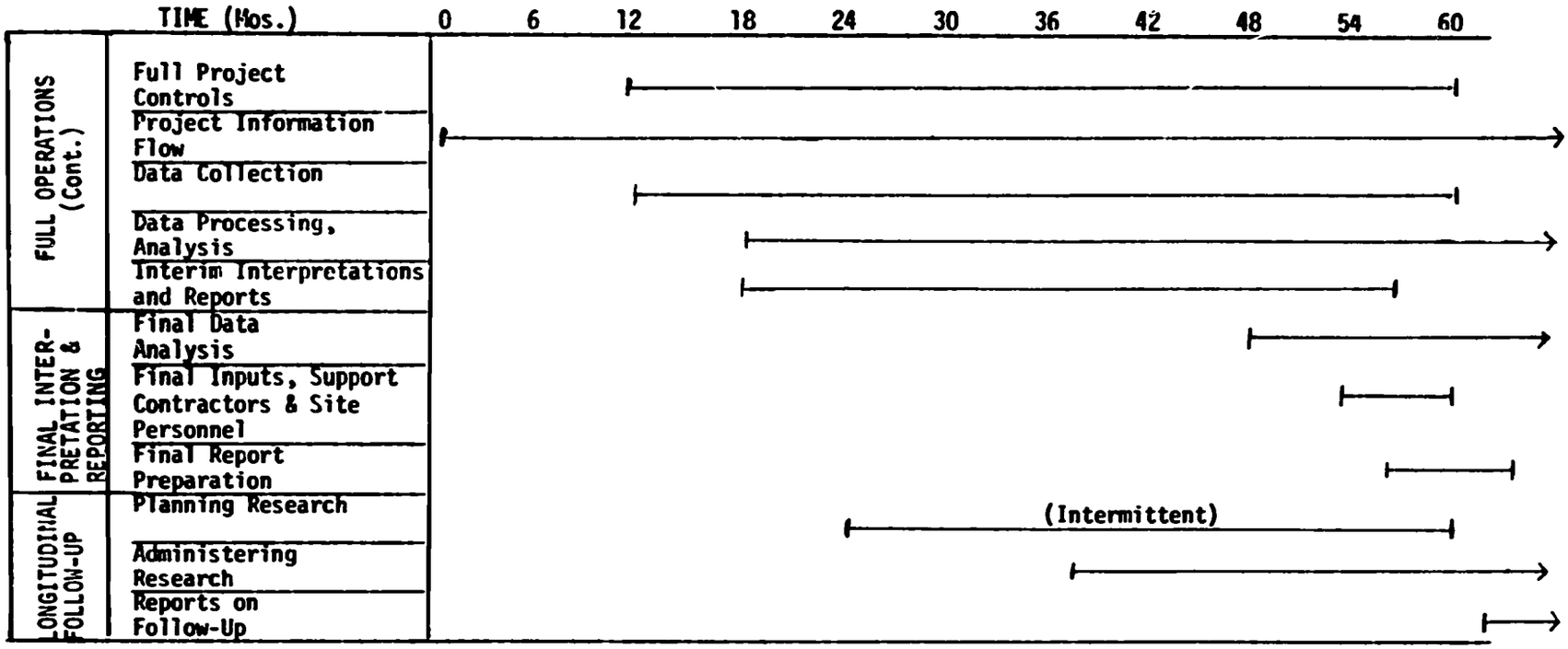


FIGURE 6-1. ROUGH TIME SEQUENCE FOR PROJECT ACTIVITIES



— — — → Indicates Continues as Necessary/Useful

FIGURE 6-1. ROUGH TIME SEQUENCE FOR PROJECT ACTIVITIES (Cont.)

7

BUDGET

The budget section provides only a rough estimate of the costs needed to implement this project. The overall project cost per year is estimated to be $5,762,200. This budget estimate has been based on a single full operational year, rather than on estimates for each of the five separate years of the project.

Once costs have been estimated more precisely for each of the various elements of the project, it is then possible to "try out" different reductions in the scope of the project and see how this reduces total project costs. Some of the ways in which this project could be reduced in scope (and costs) are:

- Reduce the length of the experiment by one or two years.
- Run only two replications, instead of three replications, of each of the 16 program types. This would reduce the number of child care units in operation from 48 to 32.
- Compare only one formal program curriculum with the informal programs, rather than comparing three different formal programs with the informal programs. This would reduce the number of child care units in operation from 48 to 24.

Many other reductions could also be considered. It is recommended, however, that no fewer than 30 children should be assigned to each child care unit, and no less than six different geographical sites should be used for the project.

Since the budget section consists primarily of tables, the following short listing will help to guide the reader through this section. Table 7-1 identifies the overall budget amount of $5,762,200 by its eleven major subcategories.

Figure 7-1 illustrates the relative costs for administration, program operation, research, and indirect costs.

Table 7-2 breaks out the costs for running each of the 48 different child care units.

Tables 7-3 through 7-10 give much more detail on the costs included within each type of child care unit.

Table 7-11 presents the salaries and wages paid by the Prime Contractor at the central and site offices.

Table 7-12 lists the expected videotaping supplies and equipment costs.

Table 7-13 identifies the indirect costs as figured on different areas of personnel costs throughout the project.

7.1 Overall Budget Totals

The broad allocation of the total proposed budget is presented in Figure 7-1. As would be expected, over half of the total budget is spent for the operation of child care units.

The ten different budget entries in Table 7-1 are for the most part self-explanatory. However, one budget entry which needs more explanation is "Operation of 48 Child Care Units." This represents the total of each specific child care unit cost multiplied by the number of units of that type which are to be run (see Table 7-2). The total cost for each program type is presented in the eight tables, 7-3 through 7-10. A description of how these costs were determined is presented in Section 7.2.

The detailed information on personnel needed by the Prime Contractor on the central staff and at each of the six sites is presented in Table 7-11. All of these people are part of the "experimental" staff and so are not included in any of the child care unit operation budgets. This information includes some supporting staff not detailed in Section 5 (Project Management and Administration), which only describes key personnel.

The training contractor consulting figure in Table 7-1 is based on three training contractors (one for each of the formal programs), each being paid $60,000 per year for their consulting.

The videotaping equipment and supplies entries are explained in greater detail in Table 7-12. These costs are part of the data collection and analysis of the ongoing processes taking place in each child care program unit.

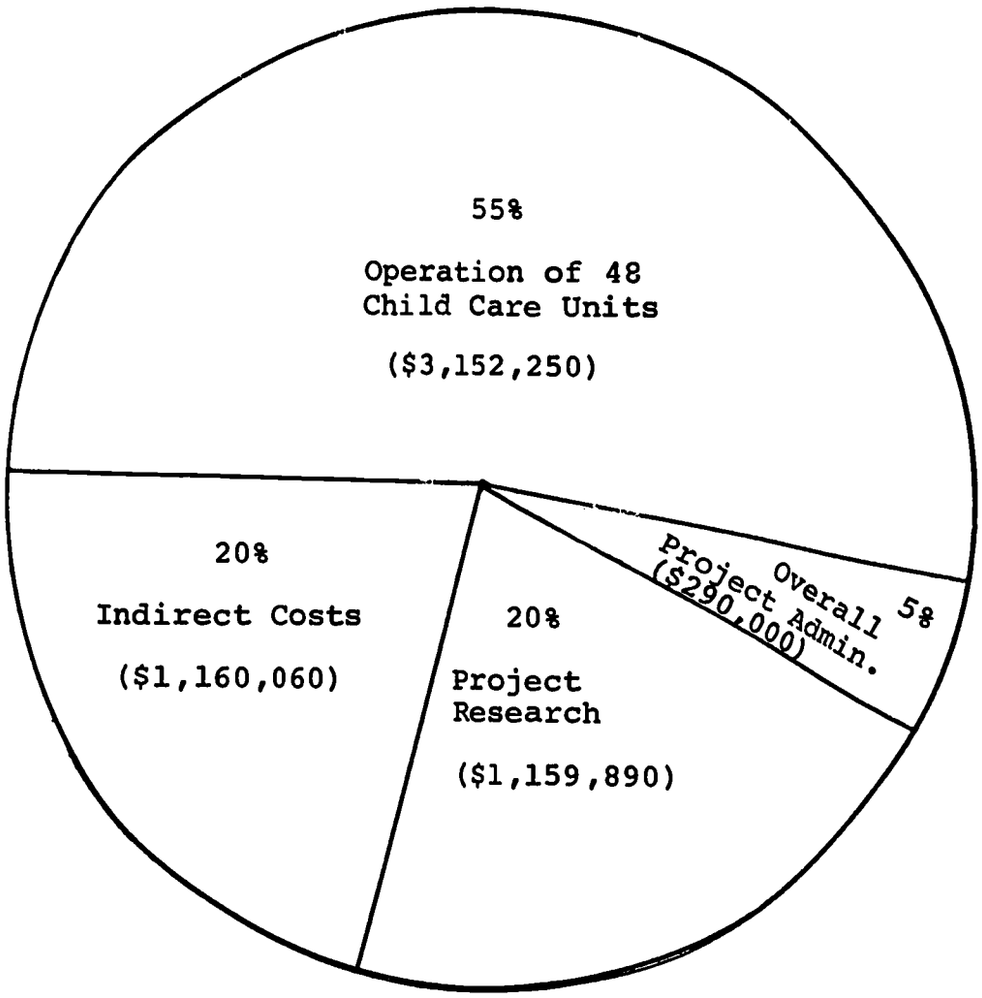
TABLE 7-1

OVERALL BUDGET

Operation of 48 Child Care Units	$3,152,250
Salaries and Wages	
Prime Contractor Central Staff	404,400
Prime Contractor Staff at 6 Sites	262,200
Fringe Benefits (15%)	99,990
Travel	
Staff Travel	$ 50,000
Consultants (Support Contractors) Travel	30,000
Support Contractors Consulting	
3 Training Consulting Contractors (@ $60,000)	180,000
1 Research Consulting Contractor	20,000
General Consulting	20,000
Supplies (General)	10,000
Equipment (General)	40,000
Videotaping Equipment and Supplies (as prorated per year)	173,300
Computer Time	100,000
Publications Costs	50,000
Miscellaneous	10,000
Indirect Costs (40% of all salaries and wages)*	1,160,060
Grand Total	$5,762,200

* Indirect costs can be figured in several different ways. See Table 7-13 for details on this indirect cost figure.

FIGURE 7-1 ALLOCATION OF PROJECT BUDGET



The indirect costs listed in Table 7-1 are based on the salaries and wages of all people at the central office, all people at the site offices, and all people working at each of the 48 child care units (see Table 7-13).

The other budget entries in Table 7-1 are self-explanatory estimates of costs needed by the Prime Contractor to operate this project.

There is no specific cost breakdown for the start-up period, since start-up costs will not exceed unexpended personnel costs during the first year. In other words, this budget would be a typical year of the five year grant. The first year would cost roughly the same amount, but more money would be allocated to occupancy (remodeling), and less money allocated for salaries (not yet hired).

7.2 Explanation of Data in Tables--"Cost per Child by Functional Budget Categories"*

The basic data for the child care unit functional budgets comes from A Study in Child Care 1970-71 (vol. III, Systems Quality Issues for Operators) by Abt Associates (1971d). Some changes were necessitated by the use of eleven functional categories instead of the 5 used by Abt. For each Abt category the equivalent functional category breakdowns are presented below:

- Administration as used in the Abt study has been divided into the following four functional categories in the present study: (1) Administration, (2) Staff Development and Training, (3) Intake Evaluation and Recruitment, and (4) Community Relations.

- Occupancy category figures are used directly from the two Abt reports cited above.

- Care and Teaching category in the Abt studies has been split into two functional categories: (1) Basic Child Care and (2) Teaching and Instruction. These two categories sum to the Abt Care and Teaching category based upon 90% care and 10% teaching for the informal programs, and 60% care and 40% teaching for the formal programs.

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* Based on functional categories and costs per child for day care centers of 25 children (Abt, 1971d, pp. 50-57) and for family day care (Abt, 1971c, pp. 37-41).

The Care and Teaching category costs given in the Abt study for a center of 25 children average daily attendance is for five different teachers or teacher's assistants and aides. This caregiver/child ratio figures to about 1:6, and so the Care and Teaching costs were used as is for the 1:6 caregiver/child ratio centers. Only three teaching staff would be employed if the ratio was 1:10, so 60% (or 3/5) of the given Care and Teaching personnel amount was used. Only two teaching staff would be employed if the ratio was 1:15, so 40% (or 2/5) of the given Care and Teaching personnel amount was used.

- Feeding and Food Service category figures were taken directly from the Abt (1971d) study.

- Staff Development and Training category represents costs used only for special caregiver training in the formal programs. These costs include the following personnel:

  a) 1 Site training director for every 60 children ($8,300 per year), or $138 per child per year.

  b) One day per week replacement personnel costs for each teacher. Such replacement personnel are based on $1.60 per hour or $640 per year per teacher.

  c) Preservice training time of one week for each teacher.

  In addition to the personnel costs educational supplies and other expenses (equipment) are also included.

- Intake, evaluation and recruitment costs are incurred at the site office, but are charged to each of the 48 units. One intake paraprofessional and one 1/2 time secretary would meet this function.

- Community Relations will be handled by site staff also, but is charged as a direct operating cost to each of the 48 day care units.

- Health Services costs were based upon the following estimated full time staff for each geographical location (or 240 children):

2 Nurses @ $7,100 (Inner City Fund, 1971)

1 Secretary 1/4 time @ $5,400 (Abt 1971d)

Medical, Dental and Psychological fees (as needed), $4,800

These figures amount to $85 per child for Health Services category personnel and fees plus an estimated $25 per child for supplies and other expenses.

- Social and Economic Services category was based upon the following estimated full time staff for each geographical location (or 240 children):

  2 Social Workers @ $10,000 (Grow and Smith, 1971)

  1 Secretary 1/4 time @ $5,400 (Abt, 1971d)

  These figures amount to $90 per child for Social and Economic Services personnel plus $20 for other expenses as needed.

Salary rate information used in these sections was derived from the following sources:

- Abt Associates. A Study in Child Care 1970-71. Vols. IIB and III. Cambridge, Mass.: Author, 1971.

- Grow, L. V. and Smith, M. J. Salary Study 1971. New York: Child Welfare League of America, 1971.

- Inner City Fund. Potential Cost and Economic Benefits of Industrial Day Care. Labor Department. Washington, D.C.: Author, 1971.

TABLE 7-2

OPERATIONAL COSTS FOR 48 CHILD CARE UNITS BY KIND OF PROGRAM

Program Type	Cost Per Child	Cost Per Child Care Unit	No. of Units	Cost Per Program Type
Formal Home	$2,656	$79,680	9	$717,120
Informal Home	2,351	70,530	3	211,590
Formal 1:6 Center	2,552	76,560	9	689,040
Informal 1:6 Center	2,247	67,410	3	202,230
Formal 1:10 Center	2,039	61,170	9	550,530
Informal 1:10 Center	1,784	53,520	3	160,560
Formal 1:15 Center	1,783	53,490	9	481,410
Informal 1:15 Center	1,553	46,590	3	139,770
		Totals	48	$3,152,250

TABLE 7-3

COST PER CHILD
BY
FUNCTIONAL BUDGET CATEGORIES
FOR
PROGRAM TYPE: Formal Home

	1	2	3	4	5	6	7	8	9	10	11
	Admin.	Occupancy	Basic Child Care	Teaching & Instruction	Food Serv.	Staff Dev. & Training	Intake Eval. Recruit.	Community Relations	Health Serv.	Social/ Economic Serv.	Transportation
Personnel	90		765	510	116	265	30	30	85	90	-
Supplies			15	20		30			15		-
Foodstuffs					150						-
Rent		236									-
Other	60	44	20	20	10	10		15	10	20	-
Totals	150	280	800	550	276	305	30	45	110	110	-0-

Total Cost Per Child Across All Categories = $ 2,656

Total Cost Per Day Care Unit (cost-per-child X 30) = $ 79,680

TABLE 7-4

COST PER CHILD
BY
FUNCTIONAL BUDGET CATEGORIES
FOR
PROGRAM TYPE: Informal Home

	1	2	3	4	5	6	7	8	9	10	11
	Admin.	Occupancy	Basic Child Care	Teaching & Instruction	Food Serv.	Staff Dev. & Training	Intake Eval. Recruit.	Community Relations	Health Serv.	Social/ Economic Serv.	Transportation
Personnel	90		1160	115	116	-	30	30	85	90	-
Supplies			25	10		-			15		-
Foodstuffs					150	-					-
Rent		236				-					-
Other	60	44	30	10	10	-		15	10	20	-
Totals	150	280	1215	135	276	-0-	30	45	110	110	-0-

Total Cost Per Child Across All Categories = $ 2,351

Total Cost Per Day Care Unit (cost-per-child X 30) = $ 70,530

TABLE 7-5

COST PER CHILD
BY
FUNCTIONAL BUDGET CATEGORIES
FOR
PROGRAM TYPE: Formal 1:6 Center

	1	2	3	4	5	6	7	8	9	10	11
	Admin.	Occupancy	Basic Child Care	Teaching & Instruction	Food Serv.	Staff Dev. & Training	Intake Eval. Recruit.	Community Relations	Health Serv.	Social/ Economic Serv.	Transportation
Personnel	90	50	694	463	116	265	30	30	85	90	-
Supplies			15	20		30			15		-
Foodstuffs					150						-
Rent		200									-
Other	60	44	20	20	10	10		15	10	20	-
Totals	150	294	729	503	276	305	30	45	110	110	-0-

Total Cost Per Child Across All Categories = $ 2,552

Total Cost Per Day Care Unit (cost-per-child X 30) = $ 76,560

TABLE 7-6

COST PER CHILD
BY
FUNCTIONAL BUDGET CATEGORIES
FOR
PROGRAM TYPE: Informal 1:6 Center

	1	2	3	4	5	6	7	8	9	10	11
	Admin.	Occupancy	Basic Child Care	Teaching & Instruction	Food Serv.	Staff Dev. & Training	Intake Eval. Recruit.	Community Relations	Health Serv.	Social/ Economic Serv.	Transportation
Personnel	90	50	1041	116	116	-	30	30	85	90	-
Supplies			25	10		-			15		-
Foodstuffs					150	-					-
Rent		200				-					-
Other	60	44	30	10	10	-		15	10	20	-
Totals	150	294	1096	136	276	-0-	30	45	110	110	-0-

Total Cost Per Child Across All Categories = $ 2,247

Total Cost Per Day Care Unit (cost-per-child X 30) = $ 67,410

TABLE 7-7

COST PER CHILD
BY
FUNCTIONAL BUDGET CATEGORIES
FOR
PROGRAM TYPE: Formal 1:10 Center

	1	2	3	4	5	6	7	8	9	10	11
	Admin.	Occupancy	Basic Child Care	Teaching & Instruction	Food Serv.	Staff Dev. & Training	Intake Eval. Recruit.	Community Relations	Health Serv.	Social/ Economic Serv.	Transportation
Personnel	90	50	416	278	116	215	30	30	85	90	-
Supplies			15	20		30			15		-
Foodstuffs					150						-
Rent		200									-
Other	60	44	20	20	10	10		15	10	20	-
Totals	150	294	451	318	276	255	30	45	110	110	-0-

Total Cost Per Child Across All Categories = $ 2,039

Total Cost Per Day Care Unit (cost-per-child X 30) = $ 61,170

TABLE 7-8

COST PER CHILD
BY
FUNCTIONAL BUDGET CATEGORIES
FOR
PROGRAM TYPE: Informal 1:10 Center

	1	2	3	4	5	6	7	8	9	10	11
	Admin.	Occupancy	Basic Child Care	Teaching & Instruction	Food Serv.	Staff Dev. & Training	Intake Eval. Recruit.	Community Relations	Health Serv.	Social/ Economic Serv.	Transportation
Personnel	90	50	625	69	116	-	30	30	85	90	-
Supplies			25	10		-			15		-
Foodstuffs					150	-					-
Rent		200				-					-
Other	60	44	30	10	10	-		15	10	20	-
Totals	150	294	680	89	276	-0-	30	45	110	110	-0-

Total Cost Per Child Across All Categories = $ 1,784

Total Cost Per Day Care Unit (cost-per-child X 30) = $ 53,520

TABLE 7-9

COST PER CHILD
BY
FUNCTIONAL BUDGET CATEGORIES
FOR
PROGRAM TYPE: Formal 1:15 Center

	1	2	3	4	5	6	7	8	9	10	11
	Admin.	Occupancy	Basic Child Care	Teaching & Instruction	Food Serv.	Staff Dev. & Training	Intake Eval. Recruit.	Community Relations	Health Serv.	Social/ Economic Serv.	Transportation
Personnel	90	50	278	185	116	190	30	30	85	90	-
Supplies			15	20		30			15		-
Foodstuffs					150						-
Rent		200									-
Other	60	44	20	20	10	10		15	10	20	-
Totals	150	294	313	225	276	230	30	45	110	110	-0-

Total Cost Per Child Across All Categories = $ 1,783

Total Cost Per Day Care Unit (cost-per-child X 30) = $ 53,490

TABLE 7-10

COST PER CHILD
BY
FUNCTIONAL BUDGET CATEGORIES
FOR
PROGRAM TYPE: Informal 1:15 Center

	1	2	3	4	5	6	7	8	9	10	11
	Admin.	Occupancy	Basic Child Care	Teaching & Instruction	Food Serv.	Staff Dev. & Training	Intake Eval. Recruit.	Community Relations	Health Serv.	Social/ Economic Serv.	Transportation
Personnel	90	50	417	46	116	-	30	30	85	90	-
Supplies			25	10		-			15		-
Foodstuffs					150	-					-
Rent		200				-					-
Other	60	44	30	10	10	-		15	10	20	-
Totals	150	294	472	66	276	-0-	30	45	110	110	-0-

Total Cost Per Child Across All Categories = $ 1,553

Total Cost Per Day Care Unit (cost-per-child X 30) = $ 46,590

TABLE 7-11

PRIME CONTRACTOR'S PERSONNEL COSTS
FOR CENTRAL AND SITE STAFFS

- Central Staff -

Administration	
1 Overall Project Manager	$ 30,000
1 Executive Secretary	8,000
1 Accountant	10,000
Training	
3 Master Trainers (@ $14,000)	42,000
1 Secretary	5,400
Operations	
3 Field Monitors (@ $12,000)	36,000
1 Secretary	5,400
Information	
1 Public Information Officer	14,000
1 Secretary	5,400
Research	
1 Manager of Analysis and Reporting	16,000
5 Research Associates (@ $14,000)	70,000
2 Secretaries (@ $5,400)	10,800
1 Manager of Data Coding	14,000
10 Coders (@ $5,000)	50,000
1 Videotape Technician	8,000
1 Manager of Data Reduction	14,000
2 Senior Programmers (@ $15,000)	30,000
1 Secretary	5,400
6 Keypunch Operators (@ $5,000)	30,000
Total Central Staff Salaries	$404,400
15% Fringe Benefits	60,660
	$465,060

TABLE 7-11 (con't.)

- Site Staff -

Administration	
1 Site Manager	$ 13,000
1 Administrative Asst. (@ $11,000)	Paid by Child Care Units Operational Costs
1/2 Time Secretary (@ $5,400) (and 1/2 paid by Child Care Units)	2,700
1/2 Time Bookkeeper (@ $8,000) (and 1/2 paid by Child Care Units)	4,000
Research	
2 Testers/Data Collectors (@ $8,000)	16,000
1 Videotape Technician	8,000
Training and Intake and Supporting Services Personnel	
Paid by Child Care Units Operational Costs	------
Total Per Site	$ 43,700
6 Site Total Salaries & Wages	262,200
15% Fringe Benefits	39,330
6 Site Total Staff Costs	$301,530

TABLE 7-12

VIDEOTAPING COSTS

77 Videotape Recorders (@ $2,000) (as prorated over 5 years)	$ 30,800
25 Video Monitors (@ $300) (as prorated over 5 years)	1,500
104 Video Cameras plus Accessories and Installation (@ $450) (as prorated over 5 years)	9,400
Maintenance Equipment (as prorated over 5 years)	1,600
Maintenance Supplies (per year)	10,000
Videotape (@ $30 per hour 1/2-inch tape) (per year)	120,000
Total	$173,300

TABLE 7-13

INDIRECT COSTS AS FIGURED ON
ALL SALARIES AND WAGES

Program Type	Personnel Costs Per Child	Personnel Costs Per Unit	No. of Units	Personnel Program Costs
Formal Home	$1981	$59,430	9	$534,870
Informal Home	1716	51,480	3	154,440
Formal 1:6 Center	1913	51,390	9	516,510
Informal 1:6 Center	1648	49,440	3	148,320
Formal 1:10 Center	1400	42,000	9	378,000
Informal 1:10 Center	1185	35,550	3	106,650
Formal 1:15 Center	1144	34,320	9	308,880
Informal 1:15 Center	954	28,620	3	85,860
Total Salaries & Wages for 48 Units				$2,233,530
Indirect Costs Based on 40% of Salaries & Wages for 48 Units				893,412
Indirect Costs Based on 40% of Salaries & Wages for Prime Contractor's Central Staff (See Table 7-11)				161,760
Indirect Costs Based on 40% of Salaries & Wages for Prime Contractor's 6 Site Staffs (See Table 7-11)				104,880
Total Indirect Costs				$1,160,052

APPENDIX A

PARENT PREFERENCES IN DAY CARE

While consideration of day care arrangements at the governmental level remains for the most part an academic one there is increasing evidence that the need for such services is growing:

> While estimates vary, the most "generous" figures indicate that day care currently is available for 641,000 of the almost 6,000,000 preschool children whose mothers work ...In the past three decades alone, the number of working mothers has increased by 700 percent while the population has increased 50 percent. Women's Bureau, Department of Labor, figures reflect a similar trend, by showing that the 3,700,000 working mothers with children under age 5 will increase to 5,300,000 by 1980 (Zamoff and Lyle, p. 1).

However, most of these and similar figures are based on projections of need from census sources, rather than from the needs actually expressed by parents themselves. Thus, not only is the extent of need for day care arrangements unknown, but the precise kinds of arrangements as well. Emlen (1971) emphatically stresses that many of the assumptions currently guiding national planning in day care may be unfounded.

Although a comprehensive review of existing research reports which document the growing need for day care services is not necessary for the purposes of this report, it would be useful to examine the few studies which document responses of parents.

- Emlen, A. C., Donoghue, B. A., and LaForge, R. Child Care by Kith: A Study of the Family Day Care Relationships of Working Mothers and Neighborhood Caregivers. Portland, Ore.: Tri-County Community Council and Portland State University, 1971.

  > Data for this study were obtained separately from the users and givers of family day care by independent interviewers. Though the sample was not a probability sample of working mothers in the Portland Metropolitan Statistical Area, it was, in the opinion of its authors, a fairly successful sample of ongoing private family day care arrangements of white, urban working mothers with at least one child under six years of age from a broadly representative cross section of occupations in which large numbers of working mothers are employed.

. Rowe, M P. Testimony on the Economics of Child Care for the Senate Finance Committee. Cambridge, Mass.: Abt Associates, 1971a.

Data or tables quoted are based on the results of the Massachusetts Early Education Project Survey, an area probability sample of 516 Massachusetts families with children age 0-6, conducted in November, 1970, by the Becker Research Corporation for the Massachusetts Early Education Project. Hereafter it will be referred to as the MEEP Survey.

. Ruderman, F. A. Child Care and Working Mothers: A Study of Arrangements Made for Daytime Care of Children. New York: Child Welfare League of America, 1968.

Stage II of this study utilized an area probability sample of all families with at least one child under 12, in selected communities of the four regions of the U.S. Working mothers were sampled at a higher rate than nonworking mothers.

. State of Vermont Family Assistance Planning Unit and Mathematica, Inc. State of Vermont Family Assistance Program Planning Papers. Vol. 5. Report on the Baseline Survery and Cost Projections. Montpelier, Vt.: Authors, 1971.

A representative sample of 1126 families of the total low income population of Vermont was selected for baseline interviews. Five hundred and three would actually be eligible for FAP and 603 would be classified "near-eligible." In Chapter 3 entitled "Child Care" primary focus was placed on total child care demand within specific eligible categories, namely FAP eligible families for full subsidy and near-eligible families for partial subsidy.

. Zamoff, R. B. and Lyle, J. R. Assessment of Day Care Services and Needs at the Community Level: Mt. Pleasant. Washington, D. C.: The Urban Institute, 1971.

A representative sample of 232 neighborhood parents with at least one child below age six was selected. Mt. Pleasant is a heterogeneous community (65% black) consisting primarily of middle and lower income families. The interview sample consisted of parents representing approximately 35% of the children by age six living in the geographical area included in the study.

These five studies will be examined for data relating to preferences of mothers with preschool children (ages 3-5) regarding the following questions:

- What are the three or four most important features of day care?
- What are parents' reactions to the inclusion of an educational component?
- Are informal (relatives or neighbors) or formal (family-home settings or center settings) day care arrangements preferred?
- What is the expressed desire of mothers for day care services in general?

Findings of various surveys and reports which touch upon these four issues are listed below. These findings by no means reflect the comprehensiveness of such reports and careful reading of the five documents is recommended for further clarification of results and research methodology.

Question #1: What are the three or four most important features of day care?

Zamoff and Lyle, 1971*

- Parents in all income classes are willing to pay most, on the average, for a basic day care program, next most for an additional educational component, and thirdly, for transportation. In terms of parents' willingness to pay, these components are uniformly preferred to flexible program hours or a more convenient opening or closing time (see Table A-1). If there were no financial constraints, however, mothers would uniformly consider a competent staff to be the program component of highest priority (p. 24).
- In reference to timing of day care availability, mothers in every income class indicated greatest interest in an arrangement where a parent could leave a child for a few hours to go shopping, look for a job, or attend to other personal business. Frequency of use patterns revealed that groups of parents used day care arrangements either for less than 20 hours or more than 40 hours per week, with the smallest number using day care for hours between 20 or 40 per week (p. 22).

* The authors define a basic day care arrangement as one without a preschool educational program, without transportation, and without one hot meal.

- Mothers not now working full-time, in all income classes, would be willing to pay at least one-fifth of their weekly earnings for day care services. In every income class, employed mothers actually are spending a lower share of their earnings on day care than mothers not employed expect to have to spend (pp. 17-18). A comparison of Tables A-2 and A-3 will demonstrate this point.

Emlen, Donoghue, and LaForge, 1971*

- When mothers were asked to respond to the question "Did you get what you wanted from this arrangement?" 60% ranked good sitter-child relationship first in importance, 34% ranked convenience second in importance, 30% ranked good quality of care third, and 10% ranked good mother-sitter relationship fourth. Though convenience ranked second to a good sitter-child relationship in what mothers reported wanting in an arrangement, the authors maintained that convenience factors appear to undergird the formation of all arrangements. Accordingly, "the mothers perceived benefits to the child as desirable, but convenience as a near-necessity" (p. 62).

- The authors concluded "Family day care of the private, informal variety found in the neighborhood is a type of care that is preferred and used by large numbers of working mothers not only because it is physically convenient, flexibly accommodating, socially approachable, and consumer controllable, but also because it is perceived as a comfortable and familiar setting in which the working mother finds a responsible, nurturant caregiver who is capable of providing love and comfort as well as new social learning experiences for the infant, toddler, or preschool child (pp. 177-8).

Rowe, 1971a

- Massachusetts parents were asked to select those characteristics of child arrangements and programs they found "most important" and "least important." The four "most important" characteristics in ranked order were: help children get along better with each other, close to home, provide health care, and provide meals. "Least important" were: provide TV, speak many languages, and provide special toys.

- In reference to timing of day care availability, Rowe cites studies which indicate that "at least half of all use of arrangements made for care with anyone other than the child's

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* Family day care, as it is defined in this study, is care of a child by a non-relative outside of the child's home.

parent (whether in or out of the child's own home) occur outside the normal 9-5 working day, five days a week" (pp. 9-10)* She also quotes pleas of working mothers for "a little extra child care so I can shop/do the laundry in winter/visit my relatives in the hospital" (p. 11).

- Far more working mothers with children 0-6 in Massachusetts, when asked, say they want child care near home than close to work (p. 8). Many parents would in fact rather pay high fees than travel. The desire for care close to home does not vary with family income (p. 9).

- Parents say they would pay more money than they now spend if they could choose the child care they want. A third of all Massachusetts parents said they would pay more than $10 per week for only about 6% of the children in Massachusetts (pp. 7-8).

- Patterns of use of child care arrangements make very clear that finances, geographical convenience, and appropriateness of hours of child care are of necessity the parents' first concern (p. 17).

Ruderman, 1968

- Most often the positive points mentioned are good care, supervision, nearness and convenience, and that the caretaker is responsible and experienced. Convenience, when the caretaker lives nearby, is mentioned almost as often as quality of care--47% compared with 58% (p. 286).

- When the caretaker (out-of-home relative or non-relative) is less than 5 minutes away, 46% express no dissatisfaction; when she lives more than 15 minutes away, only 29% express no dissatisfaction (p. 285).

Question #2: What is parents' reaction to the inclusion of an educational component?

Only two of the studies give information that might indicate parents' reaction to the inclusion of an educational component.

Zamoff and Lyle, 1971

- Based on the incremental amounts respondents say they would

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* The Vermont FAP Study, op. cit., states that "nearly 34% of the low income mothers need care for their children after 6 P.M. and an average of 29% need care during the weekend while they are working outside the home" (p. 95).

be willing to pay to have various components of day care services added, it appears that the inclusion of a preschool educational program has the highest priority for residents of the Mt. Pleasant neighborhood (p. 9).

Rowe, 1971a

. Parents who use and like center care often mention the opportunity for experience with other children, preschool education programs and field trips, after-school recreation and tutoring as benefits of center programs (p. 13).

Question #3: Are informal (relative or neighbors) or formal (family-home settings) day care arrangements preferred?

Zamoff and Lyle, 1971[1]

. Organized and formal day care arrangements appeal to the majority (51.8%) of mothers who would choose some type of day care for their children between ages three and six, while informal arrangements appeal to the majority of mothers with children under age three (p. 30; see also Table A-4).

Emlen, Donoghue, and LaForge, 1971[2]

It is interesting to note some results of the sampling procedures regarding existing types of child care arrangements before noting mothers' stated preferences:

1. The ratio of family day care arrangements to other types of child care, usually in the child's home, was approximately 1 to 2.
2. Among the family day care arrangements, 27% had no child under six in the arrangement; 76% did.
3. The screening eliminated two agency-sponsored family day care arrangements, a proportion of 167 to 2 of existing private vs. family day care arrangements (p. 19).

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[1] Formal day care arrangements include family and group day care homes and day care centers. The authors of the study suggest the reader keep in mind that the lack of a variety of day care arrangements in Mt. Pleasant means that respondent preferences are being expressed in the absence of price (and quality) information.

[2] This study makes a distinction between family day care (any non-relative who cares for the child outside the child's home) and group day care in a day care center, but does not use equivalent terms for informal and formal care.

- Seventy-two percent of the working mothers using family day care reported preference for family day care over group care in a day care center in response to the item, "I would rather have my child at the home of a sitter than at a day care center." The preference for family day care held up for children of ages four and five in contrast to infants and toddlers although the authors note that the increased preference for family day care among the parents of preschoolers in the sample suggests Portland women who preferred group care probably were using it and, therefore, did not show up on the sample (p. 63).

- In general, it may be said that family day care users appear to be avoiding the use of relatives (see Table A-5).

- Working mothers may turn to a relative of a friend in making their first day care arrangements, but once they make an arrangement with a "regular sitter" they undergo a shift in the type of arrangement they prefer. This is revealed in the first choices of arrangements, comparing mothers who made arrangements with friends or acquaintances and those who made arrangements with strangers. The pattern of last choices was similar for the two groups, with the day care center given as last choice more often than any other type of care, and family day care given least frequently as last choice (p. 65; see also Table A-6).

Vermont FAP unit and Mathematica, 1971*

(It is interesting to note that at any given time during the normal work day, an average of 61% of the total number of children of mothers working outside the home do not receive care or supervision aside from their presence at school. The remaining 39% of the children for whom care is considered necessary in order for the mother to work outside the home by the source of care arranged during the normal work day is presented in Table A-7).

- Of the children who receive child care during the work day, 97% receive some type of informal day care and 3% receive formal day care.

- Licensed facilities are scarce and there is a lack of knowledge about the services which can be provided in a day care center or home, yet approximately 50% of the working mothers

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* Distinctions between preferences of mothers of preschool children and school-age children were not made in this study's summary of findings.

(and those non-employed or working at home) say they would utilize a facility that provided good, inexpensive care. At present, 89% of the mothers expressed satisfaction with their current arrangements (the average includes all sources of care and those arrangements where the children care for themselves). The authors point out, however, that this may only indicate the mothers were unaware of alternatives (p. 86).

Rowe, 1971a

- Child care preferences of Massachusetts parents,(based on an average of 1.65 preschoolers per family) were as follows: 39% preferred taking care of their own children, 39% preferred informal day care arrangements and 19% preferred center day care arrangements.

- Many parents are delighted to have their children in centers; probably half would ultimately choose centers if they in fact knew of nearby, available places in a good center. In Massachusetts, fewer than 6,000 families use day care centers, probably under 40,000 now have any contact with any kind of center care...It seems likely that many parents who now prefer "care in a home" for their children would also choose to use regular center care (such as nursery school) for at least some of the day--especially for children age 2 1/2-5 (p. 13).

- Interest is also rapidly mounting in mixed home-care/center-care systems (p. 13).

Ruderman, 1968

- Type of child care arrangements made by working mothers are summarized in Table A-8. The majority of arrangements (73 percent) are home arrangements (p. 211).

(For a detailed in-depth discussion of child care arrangements, it is recommended that the reader see Part IV of Child Care and Working Mothers, op. cit.)

Question #4: What is the expressed desire of mothers for day care services in general?

Vermont FAP Unit and Mathematica, 1971

- Of those mothers in the home, 13% indicated they might look for a job outside the home if good inexpensive child care were available to them. Most mothers did not feel the lack of child care services was an obstacle to their employment outside the home (p. 76, 96).

- Thirty-nine percent of these mothers in the home indicated interest in taking care of children for pay in their own home if they could receive some training and technical assistance to do it (p. 96).

Zamoff and Lyle, 1971

- It is revealing that 64% of the 136 mothers not now working full-time wish to work more than they do now, and say they would do so if satisfactory day care arrangements were available to them (p. 16).

- In contradiction to the findings of the FAP study, Zamoff and Lyle found that over 80% of non-working mothers in all families depending on transfer payments for some positive proportion of the household's income state that they would work if adequate day care arrangements were available to them (p. 17).

- Fifty percent of the respondents are interested in the possibility of establishing a day care arrangement in their own homes, with 28% very interested.

All in all there appears to be very little information on what parents want in day care arrangements for their children. What little information is available is often conflicting, partly because the research methods used differ and partly because people have different characteristics and want different things, thereby affecting results in peculiar ways. Although some common findings among the studies are summarized above, the need should be stressed for thorough surveys, among all income classes, of parents' responses to a wide range of issues relating to day care.

AVERAGE WEEKLY COST PARENTS ARE WILLING TO PAY PER CHILD FOR BASIC DAY CARE PROGRAM AND FOR ADDITIONAL PROGRAM COMPONENTS BY INCOME OF HOUSEHOLD, FOR CHILDREN BETWEEN AGES 3 AND 6 (N=211)*

Average Weekly Household Income Per Capita	Basic Day Care	Additional Program Component				
		Pre-School Educational Program	Transportation	One Hot Meal	Open Until 9:00 P.M.	Open on Week-ends
$0 - $14 (N=48)	$11.98	$ 8.14	$ 4.45	$3.43	$1.30	$1.00
$15 - $29 (N=68)	11.74	5.91	3.73	3.40	0.50	0.83
$30 - $44 (N=29)	11.36	9.75	5.28	4.08	3.64	1.78
$45 - $59 (N=25)	15.50	9.65	4.95	4.39	1.26	2.60
$60 - $74 (N=22)	8.95	10.25	5.65	4.27	1.45	1.63
$75 and over (N=19)	15.44	8.05	4.68	4.26	3.27	3.11
All Income Classes	12.23	8.03	4.53	3.78	1.55	1.49

* Source: Zamoff, R. B. and Lyle, J. R. Assessment of Day Care Services and Needs at the Community Level: Mt. Pleasant. Washington, D. C.: The Urban Institute, 1971, Table 17, p. 27.

TABLE A-1

TABLE A-2

AVERAGE WEEKLY DAY CARE COST AS PROPORTION OF AVERAGE WEEKLY EARNINGS BY INCOME OF HOUSEHOLD, FOR MOTHERS WORKING (N=98)*

Average Weekly Household Income Per Capita	%
$0 - $14	27.0
$15 - $29	11.0
$30 - $44	12.0
$45 - $59	9.0
$60 - $74	15.0
$75 and over	25.0

* Source: Zamoff, R. B. and Lyle, J. R. Assessment of Day Care Services and Needs at the Community Level: Mt. Pleasant. Washington, D. C.: The Urban Institute, 1971, Table 6, p. 16.

TABLE A-3

AVERAGE WEEKLY COST MOTHERS WOULD BE WILLING TO PAY FOR DAY CARE AS PROPORTION OF EXPECTED AVERAGE WEEKLY EARNINGS BY INCOME OF HOUSEHOLD, FOR MOTHERS NOT WORKING FULL-TIME (N=136)*

Average Weekly Household Income Per Capita	%
$0 - $14	32.0
$15 - $29	28.0
$30 - $44	25.0
$45 - $59	24.0
$60 - $74	21.0
$75 and over	31.0

* Source: Zamoff, R. B. and Lyle, J. R. Assessment of Day Care Services and Needs at the Community Level: Mt. Pleasant. Washington, D. C.: The Urban Institute, 1971, Table 8, p. 18.

TABLE A-4

COMPARISON OF DAY CARE ARRANGEMENTS USED AND PREFERRED FOR CHILDREN UNDER AGE 3 AND BETWEEN AGES 3 AND 6*

Arrangement	Under 3		Between 3 and 6	
	Used %	Preferred %	Used %	Preferred %
Other member of household	25.8	16.3	40.2	24.6
Relative or friend from outside household	31.5	18.3	28.0	13.6
Hired sitter in own home	13.5	16.3	12.2	8.5
Hired sitter outside home	20.2	4.8	11.0	1.7
Family day care home	6.7	19.2	6.1	11.9
Group day care home	2.2	6.7	2.4	11.9
Day care center	0.0	18.3	0.0	28.0
Total	89	104	82	118

*Based upon answers provided by 89 respondents with children under age three, and 82 respondents with children between ages three and six, who are using some type of day care arrangement, and upon answers provided by 104 respondents with children under age three, and 118 respondents with children between ages three and six, who would prefer to use some type of day care arrangement.

Source: Zamoff, R. B. and Lyle, J. R. Assessment of Day Care Services and Needs at the Community Level: Mt. Pleasant. Washington, D. C.: The Urban Institute, 1971, Table 12, p. 21.

TABLE A-5

Working Mothers' Preferences for Types of Child Care*

Type of Care	Percentage Giving a High Rank
Mother stays home herself	75%
Babysitter who comes in	61%
Child goes to babysitter's home	59%
Child goes to day care center	36%
Child goes to relative's home	38%
Relative who comes in	32%

*"High preference" means the alternative was ranked first, second, or third.
Source: Emlen, A. C., Donoghue, B. A., and LaForge, R. Child Care by Kith: A Study of the Family Day Care Relationships of Working Mothers and Neighborhood Caregivers. Portland: Tri-County Community Council, 1971.

TABLE A-6

Family Day Care Users' First and Last Choice
Among Types of Day Care Arrangements,
Friends vs. Strangers *

	Mother's First Choice			Mother's Last Choice	
	Friends	Strangers		Friends	Strangers
Non-relative out (FDC)	13%	34%	(+21%)	10%	5%
Non-relative in	41	32	(- 9%)	8	14
Day care center	13	14		41	38
Relative in	23	12	(-11%)	31	29
Relative out	10	8		10	14
	100%	100%		100%	100%
	N=39	N=65		N=39	N=65

* Source: Emlen, A. C., Donoghue, B. A. and LaForge, R. Child Care by Kith: A Study of the Family Day Care Relationships of Working Mothers and Neighborhood Caregivers. Portland: Tri-Community Council, 1971, Table 4.7, p. 65.

TABLE A-7

DISTRIBUTION OF CHILDREN WHO RECEIVE CHILD CARE BY SOURCE OF CARE DURING THE WORK DAY*

Source of Care	Children under 14 for Whom Care is Arranged	
	Average Percentage	Average Number**
Other member of the household	54%	2537
Friend or relative outside the household	13%	611
Hired sitter in respondent's household	14%	658
Hired sitter outside respondent's household	16%	752
Family or group day care center or home	3%	141
Total	100%	4699

* Source: State of Vermont Family Assistance Planning Unit and Mathematica, Inc. State of Vermont Family Assistance Program Planning Papers. Vol. 5. Report on the Baseline Survey and Cost Projections. Montpelier, Vt.: Authors, 1971, Table IX, p. 85. (Work day defined as 8:00 a.m. to 5:00 p.m.)

TABLE A-8

Type of Child Care Arrangements Made by Working Mothers *

	Percent														
	In-Home									Out-of Home					Total
Total Reporting Working Mothers	Child Cares for Self	Mother Cares for Child While Working	Father	Sibling	All Other Relatives	Neighbor, Friend	Baby-Sitter	Maid, Housekeeper	Total In-Home	Relatives	Neighbor, Friend, Baby-Sitter	Nursery School or Center	Recreation	Total Out-of-Home	Arrangements of Working Mothers
A. Based on Total Number of Reporting Working Mothers															
950	9	3	29	15	21	3	4	7	91	15	14	4	1	34	125[a]
B. Based on Total Number of Arrangements Reported by Working Mothers															
Total Arrangements 1183	7	3	23	12	17	3	3	5	73	12	11	3	1	27	100

[a] Some mothers report more than one arrangement.

* Source: Ruderman, F. A. Child Care and Working Mothers: A Study of Arrangements Made for Daytime Care of Children. New York: Child Welfare League of America, 1968, Table 49, p. 212.

APPENDIX B

INSERVICE TRAINING COMPONENTS*

Planning. In a structured curriculum, the classroom teacher is the essential element in the success of the program. Teachers do best with activities they have created for the use of the particular children enrolled in their program. Curriculum "scripts" of what to think, what to say, and how to put a particular goal into operation should be categorically rejected. Instead, the curriculum might offer a series of goals to guide classroom activity planning. Given this absence of prescription, planning becomes an extremely important function of the teacher. Successful planning means that the teacher works within the curriculum framework, is willing to focus her attention on key issues, and devotes sufficient time to the process of planning.

Planning in the structured preschool program is difficult because it requires a knowledge of the theoretical framework upon which the curriculum is based. For example, Piagetian developmental theory is difficult to comprehend and does not lend itself to rapid integration with the traditional concerns of the preschool teacher. Indeed, it is not directly concerned with education at all. Yet it gives depth and breadth to a program, and generalizations from it can give the teacher a way to attack most educational problems faced in the classroom.

Planning within a theoretical framework is also difficult because acceptance of the framework places restrictions on the teacher. What the theory has to say about the way a teacher should teach and the process by which a child learns limits the teacher's choice and utilization of curriculum activities. Not just anything will do. In fact, it is generally difficult for teachers new to a structured program to evolve teaching activities adequately related to the curriculum theory.

Planning provides an opportunity for the teacher to think about key issues of curriculum operation within the program. A major problem faced in any preschool is the use of time by both the children and the teacher. While ample

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*From Weikart, D. P. Ypsilanti Preschool Curriculum Demonstration Project 1968-1971. Ypsilanti, Mich.: High/Scope Educational Research Foundation, 1969.

opportunity should be provided for the individual child to explore curriculum-related materials on his own, a teacher must be very active in the pacing of the program to make full use of the time spent in school. Careful advance planning will assist the teacher in reaching this objective. What is the exact goal each activity is aimed at? What are the indications that each youngster has attained the level of academic performance appropriate to his overall development? What simpler or more difficult alternative activities are ready for possible use? What are the key words and skills that all of the staff, teachers and aides, will seek to employ during a particular unit of curriculum focus? Advance planning gives the basic plan of action to be followed by all staff. It "tags" waste time which can be eliminated, as when groups of children stand in line waiting to go somewhere or nowhere.

Planning provides occasion to focus on elements that may be overlooked when the "teacher is playing it by ear." For example, how many decisions can be made by each child during the activity being offered? Does the planned activity permit each child to be actively involved so that he learns by doing? Making pancakes on an open hotplate can be designed, with adequate planning, to give each child a chance to actively participate in the steps involved. For example, if each child mixes his own batter in his own cup, he has many decisions to make; on the other hand, a cake placed carefully in an oven by the teacher or a single child does not provide the opportunity for decision making by each individual in the group.

Planning also permits the teacher to build in opportunities for children to "be in charge," to direct themselves, and to teach each other: "John, you made the first pancake, you help Mary with the second." Now John has to make many decisions on how to help Mary.

Through planning, an educational focus may be given to all classroom problems, including discipline. The classroom environment and routine, correctly implemented, structure the child's behavior; that is, areas of activity are clearly defined for the child, and he knows what he can or cannot do within an area. The routine clearly tells him what is going to happen and when it is going to happen. The most important question asked during a planning session is, How can the instructional program be adapted to the level at which a particular child is operating? With this kind of focus, there is seldom any need for additional disciplinary measures.

Given the range and importance of the teacher's planning responsibilities, it is obvious that sufficient time for preparation must be allotted to her in the weekly work schedule. Plans should be prepared at least one week in advance. Time for evaluating the results of the plans should be included in the planning-documenting system.

In actual program operation there is usually resistance from the staff to detailed planning. It is easier to respond to the myriad day-to-day problems as they occur than to allot adequate time for planning. Basically, a staff member must learn to let the bulletin board go, avoid that extra administrative nicety, and focus directly on program goals. Planning in detail by teachers is the most essential component of successful preschool operation. In is a difficult task, but it is the only way to obtain the desired levels of intellectual growth in young children.

Team teaching. Teachers, aides, and volunteers working together in a classroom and sharing educational goals, methods, and outlook constitute a teaching team.

On the whole, a preschool classroom staff functioning in a team teaching setting is in a better position to produce superior programming than a staff working within a clearly defined hierarchy. The general tendency of any project designed for efficient operation is to organize staff into levels of professional responsibility. This "table of organization" may be a natural outcome of professional experience and aspirations and a need for clear-cut assignment of responsibility, but it may also prevent successful programming. In a preschool operation it is essential that all members of the staff attend to the problems of education within the preschool classroom. The teaching team should be the center of an ongoing forum where the staff can discuss curriculum theory and adjust the curriculum to the individual needs of the children. The teaching team itself can monitor the teaching behavior of each member, develop new and creative activities in accordance with curriculum theory, and in general focus upon the key issues that must constantly be kept before the total staff.

When a hierarchical type of preschool staff model (with each staff member assigned a clear-cut function along levels of professional responsibility) is the result of group planning, subject to ongoing group decision making, superior programming may result. On the other hand, if the organization results in a you-don't-criticize-me-and-I'll-not-criticize-you attitude, then the program will deteriorate. For example, one such preschool project had four teachers

handling a group of twenty-eight children. The teachers agreed to differ in their approaches and curriculum methods. What developed was serial teaching; first one teacher, then another, would conduct the class, and an implicit agreement was reached not to do anything that would upset any other teacher. That is not true team teaching. A better alternative is for the team to develop parallel teaching activities: teachers and aides teach simultaneously, and all work from a master plan developed during the planning sessions and drawn from the best thinking the group can produce.

It is essential that team teaching be used as the basis for mutual development and program improvement. How do we best use this idea next week? What are the adjustments we can make for Charles and Mary? Will you observe me when I try this new classification lesson? Will you help me think of two more activities like this one at the index level? Team teaching is difficult because it is hard to turn differences of opinion about school operation into constructive program development and self-education. It is hard to avoid personality clashes and authority and control competition. Yet it is the struggle to produce a competent and integrated program that will result in a superior preschool. Smooth and agreeable operation seems to produce a program that is dull in application and has minimal stimulation for and limited impact upon both the children and the staff. Somehow, the struggle to be effective, when focused on the child and his educational needs in the preschool situation, is what produces success. Problems provide the material that engenders superior thinking on the part of concerned staff.

A functioning team is an excellent source of inservice training. Teachers working together have an ideal opportunity to observe children responding to specific lesson and program ideas. They begin to specialize in curriculum areas of special concern to them, and the information thus gained is passed on to the others in the program, creating an intellectual challenge directly related to real concerns of the teaching staff. The constructive criticism that results will lead to improved teaching performance.

Classroom aides must be included in this process of give and take. Aides frequently do not have an extensive formal education, and often their expectations for the children differ from those of the teachers, especially in the area of classroom discipline. The task of honestly explaining the rationale for the classroom program and the concrete extension of theoretical ideas into actual practice are excellent learning experiences for both aides and teachers.

Teams of teachers and aides who have developed an adequate system of operation permitting honest and open personal relationships and candid appraisal of program implementation have developed a powerful tool. As mentioned above, the team can be the center of a forum for discussion of curriculum theory. Reading Piaget sounds like a difficult task, and it is, but discussion of curriculum ideas derived from this reading can generate excitement about classroom teaching and whole new realms of productive activities.

Supervision. Adequate supervision is the most essential ingredient of the preschool staff model. Effective planning with careful focus on classroom educational problems and team teaching that fully implements the plans are made possible through adequate supervision. Supervision provides support to the teaching staff through assistance with classroom educational and operational problems, inservice training in the curriculum theory, "advice and comfort" in coping with the administrative structure, and direct facilitation of decision making. The supervisor should be an experienced teacher who has learned the curriculum through inservice training and direct experience in the classroom.

The supervisor is not an administrator and spends little time in any administrative function. This restriction is absolutely critical. If the supervisor must give time to administrative matters such as attendance, staff policies, community liaison, ordering supplies, then she will not be able to provide the support necessary for successful operation of the program.

While the supervisor must fend off both the temptation and the pressure to be involved in administrative work, it is important for her to present the teaching problems to the administrative group. The supervisor must be willing to speak out for the team and to identify forcefully to the administrators the problems that the teachers feel are real. For example, one problem that a group of preschool teachers faced in a small rural schoolhouse was rodents in the building. The administrators thought the problem was (a) to be expected in a small rural school, (b) typical--you can't keep them out anyway, (c) short term--when it gets cold they won't be so active, and (d) just like a bunch of women to complain about a mouse or two. The supervisor was the individual who said that, regardless of all the "masculine" reasons office-bound administrators wanted to offer, the problem was real for the team and therefore it had to be resolved. The "rodent invasion" was actually never satisfactorily resolved, but from the teachers' point of view the fact that an effort was finally made by the administrators was sufficient to satisfy them.

The major task of the supervisor is to give direct assistance to the classroom team by underscoring the real problems in the classroom. To accomplish this goal she reviews the plans the teachers have prepared, observes in the classroom for extended periods of time, and arranges for videotapes to be taken of key lessons. The supervisor can raise questions for the staff about the program operation, planning, and teaching functions. In addition, she is the "referee" for the many problems within the team, bringing the difficulties out into the open rather than allowing them to be smoothed over; since genuine program difficulties with individual children and among staff are the basis for program improvement, to smooth them over is to avoid the opportunity they provide.

From the knowledge and overview the supervisor gains in giving direct assistance to the classroom team, an adequate inservice training program can be developed specifically for that team. Discussion of lesson plans and application of those plans lead naturally into discussion of the theory the curriculum is based on. Demonstration teaching by the supervisor can give team members an opportunity to watch their children reacting to planned curriculum lessons. The videotapes, while devastating at first to anyone who has not seen himself on tape before, can serve as an excellent training device for teachers. The supervisor can use the occasion to focus upon teaching problems and introduce solutions from the curriculum teaching framework. There is little need to bring in "outside experts" throughout much of this inservice training. A well supervised staff that actively questions, that constantly searches for ways to be more effective with children by watching their actual behavior within the classroom setting, and that takes an honest look at themselves and their commitment to planning team teaching, has ample knowledge and resources to ask the right questions and develop the right activities within the framework of the curriculum.

The role of the supervisor is often accepted with considerable hesitation by administrators, teachers, and supervisors themselves. Just why is the term "supervisor" used and doesn't that imply an authoritarian role? Actually, any term can be used, and some projects use such terms as "program assistant" or "curriculum assistant." However, the function is the same: the supervisor is clearly responsible for holding the teachers to the instructional tasks at hand, raising appropriate questions, and helping teachers find educational solutions within the curriculum framework. The supervisor serves as the balance wheel in the operation of the curriculum, maintaining, through supportive services, dedication, and knowledge, the momentum that the staff has generated.

Conclusions. Long-term educational impact is an unusual outcome for preschool programs. While most programs look good from the outside because the children seem involved, because teachers can state how they are meeting the needs of the children, because parents say they think the program is good for their children, and because outside consultants find that all the appropriate words are being used, such as, "meeting the child's needs and providing for his social and emotional growth," the facts are that most programs do not produce any lasting impact upon most children. For a solution to this vexing problem, the search has been directed toward new preschool curricula. But, in this section, the staff model has been presented as a critical aspect of any successful operation. A good curriculum is important, but the way in which the curriculum is put into operation determines the outcome. Planning is often seen by professional teachers (and others) as harking back to student teaching days. Planning in detail with team members and then discussing the plans with a supervisor sounds as though one never went to college or learned anything about children. Yet it is just this exposure to constant self-development and supervision that protects the program, the children, and teachers from stagnation. Supervision is frequently left out of a "good" operation when teachers have learned to cope with almost insurmountable problems. The point at which failure begins, though, is when education shifts to training, and problem solving to routine performance.

FORM A
IDENTIFYING DATA
Date Collected _____

APPENDIX C*

THIS FORM IS FILLED OUT BY INTAKE WORKER AND RETAINED IN LOCAL PROJECT FILES

PERSON IN PROGRAM

- Person's Name _____
- Address _____
- Phone Number _____
- Sex: Male _____ Female _____
- Birthdate _____
- Date of entering program _____
- Who referred you to the program (check)
  Friend _____ Self _____ Relative _____
  Doctor _____ Minister _____
  Other Agency: School _____ Clinic _____ Social Agency _____
  Other _____

APPLICANT NUMBER __/___/____/_

- 00/ State
- 000/ Project Number (as assigned by ARC)
- 0000/ Person Number in Project
- 0/ Other Information _____

PARENT IDENTIFICATION

- Mother's Name _____
- Father's Name _____
- Does Father live at home now: Yes _____ No _____
- If both or either parent are not at home, where are they now
- Mother _____
  Father _____

DISTANCE TO CENTER

_____

MEANS OF TRANSPORTATION

_____

EMERGENCY INFORMATION

- Place where Mother can be reached, if necessary (if different from above) _____
  _____ Phone Number _____
- Place where Father can be reached, if necessary (If different from above) _____
  _____ Phone Number _____
- Other persons to call in case of emergency:
  Day _____ Phone Number _____
  Night _____ Phone Number _____
  Medical _____ Phone Number _____
- If neither parent can be reached, in case of emergency, I give my permission for members of the staff to secure medical care for my child.
  Parent's Signature _____

DATA COLLECTION

- Informant _____
- Neighborhood _____
  Area _____
  Directions to Home _____
- Name of Interviewer _____

* Obtained from The Appalachian Regional Commission, 1666 Connecticut Ave., Washington, D. C., 20235 - Source Unknown

(over)

PERSONS LIVING AT HOME

- Men and Boys Living at Home

	Name	Age	Relationship
M1			
M2			
M3			
M4			
M5			
M6			

- Women and Girls Living at Home

	Name	Age	Relationship
F1			
F2			
F3			
F4			
F5			
F6			

TO BE FILLED OUT BY INTAKE WORKER ON DOUBLE WORKER INTERVIEW

FAMILY NUMBER B1

Applicant Number

Date Collected

INTERVIEWER FOR CONFIDENTIALITY B1

CHILD IN PROGRAM

Sex: Boy ... Girl ...

Birthdate

Date of Entering Program

TOTAL NUMBER OF PERSONS living in home besides parents or guardians. Include brothers and sisters, relatives, and others:

MALES

Living at Home

	Age	Highest Grade Completed in School: Some Grade School (K-5th)	Completed Grade School (6th)	Some High School (7th-11th)	Completed High School (12th)	Technical Training	Some College (1,2,3 yrs.)	Completed College	Professional Training	No Information	Is he working now? Yes	No	If Not Working, Why? In School or In Training—1	No Job Available—2	Health Reasons—3	Too Old—4	Other (Specify)—5
M 1	35-36	36-1	36-2	36-3	36-4	36-5	36-6	36-7	36-8	36-9	37	37	38-1	38-2	38-3	38-4	38-5
M 2	39-40	41-1	41-2	41-3	41-4	41-5	41-6	41-7	41-8	41-9	42	42	43-1	43-2	43-3	43-4	43-5
M 3	44-45	46-1	46-2	46-3	46-4	46-5	46-6	46-7	46-8	46-9	47	47	48-1	48-2	48-3	48-4	48-5
M 4	49-50	51-1	51-2	51-3	51-4	51-5	51-6	51-7	51-8	51-9	52	52	53-1	53-2	53-3	53-4	53-5
M 5	54-55	56-1	56-2	56-3	56-4	56-5	56-6	56-7	56-8	56-9	57	57	58-1	58-2	58-3	58-4	58-5
M 6	59-60	61-1	61-2	61-3	61-4	61-5	61-6	61-7	61-8	61-9	62	62	63-1	63-2	63-3	63-4	63-5

FEMALES

Living at Home

F 1	13-14	15-1	15-2	15-3	15-4	15-5	15-6	15-7	15-8	15-9	16	16	17-1	17-2	17-3	17-4	17-5
F 2	17-18	20-1	20-2	20-3	20-4	20-5	20-6	20-7	20-8	20-9	21	21	22-1	22-2	22-3	22-4	22-5
F 3	23-24	25-1	25-2	25-3	25-4	25-5	25-6	25-7	25-8	25-9	26	26	27-1	27-2	27-3	27-4	27-5
F 4	28-29	30-1	30-2	30-3	30-4	30-5	30-6	30-7	30-8	30-9	31	31	32-1	32-2	32-3	32-4	32-5
F 5	33-34	35-1	35-2	35-3	35-4	35-5	35-6	35-7	35-8	35-9	36	36	37-1	37-2	37-3	37-4	37-5
F 6	38-39	40-1	40-2	40-3	40-4	40-5	40-6	40-7	40-8	40-9	41	41	42-1	42-2	42-3	42-4	42-5

34	35	36	37	38	
39	40	41	42	43	
44	45	46	47	48	
49	50	51	52	53	
54	55	56	57	58	
59	60	61	62	63	
			B	2	
			1	2	
DUP. APP. #				3-12	
13	14	15	16	17	
18	19	20	21	22	
23	24	25	26	27	
28	29	30	31	32	
33	34	35	36	37	
38	39	40	41	42	

CHILD'S RELATIONS WITH OTHERS LIVING AT HOME, ASIDE FROM PARENTS

Is your child especially fond of any one person at home? Yes ... No ...

Who is it? Aunt ... Uncle ... Grandfather ... Grandmother ...

Brother ... Sister ... Other ...

How do you explain this good relationship? ...

If the child's natural father is not living at home, is there a man who treats your child like a father? Yes ... No ...

Who is he? Step-father ... Relative ... Family friend ...

Neighbor ... Teacher ...

How much time does he spend with your child? Daily ... Few hours a week ...

Weekends ... Holidays or Vacations ...

43	
44 (1-7)	
45	
46 (1-5)	
47 (1-4)	

B 2

DUP. APP. N

MOTHER OR FEMALE GUARDIAN

- Was she born in this country? Yes____ No____
- When was she born (date)____
- Was she born in this state? Yes____ No____
- When you think of her childhood, in what kind of area do you think she was raised:

  Large City____ Suburb____ Town____ Country____
- Is she presently married____ unmarried____ widowed____ divorced____ separated____
- Has she been married before? Yes____ No____

  If Yes, how many times?____
- What is the highest grade that she completed? (Check proper category below)

  ____ Some Grade School (K-5th)
  ____ Completed Grade School (6th)
  ____ Some High School (7th-11th)
  ____ Completed High School (12th)
  ____ Technical Training
  ____ Some College (1,2,3 yrs)
  ____ Completed College
  ____ Professional Training
  ____ No Information
- Is she working outside of her home at present? Yes____ No____

  If she is, does she work full time____ part time____

  If she is, what does she do: (Check proper category below)

  ____ Professional or Technical (as Nurse, Teacher)
  ____ Arts and Crafts
  ____ Business (as Sales, Insurance, Clerical)
  ____ Skilled Work (as Factory, Seamstress)
  ____ Unskilled (as Domestic Service, Child Care)
  ____ Retired
  ____ No Information

  If not working, is she away from home much of the time? Yes____ No____

  If yes, what is she doing? Is she in training? Yes____ No____

  Looking for employment? Yes____ No____

  Other activities? Yes____ No____
- Is she the child's natural mother Yes____ No____
- If she is not the child's natural mother:

  Approximately when did the child stop living with natural mother: In last month____ In last 6 months____

  1 Year ago____ 1-2 years ago____ More than 2 years ago____ Never lived with mother____

  No information____

  Is she a relative of the child? Yes____ No____

  If yes, is she: Grandmother____ Aunt____ Sister____ Other (Specify)____

  Approximately when did she begin taking care of the child: In last month____ In last 6 months____

  1 year ago____ More than 1 year ago____ When child was born____

  What was the birthdate of the child's natural mother: Date____ No information____

B 3

DUP. APP. #

FATHER OR MALE GUARDIAN

Was he born in this country? Yes _____ No _____

When was he born (date) _____

Was he born in this state? Yes _____ No _____

When you think of his childhood, in what kind of area do you think he was raised:

Large city _____ Suburb _____ Town _____ Country _____

What is the highest grade that he completed? (Check proper category below)

_____ Some Grade School (K-5th)
_____ Completed Grade School (6th)
_____ Some High School (7th-11th)
_____ Completed High School (12th)
_____ Technical Training
_____ Some College (1,2,3 yrs)
_____ Completed College
_____ Professional Training
_____ No Information

What kind of work does he do? (Check proper category below)

_____ Professional or Technical (as Engineer, Teacher)
_____ Business (as Proprietor, Insurance, Sales)
_____ Skilled Work (as Machine Ship, Craftsman)
_____ Mining
_____ Farming
_____ Unskilled (as Construction, Truck driver)
_____ Military Service
_____ Retired
_____ Non Information

Does he work full time _____ part time _____

If the child's natural father is not living at home:

How old was child when he left _____

Has he remarried? Yes _____ No _____

Does your child see him at all? Yes _____ No _____

If yes, how often? Daily _____ Weekends _____ Occasionally (holidays, special times, Christmas) _____

Seldom _____

If the child is being raised by a male guardian or stepfather, when did this man join the family? In last month _____

In last 6 months _____ 1 year ago _____ 2 years ago _____ Over 2 years ago _____ When child was born _____

B 4

FAMILY BACKGROUND

- Does family go to church regularly? Yes ____ No ____
- Does family participate in any other church activities? Yes ____ No ____
  If yes, what are they ____
- Does the family participate in other community groups on a regular basis? Yes ____ No ____
  If yes, what groups are they? ____
- To which ethnic group does the child belong? Caucasian ____ Black ____ Hispanic ____ American Indian ____
  Asian ____ Other ____
- Which languages are spoken at home?
  Major language: English ____ Spanish/Portuguese ____ Other European ____
  An African language ____ An Asian language ____ Other ____
  Other languages: English ____ Spanish/Portuguese ____ Other European ____
  An African language ____ An Asian language ____ Other ____

FAMILY FINANCES

- Who is the main wage earner in home: Mother ____ Father ____ Aunt or Uncle ____ Grandparent ____
  Other (specify) ____
- Is there any family income from any of these sources?

Source of Income	Mother	Father	Aunt/Uncle	Grandparent	Other
1. Work					
2. Retirement					
3. AFDC					
4. Other Welfare					
5. Other Sources					

- What is the total family income each month (including welfare, pensions, etc.)? Up to $50 ____ 51-100 ____
  101-200 ____ 201-300 ____ 301-400 ____ 401-500 ____ Over 500 ____

CURRENT RESIDENCE

- House ____ Apartment ____
  Own ____ Rent ____
- Number of families in building ____
- Is there running water? Yes ____ No ____
  Is toilet: outside ____ inside ____ none ____
- Does child sleep alone in own bed? Yes ____ No ____
  If no, with whom: Mother ____ Father ____ Brother ____ Sister ____ Grandparent/Male ____
  Grandparent/female ____ Aunt ____ Uncle ____ Other ____
- Does child sleep in his own room? Yes ____ No ____
  With whom: Mother ____ Father ____ Brother ____ Sister ____ Grandparent/male ____ Grandparent/female ____
  Aunt ____ Uncle ____ Other ____ Alone ____
- Does the family feel the present residence is satisfactory? Yes ____ No ____

PAST RESIDENCE

- How long has family lived at present address? Less than 6 months ____ Less than 1 year ____ 1-3 years ____
  Over 3 years ____
- How many residences has family had in the last 5 years ____

[illegible] TEACHER, NURSE OR [illegible] WORKER AT EACH REPORTING PERIOD

FORM C
DAILY ROUTINES C 1
Applicant Number
Date Collected

DO NOT WRITE FOR OFFICE USE ONLY C 1

FEEDING

- Has this child had any feeding or appetite problems? Yes ____ No ____
  If yes, what are they: Won't eat, refuses food ____ Overeats compulsively ____ Picky, poor appetite, only eats certain foods ____ Food fads ____ Refuses to eat with others at table ____ Pica or [illegible] ____ Other ____
- Does the child get a vitamin/mineral preparation regularly? Yes ____ No ____
  Which one ____
  Why: Doctor advised ____ Mother selected ____ Friend suggested ____ Other (Specify) ____
- Yesterday's Menu:
  What did the child have for breakfast? ____
  - Did he have breakfast? Yes ____ No ____ Breakfast was adequate ____ Not adequate ____
  - With whom did he eat? Family group ____ brothers or sisters ____ alone ____ others ____

  What did he have for lunch? ____
  - Did he have lunch? Yes ____ No ____ Lunch was adequate ____ Not adequate ____
  - With whom did he eat; Family group ____ brothers or sisters ____ alone ____ others ____

  What did he have for supper? ____
  - Did he have supper? Yes ____ No ____ Supper was adequate ____ Not adequate ____
  - With whom did he eat? Family group ____ brothers or sisters ____ alone ____ others ____
- Where does he usually eat? (Check all appropriate categories)
  Home: In kitchen ____ In dining room ____ In front of T.V. ____ In bedroom ____
  On table ____ On the floor ____ Other (Specify) ____
  Not home ____

SLEEPING

- Does this child have any sleep problems? Yes ____ No ____
  If yes, what kind: Refuses to go to bed on schedule ____ Has to have someone sit at bedside until asleep ____
  Fears of going to sleep ____ Nightmares, severe anxieties ____ Bed wetter ____ Frequent awakening during night ____ Won't sleep by self ____ Other (Specify) ____
- How many hours does he sleep at night? ____ hours
- Does he take a morning nap? Yes ____ No ____
- Does he take an afternoon nap? Yes ____ No ____
- Does he prefer to sleep on: Stomach ____ Back ____

ELIMINATION

- Has training for bowel control been started? Yes ____ No ____
  How old was child when toilet training started: Less than 9 months ____ 9-12 months ____ 12-15 months ____
  15-18 months ____ 18-24 months ____ 24-28 months ____ 28-32 months ____ 32+ months ____
  How old was child when training was completed: Less than 18 months ____ 18-24 months ____ 24-32 months ____
  32-36 months ____ 36-40 months ____ 40+ months ____
- Was (is) toilet training difficult? Yes ____ No ____
- Has this child any toilet problems? Yes ____ No ____
  If yes, what are they: Enuresis ____ Constipation ____ Fear of strange toilets ____ Smears ____
  Excessively concerned with cleanliness ____ Eats Dirt ____ Other (Specify) ____

WALKING

- Is this child walking? Yes ____ No ____
  If so, at what age did he start? Before 6 months ____ 6 months-1 year ____ 1-1½ years ____ 1½-2 years ____
  2-3 years ____ Not started yet ____

C 2

SEPARATION

- Has this child had any experience of being separated from the mother for any length of time, such as visiting grandparents, child or mother being hospitalized, having another caretaker while mother works, etc.? Yes _____ No _____
- Describe the experiences:

1. Why was he separated? He was hospitalized _____ Visiting _____ Mother away _____ Other _____
   How old was he at the time? 0-6 months _____ 6 months-1 year _____ During second year _____ During third year _____
   How long was the separation? Less than a week _____ 1-2 weeks _____ 2 weeks-1 month _____ More than 1 month _____
   Who took care of him during the separation? Grandparent _____ Other relative _____ Neighbor _____ Baby sitter _____ Other _____

2. Why was he separated? He was hospitalized _____ Visiting _____ Mother away _____ Other _____
   How old was he at the time? 0-6 months _____ 6 months-1 year _____ During second year _____ During third year _____
   How long was the separation? Less than a week _____ 1-2 weeks _____ 2 weeks-1 month _____ More than 1 month _____
   Who took care of him during the separation? Grandparent _____ Other relative _____ Neighbor _____ Baby sitter _____ Other _____

- How did this child react to being cared for by adults other than the parents? If he has not had a long-term experience as described above, how has he reacted to staying with neighbors or baby-sitters for shorter periods?

  Easily adjusts _____ Adjusts with difficulty _____ Poorly adjusts _____ No experience _____
- Has this child had any other experience with group care? Yes _____ No _____
  If so, where? _____

TEACHER'S RATING OR HOMEVISITOR'S RATING OF CHILD

- Physical activity: typical or advanced for age _____ atypical _____
- Social activity: typical or advanced for age _____ atypical _____
- Speech activity: typical or advanced for age _____ atypical _____
- Thinking processes: typical or advanced for age _____ atypical _____
- Check following:

  Moody _____ Not moody _____
  Cries a lot _____ Does not cry _____
  Acts babyish _____ Acts his age _____
  Requests constant care _____ Takes care of self for Age _____
  Will not do as told _____ Cooperates _____

FORM D
BIRTH HISTORY AND HEALTH OF CHILD - D 1
Applicant Number _____
Date Collected _____

DO NOT WRITE. FOR OFFICE USE ONLY. D 1

DATA TO BE COLLECTED BY NURSE OR PHYSICIAN

BIRTH HISTORY

- In what city was this child born _____
- What was his birth weight ____ LBS. ____ OZS. length at birth ____ INCHES
- Was he born in a hospital? Yes ____ No ____
- Did mother have an obstetrician? Yes ____ No ____
  If not, who delivered: Midwife ____ Relative ____ Friend, neighbor ____ Other ____ No Information ____
- Pre-natal care began: None ____ 1-3 Months ____ 4-6 Months ____ 7-9 Months ____
- Did mother want this baby? Yes ____ No ____
- Has she ever attempted to plan the birth of her children? Yes ____ No ____
  Is she trying to plan now? Yes ____ No ____
- Is this child adopted? Yes ____ No ____
  If yes, does she plan to tell her child about adoption? Yes ____ No ____

- Were instruments used? Yes ____ No ____
- Were there any complications at birth? Yes ____ No ____
  If yes, which one(s): Metabolic Diseases ____ Paralysis ____
  Convulsions ____ Birth Defects ____
  Breathing Problems ____ Birth Injuries ____
  Cyanosis (blue baby) ____ Other (Specify) ____
  Jaundice (Yellow baby) ____
- Incubator: not used ____ used 1 day ____ over 1 day ____ over 1 week ____

MOTHER'S PREGNANCY HISTORY

- How many previous pregnancies has she had? ____
- Have any children been still born? Yes ____ No ____
- How many miscarriages or abortions? ____
- How many children are living? ____
- How many children were born alive and are no longer living? ____
- Age and cause of death of each child under 10 who is no longer living:

Sex of Child	Age at Death	Cause of Death: Illness Disease	Accident, Injury, Trauma	Other (Specify)
M F				
M F				
M F				
M F				
M F				

- Were there any special problems or complications during pregnancy with this child? Yes ____ No ____
  If yes, please complete sections on reverse side: Complications of Pregnancy (Mother's Health During Pregnancy, Infectious Diseases & Illnesses and Labor and Delivery.)

D 2

COMPLICATIONS OF PREGNANCY

Mother's Health During Pregnancy	None (Occurrence)	Mild (Occasional. Occurred a few times)	Moderate (Occurred from time to time; was persistent problem)	Severe (Constant problem; occurred frequently; always bothered by it)
• Nausea, vomiting	12-1	12-2	12-3	12-4
• Anemia	13-1	13-2	13-3	13-4
• Weight gain	14-1	14-2	14-3	14-4
• Edema swelling	15-1	15-2	15-3	15-4
• Pus in urine	16-1	16-2	16-3	16-4
• Convulsions	17-1	17-2	17-3	17-4
• Accident, fall	18-1	18-2	18-3	18-4
• Bleeding	19-1	19-2	19-3	19-4
• Malnourished	20-1	20-2	20-3	20-4
	21-1	21-2	21-3	21-4

12 (1-4)
13 (1-4)
14 (1-4)
15 (1-4)
16 (1-4)
17 (1-4)
18 (1-4)
19 (1-4)
20 (1-4)
21 (1-4)

Infectious Diseases & Illnesses -- Trimester of Occurrence

	None	1-3 mo.	4-6 mo.	7-9 mo.
• German Measles	22	23	24	25
• Mumps	26	27	28	29
• Chicken Pox	30	31	32	33
• Influenza	34	35	36	37
• Gonorrhea, Syphilis	38	39	40	41
• Elevated temperature, 102°+	42	43	44	45
• Toxoplasmosis	46	47	48	49
• Meningitis	50	51	52	53
• Tuberculosis	54	55	56	57
• X-ray	58	59	60	61
• Bleeding	62	63	64	65
• Other (Specify) _____	66			

22 23 24 25
26 27 28 29
30 31 32 33
34 35 36 37
38 39 40 41
42 43 44 45
46 47 48 49
50 51 52 53
54 55 56 57
58 59 60 61
62 63 64 65
66

Labor and Delivery

- Type of Delivery: Natural ____ (67-1) Caesarian Section ____ (67-2) Medically delayed ____ (67-3) Mid or high forceps ____ (67-4)
  Other (Specify) ____ (67-5)
- Duration of Labor: Less than 2 hours ____ (68-1) 2-8 ____ (68-2) 8-16 ____ (68-3) 16-24 ____ (68-4) 24-36 ____ (68-5) Over 36 ____ (68-6)
- Presentation: Vertex (Head first) ____ (69-1) Frank Breech (Buttocks first) ____ (69-2) Footling (Foot first) ____ (69-3)
  Other (Specify) ____ (69-4)
- Condition of mother during labor: Normal ____ (70-1) Abnormal bleeding ____ (70-2)
  Other (Specify) ____ (70-3)
- Medication-Analgesia: None ____ (71-1) Light ____ (71-2) Normal amount ____ (71-3) Heavy (completely out) ____ (71-4)
- Anesthesia: Spinal ____ (72-1) Ether (GOE) ____ (72-2) NO_2 ____ (72-3) None ____ (72-4)
- Condition of baby during labor: None ____ (73-1) Low fetal heart ____ (73-2) Meconium ____ (73-3)
  Fast, or irregular heart beat ____ (73-4) Other (Specify) ____ (73-5)

67 (1-5)
68 (1-6)
69 (1-4)
70 (1-3)
71 (1-4)
72 (1-4)
73 (1-5)

D 3

DUP. APP. #

HEALTH OF CHILD

- Generally very healthy _____ Usually healthy _____ Often sick _____ Unhealthy _____
- Does this child have any handicaps? Yes _____ No _____
  If yes, what are they? Physical: Malformation of brain, spinal cord _____ Blind _____ Deaf _____ Cleft lip/palate _____ Metabolic (thyroid dysfunction, etc.) _____
  Neurological: Muscle weakness (atrophy or distrophy) _____ General Palsy, MS _____ Tumor _____
  Convulsions _____ Paralysis _____
  Mental defects: Mongolism _____ Microcephaly _____ PKU _____ Retarded _____
- Has child had any of these since last seen? Colds _____ Constipation _____ Ear ache _____ Hay Fever _____
  Upset Stomach _____ Diarrhea _____ Fever _____
- Has child had any of these since last seen? Measles _____ Chicken Pox _____ German Measles _____ Scarlet Fever _____
  Allergy-High Temperature over 103° _____ Worms _____ Anemia _____ Rickets _____ Sickle Cell Anemia _____
  Diabetes _____ Heart Disease _____ TB _____ Cancer _____ Rheumatic Heart _____ Liver Disease _____
  Ulcers _____ Other severe illnesses _____ Other minor illnesses _____
- Does the child take medicine every day? Yes _____ No _____
  For what condition? _____
- Child's present height (or length) in inches _____ Weight _____ LBS. Head Circumference _____ INCHES
- What is his Hematocrit _____ or Hemoglobin Count? _____

INJURIES

Has this child had any

- Fractured skull: No _____ Yes: under 1 yr. _____ 1-2 yrs. _____ 2+ yrs. _____
- Others (Specify, such as broken arms, legs, etc.) _____

NEUROLOGICAL DISEASES

- Seizures: No _____ Under 1 yr _____ 1-2 yrs. _____ 2+ yrs. _____
- Medication (Specify kind) _____
- Age last seizure _____

HOSPITALIZATIONS

- Neurological No _____ Yes _____
- Surgery No _____ Yes _____
- Other (Specify) _____
- Duration for each hospitalization

	None	1-5 days	6-13 days	14-21 days	over 21 days
(1)					
(2)					
(3)					
(4)					

- Total duration in hospital _____

D 4

DUP. APP. #

DOCTORS OR NURSES RATING

- On the whole, this child (person) appears
  - (1) healthy _____ unhealthy _____
  - (2) physical growth normal _____ abnormal _____
  - (3) development appropriate _____ inappropriate _____
  - (4) behaviorally responsive _____ unresponsive _____
  - (5) diagnostic impression if any
    none _____ physical illness _____ muscular defect _____ visual defect _____ auditory defect _____
    speech defect _____ neurological defect _____ mental defect _____ mental illness _____ nutritional _____

FORM E

SERVICES REPORT: INDIV — E 1 (1 2)

Applicant Number _____ (3-12)

Date Collected _____ (13-18)

DO NOT WRITE FOR OFFICE USE ONLY. E 1 (1 2)

3 4 5 6 7 8 9 10 11 12

13 14 15 16 17 18

TO BE FILLED OUT FOR EACH SERVICE RENDERED

- Type of Services (Check all appropriate categories)

Social Service _____ (19)

Psychological Service: Developmental Screening _____ (20)

Diagnosis _____ (21)

Treatment _____ (22)

Group _____ (22-1) Individual _____ (22-2)

Education: Group _____ (24-1) Individual _____ (24-2)

Nutrition: Food _____ (25) Instruction _____ (26)

Medical: Screening _____ (27)

Diagnosis _____ (28)

Treatment for Prevention _____ (29)

for Pathology _____ (30)

Delivery or Surgery _____ (31)

- Length of Time of the Visit: Under ½ hour _____ (32-1) ½-1 hour _____ (32-2) 2-3 hour _____ (32-3) 4 or more hours _____ (32-4)
- Place of Service: Home _____ (33-1) Family Day Care _____ (33-2) Day Care Center _____ (33-3) Clinic _____ (33-4) Hospital _____ (33-5)

Office _____ (33-6) School _____ (33-7) Other _____ (33-8)

- Services Supplied By (Check all appropriate categories)

- Staff:

Project Staff _____ (34)

Other Public Agency Staff _____ (35)

Private Agency Staff _____ (36)

Private Practitioner _____ (37)

- Specialists:

Social Worker (M.S.W.) _____ (38)

Social Worker (other) _____ (39)

Psychologist (Ph.D.) _____ (40)

Psychiatrist (M.D.) _____ (41)

Psychologist (other) _____ (42)

Social Service Aide _____ (43)

Certified Teacher _____ (44)

Teacher Aide _____ (45)

Non-Certified Teacher _____ (46)

Nutritionist or Dietician _____ (47)

Nutrition Aide _____ (48)

Physician

General Practitioner _____ (49) Specialist _____ (50)

Nurse Practitioner _____ (50)

Nurse (R.N.) _____ (51)

Vocational Nurse _____ (52)

Nurse's Aide _____ (53)

Health Aide _____ (54)

- Services Provided to: Child _____ (55) Brother(s) and/or Sister(s) _____ (56) Mother _____ (57) Father _____ (58)
- Services Referred By: Enrolled in Ongoing Program _____ (59) Self _____ (60) Other Agency or Professional _____ (61) Other _____ (62)
- Were Special Procedures, medications, devices, or foods recommended? Yes _____ (63) No _____ (64)
- Was child referred to another service? Yes _____ (65) No _____ (66)
- In the case of treatment services: Is the condition being treated? Yes _____ (67) No _____ (68)

Is the condition new _____ (69-1) or previously known _____ (69-2)

If previously known, was it previously treated? Yes _____ (70) No _____ (71)

Will continued treatment be needed? Yes _____ (72) No _____ (73)

Will continued treatment be available? Yes _____ (74) No _____ (75)

- Was child scheduled for a future appointment for this service? Yes _____ (76) No _____ (77)

19 20 21 22 22(1-2) 24(1-2) 25 26 27 28 29 30 31 32(1-4) 33(1-8) 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66(1-2) 67 68 69 70 71 72 73 74 75 76 77

APPENDIX D

FEASIBILITY STUDY FOR VIDEOTAPE PROGRAM DOCUMENTATION

There seems to be considerable consensus among High/Scope staff, OEO staff, and consultants, as well as among critics who have reviewed past social action experiments, that it is important to obtain "hard" descriptions of typical day-to-day activities in different experimental program types. Without such documentation it would be difficult, if not impossible, to replicate effective programs following the experiment, or to understand rudimentary relationships between the experimental treatments and the outcomes. Many new developments have occurred in recent years to make such a large observation and recording task possible: advances in unitizing and categorizing behavioral units, more accurate methods of determining reliability of observation, new statistical techniques for analyzing observation data, widespread availability of computers for handling the vast amounts of data that quickly accumulate, and advances in videotape machines and other electronic hardware that allow permanent recording of dynamic information.

In spite of all these new developments, no one has yet tried using "hard" documentation of social action programs on a large scale, and many problems remain. In order to discover some of the problems, a feasibility study was conducted using fixed cameras in a family day care home situation as well as in a day care center. In each setting a wide angle lens and a zoom lens were used at several different distances to tape the activities of children, and several staff reviewed the tapes to see how well it was possible to discern macro behaviors (such as location of children and adults in the room and large body movements) and micro behaviors (such as table play and other small motor activities, and verbal interactions). The matrix for the study is given below:

	VIDEO*		AUDIO	
	Wide Angle Lens	Zoom Lens	Near Camera	Near Children
MACRO BEHAVIORS				
MICRO BEHAVIORS				

* Videotape 6-7 minutes for each cell

Table D-1 presents the equipment used to videotape the day care activities, and Figures D-1 and D-2 present simple floor plans of the two locations, with tables summarizing the various camera and microphone placements and conditions. Positions are logged by the tape counter reading.

The preliminary results of the study have demonstrated the feasibility of some kind of videotape arrangement, but some of the problems relating to comprehensiveness of the coverage in a room, to very small movements, and to verbal interactions among children, have proven more difficult than at first anticipated. As expected, the day care home offers many rooms where children can play, and additional cameras would be needed in order to cover more than one room. Even within a room there were blind spots close to the camera, out of the angle of view, behind people and objects in the room, and too distant to obtain adequate resolution. In the majority of taped segments the voices were difficult to separate and impossible to link with individual children. In spite of all these problems the staff felt a surprising amount of information could be obtained from the tapes about ongoing activities. The observers agreed that for most purposes a fixed wide angle lens was best, used at a nominal distance of 12-15 feet (but useful from about 7 to 30 feet), and that more than one camera would be needed for adequate coverage of a large room.

Fixed cameras were examined because of the potentially low reactivity of a permanently mounted camera upon participants in the room, but in view of the problems encountered following individual children it seems useful to try another feasibility study using a portable, manned camera. This will increase the reactivity of observations, but will greatly improve the precision and thoroughness with which activities can be documented, including following children outside for play or on field trips when necessary. It is recommended that this be conducted before a final choice of methods is made.

TABLE D-1

EQUIPMENT USED IN FIXED CAMERA VIDEOTAPING FEASIBILITY STUDY

Sony Video Camera, (AVC-3000 @ Park's)
(AVC-3210 @ St. Luke's)
Sony 12.5mm f1.9 Wide-Angle Lens
Sony 16-64mm f1.9 Zoom Lens
Sony Condenser Microphone,
Panasonic 1/2 inch Videotape Recorder, NV3020
Cables, Stands, and Accessories

FIELD OF VIEW OF VIDICON CAMERA*

Distance	10 Feet		12 Feet		15 Feet		20 Feet	
Lens Focal Length	H	V	H	V	H	V	H	V
12.5mm	7.50	10.00	9.00	12.00	11.25	15.00	15.00	20.00
25mm	3.75	5.00	4.50	6.00	5.62	7.50	7.50	10.00
50mm	1.88	2.50	2.25	3.00	2.81	3.75	3.75	5.00
75mm	1.20	1.60	1.50	2.00	1.88	2.50	2.47	3.30

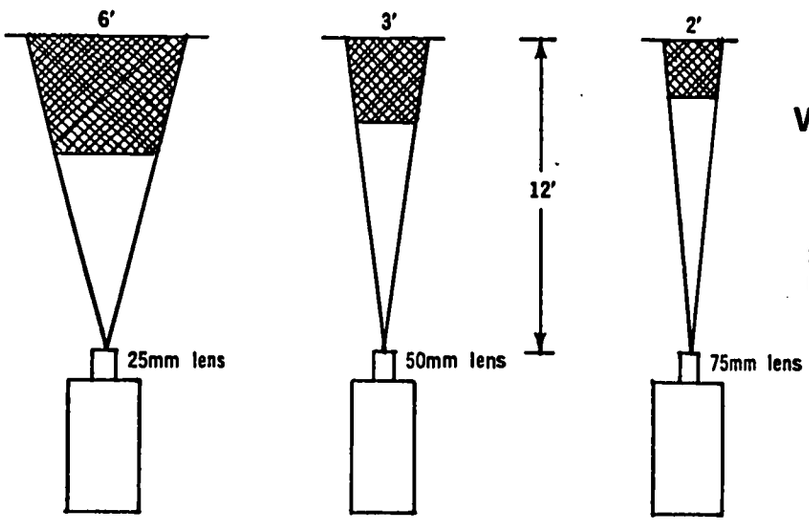
The horizontal and vertical field of view of any lens can be determined by the following:

$$W = \frac{A \times D}{FL}$$

$$H = \tfrac{3}{4} W$$

Where
W = Width of the field in feet
A = Width of the scanned area in inches
FL = Focal length of lens in inches
D = Distance from lens to subject

The scanned area of a vidicon is .5 inches wide.



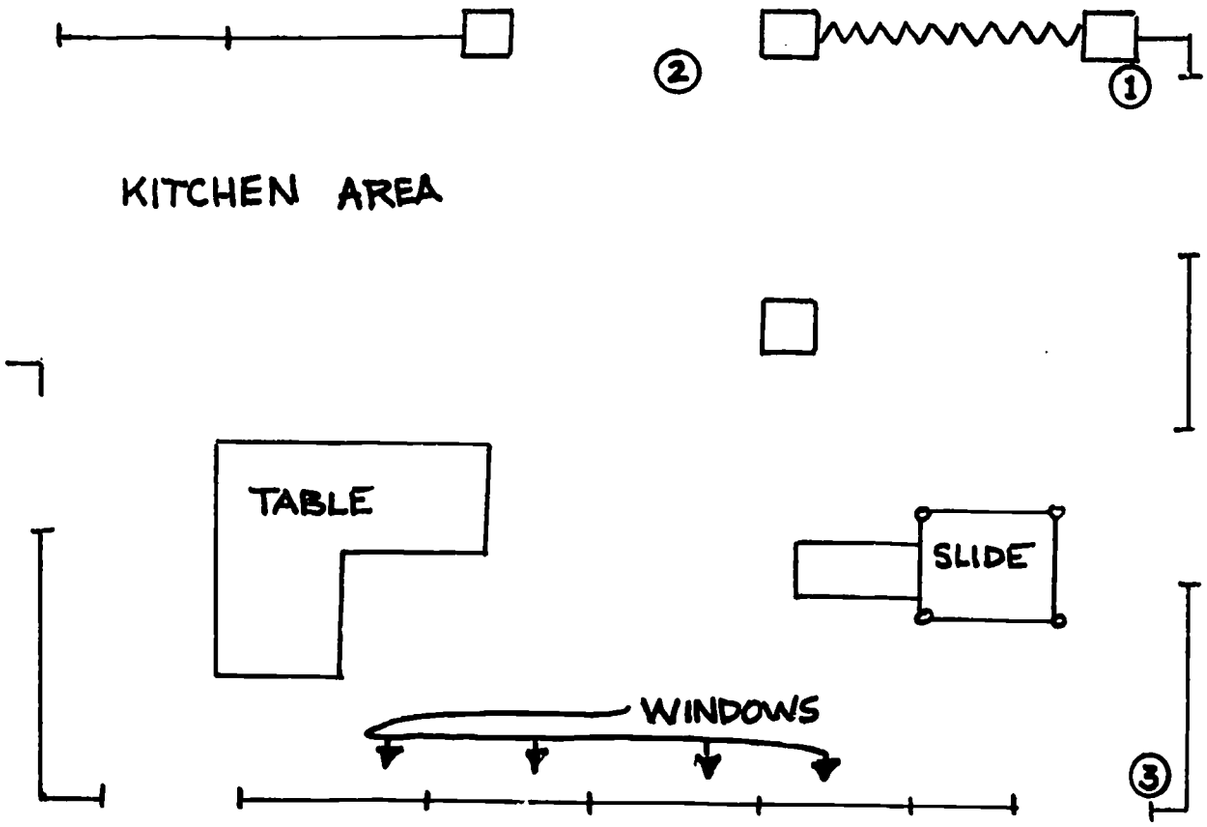
VIDICON CAMERA LENS CHARACTERISTICS*

Shaded areas represent depth of field

* Source: 3M Corporation, Magnetic Products Division. Electography Producers Manual. St. Paul: Authors, 1968, p. 14.

FIGURE D-1

FLOOR PLAN FOR ST. LUKE'S LUTHERAN CHURCH DAY CARE CENTER
Ann Arbor, Michigan

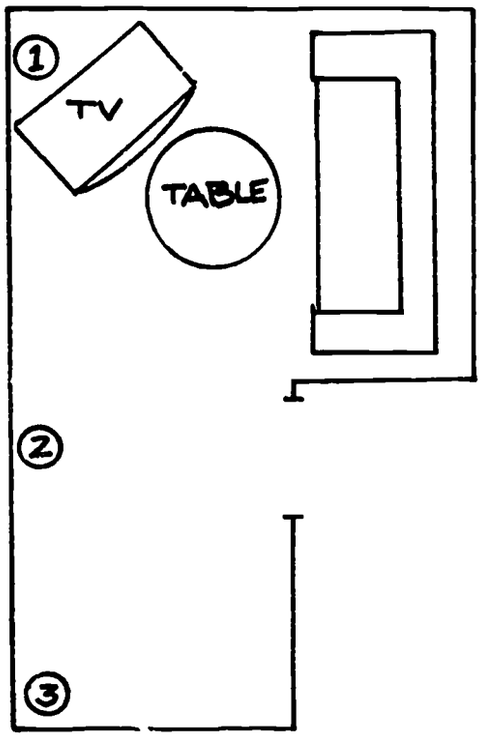


Videotaping Sequence for St. Luke's Church

(Counter Set to 000 @ Start of Tape)	Wide Angle Lens	Zoom Lens
Position #1 Camera & Mic in Corner (11' to Kids, 30' to Far Table, 16' to Slide)	000 - 089	
Position #2 Camera & Mic midway along Wall (12' to Teacher @ Table, 11' of "Dead Space" under Camera)	089 - 180 Misc. group of 4-5 Kids	363 FL=46mm 372 FL=16mm 374 FL=25mm 377 FL=40mm 385 FL=64mm 409 "Pan", 25mm
Position #3 Camera & Mic in Corner (22' to Kids in distance, 16' to Kids between Slide and for group)	180 - 280	320 FL=16mm 341 FL=25mm 348 FL=40mm 352 FL=64mm
Position #4 Camera & Mic in Corner (25' to Kids at Far Table, 22' to Other Table)	280 - 320	363 FL=46mm 372 FL=16mm 374 FL=25mm 377 FL=40mm 385 FL=64mm

FIGURE D-2

FLOOR PLAN FOR BASEMENT OF MRS. PARK'S FAMILY DAY CARE HOME
Ann Arbor, Michigan



Videotaping Sequence for Mrs. Park's Residence

(Counter Set to 000 @ Start of Tape)	Wide Angle Lens (12.5mm)	Zoom Lens (16-64mm)
Camera & Mic behind TV Set (6'-8')	000 - 080	080 - 130 FL = 64mm
Camera 12'-15' from Table Mic hanging 3' over Children	202 - 334	130 - 192 FL = 64mm 192 - 202 FL = 64-40-25-16mm
Camera 18' - 20' from Table Mic hanging 3' over Children	429 - 433	334 - 429 FL = 40mm, then to 16mm (TV off)
Camera & Mic 18'-20' from Table	433 - 452	

APPENDIX E

DEVELOPMENTAL OBJECTIVES

OBJECTIVES LISTED BY BUTLER, GOTTS, QUISENBERRY, AND THOMPSON(1971)

PSYCHOMOTOR DOMAIN

A. Balance, movement, and coordination - Gross motor control

Fives can execute a true jump for horizontal distance.

B. Dominance, handedness, and laterality - Left-right discrimination

Left-right discrimination (selecting the left or right object on the basis of verbal label) is unsupported as an expectation for fives, although some fives may sometimes make left-right discriminations.

C. Growth and maturation

1. Physical measures

A growth curve for each child which is normal for him is one indicator that his basic physical needs are being met. (These data pointing up the particular vulnerability of the DADV child for physical growth problems provide evidence for the need for basic health care and proper nutrition as a component of an educational program.)

2. Nutrition

The nutritional status of fives is shown to be below recommended standards on a variety of nutrients. This is particularly true among low SES children. (For optimal school achievement the child must be provided with a diet adequate in all nutrients necessary for proper growth. The responsibility of the school includes supplementing the diet which is provided by the home if this is necessary.)

3. Medical problems

The five who has unidentified and untreated medical problems, including visual and auditory problems, is also likely to have learning and personality difficulties. (All fives have a right to adequate medical and dental care. If this is not provided by the home, then it must be provided by the school or community. Furthermore, the prenatal care of the mother is of particular importance to the child and his later learning potentialities.)

D. Perceptual-motor abilities

1. Drawing

Realistic drawing is poorly developed at age five and improves with increasing age. The child prefers more accurate drawings than he produces.

2. Copying

Copying is poorly developed at age five and improves with increasing age. ADV children are superior to DADV children in copying.

3. Perceptual-motor (general)

Fives have a relatively high degree of skill in activities such as working puzzles and buttoning when compared to younger children. DADV fives have a deficit in perceptual-motor functioning.

E. Speech

1. Articulation

Fives can learn new articulations but they do not always learn them accurately. Substitutions comprise the majority of their articulation errors. Fives articulate the sounds t, d, n, and z in the dental and low interdental position. Almost all fives can produce h, but many cannot produce k or both h and k. Fives acquire a more stable articulatory pattern as they develop toward correct production.

2. Imitative responses

Fives imitate the sounds of their environment, making fewer and more consistent errors on the sounds they hear most often.

COGNITIVE DOMAIN

A. Attentional processes - Attention

Five-year-old children can attend to the novel, bright, or unusual characteristics of an object but quickly tire of responding to the same object, even if it were interesting to them in the beginning.

B. Ability specific - Reading ability

The five seems to be in a transition period regarding the acquisition of reading skills. Although there are fives who can be taught to read, there are also fives who do not understand what reading is all about. Fives listen to stories or books read to them by adults; they dramatize stories; and they pretend to read. They also have an

interest in learning to read. (The dilemma which must be resolved by the adult regarding fives and reading is not whether fives can be taught to read. Obviously, many fives can be taught to read. The most significant issue is whether fives should be taught to read, and to resolve it the child's behavior must be viewed in a larger perspective, which includes his total maturation. Specifically, his language ability, creative ability, motor ability, his self concept and specific adjustment abilities as well as his motivation to read must be examined.)

C. Concepts

1. Objects

Fives can make judgments of similarity and with greater difficulty make judgments of oddity. Many can make limited use of same and different as verbal descriptors. The foregoing can be done more readily for familiar objects, less for nonsense forms; they can be done more easily for three-dimensional displays than for two-dimensional representations of them. Fives can acquire labels for familiar parts of wholes, e.g., parts of the body, and for other objects of common experience but such recognition and labelling will considerably precede the practical operations of using or reproducing these. They can match objects and retain their identity through minor deformations or spatial transpositions, but with less facility than for the same objects in their familiar orientations. Fives can, if they use active investigatory responses, discriminate illusory or ambiguous stimuli. Younger or otherwise less advanced children can learn concepts from more conceptually advanced children. Fives can group objects by an attribute which they already recognize, more readily for perceptual than for functional attributes and more readily where compounded attributes are similar than when only one is the basis of similarity. For extremely familiar or overlearned attributes such as form and color, fives can perform bi-dimensional sorts or classifications. Fives can match and classify different basic colors with varying degrees of success, and to a lesser extent can name colors. Most of them can improve in all three respects, especially in color naming. Binary size distinctions are easy for fives; some fives can deal with intermediate size conceptually. Fives can conceptualize a variety of geometric forms within specifiable limits, and DADV can improve in form competency. Fives can match and recognize letters, but fewer fives can associate letters with their sounds, following explicit instructions. Fives can recognize relative age distinctions among persons, such as younger and older, and somewhat later recognize persons of intermediate age.

2. Number

Many fives can equate concrete sets for number; count to twenty by ones both with concrete materials and aloud by rote; use the ordinal references first, last, and middle; recognize written numerals within the range of counting; comprehend one-half; perform simple addition and subtraction of concrete instances; and use most and some appropriately.

3. Time

The child can develop time telling readiness, a more accurate sense of duration, and a concept of sequential time or event sequence, but often only through a program emphasizing these particular goals.

4. Causality

The five-year-old child can, because of his subjective sense of causality, conceptualize causality in personal, subjective terms; can begin to develop a distinction between physical causality and personal causation; can begin to attribute motives and intentions to other persons as a means of explaining and comprehending their behavior; can evidence nonverbally the beginnings of the probability concept.

5. Space

Fives can learn many geo-spatial concepts when they are presented in concrete, directly experienceable terms.

6. Culture concepts

Fives can learn basic concepts that are fundamental to reading, science, mathematics and social studies readiness in a preschool program. They can begin to use simple physical attributes metaphorically.

D. Language

1. Production of syntactic structures

Fives can produce simple declarative sentences, negate propositions and ask questions. They can produce negatives better than they can produce questions. The production of simple sentences is better than single embeddings (i.e., [I told him[that I would come].]), which will be better than more difficult types. Fives show a decrease in the use of substitute forms for the third person present or past tense of verbs, the omission of prepositions and articles, and the substitutition of regular forms for irregular verbs and nouns. The child will show some increase in the use of adjectives, predicate nominative, adverbs, auxillary <u>have</u>, and nominalization (i.e., She does the <u>washing</u> and the <u>ironing</u>.)

2. Comprehension of syntactic structures

The five can understand active sentences and questions best. He understands negatives least well. There is an increase in the comprehension of adjectives of number or relative quantity, of contrast between an adjective constructed by adding <u>er</u> to a verb and the verb (e.g., <u>swimmer</u> versus <u>swim</u>), passive sentences, and

plural/singular contrast (in that order). Difficulty with adjectives denoting spatial relations left and right, neither/nor as adjectives, and contrasts between singular and plural for the inflected verb to be will be evident until age six or seven.

Fives do not understand center embedding and double embedding (subordinate clauses) in sentences as well as single embeddings and simple sentences. (Indications are that adults working with preschool children should consider the complexity of their directions, instructions, and general language structure used with children.)

3. Vocabulary

Fives use a large number of words on the basis of concrete use definitions. Fives can describe pictures in some detail. (While the use of descriptions of pictures will provide the adult with a limited indication of the child's vocabulary, growth in vocabulary might be determined in this way. The vocabulary of DADV fives can be increased through a variety of experiences.)

E. Mediational processes

Fives can use verbal and nonverbal mediators, although specific instruction may be necessary in the former instance and essential in the latter. Fives can process sequential events in the form of information input to be judged, meaningful materials to be sequentially arranged, and rules to be followed. Fives can convert easier recognition and discrimination abilities into more reversible conceptual tools under appropriate instruction. Irrespective of overall linguistic quality, fives can increase appropriate labelling of objects and attributes. Fives can verbalize their solutions to problems.

F. Memory

1. Shortterm memory

Fives can retain up to five distinct pictures or language forms five phonemes in length. Fives' shortterm memory ability decreases sharply when more than five items or pictures are called for.

2. Recall

Fives give evidence of using cues for selection purposes on recall tests. Fives can increasingly recall sequences without perceptual support.

G. Perceptual processes

1. Visual

The visual perception of fives continues to increase, with top

to bottom scanning becoming more prominent. Fives can identify by matching or describing clear objects and pictures that are right side up. Fives increase in developing their ability to discriminate letter forms. Fives discriminate words on the basis of first and last letters rather than word shape.

2. Auditory-visual integration

Fives give evidence of integrating or transferring across visual and auditory stimuli.

H. General cognitive

1. Problem solving and logical thought

Fives can examine an object and attempt to understand its use or relationship to other objects. They further are able to give more adequate reasons for their problem solving behavior than threes or fours. (Adults should provide opportunities for fives to engage in problem solving activities.)

2. Conservation

Fives are able to place small numbers of chips to match the number of those placed by an experimenter. Some fives are able to regroup equivalent sets after they have been altered. (Adults ought to provide opportunities for children to group sets and match sets on a one-to-one basis. Adults should not expect children who can not perform these activities to do addition and subtraction exercises. The conservation experiments of Piaget can provide useful diagnostic tools for adults working with young children. Teaching of conservation seems of questionable value, since all normal children arrive at this point eventually, but it appears to be quite in the spirit of Piaget's work on conservation to provide the child with experiences that later will contribute to conservation. See Kamii and Radin, 1967, for an approach based on such considerations.)

AFFECTIVE DOMAIN

A. Social behaviors

1. Aggression; Dominance

No objective. (Adults should recognize that aggression is often a form of social approach at age five, and should avoid labelling it as "bad" and avoid intruding obtrusively into vigorous play, unless someone is actually being harmed. Adults are cautioned that children who do not learn early to be assertive may later lack intellectual assertion and social skill. Further, if adult

intrusion is seen by the child as aggressive, this will increase rather than diminish his overt aggression---and it may well be that aggression copied from adults does not assume the same positive significance in the child's development as does aggression which arises in the normal course of peer interactions. Encouraging fantasy activity appears generally promising as an alternative to more disorganized and purposeless forms of aggression.)

2. Imitative behavior

The five year old imitates adults and to a much lesser extent peers. He can acquire new motor behaviors, especially, through imitation. (The focusing of attention upon the behavior to be imitated is probably the most critical aspect of learning management).

3. Sex-typing; Identification

Fives can recognize sex-typed objects about which high adult consensus exists. This is especially true for feminine-typed objects. Fives can use these or avoid their use appropriately in play. Preference for sex-typed activities is not as clearly present. Many boys and girls are adopting more sex-appropriate behavior. A smaller number of children display a same-sex orientation, with more mature girls typically showing a tendency toward cross-sex orientation. DADV boys may develop sex-role orientation more slowly, although there is no reason to expect a delay in their sex-typed choices or sex-role adoption. An increase in same-sex imitation may be evident in both boys and girls.

4. Development of controls

Many fives can use conformity to reduce the risk of yielding to temptation. This conformity may involve the child's even changing his internal evaluation of the attractiveness of objects. Conformity works well in situations that are made non-ambiguious by consistent, explicit, enforced expectations. It is favored especially among children who have a motive to please the opposite-sex adult. Notably, fives obey those adults whom they respect and respect proceeds at this age from evidence of the adult's interest in the child. Some fives obey to avoid withdrawal of nurturance and others seek to gain positive social reinforcement. Some fives are becoming more reflective in choice situations; more show better motor impulse control and are following verbal commands; most avoid obviously dangerous objects and situations. They still rely upon overt commands or self-verbalization of directions, rather than being able to use covert self-verbalization to regulate their behavior. Some fives can increasingly delay gratification and control emotional expression. Fives comprehend much of what is socially acceptable. More socially advanced fives behave in more socially acceptable ways. DADV children generally

lag ADV in the development of controls. (Reliance on overt verbalizations for self-regulation suggests that "quiet" and "well-behaved" are incompatible classroom objectives for fives.)

5. Attachment; Dependency

Fives are decreasing in dependency toward adults while perhaps increasing dependent contacts with same-sex peers. More socially mature fives increase in expression of positive attention seeking. (More dependent children can possibly learn better in an environment and through adult modeled actions, which minimize information that is irrelevant to the child's performance; the adult should be emotionally supportive. Less dependent children may learn better if what they are to do is explained or pointed out to them. For them, the adult should not make an issue of interpersonal responsiveness and should anticipate more autonomous action.)

6. Maturity

Fives frequently manifest autonomy, self-assertion, and competence. Many increase in these behaviors, a few from a near zero starting point. To a much lesser extent, fives spontaneously give affection, attention, reassurance, assistance, and protection to others. Some fives increase in these helping behaviors. Fives move away from parents more often, over greater distances, and for longer durations than previously. DADV fives lag more behind ADV in these than in some other respects. (As with dependency, adults should treat less mature and more mature children differently. Particularly immature fives probably require a continuation of adult closeness, supervision, and emotional support, coupled with expectations for assertiveness, the granting of independence, and provision of opportunities to perform simple, responsible tasks. More mature fives probably can respond well to the other successful adult measures listed in the above summary.)

7. Prosocial behaviors; Introversion

Fives who earlier have been interpersonally oriented and of negative mood are becoming more poised, in contrast to impersonal-positive children who become more socially insecure at five, unless there is adult intervention. Fives' negative interactions with peers decline as overall frequency of interaction increases. Fives can increase their use of suggestion and agreement through dramatic play, although an expectation of immediate transfer to reality behavior is unwarranted. Most fives can behave cooperatively and share more readily, when rewards and cues for cooperation are accentuated. (Adults must not expect fives to establish parity in sharing. Further help toward promoting prosocial behaviors through play and fantasy may be obtained from the summary for "Fantasy.")

B. Social perceptions and Communications

1. Status awareness

Most fives respond to black and white with negative and positive connotations, respectively. Many may have racial awareness. Fives show little evidence of racial prejudice, but they may be learning distorted conceptions of particular groups. Such misconceptions are easily modified in the direction of greater accuracy.

2. Social abstraction

Fives use private speech often during play with peers. For brighter fives, this behavior may be declining slightly, but for average, below average, and possibly DADV, the percentage is still increasing. A few fives are beginning to use such initially sensorilly-concrete terms as sweet, bright, and crooked to refer to psychological qualities of persons. Virtually all fives comprehend good and bad acts, and comprehend when a statement made about a person means that the person is good or bad. (Providing opportunity for private speech may make important contributions to self-control, fantasy, general cognitive functioning, and even popularity, as suggested in the next section. Dramatic play appears to provide a particularly conducive setting.)

3. Person preference

Fives show clear preferences for playmates. Children with greatest facility in dramatic play talking become more accepted by peers. Children can improve their facility in dramatic play talk by having adults teach them about topics that are used in dramatic play. Fives' preferential sets can be shaped by reinforcement procedures. Fives of different racial background play comfortably together and thereby increase in mutual regard. (Children who are less accepted may be helped if they are taught not only how to talk more during play, but also taught to use negative reinforcement less and positive more often, when interacting with their peers.)

4. Emotional communication; Affective awareness

Fives can recognize facial expressions of primary emotions with considerable accuracy, but with the notable exceptions mentioned above. Fives recognize emotions as pleasant or unpleasant even if they do not recognize the particular emotion. They use affective language to describe feelings. Their labelling of emotions and mediated categorizing of emotions can be improved. Such changes of verbalization may be especially beneficial to DADV fives.

C. Motivation

1. Types of feedback the child can use

Fives learn incidentally better under social reinforcement or adult attention. Fives learn intentionally better under tangible reinforcement. When tangible reinforcement is indicated, each five responds best to those reinforcers which are appealing to him individually, but not so much valued as to emotionalize him or distract his attention from the task. Fives intentionally learn best when the task is structured so as to optimize attention to relevant components. Intentional learning may be more indicated for fives when the behaviors they are to acquire are too covert behaviors of a model to be discriminated. Fives can learn to use token reinforcers that are referenced either to social or tangible reinforcement. They may be distracted less by tokens than by tangible reinforcers. Fives learn when natural contingencies are used. Fives increasingly reinforce each other through positive attention. Fives perform better for higher reward. Fives acquire more vigorous and enduring motor behaviors under intermittent reinforcement. Fives tolerate reinforcement delay better when it is increased very gradually. Fives may require immediate, continuous reinforcement to produce or increase a low probability response. Fives are easily confused by failure feedback, possibly mistaking it for punishment. (If threat or punishment is used, fives respond to its harshness or intensity on the basis of their prior histories. Imposing one's own values in this area is not only ethically questionable but is predictably ineffectual. Adults should give augumented feedback early, before the child experiences failure. Sources of individual differences in responsiveness to reinforcement should be carefully weighed before acting. The inconsistent or erroneous application of reinforcement principles can actually cause serious deterioration of learning and classroom climate. Only clearly qualified personnel, who are aware of these risks, should undertake the management of reinforcement. It is not a game to play, but a powerful resource if used wisely.)

2. Preference

Fives can display individual preferences for foods, colors, toys, story themes, and role positions to be played. Their motivation for what the adult wants them to do relates directly to the presence, absence or competition of their preferences, i.e., relates to preferential compatibility with the behaviors expected of them. Fives increase interest in neutral objects or activities which are favorably mentioned by others. Most fives like to listen to stories, especially about people; their interest will be higher still if the story is accompanied by realistic, colored illustrations. Boys are interested in phenomena of the physical world.

Fives can selectively attend to form, if appropriate focusing techniques, reinforcement, and emphasis are used by adults. Fives can develop positive attitudes toward learning and school-oriented activities. (A major goal of any preschool program should be the development of positive interest in learning and school-oriented activities. Adults increase the child's chances of new learning by building around his individual preferential behaviors. Selective attention to form facilitates reading readiness so should be cultivated. The child who shows no clear preferences, in several of these preferential areas, is manifesting atypical affective development. For such a child, a home study is warranted, followed by an individualized program of directing his attention to the respects in which things vary. Conditioning procedures may be required. Further development in this area is essential if the child is to build a process basis for making later choices.)

3. Stimulus variation

The curiosity of fives is manifested in different approach styles, (i.e., verbal, visual, tactile). and under different stimulus conditions. Fives are motivated both by greater complexity and novelty, within the limits suggested in the summary above. Fives can increase in their capacity to cope with both complexity and novelty. (It may be noted from the motor novelty data above that one way to eliminate an undesirable behavior is to require its repeated practice until its novelty is seriously curtailed.)

D. Intra-psychic factors

1. Temperament

The child should be allowed to express his persistence, reactivity to stimulation, emotionality, activity level, and adaptability; he can move gradually, within the speed limits of his own temperament, toward coping with a wider range of important environmental events and objects; he may often become more active as he comes in contact with a new peer group in a preschool program; his increased activity may often mean an increase in aggression, touching, attention seeking; he can use tension releases which are helpful for him and are increasingly mature, (e.g., he can move toward being able to release tension through play and eventually by symbolic means); if initially focused upon adults, he is likely to become more involved with peers. (Adults should recognize that while the child's basic temperament may not be subject to change at age five, the focus of his action is subject to change. Working with the child's temperament rather than against it will speed up such changes of focus in his actions. Adults should alert themselves to both the sources of tension and the highly individual manifestations of tension which char-

acterize fives. Regulation of stimulation and demands are central issues in the management of temperamentally-controlled reactions.)

2. Creativity; Creative processes

Fives play imaginatively with toys and other materials; engage in sociodramatic play, if capable; interact sensorially with varied materials and answer questions about their experience; and produce more divergent perceptions or more fluent reactions to a phenomenon or set of experiential data. Fives can improve in these areas. (no particular absolute level of creativity is known to be optimal, so elevation of the tendency to behave creatively must constitute the primary evidence of progress.)

3. Self-concept; Self awareness

The child can increasingly evidence his concept of himself as competent by spontaneously making realistically positive references to his ability to perform age-appropriate tasks. (Adult-requested self assessments are less satisfactory than are those offered spontaneously either verbally or non-verbally. Providing success experience is fundamental to favorable self concept development.)

4. Personality, global

None. (Adults should be guided, as is suggested under temperament, by a healthy respect for individual differences in the newly discovered areas listed above as factors.)

5. Adjustment

Fives who have adjustment difficulties can improve. Fives initially entering a preschool program can develop good school adjustment. (Parental involvement appears to be essential to the improvement of poor adjustment. Younger or less mature boys who are having an initial preschool program experience should be carefully monitored for signs for poor adjustment.)

6. Fantasy

Many fives use fantasy in doll play, dramatic play and, to a lesser extent, in direct verbalization during story telling. Fives' distinction between reality and fantasy is poorly developed. Most fives can use fantasy more extensively than they do. (Fantasy productivity ultimately enhances the child's construction of social and physical realities. Opportunities for fantasy should be provided in preschool programs for ADV and DADV.)

Appendix F

Projected Numbers of Children per Site, with Suggested Procedures for Site Identification, Selection and Start-up

This appendix discusses three principal topics:

- The notion of a "service area"
- Projection of the number of eligible children available at each service area
- Recommended procedures for the selection of a site, allocation of eligible children to treatments.

The concept of service areas.* In order for the requirement that children be allocated at random to treatments to be realistic, it is essential that all treatments be conveniently accessible to all users at a given geographic location. The area in which treatments are located must thus have a high concentration of potential users in close proximity to one another. For convenience in discussion, such an area will be called a service area.

How large is a service area? At a minimum, one can assume an environment within which poverty levels and problems of access are such that the most likely form of transportation is walking. In such an area no path longer than perhaps a mile is going to be "convenient." Thus a service area no larger than one square mile is not unreasonable in terms of convenient access. If public transporation is available, the service area might be longer in those directions in which public service was offered, but not in all directions. Unless some form of busing is provided, then, a good estimate of the size of a service area is one square mile.

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*This discussion applies only to urban areas. In Section 4.3 it was recommended that only urban areas be considered for this experiment, for reasons discussed there.

It must be pointed out that a site is not the same geographical unit as a service area. The difference may be illustrated by an example. One of the sites for the experiment might be Denver; but the actual service area selected at random and within which the program is run would be defined, say, by census tracts 271, 272 and 275 of the 1970 Census for the Denver SMSA (Standard Metropolitan Statistical Area). Thus the unit of selection and operation is not the site but the service area, a specific geographical location with certain characteristics within a site. For purposes of assuring regional representation and balanced administrative loads, however, it is recommended that no more than one service area be selected per site; thus the site name can serve as a label for the service area contained within it.

The numbers of eligible children in service areas. The logical source of current information on the characteristics of subsections of urban areas across the United States is the Bureau of the Census' 1970 Census of Population and Housing. Preliminary information about data categories and formats is already available in the Bureau of the Census Data Access Description (DAD) Series, 1969-71. The census subdivision closest to the service area in size is the census tract, a population unit whose size can be roughly estimated at two to four thousand persons. For 1970 data, population breakdowns at the census-tract-level will include counts of the number of families below the level of the Social Security Administration's poverty index, as well as the number of children in such families below the age of five; these data will be available on the Fourth Count summary tapes to be issued by the summer of 1972. DAD Nos. 18 and 22 (1970-71) deal with summary computer tapes to be issued by the Bureau of the Census, and No. 22 describes the Fourth Count tape. DAD No. 12 (1969) describes the maps available (for gridding of surface areas), while an unnumbered publication called "Summary Tape Processing Centers," September 1971, lists the centers at which the tapes will be available; they are too expensive and voluminous for purchase for one-time uses such as the present.

A series of reports identifying low-income areas will also be available during the first part of 1972 (Bureau of the Census Series PHC [3]). These may prove useful in leading to a preliminary definition of sites and service areas of interest, although the information identified above as desirable may not be tabulated in those publications.

To obtain preliminary estimates of the number of eligible children to be found in service areas with high numbers of low-income families, corresponding data were sought from the

1960 Census of Population and Housing. Census-tract level data for a number of SMSA's of all population sizes (above 50,000) were searched for tracts with low median family incomes. No attempt was made to arrive at random or representative selection of sites or tracts. Tracts identified were tabulated, and an algorithm was used to find the number of children between the ages of thirty and sixty months belonging to families with incomes under $4,000 per year in each tract.* Tract maps were gridded to establish surface areas, and densities (as the numbers of children per square mile) were calculated. The tract data and results are summarized in Table F-1.

The tracts in Table F-1 are arranged roughly in descending order of size of the site in which they are located. Note that, for comparison purposes, a tract in Lorain, Ohio (a less urbanized, higher income area) is included; its density is markedly lower than that of the other tracts. It is clear from inspection of the table that, for urban areas in the East and South and certainly for larger urban areas, concentrations of 240 children to a square mile can be easily obtained; for smaller cities and towns and for areas in the Southwest suitable concentrations may be a problem

How many of the children of potentially eligible families will actually use offered day care services is still an open question, and one that cannot be answered here. Given current apparent legislative intent, it may well be the case that a high proportion of mothers in low-income families will feel strong pressure to work or participate in some training program, in which case the proportion of potentially-eligible children actually participating might

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*The algorithm for computation of the density can be written as

$$d = \frac{a \cdot b \cdot c \cdot .5}{s}, \quad b = b_1 + b_2 + b_3 + b_4$$

where d= density, number of children (aged 30-60 months) of low-income families per square mile
a= average household size
b= number of families with annual income $< \$4,000$ (low-income)
c= proportion of the population under 5 years of age
NOTE: proportion of children aged 30-60 months estimated at .5c
s= surface area (in square miles)
and b_1= number of families with annual incomes under $1,000
etc.

The above indices are displayed in Table F-1 above the columns of the corresponding data for each tract.

SMSA's	Tract	Median Family Income	Average Household Size (a)	Number of Families with Income <$4000: <$1000 (b_1)	1000-1999 (b_2)	2000-2999 (b_3)	3000-3999 (b_4)	Total (b)	Est. Low-Income Pop.	Proportion of Pop. < 5 yrs. (c)	Proportion of children 30-60 Mos. (.5) (c)	Estimated Population 30-60 Mos. Low-income	Surface Area (Sq. Mi.) (s)	Density of Eligible Children Per Square Mile (d)	PHC Report Series Volume Identification Number 3
New York (Manhattan)	186	3,636	3.83	167	173	361	461	1,162	4,451	.14	.07	312	.05	6,783	104, Pt. 1
	20	3,788	4.18	94	120	321	397	932	3,896	.13	.065	253	.05	5,060	
Los Angeles	2,034	2,729	4.71	117	130	194	180	621	2,925	.24	.12	351	.54	650	82
	2,045	3,387	3.67	82	166	175	186	609	2,235	.16	.08	179	1.07	167	
Chicago	133	2,872	4.47	97	120	74	81	372	1,663	.20	.10	166	.05	3,388	26
	557	2,924	4.14	217	405	328	333	1,283	5,312	.16	.08	425	.11	3,795	
Baltimore	10-2	2,512	3.56	213	246	255	176	890	3,168	.15	.075	238	.20	1,184	13
	16-2	3,113	3.96	154	221	212	172	759	3,006	.14	.07	210	.19	1,129	
Charlotte, N.C	37	2,890	4.41	75	176	295	288	834	3,678	.21	.105	386	.93	415	24
	6	2,811	3.82	108	238	333	257	936	3,576	.14	.07	250	.43	581	
Savannah, Ga.	6	2,677	3.92	237	460	492	314	1,503	5,892	.14	.07	412	1.06	389	139
	5	2,303	3.70	119	188	228	89	624	2,309	.17	.085	196	.805	244	
Albuquerque, N.M.	20	3,103	3.90	82	137	131	184	534	2,083	.15	.075	156	1.88	83	4
	14	3,432	3.69	114	202	213	244	773	2,852	.15	.075	214	1.00	214	
Lorain, Ohio LR-0011		4,711	3.92	87	91	167	264	609	2,387	.15	.075	179	4.06	44	81

*Sources: U.S. Census of Population and Housing: 1960, PHC Final Report Series.

TABLE F-1

TRACT CHARACTERISTICS AND DENSITY OF LOW-INCOME CHILDREN, FOR SELECTED URBAN TRACTS

(Data from the 1960 Census of Population and Housing)

be expected to be high.

Site identification, selection and start-up. The following steps in the random selection of suitable service areas are envisioned:

- Census tracts with a high proportion of families with incomes below poverty level are selected as the sampling universe. This can be done directly by setting some proportion a of low-income families as a lower boundary figure for tract acceptability, or through the use of the tracts identified in the above-mentioned Bureau of the Census Publications in Series PHC(3).

- All identified census tracts are gridded and their surface areas obtained. Clusters of adjacent census tracts with areas of approximately one square mile will be formed as the operational equivalent of service areas.

- Weights based on the total number of low-income children living in a given service area will be assigned to each service area. A list for sampling will be prepared in which each area is represented a number of times proportional to its weight.

- Service areas will be separated into six regional strata of approximately equal total weight or low-income population size. From each list ten numbers will be selected at random. The first three numbers will indicate the service area selected and two alternates. In case two numbers belong to the same service area or the same site, the second such number will be discarded and the fourth, fifth, etc. numbers in the list moved up as needed to identify alternates.

- A preliminary estimate should be obtained next of the number of children in the service areas selected that meet eligibility criteria. These figures will be first-order approximations to the number of day care users expected.

In order to accomplish the above, the following data categories are required for each tract:

- The proportion of families with incomes below poverty index levels

- The total number of families

- The number of children of low-income families between the ages of 0-5 (if this is not available, the total number of children in this age group, multiplied by the proportion of families below poverty levels, will provide a conservative estimate).

The above procedures will result in the identification of potential service areas. Their final acceptance or selection for the experiment will depend on the results of site visits, for which these steps are recommended in Section 4.3:

- Survey of area physical characteristics
- Survey of local employment opportunities
- Survey of the perceptions of need for day care among potential users
- Review of licensing requirements with local officials.

Although sites are to be inspected carefully, they are not to be lightly discarded from the experiment; to do so would violate the basis for statistical selection. Only if it is virtually certain that the experiment will not work at that site for one or more reasons discovered in the above surveys should the service area be discarded and the first alternate considered for selection.

Once a service area has been finally selected, potential users will have to be informed of the project, identified and listed for enrollment. Enrollment should not be on a "first come, first served" basis, since this is not a random process; rather, lists should be kept open for a fixed time period, and then augmented by recruitment if necessary. The lists should be sorted into approximate random order, alternating sex and age cohort members in a balanced fashion. No more than eighty per cent of capacity should be guaranteed placement, with the rest of the applicants put on waiting lists. When the lists include enough children for a ten percent replacement backlog, all of the units should open simultaneously. Two-thirds of the waiting list should be selected at random and together with the remaining eighty percent group assigned at random to child care units, with one exception: if siblings are enrolled in the program, they should both be allocated to the same treatment condition.

This procedure can appear dehumanizing to potential users, and may be the cause of resistance and severe hostility if accompanied by a lack of communication or the feeling that the users' needs are being ignored. Within

the limits set by the demands of the experiment (namely, avoidance of identification of the alternative treatments in some fashion that might influence participation levels or withdrawal rates) every effort should be made to be completely open about the purposes, requirements and possible benefits of the research. Realistic and satisfying ways of involving parents to the extent of their interest should be sought.

APPENDIX G

DESIGN FOR ALLOCATING TREATMENTS TO SITES

The following design assumes that 240 eligible children can be found in each service area, and therefore places balanced sets of eight treatments in each of six sites.

Figure G-1 is a modified version of Figure 4.1, the independent variable design matrix, in which six sites (letters A-F) have been placed in a balanced fashion. Table G-1 displays all contrasts available for assessment of main effects, and lists which site provides each contrast. Each contrast is listed as a pair of numbers from the design cell of Figure G-1: thus the (1,2) contrast is the comparison of informal training and formal training--child-centered program for family day care homes.

Although there is balancing of the contrasts in Table G-1, interaction contrasts (including site x treatment effects) are not balanced. For example, inspection of Figure G-1 will show that treatment cells 1 and 14 occur only for sites A, B and D. For this reason it is absolutely essential that service areas be selected at random and randomly allocated to the sets of treatment conditions A-F. Figure G-2 displays the treatment sets for each site.

FIGURE G-1

AN EXAMPLE OF THE ALLOCATION OF TREATMENTS TO SITES

	Informal Training	Formal Training: Child-Centered	Formal Training: Open Framework	Formal Training: Programmed Curriculum
Family Home	ABD 1	AEF 2	BCF 3	CDE 4
1:6	ACF 5	CDE 6	ABE 7	BDF 8
Center 1:10	CDE 9	BCF 10	ADF 11	ABE 12
1:15	BEF 13	ABD 14	CDE 15	ACF 16

Letters (A-F) denote sites

TABLE G-1

CONTRASTS FOR DESIGN OF FIGURE G-1

(1,2)=A	(2,3)=F	(3,4)=C	(4,8)=D
(1,3)=B	(2,4)=E	(3,7)=B	
(1,4)=D	(2,6)=E		
(1,5)=A			
(5,6)=C	(6,7)=E	(7,8)=B	(8,12)=B
(5,7)=A	(6,8)=D	(7,11)=A	(8,16)=F
(5,8)=F	(6,10)=C	(7,15)=E	
(5,9)=C	(6,14)=D		
(5,13)=F			
(9,10)=C	(10,11)=F	(11,12)=A	(12,16)=A
(9,11)=D	(10,12)=B	(11,15)=D	
(9,12)=E	(10,14)=B		
(9,13)=E			
(13,14)=B	(14,15)=D	(15,16)=C	
(13,15)=E	(14,16)=A		
(13,16)=F			

Total number of contrasts: 40

FIGURE G-2

TREATMENTS ALLOCATED TO SITE A

		Informal Training	Formal Training CC	OF	PC*
Family Home		A	A		
Center	1:6	A		A	
	1:10			A	A
	1:15		A		A

TREATMENTS ALLOCATED TO SITE D

		Informal Training	Formal Training CC	OF	PC*
Family Home		D			D
Center	1:6		D		D
	1:10	D		D	
	1:15		D	D	

TREATMENTS ALLOCATED TO SITE B

		Informal Training	Formal Training CC	OF	PC*
Family Home		B		B	
Center	1:6			B	B
	1:10		B		B
	1:15	B	B		

TREATMENTS ALLOCATED TO SITE E

		Informal Training	Formal Training CC	OF	PC*
Family Home			E		E
Center	1:6		E	E	
	1:10	E			E
	1:15	E		E	

TREATMENTS ALLOCATED TO SITE C

		Informal Training	Formal Training CC	OF	PC*
Family Home				C	C
Center	1:6	C	C		
	1:10	C	C		
	1:15			C	C

TREATMENTS ALLOCATED TO SITE F

		Informal Training	Formal Training CC	OF	PC*
Family Home			F	F	
Center	1:6	F			F
	1:10		F	F	
	1:15	F			F

* CC refers to Child-Centered; OF refers to Open Framework; and PC refers to Programmed Curriculum.

APPENDIX H

Back-Up Information for 4.7 Cost Assessment Procedures

Measurement Considerations in Day Care Cost Assessment

Start-up costs. Start-up costs are not expected to vary directly with experimental variables, but there will be some differences due to experimental variables. Remodeling costs for a family home care system will probably be lower than such costs for a center. Educational equipment purchased for a formal program will be different than equipment purchased for an informal program. Costs for desks and teacher's lounge space will be greater in a 1:5 (caregiver/child) staffed center than in a 1:15 center.

Although the general goal will be to provide similar or comparable facilities and equipment across all programs, it will be important to identify specific start-up costs for each program. Start-up costs are defined as all those costs which occur before the child care operation has actually begun, and also obvious one-time costs incurred during the first few months that the center is operating. Although the entire first year of operation is in reality a "start-up" year, most costs incurred after the day care operation has opened its doors will be assigned to standard operating or supplementary services costs (see below).

The specific start-up costs are to be separated according to whether they are purchased or donated, and include:

- Equipment

  Office
  Classroom
  Playground
  Kitchen
  Cleaning
  Maintenance
  Other

- Motor Vehicles

  Buses
  Automobiles
  Other

. Facilities

Renovation (clean-up, painting, etc.)
Remodeling (structural changes)
Rent advance
Rent for time before center opens
Landscaping
Installation of equipment

. Personnel Time

Director's salary
Staff training time
Site location and selection time
Market survey time
Recruiting and parent interviewing time
Program planning time

. Miscellaneous

Fees and licenses
Advertising and paid recruiting
Training consultant services
Community public relations-good will

Standard operating (experimental) costs. Operating costs must be broken down into standard operating costs and supplementary services operating costs (see below), using a functional reporting system. Without some form of functional reporting it would be impossible, for example, to determine the cost of staff time spent on parent counseling and referrals compared to the staff time spent on teaching and instruction.

Standard operating costs are defined as including the following functional budget categories:

. Basic child care and supervision

. Teaching and instruction

. Feeding and food service

. Staff development and on-the-job training

. Intake evaluations, enrollment interviews and recruitment

. Community relations activities

The overall costs for administration and occupancy would also be assigned to these six categories of standard operating costs and the three categories of supplementary services costs (see next section). This assignment would be done on a prorated basis as described by McClellan, Zemont, and Kelpsas in Day Care Cost Analysis: A Manual of Instructions (1971, p. 7), and Day Care Costs: Proceedings of a Workshop, Day Care Policies Studies Group (1971, p. 23).

Supplementary services costs. The costs assigned to supplementary services are defined as including the following functional budget categories:

- Health services
- Social and economic services to families
- Transportation services (if needed)

As mentioned above, the overall costs for administration and occupancy would also be assigned to the first two categories on a prorated basis as described in Day Care Cost Analysis: A Manual of Instructions.

There will have to be a decision made regarding the inclusion of any part of the health services in the standard operating costs. Are there certain health costs which are not supplementary, but are standard (i.e., entry physical for child by doctor required by Michigan law)? If there are any standard health costs, these must be clearly defined and held separate from "supplementary" health services for cost analysis purposes.

Longitudinal control of costs. Because day care programs develop and change over time, costs should be identified by year. This is especially important because of the relatively short life span of day care programs (Rowe, 1971b). In this study, the first year should begin on the first of the month nearest to the actual opening day for the day care program. Each fiscal year should then be figured from this starting date. The entire first year of operation will be considered as a start-up year. Regular operating costs won't be evident until the second year of each program's operation.

Time unit for cost comparisons. Because the demand for day care is often a seasonal thing, costs and program attendance often drop in the summer months and then increase again in the fall. The reason for this drop in attendance is the availability of older children who are out of school to serve as babysitters. Also, when schools close for the

summer many working women are not working. For this reason costs should be figured on a per year basis, unless actual hours or days of attendance are to be used.

Costs per child year figured by attendance and by enrollment. One of the consistent causes of differences between existing day care cost studies has been the basing of costs per child on yearly enrollment figures (Children's Bureau, H.E.W. and Day Care and Child Development Council of America--CB-DCCDC Budget--1968) or on average daily attendance (ADA) (Abt, 1971d). In the Abt study, average daily attendance was generally about 12% less than enrollment, but there was a wide range of differences between these two figures in different day care programs. There is, for instance, some evidence indicating that absenteeism is almost double when parents must travel for 15 to 30 minutes to get to the day care facility rather than walking a few blocks (Rowe, 1971a).

Program information put into standard form. Costs must be expressed per unit of care before there is any possibility for comparing costs from program to program. If one program is open for eleven hours per day, while another is only open for ten hours per day, the first program will appear to be more expensive even though their costs were the same per unit of service provided. This adjustment is also important to equalize costs across centers which may be open for ten, eleven, or twelve months per year (Galambos, 1971).

Costs adjusted for donations. Because day care programs are often the recipients of donated services, supplies, equipment or sometimes even rent, these donations must have an imputed cost added into other program costs (McClellan, Zemont, and Kelpsas, 1971). A good model for handling donated goods and services in day care cost assessment is presented in Day Care Cost Analysis: A Manual of Instructions, pp. 22-28.

Accounting Considerations

Standardized definitions and accounting procedures. For the most part the definitions and accounting procedures outlined by McClellan, et al. (1971) should be used. When there are to be changes, such as the use of the eleven functional accounting categories (see functional reporting system below), they should be agreed on at the start of the study.

Standardized reporting forms. Standardized reporting forms similar to those in McClellan et al. (1971) should be set up for use by each program director. The site coordinator should receive these forms filled out monthly or quarterly. Examples of these standardized forms are:

- General accounting journal
- Payroll journal
- Depreciation schedule for fixed assets
- Statement of annual operating expenses
- Information on donated inputs
- Staff time utilization report
- Child enrollment and attendance record
- General program events record
- Allocation of work time and personnel expenses
- Statement of operating expenses as imputed to functional categories

Examples of these worksheets are available in McClellan, et al. (1971) or from Abt Associates, Inc. (1971e). All of the above worksheets except the last two would be filled out by the individual program director. The director would be trained and assisted in this task by the cost analyst who would probably be assigned to one single geographic site.

The functional reporting system. The use of functional budget categories doesn't require that the individual program units adopt a complex functional accounting system. As pointed out by McClellan in Day Care Costs: Proceedings of a Workshop (p. 17), reliable cost analysis requires standard reporting of annual expenditures rather than a standard accounting system for those expenditures. A variety of accounting systems may potentially yield the necessary data for standard reporting. One characteristic, however, must be present in the accounting system to be used. The accounting system must use accrual accounting as contrasted to "cash-basis" accounting. Most day care center managers currently use cash basis accounting. They simply record and report revenues only when received in cash, and expenses only when they are paid in cash. This allows significant bias when bills from one year are merely postponed and paid the next year. In accrual accounting one records expenses, purchases, and other bills when one incurs a clear obligation to pay them.

The following eleven functional budget categories will be used for the functional reporting system of the child care

units. The first two categories (Administration and Occupancy) are kept separate for general information purposes, but then are reassigned to the other nine categories on a prorated basis to provide a pure functional view of costs for each program. The next six categories make up the standard (experimental) operating costs, while the last three categories make up the supplementary services costs:

- Administration
- Occupancy
- Basic child care and supervision
- Teaching and instruction
- Feeding and food service
- Staff development and on-the-job training
- Intake evaluations, enrollment interviews and recruitment
- Community relations activities
- Health services
- Social and economic services to families
- Transportation

Functional categories such as those listed above must be:

- Mutually exclusive (the same item cost cannot be placeable in two or more categories)
- Exhaustive (every item cost must fit into one of the categories)
- General enough to allow comparability among different kinds of day care operations
- Meaningful in terms of the goals and objectives of day care operations as examined in this day care design

The following listing of the kinds of operating expenses which fall under each of these functional budget categories throws some additional light on the makeup of each functional budget category:

- Administration

  Personnel administration and teacher supervision
  Program planning and research
  Advertising
  Communications (telephone, postage, etc.)
  Office supplies
  Printing costs
  Legal, architecture and accounting (audit) fees
  Bonding insurance
  Center memberships
  Licenses and fees
  Repair and replacement of office equipment

- Occupancy

  Personnel costs (janitor)
  Rent
  Maintenance
  Utilities
  Insurance
  Moving expense
  Building permits
  Housekeeping supplies

- Basic child care and supervision (of child)

  Personnel costs for teachers, assistant teachers, and aides (based on time allotment)
  Supplies and materials (consumable)
  Repair and replacement of indoor and playground equipment

- Teaching and instruction

  Personnel costs for teachers, assistant teachers, and aides
  Educational supplies and materials
  Repair and replacement of educational equipment
  Field trips and special educational experiences

- Feeding and food service

  Personnel costs for food preparation (cook), and mealtime supervision
  Foodstuffs
  Repair and replacement of kitchen equipment
  Kitchen supplies

. Staff development and on-the-job training

On-the-job training assistance
Professional conferences, conventions, meetings (travel and fees)
Individual memberships
Subscriptions and reference materials
Educational training consultant fees
Personnel time replaced due to training and program planning meetings

. Intake evaluations, enrollment interviews and recruitment

Personnel time for interviews
Fees paid for recruiting

. Community-(parent and public) relations activities

Personnel time
Educational materials-displays
Incidental expenses, e.g., transportation, refreshments

. Health services

Personnel costs
Medical examinations
Medical treatment
Dental examinations
Dental treatment
Special nutritional expense
Insurance fees to protect health
Repair and replacement of health service equipment
Health service supplies

. Social and economic services to families

Personnel time
Emergency assistance--(food, clothing, legal aid)
Transportation to services
Counseling and family consulting fees

. Transportation

Personnel costs
Operating costs
Licenses
Repair and replacement of vehicles
Rent of vehicles or garage facilities

The chart presented in Figure H-1 is adapted from Form D as presented in McClellan et al. (1971, p. 76). It is very similar to Form F--as presented by Lazar et al. (1970, p. 524). This chart is presented to clarify the relationship between (1) the different operating expenditures of each program unit with (2) the constant eleven functional budget categories. Once costs are allocated to the eleven functional categories, then costs of different parts of a program can be compared with benefits from that unit. Costs can then be compared within one program unit over time, i.e., how much or what percentage is spent on instruction in year one vs. year three. Costs can also then be compared across program types to determine real program differences, i.e., where do they put their money?

In A Cost Analysis System for Day Care Programs (Galambos, 1971, p. 17), it is stated that "family day care costs cannot be expressed by functional classification." However, with the detailed monitoring of the family child care units to be done in this study this same functional reporting system used for day care centers can also be used with the family day care arrangement. The problem is not that the functional system won't work--the problem is one of collecting the correct data from the day care mother.

Standards for allocating line item expenditures. The instructions for completing Form C in McClellan et al. (1971, p. 58), should be adapted to the eleven functional categories presented above in order to allocate line item expenditures into each of the functional categories.

Fixed costs and variable costs. It is normally important to distinguish costs which are fixed and those which vary according to the number of children enrolled. However, since the experimental design is now based on one single enrollment for each child care unit, the fixed and variable cost structures are not separable.

Since fixed and variable costs won't be experimentally varied, the relative amounts of costs which are fixed and varied can only be studied on a post hoc basis for one center size. If, during the life of the project, one center runs half-full, i.e., 15 children for a long period of time, then a comparison of fixed and variable costs when it was operating half-full vs. full would give some idea of actual fixed costs.

The typical cost-per-child-per-year figure used in comparative day care studies can be gross and misleading. Rather than cost-per-child-per-year it would be more useful to present fixed costs-per-year and variable cost-per-child-

FIGURE H-1

SUMMARY STATEMENT OF TOTAL EXPENDITURES BY FUNCTIONAL CATEGORY

		Supporting Services Indirect Costs		Program Services Direct Costs						Supporting Services Additional Costs		
	X	1	2	3	4	5	6	7	8	9	10	11
Line Item Expense	Total	Administration	Occupancy	Basic Child Care	Teaching and Instruction	Feeding & Food Service	Staff Develop. & OJT	Intake Evaluation & Recruit.	Community Relations Activities	Health Services	Social & Economic Services	Transportation
1. PERSONNEL												
(a) Salaries												
(b) FICA & Payroll Taxes												
(c) Fringe Benefits												
(d) Donated Services												
2. OCCUPANCY												
(a) Rent												
(b) Maintenance												
(c) Utilities												
(d) Moving Expenses												
3. INSURANCES, PERMITS, LICENSES AND TAXES												
(a) Bonding Insurance												
(b) Occupancy Insurance												
(c) Health Insurance												
(d) Auto & Bus Insurance												
(e) Building Permits												
(f) Health Permits												
(g) Vehicle Permits & Licenses												
4. COMMUNICATIONS												
(a) Telephone & Telegraph												
(b) Mailing & Shipping												
5. CONFERENCES, CONVENTIONS, MEETINGS & SPECIAL EVENTS												
(a) Educational Conferences												
(b) General												
(c) Parent Council												
(d) Advisory Council												
(e) Special Events												

FIGURE H-1 (CONT.)

SUMMARY STATEMENT OF TOTAL EXPENDITURES BY FUNCTIONAL CATEGORY

		Supporting Services Indirect Costs		Program Services Direct Costs						Supporting Services Additional Costs		
	X	1	2	3	4	5	6	7	8	9	10	11
Line Item Expense	Total	Administration	Occupancy	Basic Child Care	Teaching and Instruction	Feeding & Food Service	Staff Develop. & OJT	Intake Evaluation & Recruit.	Community Relations Activities	Health Services	Social & Economic Services	Transportation
6. SUPPLIES, RENTALS & DEPRECIATION												
(a) Office Supplies												
(b) Educ. Supplies												
(c) Food Supplies												
(d) Health Supplies												
(e) Housekeeping Supplies												
7. PRINTING & ADVERTISING												
(a) Printing												
(b) Advertising												
8. SPECIAL FEES & SERVICES												
(a) Speech Therapy												
(b) Physical Therapy												
(c) Occupational Therapy												
(d) Medical/Dental Fees												
(e) Legal, Accounting, Architect & Investment												
(f) Public Relations												
(g) Program Planning												
(h) Field trips & Special Educational Experiences												
(i) Memberships												
(j) Subscriptions & Reference Materials												
(k) Special Assist. to Indiv. Other than Owners & Staff												
(l) Security Guard Service												
9. TOTAL EXPENSES												
Percent Functional Category is of Total Expense												

per-year for each different program being compared.

In summary, fixed and variable costs will be examined after the fact during the course of the project. If some centers operate very much under or over projected size for long periods of time then differences in fixed and variable costs by size can be determined. This will permit more accurate estimates of "real" costs for the funding of centers by the government.

Pricing Considerations

Regional price adjustment. The annual cost per child varies among programs because of two basic differences. One of these factors is the difference in the prices of inputs (e.g., rent, salaries) due to local market conditions (Abt, 1971d). The regional price adjustment procedure is one of the key elements for making equitable or true comparisons between program costs across different child care units.

The suggested process for adjusting costs for regional price variations will deal only with costs for personnel, rent, food, and medical expenses. These four items account for over 90% of the fully costed budget (Warner, 1971) so this suggested regional price adjustment is very comprehensive and effective.

The adjustment for all personnel costs should be based on the "Bachelor's Degree-Minimum" figure given in Salary Schedules for Teachers, 1971-1972, by the Research Division of the National Education Association.

The price adjustment for food, rent, and medical care should be based on these same entries in the "Indexes of Comparative Costs Based on a Lower Level Budget for a 4-Person Family." This data is presented in Three Budgets for an Urban Family of Four Persons, Final Spring 1970 Cost Estimates. These price adjustments are based on a "Lower Level Budget" since the geographical location and socioeconomic level of the day care clients would logically fit the "Lower Level Budget." Since the purpose is to make a relative price adjustment rather than to predict actual prices, the "intermediate" or "higher level" budgets could also be used.

These budget indexes are provided for 39 metropolitan areas in the United States and four regional classes of nonmetropolitan areas. If a site location is not included in these 39 metropolitan areas then the index for that site should be based on the indexes for similar sites in that same geographic region.

Price inflation adjustment. Costs will vary from year to year due to both local and national variations in the cost of living. This adjustment for price inflation can most easily be handled by assuming a 3% to 4% rate of price increase per year for all site locations. Personal communication with Janet Norwood, Chief of the Division of Consumer Prices and Price Indexes and Jean Brackett of the Family Budget Program (Bureau of Labor Statistics) determined that these prices have been going up uniformly across all cities over time. For this reason, local price inflation adjustments are not necessary.

The Consumer Price Index from the Bureau of Labor Statistics can be checked to identify and adjust for any extraordinary site variations in price inflation which may occur in the future. However, city by city Consumer Price Indexes do not show intercity differences in either prices or living costs. They show only intracity differences in rates of price change from one time to another, and are not to be used in figuring any price adjustment by region.

APPENDIX I

LICENSING CONSIDERATIONS

The requirements and problems connected with present standards for and licensing of such day care programs as proposed for this experimental study will be briefly treated here in terms of:

- A basic picture of the current status of licensing regulations and procedures in the United States

- Recommended sources for further details on these general practices and for specific details on the licensing and regulation processes in individual states and localities

The decision to examine so complex, problematic, and potentially crucial a topic in only broad, general terms, and in an appendix, rests upon two fundamental considerations:

- The final details of licensing, local regulations, and periodic inspections will be one of the major initial concerns of the project's Prime Contractor during start-up and pilot phases of the actual experiment, that is, in those phases subsequent to this design effort and the selection of project contractors by OEO (cf. Section 5, Project Management and Administration and Section 6, Project Time Schedule). Detailed investigations and decisions would naturally follow the initial selection of eligible sites and proceed through final site selection for full project operations (cf. Section 4, Experimental Design, Implementation and Analysis).

- In practical terms, there is no other way to treat this subject except generally and through reference to several available resources, unless one wishes to prepare a multi-volume report on licensing issues alone. Several such long-term studies have been performed or are in progress, and these are cited in the list of basic resources below.

As concisely summarized by Prescott et al. (1970), day care program standards and regulations for licensing concern four basic dimensions:

- Physical facilities, e.g., square footage of space per child; windows; toilets; type and placement of equipment; technical standards for fire, health, and building safety; plumbing and electrical specifications

- Caregivers, e.g., background, vocational experience, special educational training, references, personality

- Program administration, e.g., daily schedules for activities, specifications for numbers and roles of adults in a program,

provision of adequate funds and maintainence of financial records, maintainence of necessary records on program participants

- Users of day care services, e.g., numbers of children permitted, age limits of children, exclusions of some children or parents for special health or psychological reasons, direct involvement of parents, socio-economic standards for obtaining some types of funding

The crux of the complexities, and ultimately the obstacles, for regulations on all these components is perhaps most directly stated in the Phase I Summary Report (1971) of a massive three-phase study of day care licensing under the joint auspices of OEO, OCD, the Social and Administrative Services and Systems Association (SASSA), and Consulting Services Corporation (CONSERCO):

> Although there are many similarities, no two states, cities, or counties follow the same specific procedures or interpret regulations in the same way (p. 5).

For an example of just one category of this variance, one may ponder the following ranges of regulatory areas and definitions now in existence (as summarized from the CONSERCO Summary Report, pp. 4-5):

- The three major types of day care facilities, family day care homes, group day care homes, and day care centers, are not similarly defined from state to state. Moreover, while family homes are subject to some form of licensing regulations in 48 states.

- State licensing of family homes is not mandatory in 12 states (though Georgia does have regulations for other types of day care). In at least one state, Idaho, center licensing regulations have been overturned by court action.

- In several states which do require day care licensing, licensing is nevertheless not mandatory under the jurisdiction of some city and county statutes.

- Generally, local requirements in zoning, fire safety, and building codes are less stringent and detailed for family homes than for centers, as are state requirements for physical facilities and programming.

- Only 60% of the states now have explicit special requirements for infant care in day care centers.

- Day care facilities are frequently not specifically defined or

classified in state or local regulations applied to such facilities by inspectors from different departments; therefore, zoning, fire safety, health, and building code requirements are seldom coordinated with overall state day care licensing requirements.

- Local regulations on fire hazards, health needs, and building construction clearly increase in number and stringency as population density increases.

- While applicants included in this study often did not consider the licensing requirements unrealistic, the costs and lead time involved in meeting these was clearly a major reason for a majority of those interviewed to have decided not to continue their efforts to obtain a license, even though some were operating day care homes.

The Phase I Summary Report prepared by CONSERCO describes comparable thickets of inconsistency and contradiction in the actual procedures to be followed for obtaining day care licenses and in the major points of delay encountered in this process.

It was within this nationwide context, and among the frequent indications by states that they intended major changes in their regulations over the next two years, that CONSERCO, in conjunction with SASSA, embarked upon the three-phase study, commissioned by the Department of Health, Education and Welfare,

- To determine the status of licensing in the various states and the extent to which the licensing process might be a deterrent to future expansion of day care facilities.

- To develop model statutes, codes, regulations, and administrative procedures for possible future adoption by state and local government....

- To present the models to national and regional conferences and local officials.... (CONSERCO AND SASSA, p. 1).

The resultant report on Phase I, cited extensively here, and accompanied by two volumes of Abstracts of State Day Care Licensing Requirements (1971; Part 1: Family Day Care Homes and Group Day Care Homes; Part 2: Day Care Centers), is obviously an essential resource on day care standards and licensing. The length and degree of detail of these three volumes alone is a fair indication of the amount of relevant information and the complexity of present practices. The interested or curious investigator is particularly referred to the summary tables of regulations and the appendices on special requirements and procedures in the Phase I Summary Report.

A draft report on day care licensing models (Phase II of the study described above) was prepared for limited dissemination by OEO and CONSERCO late in 1971. This report was the result of week-long conferences for six task forces of experts formed to produce a set of coordinated licensing models, drawing on the results and recommendations of the Phase I survey. The six models cover legislation, zoning, fire safety and building codes, health and sanitation, administration, and staffing and program requirements.

The basic guide for day care programs receiving federal support is, of course, the Federal Interagency Day Care Requirements (1970; draft revision and expansion circulated to federal agencies June, 1971). It should be emphasized in the light of the preceding discussion, however, that "programs and facilities must also be licensed or meet the standards of licensing applicable in the State (Federal Requirements, p. 2)."

A helpful detailed examination of such state standards for family day care homes in eight Southeastern states (included in the Southeastern Day Care Project) has been prepared by Galambos (1971). The concluding appendix of Chapman and Lazar (1971) contains a handy quick-reference chart of day care regulations and licensing in the 50 states (reprinted from Franchise Journal, August, 1971). For a coherent and readable treatment of the "philosophical context" of child care licensing and the rationale for such regulations, the reader may consult Class (1968). Finally, Prescott et al. (1970), also cited earlier, is a valuable resource for its unusual perspectives on day care licensing and its problems. Primarily from extensive analysis of day care in Southern California, with judicious use of supporting information from other states, this report treats licensing in California not only in terms of its historical evolution, but also in brief "case studies" and excerpts from interviews which document the process as experienced and judged by both applicants for licenses and state day care licensing staff.

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